Reconnaissance Level Fish and Fish Habitat Inventory in the Bulkley T.S.A.

(Working Unit #12 - Coffin)

Volume 1

Reconnaissance Level Fish & Fish Habitat Inventory in the Bulkley TSA
Working Unit #12 – Coffin (Volume 1)

Bulkley R BULK 460-472700 COFFIN CR 093L10
Pacific Inland Resources Smithers, BC Triton Environmental Consultants Ltd Richmond, BC 1998

TRITON
Environmental Consultants Ltd.

2565.00/WP8352

Reconnaissance Level Fish and Fish Habitat Inventory in the Bulkley T.S.A.

(Working Unit #12 - Coffin)

Prepared for:

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April 1998

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EXECUTIVE SUMMARY

Triton Environmental Consultants Ltd. was retained by Pacific Inland Resources (PIR) in partnership with the Ministry of Environment, Lands and Parks (MELP) in Smithers to conduct reconnaissance level fish and fish habitat inventories in the Bulkley Forest District. This report summarizes historical fisheries data, collected by SKR Consultants Ltd., and field data collected by Triton survey crews in working unit 12. The historical records indicate the presence of the following species in this working area:

- coho (*Oncorhynchus kisutch*)
- chinook (*O. tshawytscha*)
- steelhead and rainbow trout (*O. mykiss*)
- Dolly Varden (*Salvelinus malma*)
- eastern brook trout (*S. fontinalis*)
- cutthroat trout (*O. clarkii*)
- giant pygmy whitefish (*Prosopium coulteri*)
- mountain whitefish (*P. williamsoni*)
- longnose sucker (*Catastomus catastomus*)
- prickly sculpin (*Cottus asper*)
- burbot (*Lota lota*)
- red sided shiner (*Richardsonius balteatus*)
- largescale sucker (*C. macrocheilius*)
- northern squawfish (*Ptychocheilus oregonensis*)

A total of 230 sites were sampled between July 25 and October 2 1996 and July 7 and September 20 1997. Twenty nine sites were classified as "Not A Creek" based on the absence of a defined channel in the sampling area. Fish were captured by electrofishing at 51 sites, were visually observed at another 6 sites, and the species sampled include : rainbow trout, Dolly Varden, cutthroat trout, burbot, coho, peamouth chub, long nose dace, northern squawfish and an unidentified sucker species. A total of 52 sites were classified non fish bearing S5 or S6 and the basis for the non fish bearing status is summarized. This report also includes recommendations for resampling in reaches that fish are likely to use, but where no fish were caught.

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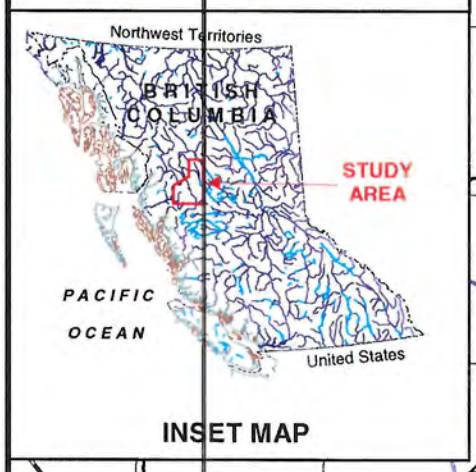
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INSET MAP

BABINE RIVER WATERSHED
KISPIOX RIVER WATERSHED
BULKLEY RIVER WATERSHED
BABINE LAKE WATERSHED
BABINE RIVER WATERSHED
UNIT 12

Skeena River
Nilkitkwa River
Babine River
Kispiox River
Shegunia River
Nichyeskwa Cr.
Driftwood River
Suskwa River
Harold Price Cr.
Kitwancool River
Skeena River
Bulkley River
Blunt Cr
Babine Lake
Kitseguecla River
Kitsuns Cr.
Fulton River
Red Canyon Cr.
Serb Cr.
Telkwa River
Zymoetz River
Clore River
Kitnayakwa River

HAZELTON
SOUTH HAZELTON
SMITHERS
TELKWA
HOUSTON

093M.095 093M.096
093M.085 093M.086 093M.087
093M.075 093M.076 093M.077
093M.067 093M.066 093M.068
093M.055 093M.056 093M.057 093M.058
093M.045 093M.046 093M.047 093M.048
093M.035 093M.036 093M.037 093M.038
093M.024 093M.025 093M.026 093M.027 093M.028
093M.013 093M.014 093M.015 093M.016 093M.017 093M.018
093M.002 093M.003 093M.004 093M.005 093M.006 093M.007 093M.008
103I.100 093L.091 093L.092 093L.093 093L.094 093L.095 093L.096 093L.097 093L.098
103I.090 093L.081 093L.082 093L.083 093L.084 093L.085 093L.086 093L.087 093L.088
103I.080 093L.071 093L.072 093L.073 093L.074 093L.075 093L.076 093L.077
093L.061 093L.062 093L.063 093L.064 093L.065 093L.066 093L.067
093L.052 093L.053 093L.054 093L.055 093L.056 093L.057
093L.042 093L.043 093L.044 093L.045

FISH AND FISH HABITAT INVENTORY IN THE BULKLEY FOREST DISTRICT	Sources : 1 : 20,000 TRIM B.C. Watershed Atlas 1 : 50,000 M.O.E.L.P	5 0 5 10 15 20 Kilometers 1 : 500,000
UNIT 12 OVERVIEW MAP Project ID : 2565	Projection : UTM Zone 9 Datum : NAD83 Created : February, 1998	TRITON Environmental Consultants Ltd.

FIGURE 1

MAp 256506223

ACKNOWLEDGMENTS

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Triton would like to thank Mr. Alan Baxter of Pacific Inland Resources for his assistance throughout the planning and field phases of this project. The principal contract monitor was Mr. Paul Giroux, B.C. Ministry of Environment, Lands and Parks, Smithers office. The quality assurance was conducted by Mr. Ward Prystay and Mr. Ryan Sherman. Triton would also like to thank Mr. Dave Reynard and Mr. Steve Grey of Highland Helicopters. This project was funded by Forest Renewal B.C. The province has not accepted the contents of this product for the purposes of the Forest Practices Code, and reserves the right to dispute the validity of summarized results. The province does not necessarily agree with the classification assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

1.0 INTRODUCTION

1.1 Background

Pacific Inland Resources retained Triton Environmental Consultants Ltd. (Triton) to conduct a reconnaissance level fish and fish habitat inventory in 14 watersheds located in the Bulkley Forest District. Existing information on fish distribution in the watersheds under investigation, was collected by SKR Consultants Ltd. in Smithers, B.C. Data from provincial and federal government sources such as the Stream Information Summary System (SISS) and the Fisheries Information Summary System (FISS) were researched for information. Stream classification is now required under the Forest Practices Code (FPC) of British Columbia Act (Bill 40 - 1994) and the associated Operational Planning Regulation enacted in June 1995 and is used to determine the required width of appropriate riparian management areas. This report summarizes the historical and field data collected in unit 12, which consists of the Bulkley tributaries in the south end of the district, including Hubert, Helps, Coffin, Canyon, and Deep watersheds (see Figure 1). The historical records indicate that the following species are found in the study area:

- coho
- chinook
- steelhead and rainbow trout
- Dolly Varden
- eastern brook trout
- cutthroat trout
- giant pygmy whitefish
- mountain whitefish
- longnose sucker
- prickly sculpin
- burbot
- red sided shiner
- largescale sucker
- northern squawfish

1.2 Objectives

Triton's objectives were to describe fish distributions and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. Fish and fish habitat operational inventories consist of:

- reconnaissance-level surveys aimed at characterizing fish habitat and distribution;
- identification of fish and fish habitat requiring special designation under the Forest Practices Code (e.g. sensitive areas); and

- new, reinterpreted, or augmented data to meet Forest Practices Code requirements for classification of areas (e.g. fish stream classification).

2.0 STUDY AREA

2.1 Location

The Bulkley Forest District is located in north-central British Columbia and contains several major tributaries to the Bulkley and Babine Rivers. The 1:20,000 TRIM sheets covering working unit 12 are: 93 L 055, 93 L 056, 93 L 057, 93 L 065, 93 L 066, 93 L 067, 93 L 075, 93 L 076, 93 L 077, 93 L 086 and 93 L 087. This working unit covers an area roughly 890 km² in size and comprises 11.3% of the study area. It consists of the smaller Bulkley river tributaries upstream of the confluence with the Telkwa River and the Canyon Creek drainage, which is a community watershed. Fisheries information exists for the part of the Bulkley mainstem flowing through this unit, as well as Coffin Lake and its outlet, Round Lake and its outlet, Tyhee Creek, Tyhee Lake, Unnamed Creek (460 4370) and its tributary (460-4370-227), Llama Lake and the lower 7.5 km of Canyon Creek (Saimoto 1996). The watersheds inventoried in unit 12 include :

- Badley Creek (ILP-05022)
- Burbridge Creek (460-3254-624)
- Canyon Creek (460-3254-000)
- Coffin Creek (460-4727-000)
- Deep Creek (460-4961-000)
- Ganokwa Creek (460-3254-265)
- Gibson Creek (460-4961-087)
- Helps Creek (460-4370-000)
- Lacroix Creek (460-4370-000)
- Lyon Creek (460-3254-265-159)
- Tributaries to McQuarrie Lake (460-7449-000)
- Mc Dowell Creek (460-4353-000)
- Robin Creek (460-4879-000)
- Thompson Creek (460-5117-000)
- Tyhee Creek (460-4309-000)
- Victor Creek (460-4309-559)

2.5 Access

The lower reaches of the streams sampled in this unit were primarily accessed by road, however the upper reaches of the Helps, Deep, Thompson, Canyon and Lyon watersheds were accessed by helicopter.

2.6 Resource Use

The predominant resource activity in the watersheds studied is logging. Agricultural activity , residential development, railways, highways etc. were all noted along the Bulkley River in this unit.

3.0 METHODS

3.1 Physical

Prior to the start of the field program 1:20,000 TRIM maps were used to estimate the location of reach breaks, as needed to identify potential sampling sites. The locations of these reach breaks were subsequently confirmed or modified during the field studies.

The survey was conducted by a ten person field crew working in five teams in 1996, and an eight person field crew working in four teams in 1997. Sites at the top of the watershed were sampled first to determine fish presence whenever possible. DFO/MELP Stream Inventory Survey forms were filled out for each site (Department of Fisheries and Oceans and Ministry of Environment, 1989). Channel widths were measured with meter sticks, hip chains and measuring tapes or were visually estimated where wading conditions were dangerous. Water depth was measured with a meter stick. Stream classification, whether fish bearing or non fish bearing, requires the measurement of a minimum of six channel widths. Stream gradients were measured with a Suunto clinometer. In order to allow for future verification of sampling sites, all sampling sites were permanently marked with unique flagging tape (blue and white striped) and the GPS locations of all sites were noted.

Photos were taken at each site to document field data and conditions. Canon Sure Shot A1 Prima AS-1 cameras were used for this purpose. The camera is equipped with a 32 mm lens. Photos were usually taken of both the upstream and downstream view of the stream and any characteristic features such as beaver dams, falls and cascades were documented. Photos were often taken of fish captured at the site. The film used was 200 ISO. All of the fish, feature and site photos are included with the sub basin description in the results and discussion section. A summary of photodocumentation for working unit 12 is provided in Appendix 3.

The report maps were generated using 1:20,000 scale TRIM base maps provided by MELP. Using ARC Info, these files were projected into UTM and coverages were created from the field sampling and stream classification data.

3.2 Biological

Triton obtained fish sampling permits from the appropriate DFO and MELP offices. Fish presence/absence was determined by electrofishing and/or minnow trapping and occasionally angling. Electrofishing was conducted, where possible, at all sites where fish presence had not been determined upstream or habitat characteristics were sufficiently different from other sites. A minimum area of approximately 100 m^2 was sampled to ascertain fish presence. The effort, (shocking time and distance shocked) was recorded for each sample site. A variety of electroshocker models were used in this study including:

- Smithroot 12 B POW
- Smithroot Type VII
- Smithroot 15 A
- Coffelt Mark 10

The electroshockers were usually set at 60HZ at 6MS, however adjustments were made where appropriate. Salt was not used at any of the sample sites. The fork length of each fish collected was then measured and, whenever necessary, voucher specimens were collected and stored in a 10% formaldehyde solution in plastic bags. These specimens were delivered to the Smithers office of BC Environment. Where necessary, the Field Key to Freshwater Fishes of British Columbia (RIC Manual 1993) was used to identify fish to species. Additionally, bull trout were distinguished from Dolly Varden by a branchiostegal ray count and /or the Bull Trout and Dolly Varden LDF Identification Formula (Haas and McPhail 1991).

The data collected from existing sources and during the field program were used to determine the riparian class as defined under the *Forest Practices Code*. **Table 1** shows the FPC definition of each riparian class. Draft procedures are also outlined in the guidebook to determine the riparian management areas (RMA) for lakes (L1 - L4), wetlands (W1 - W5) and fisheries sensitive zones.

4.0 STREAM FLOW AND WATER QUALITY

4.1 Stream Flow

Records are available from 6 Water Survey of Canada (WSC) stations within Unit 12. The station locations and their corresponding periods of record are:

- Bulkley River near Hubert (08EE002), 1915
- Bulkley River at Quick (08EE004), 1930 to 1995
- Bulkley River near Smithers (08EE005), 1946 to 1971
- Canyon Creek near Smithers (08EE014), 1973 to 1995
- Deep Creek below Gibson Creek (08EE022), 1978 to 1979
- Tyhee Creek at the outlet of Tyhee Lake (08EE027), 1983

The Bulkley River near Hubert has a drainage area of 7,490 km^2 and recorded a mean annual discharge (MAD) of 109 m^3/s, however this value is based on a single, incomplete year of data. The recorded minimum and maximum mean daily discharges were 27.8 m^3/s and 245 m^3/s, respectively.

The Bulkley River at Quick has a drainage area of 7,360 km^2 and recorded a mean annual discharge (MAD) of 142 m^3/s. The recorded minimum and maximum mean daily discharges were 10.5 m^3/s and 957 m^3/s, respectively.

The Bulkley River near Smithers has a drainage area of 8,940 km^2 and recorded a mean annual discharge (MAD) of 210 m^3/s, however this value is based on a limited period of record of seven years. The recorded minimum and maximum mean daily discharges were 19.8 m^3/s and 1190 m^3/s, respectively.

Canyon Creek near Smithers has a drainage area of 256 km^2 and recorded a mean annual discharge (MAD) of 2.22 m^3/s. The recorded minimum and maximum mean daily discharges were 0.008 m^3/s and 54.8 m^3/s, respectively.

Deep Creek below Gibson Creek has a drainage area of 89.9 km^2 and recorded a mean annual discharge (MAD) of 1.25 m^3/s, however this value is based on two incomplete years of data. The recorded minimum and maximum mean daily discharges were 0.011 m^3/s and 8.24 m^3/s, respectively.

Tyhee Creek at the outlet of Tyhee Lake has a recorded a mean annual discharge (MAD) of 0.053 m^3/s, however this value is based on a single, incomplete year of data. The recorded minimum and maximum mean daily discharges were 0 m^3/s and 0.215 m^3/s, respectively.

Summary information and hydrographs are presented for each station in Appendix 1.

4.2 Water Quality

As agreed with the Ministry Representative, water samples were not collected for chemical analyses. The parameters that were measured for each site, however, were pH,

temperature and conductivity. Conductivity was measured with a handheld Hanna TDS Tester #3 and a Hanna Conductivity TDS #3. The acceptable values of conductivity for electroshocking purposes must exceed 30 µS. The pH was measured with a handheld Hanna pH meter 3#, an Oakton pH Tester #2 and a Hanna HI9024 Microcomputer pH meter, low pH Regents Accutron" Water Test System. Water temperature was measured with a Weksler general purpose thermometer. Turbidity was determined subjectively and it was stipulated by the ministry representative during the quality assurance phase of the project that the depth of the deepest pool would be the default value in the database when the water was clear to the bottom.

Table 2 summarizes the pH, temperature and conductivity measurements collected in working unit 12. The water temperatures ranged from 2.5 to 20.0°C, with an average value of 10.18°C. The pH values ranged from 6.45 to 8.8, with an average pH of 7.55. The conductivity ranged from 40 to 920 (umhos/cm) with an average value of 172.22

5.0 RESULTS AND DISCUSSION

The survey took place between July 25 and October 2 1996 and July 7 and September 20 1997. A total of 230 sites were sampled and only 29 sites were classified as "Not a creek" due to a lack of defined channel. Fish were caught by electrofishing at 51 sites and were visually observed at another 6 sites. A total of 52 sites were classified as non fish bearing. A number of sites in the watersheds sampled were classified as non fish bearing, due to the presence of significant barriers downstream of the sampling areas. These barriers are listed in **Table 3**. The summary information for all sites in working unit 12 is listed in **Table 4**. This table is organized alphabetically, by sub-basin and includes fish data, stream classifications and methods of sampling. The stream cards and accompanying photos are also in alphabetical sub basin order and appear after the appropriate sub basin description in the report. A summary of non fish bearing classifications established in this working unit is provided in **Table 5** and a summary of sites for which future sampling is recommended is provided in **Table 6**. **Table 7** summarizes the wildlife observations for working unit 12. Individual fish data for this working unit has been summarized in Appendix 2. Figures 2a through 2h include histograms of the fish species sampled during the study.

5.1 Badley Creek (ILP 05022) (93 L 086)

5.1.1 Sensitive Habitats and Barriers

The Badley Creek mainstem is 6.4 km in length and is fed by 3 tributaries including Tamara Brook. Reach 1 has low to moderate gradient and is unconfined, while reach 2 has steep impassable gradient. Two road crossings occur in reach one. No sensitive habitats or barriers were identified by field crews in this system. The Badley Creek system was sampled twice, in reach 1 of the mainstem and in reach 1 of Tamara Brook.

5.1.2 Fish Summary Tables and Stream Classification

No historical records exist for Badley Creek. However, Dolly Varden were caught in the mainstem by electrofishing. Badley Creek was classified as an S3 based on an average channel width of 4.2 meters and the presence of Dolly Varden in the sampling area. The tributaries to upper reach 1 can be classified as non fish bearing S6 streams based on steep gradient. An additional tributary to mid reach 1 appears to be an S4 on the TRIM sheet. Tamara Brook was sampled once. No historical information exists for this small stream, which was not electrofished and was classified as non fish bearing at site R84. Tamara Brook was classified as an S6 based on the lack of suitable fish habitat and the ill defined banks noted in the sampling area. The unsampled tributary to this stream would also be classified as an S6.

DFO/MoELP Stream Survey Form

Site Number: ARNE 17 **Reach No.: 1**

Badley Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 17, Unit 12, see C5. **Stream (Gaz.):** Badley Creek **Watershed Code:** 050-2200-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 **Reach Length (km):** 4.8 MW **Date:** 21-Sep-96 **Time:** 14:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6299 .60760 **Length surveyed (m):** 300.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-15,16 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	4.2	MS
Av. Wet. Width (m):	2.0	MS
Av. Max Riffle Depth (cm):	10	MS
Av. Max Pool Depth (cm):	50	MS
Gradient (%):	1.0	CL
Pool: 15 Riffle: 70 Run: 15 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

4.1	3.7	4.3	4.5	5.1	3.5
1.9	1.8	1.2	2.1	3.0	1.8
9	11	13	6		
50					

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	25	5	0	50	20

Crown Closure %: 60 Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	15
	Large (16-64mm):		45
Larges	Sm. cobble (64-128mm):	30	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 13 Compaction: Medium

Discharge

Wetted Width (m):	1.0	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.37	F
Discharge (m3/s):	0.03	F

Banks

Height (m): 0.4

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 25 pH: 8.1 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): 50 Cond. (µmhos): 200

Reach Symbol

(Fish)

DV

4 E 1.0 | 1630

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	21	35-165	J	R			EL

Comments

C1 S3

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted.

C4 The electroshocking effort, using Smithroot 15 A model was 132 seconds over 80 square meters.

C5 Lat N 54 48' 52.3", Long W 126 59' 33"

C6 No additional bank texture information.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8 Excellent rearing and spawning habitat was observed at this stie. This stream courses through rangeland and is used by livestock. A small amount of riparian vegetation, including alder and cottonwood, remains.



Photo #: A-2-15, 21-Sep-96
Site #: A17, Looking downstream.



Photo #: A-2-16, 21-Sep-96
Site #: A17, Looking upstream.

5.2 Unnamed Tributaries to the Bulkley River (460-0000-000) (94 L 056, 93 L 066, 93 L 065) (93 L 075, 93 L 085)

5.2.1 Sensitive Habitats and Barriers

Roughly 56.1 km of the Bulkley flow through unit 12, which includes the confluence of the Telkwa and Bulkley Rivers. A great deal of development was noted along the banks of this river, including agricultural activity, railways, powerlines and residential areas. Twenty two sample sites are located on unnamed tributaries to the Bulkley River in this working unit.

5.2.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of spawning pink salmon in two areas in this unit, as well as the following species at the mouths of major tributaries:

- coho
- Dolly Varden
- rainbow trout
- steelhead
- pink
- cutthroat
- chinook
- longnose dace
- longnose sucker

A number of the unnamed tributaries to the Bulkley sampled in this unit were dry at the time of survey. Seven sites were electrofished, with rainbow trout and cutthroat trout captured at only 1 site, J260. This reach was classified as an S2 based on an average channel width of 5.18 meters and the presence of fish in the sampling area. Nine of the tributaries sampled were classified as non fish bearing, 2 sites were classified as S2, 4 sites were classified as S3, 6 sites were classified as S4 and 1 was classified as "NC".

DFO/MoELP Stream Survey Form

Site Number: JULIE 263 **Reach No.: 2**

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 263, Unit 12 west side of block 033-F, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2200-000-000-000-000-000-000-000-000-0

Map #:	93 L 066	Reach Length (km):	1.2	MA	Date:	29-Sep-96	Time:	17:30	Agency:	TEC	Access:	V2	Fish Card:	N	Field ☒ Historical ☐
U.T.M.:	9 .6300 .60543	Length surveyed (m):	110.0	GE	Survey Crew:	JP\DD\ \ \ \ \ \ \			Photos:		J-20-8,9		Air Photos:		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.8	MS	3.0	3.5	3.9	3.3	4.4	4.4
Av. Wet. Width (m):	2.0	MS	2.1	2.0	2.0	2.0	2.3	1.8
Av. Max Riffle Depth (cm):	7	MS	6	8	8			
Av. Max Pool Depth (cm):	48	MS	31	43	48	68		
Gradient (%):	8.0	CL						

Pool: 20 Riffle: 30 Run: 45 Other: 5

% Side Channel: GE

% Debris Area: 10 GE

%Stable: 60 GE

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
35	5	40	0	10	10

Crown Closure %: 80 Aspect: N

Discharge

Wetted Width (m):	1.3	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.37	FI
Discharge (m3/s):	0.04	FI

Reach Symbol

(Fish)

(RB) (CT)

4 C 8.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 32 Compaction: Medium

Banks

Height (m): 0.5

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 20 pH: 7.5 Braided: Y

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): 68 Cond. (µmhos): 70

Obstructions

C	Height (m)	Type	Location
	0	CV	0.5
	1	CV	2.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1 S3

C2 LS = 15%, RS = 30%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished, as rainbow and cutthroat trout were caught downstream and no barriers to this site were noted.

C5 Lat N 54 37' 11.6", Long W 126 59' 13.3"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear ot the bottom. The mean air temperature on this day was 4.4°C

C8 A utility road runs right through the creek at this site.

C9 The air temperature at this site was 7.C.



Photo #: J-20-8, 1996/09/29
Site #: J263, Looking upstream, boulder and cobble.



Photo #: J-20-9, 1996/09/29
Site #: J263, Looking downstream, debris in channel.

DFO/MoELP Stream Survey Form

Site Number: RYAN 84 **Reach No.: 1**

Trib. to Badley Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 84, Unit 12, see C5. **Stream (Gaz.):** Tamara Brook **Watershed Code:** 050-1900-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 1.7 MA | Date: 21-Sep-96 | Time: 14:45 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6303 .60259 | Length surveyed (m): 200.0 GE | Survey Crew: RH \JL \ \ \ \ \ \ \ | Photos: R-5-18,19 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.0	MS
N Av. Max Riffle Depth (cm):	0	GE
N Av. Max Pool Depth (cm):	0	GE
Gradient (%):	1.0	CL
N Pool: 0 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	60	GE

Specific Data

Cover

Cover Total % : 75 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	0	20	70	5

Crown Closure % : 55 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	90	90
Gravels	Small (2-16mm):	10	10
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 1 Compaction: Low

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

1 D 1.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

Water Temp. (°C): O2 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: This dry site was not electrofished.

C5: Lat N 54 48' 58.8", Long W 126 58' 20.4"

C6: No additional bank texture information.

C7: Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8: This stream channel is intermittent in the sampling area, creating multiple barriers to fish passage upstream.



Photo #: R-5-18, 1996/09/21
Site #: R84, Looking downstream through aspen and grass.



Photo #: R-5-19, 1996/09/21
Site #: R84, Looking upstream.

DFO/MoELP Stream Survey Form

Site Number: JULIE 237 **Reach No.: 2**

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 237, Unit 12, 2.6km West of Helps Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 | Reach Length (km): 1.4 | MA | Date: 26-Sep-96 | Time: 14:40 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6231 .60558 | Length surveyed (m): 100.0 | GE | Survey Crew: JP \DD\ \ \ \ \ \ \ | Photos: J-18-9,10 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.0	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	3.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	20	GE

Specific Data: 1.4 0.7 1.2 1.1 1.0 0.8

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	40	0	60	0

Crown Closure % : 70 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 25 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

I	D	3.0	6130
(Width, Valley: Channel, Slope)			(Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4

C2 LS = 5%, RS = 5%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 38' 06.2", Long W 127 05' 30.4"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 12.7°C

C8 This site may provide marginal rearing habitat for cutthroat. No barriers to fish movement upstream were noted. The channel runs through a woodland upstream of the powerline.



Photo #: J-18-9, 1996/09/27
Site #: J237, Looking downstream.



Photo #: J-18-10, 1996/09/27
Site #: J237, Looking upstream toward culvert.

DFO/MoELP Stream Survey Form

Site Number: JULIE 262 **Reach No.: 1**

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 262, Unit 12, downstream of block 577-5, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-1700-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 3.0 MA **Date:** 29-Sep-96 **Time:** 17:00 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6335 .60545 **Length surveyed (m):** 50.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-20-6,7 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.5	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	2.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	80	GE

Specific Data

1.3 0.8 1.5 2.4 2.1 1.0

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	5	0	0	45	40

Crown Closure % : 60 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	70	40
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

2 D 2.0 | 2710

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location
	0	C	0.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS = 2%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 37' 15.4", Long W 126 55' 57.3"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.4°C

C8 Upstream of the culvert some LOD and pools were observed. For approximately 20 m downstream however, the channel appears to be mechanically textured. This site would contain marginal habitat at high water. Future sampling is recommended during higher flows. At 20 m below the road crossing the channel becomes undefined briefly.

C9 The air temperature at this site was 10.C.



Photo #: J-20-6, 1996/09/29
Site #: J262, Looking upstream toward culvert.



Photo #: J-20-7, 1996/09/29
Site #: J262, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: JULIE 260

Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 260, Unit 12, downstream of block 517-1, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2200-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 1.4 MA **Date:** 29-Sep-96 **Time:** 15:15 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6307 .60557 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-20-1,2,3 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	5.2	MS
Av. Wet. Width (m):	2.2	MS
Av. Max Riffle Depth (cm):	7	MS
Av. Max Pool Depth (cm):	58	MS
Gradient (%):	8.0	CL
Pool: 25 Riffle: 50 Run: 20 Other:	5	
% Side Channel:		GE
% Debris Area:	20	GE
%Stable:	50	GE

Specific Data

4.4	6.0	4.9	6.0	4.6	5.2
1.9	1.6	2.6	2.1	3.5	1.4
8	5	8			
80	44	50			

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
35	20	35	0	5	5

Crown Closure %: 80 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	60	30
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 26 Compaction: Medium

Discharge

Wetted Width (m):	1.5	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.34	F
Discharge (m3/s):	0.04	F

Banks

Height (m): 0.8

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 1.2

Bars (%): 20 pH: 7.5 Braided: Y

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): 80 Cond. (µmhos): 70

Reach Symbol

(Fish)

RB CT

5 B 8.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	0	CV	0.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	96-97	J	R			EL
	CT	1	84	J	R			EL

Comments

C1 S2

C2 LS = 15%, RS = 25%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was electrofished over 80 square meters with a Smithroot 15 A model.

C5 Lat N 54 37' 53.2", long W 126 58' 31.1"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 4.4°C

C8 Excellent fish habitat, including some nice pools and one deep pool (20m squared), was observed at this site.

C9 There are two culverts at the road crossing, the first is .5m above the the water level and the second is .2m above the water level. These are not expected to effect fish migration. This stream seems to carry high flows at certain times of the year, as indicated by rafted LOD on the banks and eroded benches.

1 The air temperature at this site was 10.C.



Photo #: J-20-1, 1996/09/29
Site #: J260, Looking upstream toward culvert.



Photo #: J-20-2, 1996/09/29
Site #: J260, Looking downstream.



Photo #: J-20-3, 1996/09/29
Site #: J260, Rainbow trout caught by electrofishing.

DFO/MoELP Stream Survey Form

Site Number: W183

Reach No.: 1

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: W183, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 051-4400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 075 | Reach Length (km): 0.7 MA | Date: 14-Aug-97 | Time: 16:00 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6194 .60732 | Length surveyed (m): 300.0 GE | Survey Crew: KA \DD\ \ \ \ \ \ \ | Photos: W-H-10,11 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	15.3	GE
	Av. Wet. Width (m):	15.3	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.0	CL
C1	Pool: 0 Riffle: 0 Run: 0 Other:	100	
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	100	GE

Specific Data

14.0	15.0	20.0	15.0	12.0	16.0
14.0	15.0	20.0	15.0	12.0	16.0

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	0	90	0	0

Crown Closure % : 5 | Aspect : NW

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):		0
		Lge cobble (128-256mm):	0	0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 | Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M | Flood Signs Ht(m): 0.5

Bars (%): 0 | pH: 7.8 | Braided: N

Water Temp. (°C): 26.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 280

Reach Symbol

(Fish)

(CO) (DV) (RB)

15 D 0.0 | F

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 NC. This is not a creek, it is more a pond or slough.

C2 LS=10%, RS=20%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 100V, was 225 seconds over 200 square meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom, but slightly blue in colour.The air temperature at this site was 24.0 C.

C7 No visible flow was found and leaf litter was quite abundant.This may have been a channel dug for irrigation purposes. This pond may be connected to the Bulkley at high water.



Photo #: W-H-10, 14-Aug-97
Site #: W183, Looking at a large pond



Photo #: W-H-11, 14-Aug-97
Site #: W183, Looking at a large pond

DFO/MoELP Stream Survey Form

Site Number: E224

Reach No.: 3

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: E224, Unit 12, West of the Bulkley River.

Stream (Gaz.): Unnamed

Watershed Code: 066-3300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **U.T.M.:** 9 .6362 .60500

Reach Length (km): 1.4 MA **Length surveyed (m):** 100.0 GE

Date: 20-Aug-97 **Time:** 11:00 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

Survey Crew: SJ \EM\ \ \ \ \ \ \ **Photos:** E-21-23,24 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.2	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	4.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area: 40		GE
	%Stable:	0	GE

Specific Data

1.0 1.2 1.1 1.4 1.3 1.0

Cover

Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	80	20

Crown Closure % : 90 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 100 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

I D 4.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				NA

Comments

C1: S4

C2: LS = 7%, RS = 6%

C3: A large meadow was noted in this reach.

C4: This dry site ws not electrofished.

C5: No additional bank texture information.

C6: Water quality could not be evaluated. The mean air temperature on this day was 17.4.C.

C7: This reach may be used seasonally. This small creek is dry upstream of the large meadow and has little fish habitat. The meadow itself contains some stagnant water. A clearcut is located within 50 m of the creek.



Photo #: E-21-23, 20-Aug-97
Site #: E22 , Looking upstream at a small channel covered by vegetation



Photo #: E-21-24, 20-Aug-97
Site #: E224, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E303 **Reach No.: 1**

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: E303, Unit 12, West of the Bulkley River Stream (Gaz.): Unnamed Watershed Code: 066-2000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 Reach Length (km): 0.7 MW Date: 13-Sep-97 Time: 16:30 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 . 6394 . 604752 Length surveyed (m): 300.0 GE Survey Crew: SJ \LE\ \ \ \ \ \ \ Photos: E-29-7,8 Air Photos:

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	8.8	MS	8.0	8.5	9.0	9.0	8.5	10.0
Av. Wet. Width (m):	0.0	GE						
Av. Max Riffle Depth (cm):	0	MS						
Av. Max Pool Depth (cm):	42	MS	25	85	35	28	37	
Gradient (%):	2.0	MA						

Pool: 100 Riffle: 0 Run: 0 Other: 0

% Side Channel: 0 GE

% Debris Area: >15 GE

%Stable: 0 GE

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
60	30	0	0	0	10

Crown Closure % : 30 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	90	90
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.5

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.8

Bars (%): 90 pH: 7.4 Braided: N

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): 20 Cond. (µmhos): 100

Reach Symbol

(Fish)

(DV)

9 D 2.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S2

C2 LS = 12%, RS = 12%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 199 seconds over 50 meters. This creek had some large pools at the time of sampling, but in general the shocking conditions were very poor.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 17.C.

C7 This creek is actually a muddy side channel and has low flow. The only fish habitat noted in the sampling area, were in the deep isolated pools containing LOD.



Photo #: E-29-7, 13-Sep-97
Site #: E303, Looking upstream at a fanned channel



Photo #: E-29-8, 13-Sep-97
Site #: E303, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: JULIE 285 Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 285, Unit 12 , see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-2800-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **Reach Length (km):** 4.7 MA **Date:** 02-Oct-96 **Time:** 18:10 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6372 .60497 **Length surveyed (m):** 120.0 GE **Survey Crew:** JP \DD \ \ \ \ \ \ **Photos:** J-22-9,10 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.7	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	31	MS
Gradient (%):	0.5	CL
Pool: 100 Riffle: 0 Run: 0 Other: 0		
% Side Channel:		GE
% Debris Area:	40	GE
%Stable:	10	GE

Specific Data

1.6	2.5	1.1	1.3	1.6	1.8
1.6	2.5	1.1	1.3	1.6	1.8
40	25	28			

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	0	0	70	0

Crown Closure %: 100 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: High

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 D 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: Y

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): 40 Cond. (µmhos): 180

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1 S4

C2 LS = 5%, RS = 5%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electofished as no habitat occurs upstream of the road crossing. (See C8)

C5 Lat N 54 34' 32.7", Long W 126 52' 38.1"

C6 No additional bank texture information.

C7 DO, pH were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 4.95°C

C8 This site is primarily an alder swale drainage, the channel is poorly defined. Upstream of the road crossing, the channel was dry at the time of sampling and had a mud substrate. The road crossing lacks a culvert, which is causing the water to pool.

C9 The air temperature at this site was 6.C.



Photo #: J-22-9, 1996/10/2
Site #: J285, Looking upstream, standing pool.



Photo #: J-22-10, 1996/10/2
Site #: J285, Looking downstream, standing pool.

DFO/MoELP Stream Survey Form

Site Number: RYAN 87

Reach No.: 1

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: RYAN 87, Unit 12, E of the Bulkley R., see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-5300-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 0.5 MA **Date:** 21-Sep-96 **Time:** 17:50 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6214 .60666 **Length surveyed (m):** 100.0 GE **Survey Crew:** RH\JL\ \ \ \ \ \ \ **Photos:** R-5-24 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	2.3	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

2.2 3.0 1.8 2.4

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	0	55	35	5

Crown Closure % : 25 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	45	45
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	15	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 26 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.5

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

2 D 1.0 | 5410

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 43' 56.5", Long W 127 06' 54.5"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8 No additional fish habitat information. Above the road the channel deteriorates and becomes intermittent. A local resident reported that this creek flows for 2-3 months of the year.



Photo #: R-5-24, 1996/09/21
Site #: R87, Looking downstream from culvert.

DFO/MoELP Stream Survey Form

Site Number: Y154 **Reach No.:** 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: Y154, Unit 12; 2.6km west of Bulkley R. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-2800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 | Reach Length (km): 5.0 | MA | Date: 13-Aug-97 | Time: 15:10 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6364 .60485 | Length surveyed (m): 100.0 | GE | Survey Crew: JL \JP\ \ \ \ \ \ \ | Photos: Y-17-16,17 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.6	MS
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	10.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

0.7 0.6 0.5 0.5 0.4 0.6

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

Crown Closure % : 95 Aspect : N

Bed Material

	Fines	Clay, silt, sand (<2mm):	20	20
	Gravels	Small (2-16mm):	60	20
		Large (16-64mm):		40
	Larges	Sm. cobble (64-128mm):	20	10
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		5
	Bedrock		0	0

D90 (cm): 23 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 30

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

I D 10.0 | 2620

(Width, Valley: Channel, Slope) | (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.1

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4. The channel was dry at the time of sampling.

C2 LS=18%, RS=6%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished as the channel was dry.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site as the channel was dry.

C7 The rearing habitat is marginal in the sampling area, however, this tributary is connected to a fish bearing stream.



Photo #: Y-17-16, 13/08/97
Site #: Y154, Looking upstream at the channel, note thick alder cover



Photo #: Y-17-17, 13/08/97
Site #: Y154, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y155 **Reach No.:** 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: Y155, Unit 12; 1.7km west of Bulkley R. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-2900-000-000-000-000-000-000-000-000-000-

Map #:	93 L 056	Reach Length (km):	1.9	MA	Date:	13-Aug-97	Time:	16:00	Agency:	TEC	Access:	V2	Fish Card:	N	Field	☒	Historical ☐
U.T.M.:	9 .6376 .60488	Length surveyed (m):	100.0	GE	Survey Crew:	JLJ\P \ \ \ \ \ \ \					Photos:		Y-17-18,19		Air Photos:		

Channel Characteristics

				Specific Data					
	Av. Chan. Width (m):	0.6	MS	0.7	0.5	0.6	0.6	0.7	0.7
	Av. Wet. Width (m):	0.4	MS	0.4	0.3	0.4	0.2	0.4	0.5
N	Av. Max Riffle Depth (cm):	0	MS						
	Av. Max Pool Depth (cm):	7	MS	8	6	5	7	10	8
	Gradient (%):	4.0	CL						

Pool: 100 | Riffle: 0 | Run: 0 | Other: 0

% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	20	GE

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	10	0	20	30

Crown Closure %: 60 Aspect: NE

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Reach Symbol

(Fish)

(DV)

1 D 4.0 | 3520

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	50	20
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	20	10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 24 Compaction: Medium

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m):

Bars (%): 0 pH: 6.7 Braided: N

Water Temp. (°C): 18.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4. Very low flow was observed at the time of sampling.

C2 LS=1%, RS=2%

C3 No fisheries sensitive zones noted.

C4 This site was not electroshocked as there was too little water.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 27.0 C.

C7 The water level in this stream is very low with no signs of flow. This reach has marginal rearing habitat. Cover would be provided by cutbanks at higher flows. This stream is a tributary to a fish bearing stream.



Photo #: Y-17-18, 13/08/97
Site #: Y155, Looking upstream at the channel



Photo #: Y-17-19, 13/08/97
Site #: Y155, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: JULIE 261 — Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 261, Unit 12, .92km South of the Bulkley River, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-1800-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **U.T.M.:** 9 .6320 .60544 **Reach Length (km):** 2.0 MA **Length surveyed (m):** 100.0 GE **Date:** 29-Sep-96 **Time:** 16:00 **Agency:** TEC **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Access:** V2 **Photos:** J-20-4,5 **Fish Card:** N **Field** ☒ **Historical** ☐ **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.3	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	11	MS
Gradient (%):	5.0	CL
Pool: 20 Riffle: 80 Run: 0 Other: 0		
% Side Channel:		GE
% Debris Area:	20	GE
%Stable:	10	GE

Specific Data

3.9	3.3	3.7	3.8	2.1	2.8
0.8	1.2	0.9	0.6	1.1	0.6
2	2				
7	11	14			

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	20	60	0	5	5

Crown Closure % : 40 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 28 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.09	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.3
% Unstable: 10
Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC
Valley : Channel Ratio 5-10
Stage: L Flood Signs Ht(m): 0.3
Bars (%): 20 pH: 7.3 Braided: N
Water Temp. (°C): 7.5 02 (ppm):
Turb. (cm): 14 Cond. (µmhos): 80

Reach Symbol

(Fish)

(RB)

3 C 5.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	1	CV	0.9

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1: S3

C2: LS = 10%, RS = 10%

C3: No fisheries sensitive zones were noted at this site.

C4: This site was not electrofished as too little water was present in the channel at the time of sampling.

C5: Lat N 54 37' 10.4", Long W 126 56' 18.2"

C6: No additional bank texture information.

C7: DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 4.4°C

C8: Suitable rearing habitat was observed at this site, as well as some potential rainbow trout spawning habitat. Some ponds occuring upstream of the sampling area could provide rearing habitat when the stream is dry. Sampling at higher flow stages is recommended.

C9: Siltation, caused by the road, would likely occur during precipitation events at this site.

1 The air temperature at this site was 10 degrees celcius.



Photo #: J-20-4, 1996/09/29
Site #: J261, Looking downstream from culvert, dry channel.



Photo #: J-20-5, 1996/09/29
Site #: J261, Looking upstream toward culvert.

DFO/MoELP Stream Survey Form

Site Number: JULIE 284

Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 284, Unit 12, see C5. | Stream (Gaz.): Unnamed | Watershed Code: 066-3300-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 | Reach Length (km): 1.8 MA | Date: 02-Oct-96 | Time: 17:25 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6371 .60499 | Length surveyed (m): 80.0 GE | Survey Crew: JP \DD \ \ \ \ \ \ | Photos: J-22-7,8 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.8	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	5	GE
	%Stable:	100	GE

Specific Data

0.6 0.8 1.0 0.9 0.7 0.7

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	0	35	35	0

Crown Closure %: 70 | Aspect: SE

Bed Material

	Fines	Clay, silt, sand (<2mm):	60	60
	Gravels	Small (2-16mm):	30	30
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	10	5
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 13 | Compaction: Low

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry | Flood Signs Ht(m): 0.2

Bars (%): 10 | pH: | Braided: N

N Water Temp. (°C): | 02 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

(RB)

I D 1.0 | 6310

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4

C2 LS = 5%, RS = 5%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished. Minnow trapping the pond upstream of the site is recommended for the next field season.

C5 Lat N 54 34' 43.2", Long W 126 52' 41.9"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.95°C

C8 This stream has a small defined channel in the sampling area. Upstream of the road it is small, narrow and contains a cobble and dirt substrate. The channel itself is filled with woody debris. Downstream of the road, the channel is shallow and contains a gravel substrate. The channel is distinct for roughly 30m. It gradually becomes less defined as it moves downstream.

C9 The air temperature at this site was 6.C.



Photo #: J-22-7, 1996/10/2
Site #: J284, Looking upstream in dry channel.



Photo #: J-22-8, 1996/10/2
Site #: J284, Looking downstream, muddy pool at culvert.

DFO/MoELP Stream Survey Form

Site Number: ARNE 14

Reach No.: 1

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: ARNE 14, Unit 12, Telkwa High Road, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-5400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 3.0 MW **Date:** 21-Sep-96 **Time:** 11:19 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6243 .60687 **Length surveyed (m):** 150.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-7,8,9 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.9	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	10.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area: 0		GE
	%Stable:	0	GE

Specific Data

2.6 1.8 1.7 1.9 2.0 1.6

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

Crown Closure % : 5 Aspect : W

Bed Material

	Fines	Clay, silt, sand (<2mm):	0	0
	Gravels	Small (2-16mm):	60	20
		Large (16-64mm):		40
	Larges	Sm. cobble (64-128mm):	40	10
		Lge cobble (128-256mm):		20
		Bldr cobble (>256mm):		10
	Bedrock		0	0

D90 (cm): 30 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.3

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry Flood Signs Ht(m): 0

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

2 E 10.0 | 0640

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	0	CV	0.7
C9	0	CV	0.7

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6

C2: LS = 0%, RS = 0%

C3: No fisheries sensitive zones are present at this site.

C4: This dry site was not electrofished.

C5: Lat N 54 45' 03.5", Long W 127 04' 05"

C6: No additional bank texture information.

C7: Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8: No fish habitat was observed at this site. A reservoir pond, dry on the sampling day, was observed in the area 20 m upstream of the road crossing. The manmade ponds that are not connected to the stream contain water and are on private land.



Photo #: A-2-7, 21-Sep-96
Site #: A14, Looking downstream, channel through pasture.



Photo #: A-2-8, 21-Sep-96
Site #: A14, Looking upstream in dry channel.



Photo #: A-2-9, 21-Sep-96
Site #: A14, Dry pool upstream of road crossing.

DFO/MoELP Stream Survey Form **Site Number:** E301 **Reach No.: 2**

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: E301, Unit 12, East of the Bulkley River **Stream (Gaz.):** Unnamed **Watershed Code:** 066-1700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **Reach Length (km):** 1.1 MW **Date:** 13-Sep-97 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6406 .60470 **Length surveyed (m):** 150.0 GE **Survey Crew:** SJ \LE\ \ \ \ \ \ \ **Photos:** E-29-1,2,3,4 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.6	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	30.0	CL
N Pool: 0 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	0	GE

Specific Data

0.7 0.2 1.2 0.9 0.3 0.5

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	15	0	0	85	0

Crown Closure % : 70 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: High

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.1

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 D 30.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6

C2 LS = 10%, RS = 5%

C3 No fisheries sensitive zones.

C4 This dry site was not electrofished.

C5 Fines, gravels and larges make up the bank texture at this site.

C6 Water quality was not applicable.

C7 The channel is defined in only a small steep section of this reach. Above the culvert the draw disappears.

C8 This appears to be an ephemeral runoff creek. This reach has been classified as non fish bearing because it lacks suitable fish habitat, has sections of steep gradient and is undefined in several locations.



Photo #: E-29-1, 13-Sep-97
Site #: E301, Looking downstream at the channel, heavily overgrown with vegetation

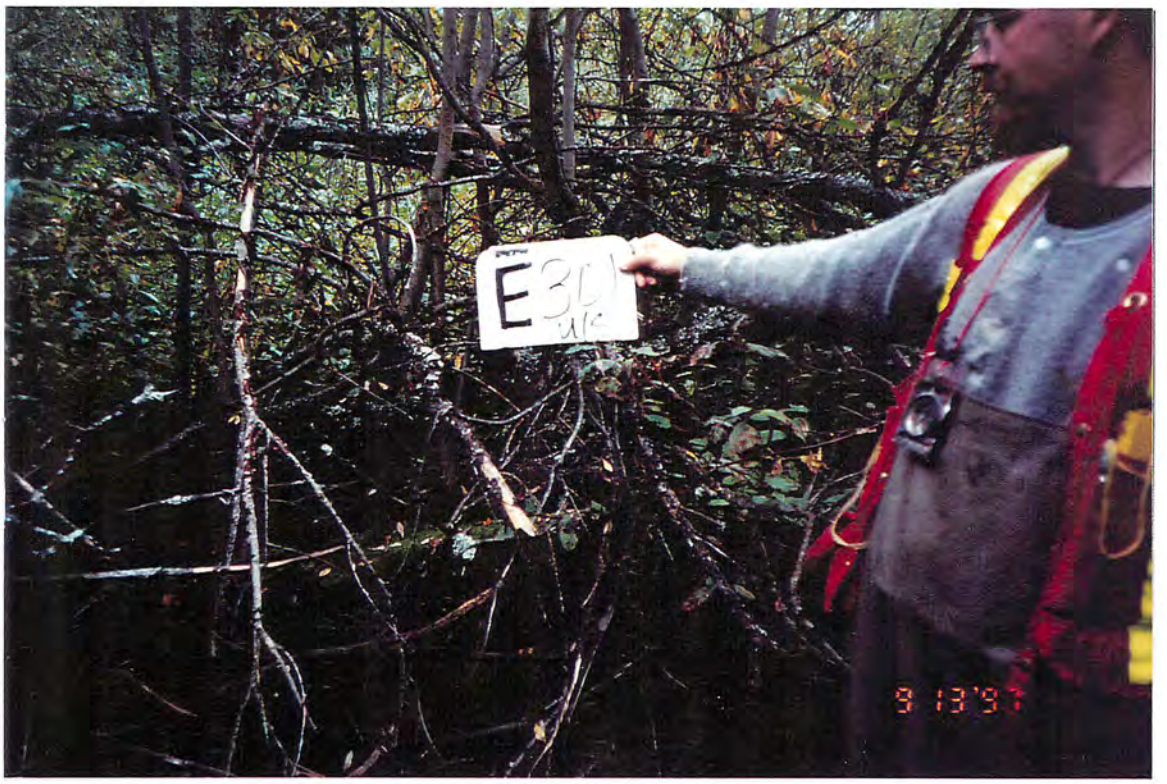


Photo #: E-29-2, 13-Sep-97
Site #: E301, Looking upstream at the channel



Photo #: E-29-3, 13-Sep-97
Site #: E301, Looking downstream at young aspen



Photo #: E-29-4, 13-Sep-97
Site #: E301, Looking upstream at young and old aspen

DFO/MoELP Stream Survey Form

Site Number: JULIE 264 Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 264, Unit 12, middle of block 517-1, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 2.0 MA **Date:** 29-Sep-96 **Time:** 18:00 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6307 .60540 **Length surveyed (m):** 60.0 GE **Survey Crew:** JP \DD \ \ \ \ \ \ **Photos:** J-20-10 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.0	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	2.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:		GE
N	% Debris Area: 5		GE
	%Stable:	20	GE

Specific Data

0.8 1.0 1.1 1.3 1.0 1.0

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	20	0	75	0

Crown Closure % : 20 Aspect : N

Bed Material

	Fines	Clay, silt, sand (<2mm):	50	50
	Gravels	Small (2-16mm):	20	10
		Large (16-64mm):		10
	Larges	Sm. cobble (64-128mm):	30	20
		Lge cobble (128-256mm):		10
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 16 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry N Flood Signs Ht(m): 0.2

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 C 2.0 | 5230

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6

C2 LS = 2%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 36' 58.8", Long W 126 58' 34.1"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.4°C

C8 This tributary was classified as non fish bearing because it contains no suitable fish habitat. The banks are barely defined in the sampling area and evidence of livestock movement through the creek was noted.

C9 The air temperature at this site was 7.C.



Photo #: J-20-10, 1996/09/29
Site #: J264, Looking upstream, dry channel.

DFO/MoELP Stream Survey Form

Site Number: JULIE 283 **Reach No.:** 2

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: JULIE 283, Unit 12 , 2.8km South of Highway 16 on Walcott Road, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-1800-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **Reach Length (km):** 1.2 MA **Date:** 02-Oct-96 **Time:** 16:05 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6417 .60470 **Length surveyed (m):** 80.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-22-5,6 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.7	MS	1.6	1.7	1.5	1.7	1.7	1.8
Av. Wet. Width (m):	1.4	MS	1.4	1.2	1.3	1.4	1.6	1.4
Av. Max Riffle Depth (cm):	0	MS						
Av. Max Pool Depth (cm):	40	MS	40	42	38			
Gradient (%):	1.0	CL						

Pool: 100 Riffle: 0 Run: 0 Other: 0

% Side Channel: GE

% Debris Area: 30 GE

%Stable: 20 GE

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	10	10	20	10

Crown Closure % : 80 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 13 Compaction: Medium

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

Height (m): 0.5

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 5 pH: 7.8 Braided: N

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): 10 Cond. (µmhos): 180

Reach Symbol

(Fish)

NF

2 D 1.0 | 6220

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 2%, RS = 2%

C3 No fishieries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot Mark 7 model was 212 seconds over 120 square meters.

C5 Lat N 54 33' 02.9", Long W 126 48' 34.1"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water at this site was black in some sections and rust coloured in others at the time of sampling. The mean air temperature on this day was 4.95°C

C8 The water quality appears to be the limiting factor at this site. An old debris jam, located 20 meters upstream of the road, has backed up some of the water in this stream and created a pool. The culvert is not a barrier to fish passage upstream. A small pond was observed in a farmer's field downstream of the road at this site.



Photo #: J-22-5, 1996/10/2
Site #: J283, Looking upstream.



Photo #: J-22-6, 1996/10/2
Site #: J283, Looking downstream, debris in channel.

DFO/MoELP Stream Survey Form

Site Number: W19

Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: W19, Unit 12; east of Bulkley R.

Stream (Gaz.): Unnamed

Watershed Code: 068-2900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **U.T.M. :** 9 .6306 .60589

Reach Length (km): 1.7 MA **Length surveyed (m):** 100.0 GE

Date: 10-Jul-97 **Time:** 16:00 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

Survey Crew: KA \JP\ \ \ \ \ \ \ **Photos:** W-3-4,5 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	1.0	CL
Pool: 5 Riffle: 20 Run: 75 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	30	GE

Specific Data

1.9	1.3	1.2	1.3	2.4	2.6
1.6	1.1	0.6	0.6	0.7	1.1
4	3	2	3	2	3

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	50	0	0	50	0

Crown Closure % : 90 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	20	15
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.09	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 8.0 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 43

Reach Symbol

(Fish)

NF

2 D 1.0 | 8200

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6.

C2: LS=1%, RS=0%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished due to low water.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 13.7 C.

C7: No fish habitat information, observed a caddisfy on site.



Photo #: W-3-4, 10-Jul-97
Site #: W19, Looking upstream at the channel



Photo #: W-3-5, 10-Jul-97
Site #: W19, Looking downstream at the channel, note the heavy vegetation cover

DFO/MoELP Stream Survey Form

Site Number: W20

Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: W20, Unit 12; east of Bulkley R. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 0.7 MW **Date:** 10-Jul-97 **Time:** 16:36 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6310 .60582 **Length surveyed (m):** 20.0 GE **Survey Crew:** KA UP \ \ \ \ \ \ \ **Photos:** W-3-6,7,8 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	0.3	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	6.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	0	GE

Specific Data

0.3	0.3	0.4	0.2	0.4	0.4
0.1	0.0	0.1	0.0	0.0	0.0

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	25	0	20	30	25

Crown Closure % : 30 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 6 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

1 C 6.0 | 7300

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 100 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6.

C2 LS= 2%, RS=3%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished due to there being no water.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site due to there being no water.

C7 This channel is mostly dry, the stream has been blocked off just above the road crossing, to create a waterhole for horses. This is not a fish bearing stream. There may be some intermitant flow, but no fish habitat. There are some wetted areas; seepage and runoff, but no flow. The only defined area is below the road crossing 10m.



Photo #: W-3-6, 10-Jul-97
Site #: W20, Looking upstream at the channel



Photo #: W-3-7, 10-Jul-97
Site #: W20, Looking downstream at a dry channel



Photo #: W-3-8, 10-Jul-97
Site #: W20, Looking at a watering hole for horses

DFO/MoELP Stream Survey Form

Site Number: Y275 **Reach No.:** 2

Trib. to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: Y275, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 051-5300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 075 **Reach Length (km):** 2.5 MA **Date:** 16-Sep-97 **Time:** 16:42 **Agency:** TEC **Access:** V4 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .62268 .60655 **Length surveyed (m):** 50.0 GE **Survey Crew:** JP UL \ \ \ \ \ \ \ **Photos:** Y-33-16,17 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.6	MS
Av. Wet. Width (m):	1.7	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	4	MS
Gradient (%):	2.0	CL
Pool: 80 Riffle: 20 Run: 0 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

3.1	3.2	3.0	4.1	4.2	4.3
0.4	0.5	0.3	0.8	4.1	4.1
1	1	2	1	2	
4	5	3	2		

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
60	20	10	0	10	0

Crown Closure % : 5 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 29 Compaction: Medium

Discharge

C7	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.3

% Unstable: 70

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.6 Braided: N

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): 16 Cond. (µmhos): 510

Reach Symbol

(Fish)

NF

4 D 2.0 | 7030

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S5

C2: LS = 1%, RS = 8%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-1100V, was 96 seconds over 50 meters. Sampling was cut short by fences on private property.

C5: Fines and larges make up the bank texture at this site.

C6: DO was not measured, the water was clear to the bottom.The air temperature at this site was 11.C.

C7: This creek runs through a farm and appears to have been heavily impacted by agricultural activity. The flow at the time of sampling was limited to a series of isolated, turbid pools. Perhaps fish could use this reach at higher flows. No suitable spawning habitat was observed.



Photo #: Y-33-16, 16/09/97
Site #: Y275, Looking upstream at the channel



Photo #: Y-33-17, 16/09/97
Site #: Y275, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z243

Reach No.: 3

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: Z243, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 068-2200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 055 | **Reach Length (km):** 3.1 MA | **Date:** 13-Sep-97 | **Time:** 9:26 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M. : 9 628407 6050211 | **Length surveyed (m):** 150.0 GE | **Survey Crew:** KG\UL\ \ \ \ \ \ \ | **Photos:** Z-30-20,21,24 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	2.0	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	18	MS
Gradient (%):	7.0	CL
Pool: 25 Riffle: 20 Run: 50 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	60	GE

Specific Data

2.3	2.2	2.4	2.6	2.4	2.7
1.7	1.6	1.6	1.9	2.5	2.6
6	3	6	8	4	
19	16	20	19		

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	45	5	0	5	30

Crown Closure % : 30 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	15
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	50	30
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 18 Compaction: Medium

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.66	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 5 pH: 7.6 Braided: Y

Water Temp. (°C): 6.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 50

Reach Symbol

(Fish)

NF

2 B 7.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	20	F	9.6

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6

C2: LS=56%, RS=31%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 453 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 7.5 C.

C7: The cobble and LOD cover are abundant in this stream. It has great rearing habitat and spawning gravels. A large amount of down wood over the channel was seen.



Photo #: Z-30-20, 13-Sep-97
Site #: Z243, Looking downstream at the channel



Photo #: Z-30-21, 13-Sep-97
Site #: Z243, Looking upstream at the channel



Photo #: Z-30-24, 13-Sep-97
Site #: Z243, Looking upstream at a falls barrier on Z243

DFO/MoELP Stream Survey Form

Site Number: Z244

Reach No.: 1

Trib to Bulkley R.

TRITON Environmental Consultants Ltd.

Location: Z244, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 062-8900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 055 **Reach Length (km):** 2.0 MA **Date:** 13-Sep-97 **Time:** 10:17 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6282 .60520 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG\JL\ \ \ \ \ \ \ **Photos:** Z-30-22,23 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.0	MS
Av. Wet. Width (m):	1.0	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	21	MS
Gradient (%):	7.0	CL
Pool: 20 Riffle: 25 Run: 50 Other:	5	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	80	GE

Specific Data

0.7	1.0	1.1	1.4	1.0	0.8
0.6	1.0	1.1	1.3	1.0	0.9
4	5	6	7		
16	18	30			

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		25
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 23 Compaction: High

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	30	20	0	15	25

Crown Closure % : 30 Aspect : NW

Discharge

Wetted Width (m) :	1.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.34	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.8 Braided: N

Water Temp. (°C): 7.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Reach Symbol

(Fish)

NF

1 C 7.0 | 2350

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6

C2: LS=36%, RS=26%

C3: No fisheries sensitive zones present.

C4: The electroshocking effort, using a smithroot 12 B POW model set at I, 5, 400V, was 290 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 12 C.

C7: This stream has some good cutbank, LOD, cobble and boulder cover. The habitat would improve with higher flows.



Photo #: Z-30-22, 13-Sep-97
Site #: Z244, Looking downstream at the channel



Photo #: Z-30-23, 13-Sep-97
Site #: Z244, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: RYAN 82 Reach No.: 6

Trib. to Frederick L.

TRITON Environmental Consultants Ltd.

Location: RYAN 82, Unit 12,1.2km NW of Frederick L., see C5. Stream (Gaz.): Unnamed Watershed Code: 051-5300-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 Reach Length (km): 1.5 MA Date: 21-Sep-96 Time: 12:10 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 . 6262 . 60711 Length surveyed (m): 250.0 GE Survey Crew: RH \JL\ \ \ \ \ \ \ Photos: R-5-13,14 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.0	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.5	CL
N	Pool: 0 Riffle: 0 Run: 100 Other: 0		
	% Side Channel:	>40	GE
	% Debris Area:	>15	GE
	%Stable:	10	GE

Specific Data: 0.7 0.5 1.9 1.5 0.8 0.7

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	50	45	5

Crown Closure % : 60 Aspect : NW

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: Y

Water Temp. (°C): 5.0 02 (ppm):

Turb. (cm): 50 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

1 E 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 LS = .5%, RS =.5%

C3 No fisherics sensitive zones were noted at this site.

C4 This site was electrofished for 250m on the margins of the swamp, upstream of the road.. Some standing water was all that was found at this intermittent, swampy site.

C5 Lat N 54 46' 17", Long W 127 02' 15"

C6 No additional bank texture information.

C7 DO, pH and conductivity were not measured at this site. The mean air temperature on this day was 3.7°C

C8 No additional fish habitat information. Evidence of beaver activity was noted at this site.



Photo #: R-5-13, 1996/09/21
Site #: R82, Looking downstream.



Photo #: R-5-14, 1996/09/21
Site #: R82, Looking upstream.

5.3 Burbridge Creek (460-3254-624) (93 L 076, 93 L 077)

5.3.1 Sensitive Habitats and Barriers

Burbridge Creek is 9.6 km in length and is fed by 9 tributaries. Reaches 1 and 2 have low gradient, with reach 2 consisting of a network of wetlands and tiny lakes and containing a number of beaver dams. These wetlands have been classified as fisheries sensitive zones. Reach 2 is also fed by a set of tributaries with moderate gradient on the right bank. Reaches 3 and 4 have steadily increasing gradient and confinement, reach 5 is a small lake and wetland, reach 6 has low gradient and is unconfined and reach 7 is Burbridge Lake (300m x 200m). This system was sampled at 5 locations including reaches 1, 2 and 4 of the mainstem.

5.3.2 Fish Summary Tables and Stream Classification

No historical information exists for this stream, however Dolly Varden were caught by electrofishing in reach 1. Fish were caught at no other sites in this system despite the presence of suitable habitat and an apparent lack of barriers to fish migration. The mainstem was classified as an S3 in reaches 1 and 2, based on average channel widths of 3.02 meters and 4.45 meters and the presence of fish or fish habitat in the sampling areas. Reach 4 was classified as an S4, based on an average channel width of 1.33 meters and the presence of some good rearing cover in the sampling area. The one tributary sampled in this inventory was classified as an S4 in reach 1 and S6 in reach 2. Reach 1 has some good rearing habitat but only marginal spawning habitat while reach 2 has subterranean flow and poor fish habitat. The remaining unsampled tributaries appear to be S4, perhaps small S3 sized streams. Burbridge Creek appears to have some good rearing habitat in reach 2, however no fish were caught. Minnow trapping this reach is strongly recommended as it is comprised of deep runs (over 120 cm deep) and the effectiveness of electroshocking such habitat can be limited. In addition the extensive beaver activity in this reach maybe affecting fish distribution and more intensive sampling may be warranted.

DFO/MoELP Stream Survey Form

Site Number: Y11 **Reach No.: 4**

Burbridge Cr.

TRITON Environmental Consultants Ltd.

Location: Y11, Unit 12 **Stream (Gaz.):** Burbridge Creek **Watershed Code:** 460-3254-624-000-000-000-000-000-000-000-0

Map #:	93 L 077	**Reach Length (km):**	1.0	MW	**Date:**	11-Jul-97	**Time:**	11:00	**Agency:**	TEC	**Access:**	V2	**Fish Card:**	N	**Field** ☒ **Historical** ☐
U.T.M. :	9 .6437 .60660	**Length surveyed (m):**	100.0	GE	**Survey Crew:**	DD \SJ \ \ \ \ \ \ \					**Photos:**		Y-2-4,5,6		**Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.3	MS	1.1	1.2	1.1	1.2	2.0	1.4
Av. Wet. Width (m):	1.1	MS	0.7	0.9	0.7	0.9	2.0	1.3
Av. Max Riffle Depth (cm):	5	MS	5	5	4	5		
Av. Max Pool Depth (cm):	39	MS	30	50	22	47	45	
Gradient (%):	6.0	CL						

Pool: 30 Riffle: 10 Run: 40 Other: 20

% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	30	GE

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	10	5	15	20

Crown Closure % : 80 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
	Sm. cobble (64-128mm):		10
Larges	Lge cobble (128-256mm):	50	10
	Bldr cobble (>256mm):		30
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.69	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT) (RB)

1 C 6 0 | 4 1 5 0

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 13.0 02 (ppm): 0.0

Turb. (cm): Cond. (µmhos): 170

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4.

C2: LS=25%, RS=10%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 324 seconds over 100 meters.

C5: No additional bank texture infonnation.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 16.0 C.

C7: There is good rearing habitat at this site in the form of pools, LOD and cutbank cover. There is a 0.5m beaver dam, a beaver pond and a meadow 75m upstream of the road crossing. A 1.0m cascade was noted in the sampling area.



Photo #: Y-2-4, 11/07/97
Site #: Y11, Looking upstream, from the culvert



Photo #: Y-2-5, 11/07/97
Site #: Y11, Looking upstream at a 1m cascade



Photo #: Y-2-6, 11/07/97
Site #: Y11, Looking downstream at a pool and some LOD

DFO/MoELP Stream Survey Form **Site Number:** E236 **Reach No.: 2**

Burbridge Cr.

TRITON Environmental Consultants Ltd.

Location: E236, Unit 12, S of Canyon Cr., E of Vanderven Cr. **Stream (Gaz.):** Burbridge Creek **Watershed Code:** 460-3254-624-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 2.0 MA **Date:** 21-Aug-97 **Time:** 15:00 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6407 .60675 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-22-23,24 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	4.5	MS
	Av. Wet. Width (m):	4.5	MS
	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	128	MS
	Gradient (%):	0.5	CL
	Pool: 20 Riffle: 0 Run: 80 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	5-15	GE
	%Stable:	0	GE

Specific Data

4.0	7.0	3.0	3.5	3.2	6.0
4.0	7.0	3.0	3.5	3.2	6.0
150	120	130	140	100	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
50	0	0	10	10	30

Crown Closure % : 0 Aspect : N

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 6.8 Braided: N

Water Temp. (°C): 12.5 02 (ppm):

Turb. (cm): 80 Cond. (µmhos): 330

Reach Symbol

(Fish)

(DV)

4 D 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3. Channel widths were both measured and estimated at this site.

C2 LS = 1%, RS = 1%

C3 Several swamps are in contact with the mainstem in this reach.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-300V, was 275 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the mean air temperature on this day was 17.3.C.

C7 This creek flows trhough a large meadow as a series of beaver dams and ponds. Some good rearing habitat in the form of deep pools was observed.



Photo #: E-22-23, 21-Aug-97
Site #: E236, Looking downstream at the channel and a beaver dam



Photo #: E-22-24, 21-Aug-97
Site #: E236, Looking upstream at the channel and a beaver dam

DFO/MoELP Stream Survey Form **Site Number:** E235 **Reach No.:** 1

Burbridge Cr.

TRITON Environmental Consultants Ltd.

Location: E235, Unit 12, south of Canyon Creek **Stream (Gaz.):** Burbridge Creek **Watershed Code:** 460-3254-624-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 3.0 MA **Date:** 21-Aug-97 **Time:** 13:45 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6390 .60677 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-22-20,21,22 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.0	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	25	MS
Gradient (%):	5.0	CL

Pool: 20 Riffle: 30 Run: 50 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	40	GE

Specific Data

2.7	3.0	3.8	2.9	2.4	3.3
1.0	0.7	2.0	2.0	0.6	1.0
4	3	3	4	4	
25	25	30	22	23	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	20	0	30	30

Crown Closure % : 35 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	60	35
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 30 Compaction: Medium

Discharge

Wetted Width (m) :	0.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.23	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.3

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

DV

3 B 5.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.9

Bars (%): 30 pH: 7.4 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	135	J	R			EL

Comments

C1 S3

C2 LS = 47%, RS = 23%

C3 No fisheries sensitive zones present.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 254 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not meausred, the water was clear to the bottom but brown in colour. The mean air temperature on this day was 17.3.C.

C7 Some good rearing cover, in the form of LOD and overhanging alder roots and stems, was observed at this site. The gravel is clean at this site and caddisfly larvae is abundant.



Photo #: E-22-20, 21-Aug-97
Site #: E235, Looking upstream at the channel and a crew member electrofishing



Photo #: E-22-21, 21-Aug-97
Site #: E235, Looking downstream at the channel, note the willow cover



Photo #: E-22-22, 21-Aug-97
Site #: E235, Measuring fish on the fish board

DFO/MoELP Stream Survey Form

Site Number: Y12

Reach No.: 2

Trib to Burbridge Cr.

TRITON Environmental Consultants Ltd.

Location: Y12, Unit12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 100-3400-000-000-000-000-000-000-000-000-000-

Map #:	93 L 077	**Reach Length (km):**	1.5	MW	**Date:**	11-Jul-97	**Time:**	12:45	**Agency:**	TEC	**Access:**	V2	**Fish Card:**	N	**Field** ☒ **Historical** ☐
U.T.M. :	9 .6422 .60652	**Length surveyed (m):**	700.0	GE	**Survey Crew:**	DD \SJ \ \ \ \ \ \ \					**Photos:**		Y-2-7,8		**Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.5	MS	1.2	1.6	1.4	1.6	1.6	1.8
Av. Wet. Width (m):	1.0	MS	1.1	1.1	0.9	1.1	0.9	1.0
Av. Max Riffle Depth (cm):	5	MS	4	4	5	5	5	
Av. Max Pool Depth (cm):	38	MS	49	43	31	36	30	
Gradient (%):	2.0	CL						

Pool: 60 Riffle: 10 Run: 30 Other: 0

% Side Channel: >40 GE

% Debris Area: 5-15 GE

%Stable: 100 GE

Cover

Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Clbnk
40	10	0	0	5	45

Crown Closure % : 80 Aspect : N

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.21	F
Discharge (m3/s) :	0.01	F

Reach Symbol

(Fish)

NF

2 D 2.0 | F

(Width, Valley: Channel, Slope) | (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
	Sm. cobble (64-128mm):		0
Larges	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Banks

Height (m): 0.1

% Unstable: 90

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 8.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6.

C2 I.S~5%, RS~2%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at 60, 600V, was 242 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.0 C.

C7 This site consists of occasional sections of subterrainian flow in a large boggy area. The road has no impact on the steam, it just happens to be at a reach break



Photo #: Y-2-7, 11/07/97
Site #: Y12, Looking upstream, with horsetail



Photo #: Y-2-8, 11/07/97
Site #: Y12, Looking downstream, at the lower end of the reach.

DFO/MoELP Stream Survey Form

Site Number: Y13 **Reach No.:** 1

Trib to Burbridge Cr.

TRITON Environmental Consultants Ltd.

Location: Y13, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 100-3400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 0.6 MA **Date:** 11-Jul-97 **Time:** 13:15 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6422 .60652 **Length surveyed (m):** 100.0 GE **Survey Crew:** DD\SJ\ \ \ \ \ \ \ **Photos:** Y-2-9,10 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.3	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	5.5	CL
Pool: 20 Riffle: 10 Run: 60 Other: 10		
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	80	GE

Specific Data

1.3	1.6	1.3	1.1	1.2	1.1
0.9	1.6	0.9	1.1	1.1	0.8
5	6	4	4	4	
21	19	20	18	21	

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	25	10	0	20	20

Crown Closure %: 70 Aspect: NW

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	40	30
	Large (16-64mm):		10
	Sm. cobble (64-128mm):		10
Larges	Lge cobble (128-256mm):	20	5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 17 Compaction: Medium

Discharge

Wetted Width (m):	0.5	MS
Mean Depth (m):	0.2	MS
Mean Velocity (m/s):	0.14	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.4 Braided: N

Water Temp. (°C): 8.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Reach Symbol

(Fish)

(CT) (RB)

1	C	6.0	4420
(Width, Valley: Channel, Slope)			(Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4.

C2: LS=30%, RS=10%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 60, 600V, was 193 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 15.0 C.

C7: This stream flows out of a boggy area upstream of the sampling area. It contains suitable step pool rearing habitat and marginal trout spawning habitat.

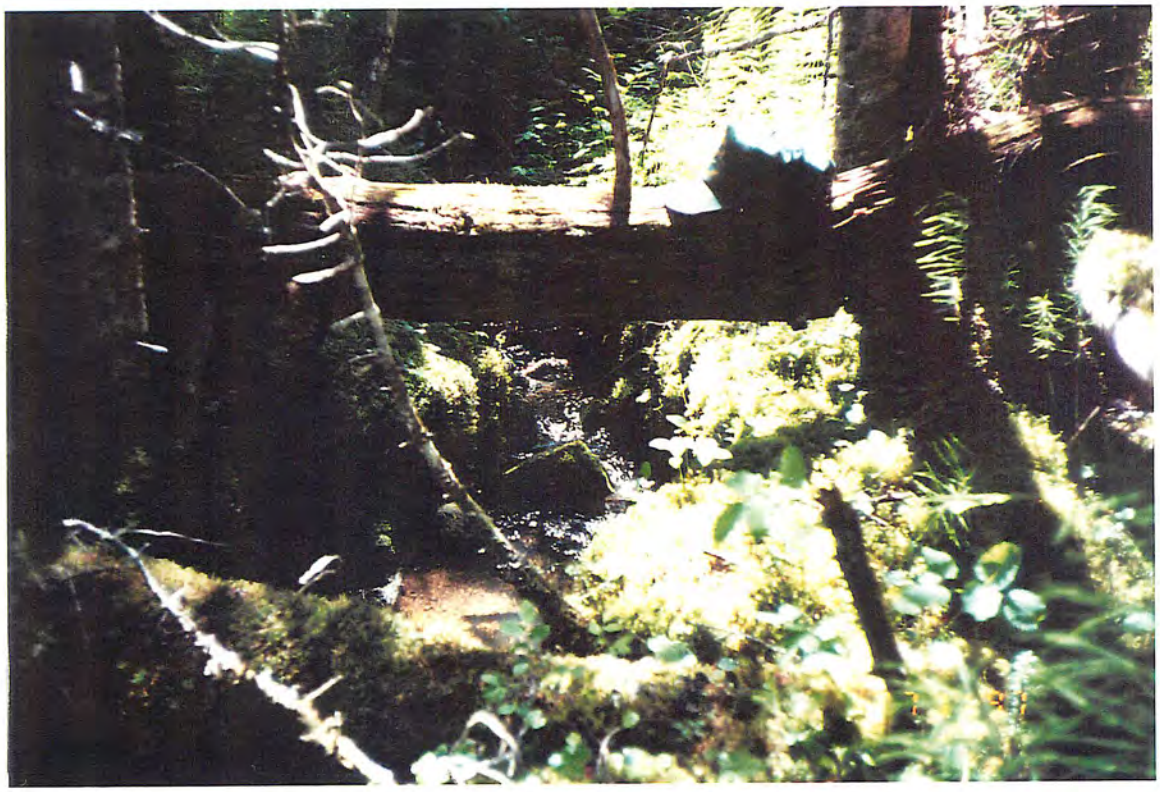


Photo #: Y-2-9, 11/07/97
Site #: Y13, Looking upstream at channel.



Photo #: Y-2-10, 11/07/97
Site #: Y13, Looking downstream at channel.

5.4 Canyon Creek (460-3254-000) (93 L 075, 93 L 076, 93 L 087)

5.4.1 Sensitive Habitats and Barriers

The mainstem of Canyon Creek is 45.5 km in length and is fed by 27 tributaries. Reach 1 is characterized by canyon like confinement and moderate gradient. Both the confinement and the gradient decrease in reaches 2 and 3. Reaches 4 and 5 are quite confined. Reach 6 has low gradient, is unconfined and has several wetlands in direct contact with the channel. A particularly large fisheries sensitive zone was noted in this reach. The confinement increases again in reach 7. The gradient and confinement increase in reach 8, peaking at the 6 meter cascade at the reach 8 and 9 break. Both an 8 meter falls and a 6 meter cascade were observed in reach 9 of Canyon Creek, above which no fish were caught. The 6 meter cascade marks the upper limit of fish distribution in this stream. This watershed was sampled in 37 different locations, including reaches 7 and 9 of the mainstem.

5.4.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of coho, Dolly Varden, rainbow trout and cutthroat trout at the mouth of Canyon Creek. Fish were caught by electrofishing at 6 sites and visually observed at 1. Dolly Varden and rainbow trout were the species sampled. The Canyon Creek mainstem was classified as an S2 in reach 7, based on an average channel width of 12.35 meters and the presence of Dolly Varden in the sampling area. It was classified as an S5 in reach 9 based on an average channel width of 3.52 meters and the absence of fish in the sampling area.

The unnamed tributaries sampled in this inventory range in size from S2 to S3 sized streams. Site E233, 93 L 076, was classified as an S2 based on an average channel width of 10.08 meters and the presence of deep pool and aquatic vegetation rearing cover in the sampling area, which flows as a series of beaver ponds. No fish were caught by electrofishing at this site and future sampling by minnow trapping is recommended. Dolly Varden were caught in 5 tributaries to Canyon Creek, ranging in size from S2 to S4. Rainbow trout were caught along with Dolly Varden at W211 and W288, both tributaries to reach 7 of the mainstem. Several tributaries to reaches 6 and 7 of Canyon Creek were classified as "NC", e.g. R94 and R91, based on the absence of defined channels in the sampling areas. Of particular note, is Auber Creek. The sampling crew classified Auber Creek as an "NC" as no defined channel was found in the sampling area, which was accessed from two different locations.

DFO/MoELP Stream Survey Form

Site Number: HASLETT 106 **Reach No.:** 7

Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: HASLETT 106, Unit 12, see C5. **Stream (Gaz.):** Canyon Creek **Watershed Code:** 460-3254-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 087 **Reach Length (km):** 10.0 MA **Date:** 21-Aug-96 **Time:** 11:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6414 .60754 **Length surveyed (m):** 200.0 GE **Survey Crew:** JHH\K \ \ \ \ \ \ **Photos:** H-7-16,17 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	11.1	TA
Av. Wet. Width (m):	2.0	TA
Av. Max Riffle Depth (cm):	15	MS
Av. Max Pool Depth (cm):	33	MS
Gradient (%):	7.0	CL

Pool: 15 Riffle: 65 Run: 20 Other: 0

% Side Channel: GE

% Debris Area: 15 GE

%Stable: 70 GE

Specific Data

8.2	8.1	12.8	13.3	13.4	10.6
2.0	2.3	2.1	2.0	1.1	2.8
16	15	14			
32	38	28			

Cover

Cover Total % : 65 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	15	0	20	25

Crown Closure % : 5 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	35	10
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	45	35
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 60 Compaction: High

Discharge

Wetted Width (m) :	1.8	TA
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.26	F
Discharge (m3/s) :	0.07	F

Banks

Height (m): 1.3

% Unstable: 25

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 2.1

Bars (%): 60 pH: Braided: N

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): 38 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

11 E 7.0	2350
(Width, Valley: Channel, Slope)	(Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				VO

Comments

C1: S2

C2: LS = 5%; RS = 4%

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 257 seconds over 300 meters.

C5: Lat 54 48 23.6 Long 126 47 57.6

C6: Gravels and fines make up the bank texture at this site. Some potential erosion problems exist near road.

C7: DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 10.9°C

C8: Some good fish habitat would be present at this site during higher flows. Potential spawning habitat may be present at moderate flows.



Photo #: H-7-16, 1996/08/21
Site #: H106, Looking downstream toward bridge.



Photo #: H-7-17, 1996/08/21
Site #: H106, Looking upstream, LOD in channel.

DFO/MoELP Stream Survey Form

Site Number: Y44 **Reach No.: 7**

Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y44, Unit 12 **Stream (Gaz.):** Canyon Creek **Watershed Code:** 460-3254-000-000-000-000-000-000-000-000-0

Map #:	93 L 076	Reach Length (km):	10.0	MA	Date:	16-Jul-97	Time:	14:30	Agency:	TEC	Access:	V2	Fish Card:	N	Field ☒ Historical ☐
U.T.M.:	9 .6406 .60697	Length surveyed (m):	200.0	GE	Survey Crew:	DD \SJ \UL \ \ \ \ \ \					Photos:	-6-16,17,18,19,20,21,21A			Air Photos:

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	12.4	MS	12.0	12.4	12.8	16.4	10.5	10.0
Av. Wet. Width (m):	5.5	MS	4.0	4.4	5.3	5.4	4.7	9.1
Av. Max Riffle Depth (cm):	11	MS	18	12	10	6	10	
Av. Max Pool Depth (cm):	70	MS	80	64	55	80		
Gradient (%):	1.0	CL						

Pool: 10 Riffle: 10 Run: 80 Other: 0

% Side Channel:	10-40	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Cover

Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	40	0	10	10

Crown Closure % : 20 Aspect : SW

Discharge

Wetted Width (m) :	2.7	MS
Mean Depth (m) :	26.4	MS
Mean Velocity (m/s) :	0.50	F
Discharge (m3/s) :	0.70	F

Reach Symbol

(Fish)

DV

12 D 1.0 | 2440

(Width, Valley : Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 48 Compaction: Medium

Banks

Height (m): 0.3

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 1.4

Bars (%): 20 pH: 7.4 Braided: Y

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	18	30-180	NA				EL

Comments

C1: S2.

C2: LS=20%, RS=15%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at J, 6, 300V, was 344 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.0 C.

C7: This stream provides plenty of rearing habtiat in the form of deep pools, runs and boulders. There is marginal spawning habitat in this reach. The site is located at a new road crossing, but the bridge does not impact upon the stream seriously. The road crossing upstream has no bridge. It is recommended that a bridge be installed or the road be decommissioned, because the vehicles crossing through the creek could have detrimental impacts on the stream.



Photo #: Y-6-16, 16/07/97
Site #: Y44, Looking upstream at the channel.



Photo #: Y-6-17, 16/07/97
Site #: Y44, Looking downstream at the channel and the bridge crossing.



Photo #: Y-6-20, 16/07/97
Site #: Y44, Measuring Dolly Varden on the fishboard



Photo #: Y-6-21, 16/07/97
Site #: Y44, Measuring Dolly Varden on the fishboard



Photo #: Y-6-21A, 16/07/97
Site #: Y44, Measuring Dolly Varden on the fishboard

DFO/MoELP Stream Survey Form **Site Number:** E269 **Reach No.: 9**

Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E269, Unit 12, Canyon Creek headwaters. **Stream (Gaz.):** Canyon Creek **Watershed Code:** 460-3254-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 **Reach Length (km):** 3.8 MW **Date:** 08-Sep-97 **Time:** 9:35 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6386 .60772 **Length surveyed (m):** 250.0 GE **Survey Crew:** SJ \JL \ \ \ \ \ \ **Photos:** E-25-15,16,16A,17,18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.5	MS
Av. Wet. Width (m):	3.0	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	25	MS
Gradient (%):	6.0	CL
Pool: 10 Riffle: 20 Run: 60 Other: 10		
% Side Channel:	10-40	GE
% Debris Area:	0-5	GE
%Stable:	20	GE

Specific Data

3.1	3.6	3.9	3.5	3.1	3.9
2.7	3.2	2.9	3.4	3.1	2.5
5	6	3	8	7	
24	38	21	19	22	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	10	40	0	0	25

Crown Closure % : 0 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	5
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		25
	Bldr cobble (>256mm):		20
Bedrock		10	10

D90 (cm): Compaction: High

Discharge

Wetted Width (m) :	2.4	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.39	F
Discharge (m3/s) :	0.14	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 30 pH: 7.8 Braided: N

Water Temp. (°C): 5.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 90

Reach Symbol

(Fish)

NF

4 D 6.0 | 1261

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	8	F	37.8
	6	C	37.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S5

C2 LS = 35%, RS = 45%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 345 seconds over 175 meters.

C5 Fines and larges make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The mean air temperture on this day was 14.2.C.

C7 This reach has stable banks, but little habitat complexity. The cover is provided by boulders, runs and occasional plunge pools. Rearing habitat, but limited spawning habitat is available in the sampling area.

C8 No fish were caught in this reach, which is located above and 8m and a 6m cascade. As a result it has been classified as non fish bearing.



Photo #: E-25-15, 08-Sep-97
Site #: E269, Looking upstream at the channel with boulder cover



Photo #: E-25-16, 08-Sep-97
Site #: E269, Looking upstream at the channel with boulder cover



Photo #: E-25-16A, 08-Sep-97
Site #: E269, Looking downstream at the channel

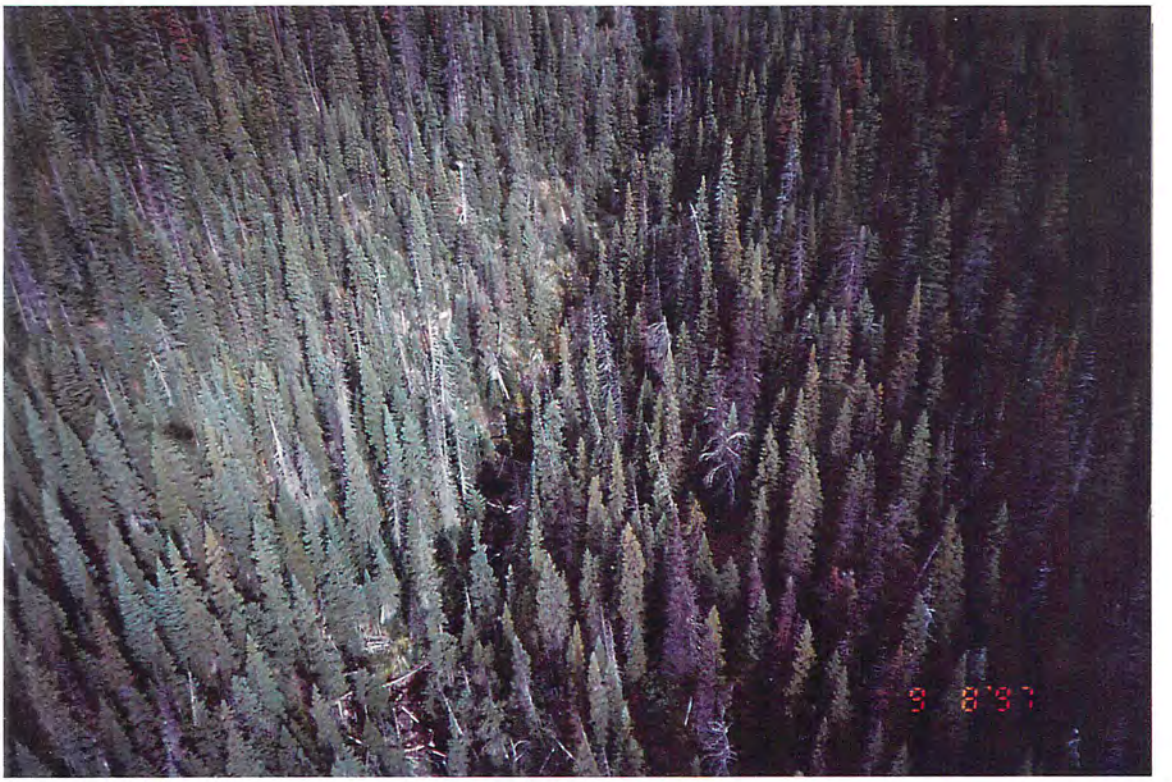


Photo #: E-25-17, 08-Sep-97
Site #: E269, Looking upstream at a barrier

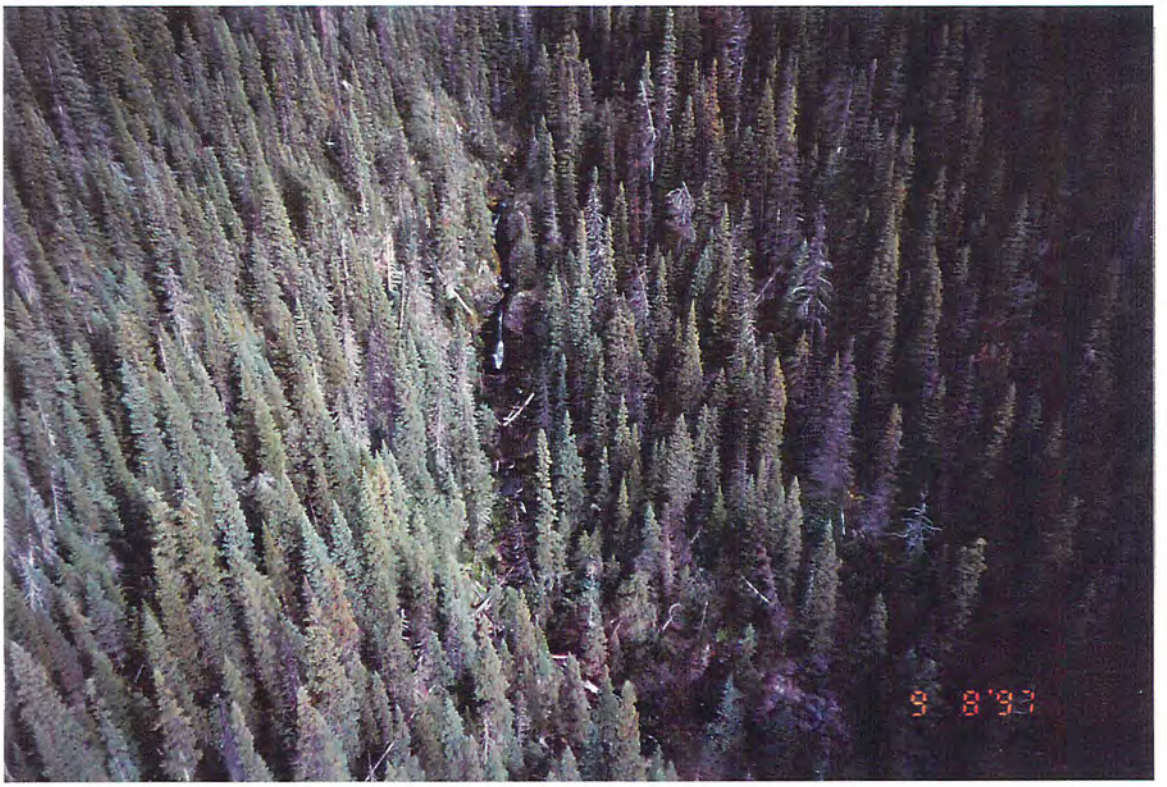


Photo #: E-25-18, 08-Sep-97
Site #: E269, Looking upstream at a series of barriers



Photo #: E-25-19, 08-Sep-97
Site #: E269, Looking upstream at a series of barriers

DFO/MoELP Stream Survey Form **Site Number:** ARNE 21 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 21, Unit 12, southeast of Llama Lake, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-9500-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 1.8 MA **Date:** 22-Sep-96 **Time:** 11:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6368 .60716 **Length surveyed (m):** 200.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-25,26 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.7	MS
Av. Wet. Width (m):	1.6	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	30	MS
Gradient (%):	7.0	CL
Pool: 20 Riffle: 40 Run: 40 Other: 0		GE
% Side Channel:		GE
% Debris Area:	20	GE
%Stable:	80	GE

Specific Data

2.3	2.7	2.5	3.2	2.3	3.0
1.2	1.5	1.3	2.0	1.8	1.5
5	4	6	6		
48	14	31	25		

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	40	0	0	40	20

Crown Closure % : 65 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	20
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	30	25
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

Wetted Width (m) :	0.8	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.19	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0

Bars (%): 5 pH: Braided: N

Water Temp. (°C): 3.5 02 (ppm):

Turb. (cm): 48 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

3 E 7.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	0	CV	1.4

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot 15 A model, was 203 seconds over 144 square meters.

C5 Lat N 54 46' 22.6", Long W 126 52' 23.8"

C6 The banks at this site were comprised of both fines and gravels.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 Excellent rearing and some spawning habitat was observed at this site.

C9 The culvert is set at a 4% gradient.



Photo #: A-2-25, 22-Sep-96
Site #: A21, Looking upstream.



Photo #: A-2-26, 22-Sep-96
Site #: A21, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: ARNE 22 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 22, Unit 12, South of block 301-3, see C5 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3600-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 Reach Length (km): 0.8 MA Date: 22-Sep-96 Time: 12:15 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6405 .60721 Length surveyed (m): 200.0 GE Survey Crew: AKL\ HK\ \ \ \ \ \ \ Photos: A-2-28,29 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	10	MS
Gradient (%):	2.0	CL

Pool: 10 Riffle: 60 Run: 30 Other: 0

% Side Channel: GE

% Debris Area: 5 GE

%Stable: 80 GE

Specific Data

1.6	2.3	2.4	2.0	1.5	0.8
0.8	1.1	0.8	0.8	1.0	1.0
6	5	4			
10					

Cover

Cover Total %: 95 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	0	0	95	0

Crown Closure %: 95 Aspect: E

Bed Material

Fines	Clay, silt, sand (<2mm):	15	15
Gravels	Small (2-16mm):	60	15
	Large (16-64mm):		45
Larges	Sm. cobble (64-128mm):	25	20
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

Wetted Width (m):	0.7	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.31	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 4.5 02 (ppm):

Turb. (cm): 10 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

2 E 2.0 | 2620

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 The side slopes were not taken at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot 15 A model was 300 seconds over 200 square meters.

C5 Lat N 54 46' 35.1, Long W 126 48' 56"

C6 The banks at this site are comprised of fines and gravels.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 Great rearing habitat was observed at this site. However, fish use of this stream at the low flow stage occuring in the sampling area on the survey date, would be limited. The culvert at this site is not an obstruction.



Photo #: A-2-28, 22-Sep-96
Site #: A22, Looking upstream.



Photo #: A-2-29, 22-Sep-96
Site #: A22, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: ARNE 23 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 23, Unit 12, South of block 301-3, see C5 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3900-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 1.1 MA **Date:** 22-Sep-96 **Time:** 12:55 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6410 .60734 **Length surveyed (m):** 150.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-30,31 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	11	MS
Gradient (%):	2.0	CL
Pool: 20 Riffle: 40 Run: 40 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	30	GE

Specific Data

1.2	1.0	1.7	1.5	1.7	1.3
1.1	0.7	1.1	1.3	1.0	1.3
3	3	2	3	2	
22	5	6			

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	10	0	70	0

Crown Closure % : 85 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	15
	Large (16-64mm):		45
Larges	Sm. cobble (64-128mm):	30	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 24 Compaction: Medium

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.36	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 5.0 02 (ppm):

Turb. (cm): 22 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

1 E 2.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	0	CV	0.4

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4

C2 The side slopes were not evaluated at this site.

C3 This stream drains a swampy hillslope. Many small seepages connect with the stream.

C4 This site was not electrofished as no habitat was available for shocking.

C5 Lat N 54 47' 16.6, Long W 126 48' 25.8"

C6 No additional bank texture information.

C7 DO, pH, and conductivity were not measured at this site . The water ws clear to the bottom. The mean air temperature on this day was 3.0°C

C8 Some good rearing habitat and spawning habitat (at higher flows) was observed at this site. Overhanging vegetation makes up most of the cover in the sampling area. The culvert at this site is an obstruction to juvenile fish passage upstream.



Photo #: A-2-30, 22-Sep-96
Site #: A23, Looking upstream.



Photo #: A-2-31, 22-Sep-96
Site #: A23, Looking downstream, moss covered boulders.

DFO/MoELP Stream Survey Form

Site Number: E234. Unit 12

Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E234. Unit 12, south of Canyon Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-2400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 1.5 MA **Date:** 21-Aug-97 **Time:** 13:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6361 .60672 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM\ \ \ \ \ \ \ **Photos:** E-22-18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.0	MS
Av. Wet. Width (m):	1.8	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	99	MS
Gradient (%):	1.0	CL
Pool: 80 Riffle: 0 Run: 20 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.4	1.6	3.4	1.2	1.9	1.3
2.2	1.6	3.0	1.2	1.6	1.2
95	35	75	155	135	

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	0	0	30	50	0

Crown Closure % : 0 Aspect : S

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 0 pH: 6.8 Braided: N

Water Temp. (°C): 16.5 02 (ppm):

Turb. (cm): 10 Cond. (µmhos): 330

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 1%, RS = 1%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 223 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the mean air temperature on this day was 17.3.C.

C7 This reach moves through a boggy area containing sedges and alder, has almost no flow, a fine organic substrate, and rust coloured algae. The water is cloudy, coloured and looks to be very poor quality for both spawning and rearing.



Photo #: E-22-18, 21-Aug-97
Site #: E234, Looking downstream at the channel



Photo #: E-22-19, 21-Aug-97
Site #: E234, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E268

Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E268, Unit 12, East of Little Onion Mtn, 2km west of the Canyon Cr. headwaters.

Stream (Gaz.): Unnamed

Watershed Code: 077-9200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 086 **Reach Length (km):** 1.1 MW **Date:** 08-Sep-97 **Time:** 8:25 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6377 .60747 **Length surveyed (m):** 350.0 GE **Survey Crew:** SJ UL \ \ \ \ \ \ \ **Photos:** E-25-11,12,13,14 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.0	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	10	MS
Gradient (%):	9.0	CL
Pool: 10 Riffle: 20 Run: 70 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	30	GE

Specific Data

1.1	0.7	1.0	1.1	0.8	1.2
1.0	0.7	0.7	0.4	0.7	0.7
1	2	1	1	2	
7	9	12	11	10	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	45	25	0	10	10

Crown Closure % : 20 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	40	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 22 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.30	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 60

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

1 D 9.0 | 3340

(Width, Valley: Channel, Slope) | (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 35 pH: 7.6 Braided: Y

Water Temp. (°C): 5.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 110

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4

C2: LS = 11%, RS = 22%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 218 seconds over 150 meters.

C5: Fines and larges make up the bank texture at this site.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 14.3.C.

C7: Fish were visually observed in the attached lake upstream of the sampling area. The outlet does not have a defined channel for 150 m. It is actually a low, swampy area with some seepage and is deemed a barrier to fish passage.

C8: This small reach has been heavily impacted by snowmobile and ATV trails. Trail builders have set LOD into the channel and the set up would prevent fish migration upstream.



Photo #: E-25-11, 08-Sep-97
Site #: E268, Looking upstream at the channel



Photo #: E-25-12, 08-Sep-97
Site #: E268, Looking downstream at the channel, note the moss on the substrate



Photo #: E-25-13, 08-Sep-97
Site #: E268, Looking across stream at the channel, note the corduroy road



Photo #: E-25-14, 08-Sep-97
Site #: E268, Looking across stream at the channel

DFO/MoELP Stream Survey Form

Site Number: E307

Reach No.: 4

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E307, Unit 12, North of Canyon Cr. | Stream (Gaz.): Unnamed | Watershed Code: 051-8800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 075 | Reach Length (km): 1.7 MW | Date: 15-Sep-97 | Time: 9:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6269 .60721 | Length surveyed (m): 100.0 GE | Survey Crew: SJ \LE \ \ \ \ \ \ | Photos: E-29-17,18 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.2	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	13	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 30 Run: 60 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

0.8	1.1	1.4	1.4	1.2	1.6
0.3	0.9	1.3	1.2	1.3	0.6
2	1	2	2	1	
6	12	16	15	15	

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	0	0	30	30

Crown Closure %: 10 | Aspect: NW

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	20	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 29 | Compaction: Low

Discharge

Wetted Width (m):	0.1	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.09	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L | Flood Signs Ht(m): 0.5

Bars (%): 30 | pH: 8.0 | Braided: N

Water Temp. (°C): 8.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 300

Reach Symbol

(Fish)

(DV)

1 D 2.0 | 6220

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4

C2: LS = 15%, RS = 25%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 170 seconds over 100 meters. The shocking conditions were poor at this site.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The air temperature at this site was 10.C.

C7: This reach flows from one beaver pond to another and contains limited rearing cover in the form of debris, pools and cutbanks. No spawning substrate was noted.



Photo #: E-29-17, 15-Sep-97
Site #: E307, Looking upstream at the channel



Photo #: E-29-18, 15-Sep-97
Site #: E307, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y43 **Reach No.:** 1

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y43, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 1.4 MA **Date:** 16-Jul-97 **Time:** 13:00 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6416 .60716 **Length surveyed (m):** 100.0 GE **Survey Crew:** DD \JL \SJ \ \ \ \ \ \ **Photos:** Y-6-12,13,14,15, **Air Photos:**

Channel Characteristics

			Specific Data				
Av. Chan. Width (m):	1.2	MS	1.0	1.0	0.8	1.6	1.5
Av. Wet. Width (m):	0.5	MS	0.4	0.2	0.7	0.7	0.4
Av. Max Riffle Depth (cm):	3	MS	4	3	3	2	2
Av. Max Pool Depth (cm):	14	MS	10	8	10	30	10
Gradient (%):	12.0	CL					

Pool: 10 Riffle: 20 Run: 60 Other: 10

% Side Channel: 10-40 GE

% Debris Aren: >15 GE

%Stable: 40 GE

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 3 Compaction: Medium

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	40	0	0	40	0

Crown Closure % : 90 Aspect : SW

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.27	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.1

% Unstable: 100

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 30 pH: 7.9 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Reach Symbol

(Fish)

(DV)

1 D 12.0 | 6310

(Width, Valley : Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=8%, RS=8%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 6, 400V, was 96 seconds over 75 meters. The shocking conditions were very poor at this site.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature at this site was 16.5 C.

C7 During higher flows, fish may accesss this reach from Canyon Creek.



Photo #: Y-6-12, 16/07/97
Site #: Y43, Looking upstream, at the road crossing.



Photo #: Y-6-13, 16/07/97
Site #: Y43, Looking across the channel, at the road crossing.



Photo #: Y-6-14, 16/07/97
Site #: Y43, Looking downstream at the channel.



Photo #: Y-6-15, 16/07/97
Site #: Y43, Looking across the channel, at the road crossing.

DFO/MoELP Stream Survey Form

Site Number: Y45 **Reach No.: 1**

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y45, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-2800-000-000-000-000-000-000-000-000-000-

Map #:	93 L 076	Reach Length (km):	1.6	MA	Date:	15-Jul-97	Time:	16:10	Agency:	TEC	Access:	V2	Fish Card:	N	Field ☒ Historical ☐
U.T.M. :	9 .6406 .60701	Length surveyed (m):	100.0	GE	Survey Crew:	DD \JL \ \ \ \ \ \ \					Photos:	Y-6-22,23	Air Photos:		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.1	MS	1.1	1.1	1.3	1.1	1.0	1.2
Av. Wet. Width (m):	0.7	MS	0.8	0.9	0.9	0.3	0.6	0.4
Av. Max Riffle Depth (cm):	2	MS	2	2	3	3	2	
Av. Max Pool Depth (cm):	16	MS	10	19	19	16	16	
Gradient (%):	9.0	CL						

Pool: 20 Riffle: 20 Run: 60 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	50	10	0	0	10

Crown Closure % : 80 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	50	20
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 23 Compaction: Low

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.04	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

I C 9.0 | 2350

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.8

Bars (%): 0 pH: 7.6 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 50

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4.

C2: LS=40%, RS=40%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 197 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7: Barring any downstream obstructions, fish could use this reach at higher flows. There is good rearing habitat here in the form of pools and LOD. The channel becomes more defined 50 meters downstream of the road crossing. There is a 0.8m drop from the culvert.



Photo #: Y-6-22, 16/07/97
Site #: Y45, Looking upstream at the channel and the culvert, situated .8m above the current flow.



Photo #: Y-6-23, 16/07/97
Site #: Y45, Looking downstream at the channel through dense understory.

DFO/MoELP Stream Survey Form

Site Number: W210

Reach No.: 1

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W210, Unit 12; 0.4km east of Red Canyon Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 2.4 MA **Date:** 21-Aug-97 **Time:** 9:30 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6413 .60707 **Length surveyed (m):** 150.0 GE **Survey Crew:** DD UP \ \ \ \ \ \ \ **Photos:** W-K-19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.6	MS
Av. Wet. Width (m):	1.9	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	28	MS
Gradient (%):	8.0	CL
Pool: 20 Riffle: 20 Run: 60 Other:	0	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

2.6	2.9	2.2	2.4	2.9	2.5
1.5	2.8	1.6	1.8	1.6	1.8
2	4	5	3	2	4
32	29	33	30	20	22

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	35	10	0	25	10

Crown Closure %: 70 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	30
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 25 Compaction: Medium

Discharge

Wetted Width (m):	1.0	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.19	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.2

% Unstable: 80

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.8

Bars (%): 10 pH: 7.8 Braided: Y

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 220

Reach Symbol

(Fish)

(DV) (RB)

3 C 8.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3.

C2 LS=35%, RS=45%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 366 seconds over 150 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 13.0 C.

C7 This site has good rearing habitat with deep pools, boulder cover and LOD. It is a well shaded stream and there are spawning gravels in most pools. The stream is characterized by shallow riffles and runs with deep pools created by LOD.

C8 Moose sign was also noted.



Photo #: W-K-19, 21-Aug-97
Site #: W210, Looking upstream at the channel, note the abundant LOD



Photo #: W-K-20, 21-Aug-97
Site #: W210, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E230 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E230, Unit 12, SW of Canyon Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-8300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 1.0 MA **Date:** 21-Aug-97 **Time:** 10:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6303 .60705 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-22-12,13 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.7	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	162	MS
Gradient (%):	1.0	CL
Pool: 20 Riffle: 0 Run: 80 Other: 0		
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	0	GE

Specific Data

2.0	1.5	1.7	1.9	1.4	1.8
2.0	1.5	1.7	1.9	1.4	1.8
150	200	120	150	190	

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	0	0	30	20	30

Crown Closure % : 0 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: High

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.0

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV) (RB)

2 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m):

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): 60 Cond. (µmhos): 60

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 1%, RS = 1%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-200V, was 289 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 17.4.C.

C7 This creek flows through a sedge meadow. Some deep runs were noted.

C8 A moose was observed at this site.



Photo #: E-22-12, 20-Aug-97
Site #: E230, Looking upstream at the channel flowing through a meadow



Photo #: E-22-13, 21-Aug-97
Site #: E230, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E233

Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: E233, Unit 12, South of Canyon Creek | **Stream (Gaz.):** Unnamed | **Watershed Code:** 078-2000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | **Reach Length (km):** 2.8 MA | **Date:** 21-Aug-97 | **Time:** 12:00 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M. : 9 .6355 .60673 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** SJ \EM\ \ \ \ \ \ \ | **Photos:** E-22-16,17 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	10.1	HC
Av. Wet. Width (m):	10.2	HC
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	92	MS
Gradient (%):	1.0	CL
Pool: 10 Riffle: 0 Run: 90 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

10.0	9.7	11.2	10.6	10.3	8.7
10.9	9.7	11.2	10.6	10.3	8.7
100	80	92	110	76	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	0	0	10	20	30

Crown Closure % : 0 | Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 | Compaction: Low

Discharge

Wetted Width (m) :	11.0	MS
Mean Depth (m) :	1.0	MS
Mean Velocity (m/s) :	0.03	F
Discharge (m3/s) :	0.25	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV) (RB)

10 D 1.0 | F

(Width, Valley: Channel, Slope) | (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M | Flood Signs Ht(m): 0.3

Bars (%): 0 | pH: 7.4 | Braided: N

Water Temp. (°C): 17.0 | 02 (ppm):

Turb. (cm): 40 | Cond. (µmhos): 210

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S2

C2 LS = 4%, RS = 3%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-200V, was 372 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 17.3.C.

C7 This reach consists of a series of beaver ponds, with slow, turbid water. Some good instream vegetation, deep pool and cutbank rearing cover was observed at this site.



Photo #: E-22-16, 21-Aug-97
Site #: E233, Looking downstream at the channel and a crew member electrofishing



Photo #: E-22-17, 21-Aug-97
Site #: E233, Looking upstream at the channel and a crew member collecting a water sample

DFO/MoELP Stream Survey Form

Site Number: Y189

Reach No.: 1

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y189, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 000-0000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | **U.T.M.:** 9 .6465 .60742 | **Reach Length (km):** 1.0 MA | **Length surveyed (m):** 100.0 GE | **Date:** 21-Aug-97 | **Time:** 9:33 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐ | **Survey Crew:** JL UP\ \ \ \ \ \ \ | **Photos:** Y-21-22, 23 | **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	2.5	MS
C1	Av. Wet. Width (m):	1.5	MS
	Av. Max Riffle Depth (cm):	4	MS
	Av. Max Pool Depth (cm):	15	MS
	Gradient (%):	13.0	CL
	Pool: 20 Riffle: 60 Run: 20 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	5-15	GE
	%Stable:	10	GE

Specific Data

1.3	1.7	3.2	3.0	1.7	2.0
0.5	1.0	2.1	1.5	0.7	0.5
7	3	4	4	3	6
15	14	19	13	16	

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
	Gravels	Small (2-16mm):	20	10
		Large (16-64mm):		10
	Larges	Sm. cobble (64-128mm):	70	15
		Lge cobble (128-256mm):		15
		Bldr cobble (>256mm):		40
	Bedrock		0	0

D90 (cm): 70 | Compaction: Medium

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	35	0	10	15

Crown Closure % : 15 | Aspect : S

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.28	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.3

% Unstable: 20

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M | Flood Signs Ht(m): 0.4

Bars (%): 10 | pH: 7.5 | Braided: N

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 170

Reach Symbol

(Fish)

(RB)

3 D 13.0 | 1270

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3. One additional measurement was taken for both channel and wetted widths; 1.8 and 1.5.

C2 LS=24%, RS=26%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 259 seconds over 150 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.0 C.

C7 This is a high gradient stream consisting of pools connecting riffles and occaisional runs. Cover is provided by boulders, cutbanks and LOD. Marginal spawning habitat was observed in the sampling area.



Photo #: Y-21-22, 21/08/97
Site #: Y189, Looking upstream at the channel, note boulder cover



Photo #: Y-21-23, 21/08/97
Site #: Y189, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y190

Reach No.: 9

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y190, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 000-0000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | Reach Length (km): 1.0 MW | Date: 21-Aug-97 | Time: 10:37 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6464 .607441 | Length surveyed (m): 150.0 GE | Survey Crew: JL \JP\ \ \ \ \ \ \ | Photos: Y-21-24, Y-22-1,2 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.1	MS
Av. Wet. Width (m):	1.9	MS
Av. Max Riffle Depth (cm):	24	MS
Av. Max Pool Depth (cm):	25	MS
Gradient (%):	9.0	CL
Pool: 20 Riffle: 10 Run: 65 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

2.5	1.8	2.7	2.6	1.5	1.4
2.5	1.5	2.2	2.5	1.2	1.3
6	32	35			
20	21	43	17		

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	30	20	5	10	20

Crown Closure % : 25 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		20
	Lge cobble (128-256mm):	50	20
	Bldr cobble (>256mm):		10
Bedrock		10	10

D90 (cm): Compaction: High

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.24	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.3

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

2 D 9.0 | 1351

(Width, Valley: Channel, Slope) | (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M | Flood Signs Ht(m): 0.4

Bars (%): 15 | pH: 7.4 | Braided: Y

Water Temp. (°C): 10.5 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 180

Obstructions

C	Height (m)	Type	Location
	0	BD	0.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3.

C2: LS=31%, RS=22%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 292 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7: This stream has good habitat with boulder, LOD, cutbank and pool cover. The substrate is mostly larges, but there are some patches of spawning gravel in the lower gradient sections.



Photo #: Y-22-1, 21/08/97
Site #: Y190, Looking upstream at the channel, note LOD



Photo #: Y-22-2, 21/08/97
Site #: Y190, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W213 **Reach No.: 1**

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W213, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 100-4100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 0.5 MA **Date:** 21-Aug-97 **Time:** 15:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6437 .60704 **Length surveyed (m):** 150.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** None **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.9	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	0	GE
N Av. Max Pool Depth (cm):	0	GE
Gradient (%):	10.0	CL
Pool: 0 Riffle: 60 Run: 40 Other: 0		
% Side Channel:	10-40	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

0.5	0.7	1.0	1.1	1.0	0.8
0.5	0.6	0.7	0.2	0.9	0.6
1	1	1	1	1	1

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	50	50

Crown Closure % : 20 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 22 Compaction: Medium

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.19	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.1

% Unstable: 60

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.6 Braided: Y

Water Temp. (°C): 10.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 200

Reach Symbol

(Fish)

(RB) (DV)

1 C 10.0 | 5320

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=28%, RS=30%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 123 seconds over 150 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7 This stream flows out of a meadow. Little habitat and subterrainean flow were noted.

DFO/MoELP Stream Survey Form

Site Number: W214

Reach No.: 2

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W214, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 078-3000-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | Reach Length (km): 1.6 MA | Date: 21-Aug-97 | Time: 16:00 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6442 .60700 | Length surveyed (m): 130.0 GE | Survey Crew: DD \ P \ \ \ \ \ \ \ | Photos: W-L-6,7 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.0	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	14	MS
Gradient (%):	7.5	CL
Pool: 10 Riffle: 10 Run: 80 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	25	GE

Specific Data

1.1	0.9	1.4	0.8	1.2	0.6
1.1	0.9	0.5	0.9	1.3	0.9
1	1	2	2	1	1
10	11	17	12	14	22

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	30	0	10	40

Crown Closure % : 25 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	60	30
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 29 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.10	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (DV)

1 D 8.0	2260
(Width, Valley: Channel, Slope)	(Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 10 pH: 7.7 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=20%, RS=25

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 211 seconds over 130 meters. No fish were caught.

C5 No additional bank texture information.

C6 DO, pH and conductivity were not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7 This stream is characterized as mostly shallow runs with riffles over a shallow rocky area. The pools are mostly found in the runs with cutbank cover in which most of the best rearing would be found. The spawning substrate observed would appear marginal.



Photo #: W-L-6, 21-Aug-97
Site #: W214, Looking upstream at the channel



Photo #: W-L-7, 21-Aug-97
Site #: W214, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: Y192** **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y192, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 100-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 1.0 | MA **Date:** 21-Aug-97 **Time:** 12:10 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6463 .6072133 **Length surveyed (m):** 100.0 | GE **Survey Crew:** JP \JL \ \ \ \ \ \ \ **Photos:** Y-22-6,7 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	2.3	MS	2.4	2.5	2.1	2.5	2.1	2.3
Av. Wet. Width (m):	1.5	MS	1.0	1.8	1.6	2.1	0.6	2.0
Av. Max Riffle Depth (cm):	6	MS	7	5	4	6	7	
Av. Max Pool Depth (cm):	25	MS	20	37	27	20	23	
Gradient (%):	12.0	CL						

Pool: 15 Riffle: 25 Run: 45 Other: 15

% Side Channel: 0-10 | GE

% Debris Area: 5-15 | GE

%Stable: 20 | GE

Cover

Cover Total % : 30 | GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	10	40	5	15	5

Crown Closure % : 20 Aspect : E

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.25	F
Discharge (m3/s) :	0.02	F

Reach Symbol

(Fish)

(RB) (CT)

2 B 12.0	1252
(Width, Valley: Channel, Slope)	(Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	50	10
	Bldr cobble (>256mm):		30
Bedrock		20	20

D90 (cm): Compaction: High

Banks

Height (m): 0.1

% Unstable: 10

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 5 pH: 7.8 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 240

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 94%, RS = 40%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I-5-400V, was 151 seconds over 100 meters.

C5: Gravels, larges and bedrock make up the bank texture at this site.

C6: DO was not measured, the water was clear to the bottom. The air temperature at this site was 21.C.

C7: Some good rearing cover was observed at this site, including some deep pools and cutbanks. Spawning habitat is limited as the substrate is comprised mostly of boulders. The overstream vegetation is dominated by willow, but also includes spruce, paintbrush, monkshood and valerian.



Photo #: Y-22-6, 21/08/97
Site #: Y192, Looking upstream at the channel



Photo #: Y-22-7, 21/08/97
Site #: Y192, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y193

Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y193, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 100-3700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | **Reach Length (km):** 0.6 MA | **Date:** 21-Aug-97 | **Time:** 13:47 | **Agency:** TEC | **Access:** H | **Fish Card:** N | ☐ Field ☒ Historical ☐

U.T.M.: 9 646126 6071712 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** JP\UL\ \ \ \ \ \ \ | **Photos:** Y-22-10,11,12 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	1.0	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	23	MS
Gradient (%):	13.5	CL
Pool: 20 Riffle: 10 Run: 55 Other:	15	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

2.9	2.3	2.6	3.2	2.0	1.5
0.7	1.0	0.6	1.2	0.9	1.5
2	4	3	5	3	
13	26	32	16	28	

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	20	5
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	50	10
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		25
Bedrock		30	30

N D90 (cm): ☐ Compaction: High

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	25	30	0	10	10

Crown Closure %: 20 ☐ Aspect: W

Discharge

Wetted Width (m):	0.5	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.11	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 10

☐ Fines ☐ Gravels ☐ Larges ☐ Bedrock ☒

Confinement: FC

Valley : Channel Ratio | 2-5 |

Stage: M ☐ Flood Signs Ht(m): 0.5

Bars (%): 20 pH: 7.4 Braided: Y

Water Temp. (°C): 9.5 02 (ppm): ☐

Turb. (cm): ☐ Cond. (µmhos): 200

Reach Symbol

(Fish)

(RB) (CT)

2 B 14.0 | 0253

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

C	Height (m)	Type	Location
	3	C	0.3

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 50%, RS = 50%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I-5-400V, was 244 seconds over 200 meters.

C5: Gravels, larges and bedrock make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 21.C.

C7: Some cutbank, pool and LOD rearing cover was observed at this site. Spawning habitat is limited at this site. Surrounding herbs include monkshood, spruce,valerian and cow parsnip.



Photo #: Y-22-10, 21/08/97
Site #: Y193, Looking upstream at the channel



Photo #: Y-22-11, 21/08/97
Site #: Y193, Looking downstream at the channel



Photo #: Y-22-12, 21/08/97
Site #: Y193, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y194 — Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y194, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 100-3600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | **Reach Length (km):** 2.4 MA | **Date:** 21-Aug-97 | **Time:** 14:43 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M. : 9 .645173.6070883 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** JL \JP\ \ \ \ \ \ \ | **Photos:** Y-22-13,14,15 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	1.9	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	34	MS
Gradient (%):	9.0	CL
Pool: 15 Riffle: 20 Run: 60 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

3.0	2.7	2.0	2.2	2.2	2.5
2.6	2.2	1.5	2.0	1.9	1.3
6	7	5	6	5	
70	33	23	23	21	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	35	30	0	10	10

Crown Closure % : 20 | Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	50	20
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	40	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 61 | Compaction: High

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.35	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.2

% Unstable: 5

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (CT)

2 B 9.0 | 1540

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M | Flood Signs Ht(m): 0.8

Bars (%): 10 | pH: 7.6 | Braided: Y

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 220

Obstructions

C	Height (m)	Type	Location
	3	C	0.2

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 45%, RS = 25%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 288 seconds over 200 meters.

C5 Fines and gravels make up the bank texture at this site.

C6 DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 18.C.

C7 This stream has some good LOD and boulder rearing cover, as well as some spawning gravels. There are a number of small cascades over boulders at this site as well as smaller debris jams.



Photo #: Y-22-13, 21/08/97
Site #: Y194, Looking upstream at the channel



Photo #: Y-22-14, 21/08/97
Site #: Y194, Looking downstream at the channel



Photo #: Y-22-15, 21/08/97
Site #: Y194, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y195 **Reach No.:** 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y195, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 2.2 MA **Date:** 21-Aug-97 **Time:** 16:17 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M.: 9 .6421 .60729 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL \JP\ \ \ \ \ \ \ **Photos:** Y-22-16,17 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	26	MS
Gradient (%):	7.0	CL
Pool: 30 Riffle: 20 Run: 50 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	15	GE

Specific Data

1.3	1.0	1.1	1.4	1.7	1.9
0.6	0.9	0.8	0.7	0.4	0.5
3	4	2	5	3	2
33	12	24	35	25	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	40	10	0	10	10

Crown Closure % : 0 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.32	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (CT)

1 D 7.0 | 3430

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 10 pH: 7.3 Braided: Y

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4

C2: The side slopes were not measured.

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-500V, was 292 seconds over 250 meters.

C5: Fines and gravels make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The mean air temperature on this day was 17.3.C.

C7: A logging road runs through the creek, which flows through a cutblock in this reach. Riparian cover is limited to herbs including fireweed, horsetail and willow. High siltation and numerous debris jams were noted in the channel. Suitable fish habitat is limited in the sampling area.



Photo #: Y-22-16, 21/08/97
Site #: Y195, Looking upstream at the channel



Photo #: Y-22-17, 21/08/97
Site #: Y195, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: RYAN 74 Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 74, Unit 12, 250 m N of Canyon Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-8000-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 0.3 MA **Date:** 20-Sep-96 **Time:** 11:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6225 .60740 **Length surveyed (m):** 200.0 GE **Survey Crew:** RH \JL \ \ \ \ \ \ \ **Photos:** B-7-21,22,23 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.3	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	10.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	5-15	GE
	%Stable:	20	GE

Specific Data

1.2 1.4 1.1 1.4 1.1 1.4

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	10	0	60	20

Crown Closure % : 30 Aspect : SW

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
	Gravels	Small (2-16mm):	40	15
		Large (16-64mm):		25
	Larges	Sm. cobble (64-128mm):	50	20
		Lge cobble (128-256mm):		15
		Bldr cobble (>256mm):		15
	Bedrock		0	0

D90 (cm): 29 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (DV)

1 C 10.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location
	8	F	0.3

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C2 LS = 35%, RS = 45%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished as it was dry at the time of sampling.

C5 Lat N 54 47' 55", Long W 127 05' 38.2"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.9°C

C8 No additional fish habitat information.

C9 The impassable 8 meter falls on this stream separates the two reaches.

C1 S4

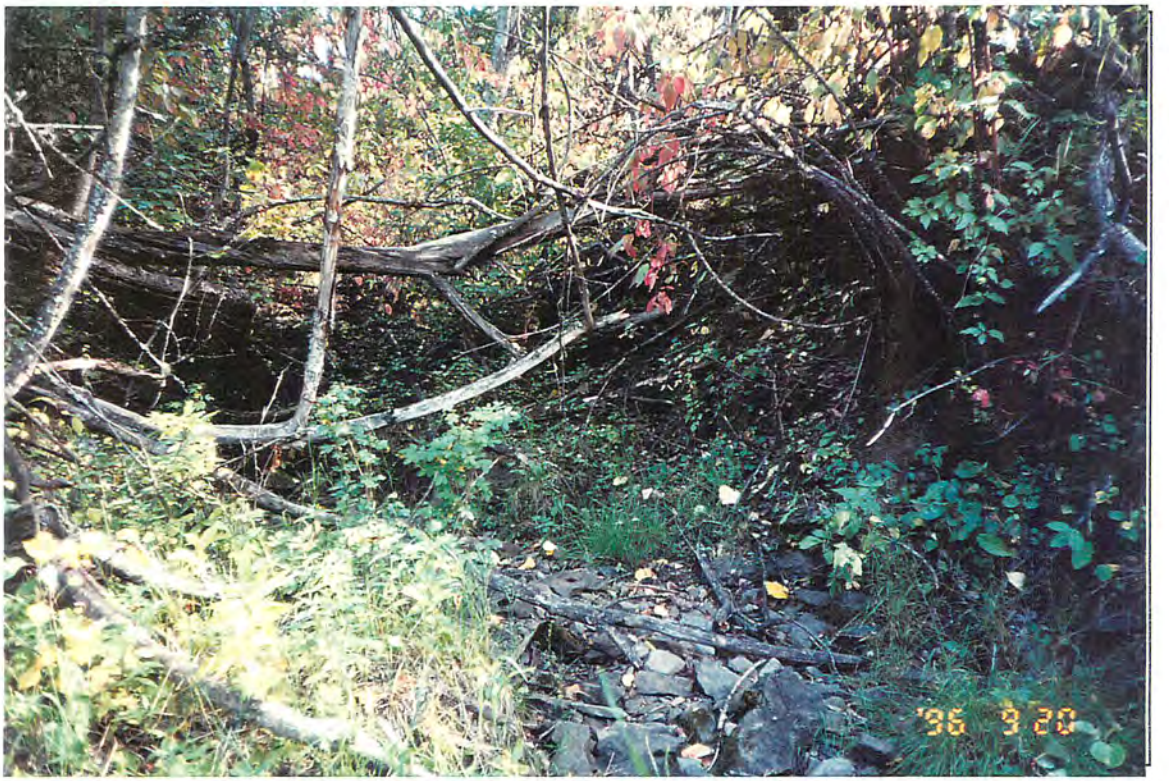


Photo #: B-7-21, 1996/09/20
Site #: R74, Looking upstream.



Photo #: B-7-22, 1996/09/20
Site #: R74, Looking downstream.



Photo #: B-7-23, 1996/09/20
Site #: R74, Waterfall between reach 1 and reach 2.

DFO/MoELP Stream Survey Form

Site Number: HASLETT 107 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: HASLETT 107, Unit 12 , see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 480-6972-427-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 0.8 MA **Date:** 21-Aug-96 **Time:** 12:47 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6411 .60743 **Length surveyed (m):** 300.0 GE **Survey Crew:** JH \HK \ \ \ \ \ \ \ **Photos:** H-7-19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	8	MS
Av. Max Pool Depth (cm):	32	MS
Gradient (%):	6.0	CL
Pool: 25 Riffle: 25 Run: 50 Other:	0	
% Side Channel:	0	GE
% Debris Area: 10		GE
%Stable:	65	GE

Specific Data

1.6	1.5	1.1	1.3	1.2	1.5
1.1	1.3	1.2	1.3	1.0	1.4
8	10	7	0	0	0
29	35	23	40	0	0

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	0	10	40	20

Crown Closure % : 25 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.01	F
Discharge (m3/s) :	0.02	f

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

DV

1 E 6.0 | 6310

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): 40 Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	128	J	R			EL

Comments

C1 S4

C2 LS = 4%; RS = 2%

C3 No FSZ noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model was 306 seconds over 150 m

C5 Lat 54 47 46.6 Long 126 48 14.9

C6 Small creek, no apparent eroion problems. This reach has some good rearing cover, spawning habitat is limited however.

C7 The mean air temperature on this day was 10.9°C



Photo #: H-7-19, 1996/08/21
Site #: H107, Looking downstream, rust-coloured substrate.



Photo #: H-7-20, 1996/08/21
Site #: H107, Looking upstream, banks covered in horsetail.

DFO/MoELP Stream Survey Form

Site Number: RYAN 89 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 89, Unit 12, 1.6km NW of Llama L., see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-3254-005-190-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 2.4 MA **Date:** 22-Sep-96 **Time:** 10:44 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6356 .60715 **Length surveyed (m):** 100.0 GE **Survey Crew:** RH \UL \ \ \ \ \ \ **Photos:** A-2-24 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.7	MS
Av. Wet. Width (m):	2.1	MS
Av. Max Riffle Depth (cm):	13	MS
Av. Max Pool Depth (cm):	34	MS
Gradient (%):	5.0	CL
Pool: 30 Riffle: 60 Run: 10 Other:	0	
% Side Channel:	>40	GE
% Debris Area:	0-5	GE
%Stable:	70	GE

Specific Data

2.0	2.7	2.5	2.1	4.0	3.0
2.0	2.1	1.9	1.8	1.8	3.0
12	17	10			
36	32				

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	10	0	60	10

Crown Closure % : 60 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 40 Compaction: High

Discharge

Wetted Width (m) :	1.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.48	F
Discharge (m3/s) :	0.07	F

Banks

Height (m): 0.5

% Unstable: 0

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Reach Symbol

(Fish)

DV

3 C 5.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0

Bars (%): 30 pH: Braided: Y

Water Temp. (°C): 3.0 02 (ppm):

Turb. (cm): 36 Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	60	J		R		EL

Comments

C1: S3

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort, using a Smithroot 15 A model, was 200 seconds over 120 meters.

C5: Lat N 54 46' 26.1", Long W 126 53' 24.3"

C6: No additional bank texture information.

C7: DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8: No additional fish habitat information.



Photo #: A-2-24, 22-Sep-96
Site #: R89, Looking downstream past gravel bar.

DFO/MoELP Stream Survey Form

Site Number: RYAN 92 Reach No.: 1

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 92, Unit 12, see C5. Stream (Gaz.): Unnamed Watershed Code: 078-4100-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 Reach Length (km): 0.8 MA Date: 22-Sep-96 Time: 13:00 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6413 .60743 Length surveyed (m): 200.0 GE Survey Crew: RH \UL\ \ \ \ \ \ \ Photos: A-2-32,33 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	10	MS
Av. Max Pool Depth (cm):	27	MS
Gradient (%):	3.0	CL
Pool: 25 Riffle: 45 Run: 30 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

1.6	1.0	1.4	1.1	0.6	1.0
1.6	1.0	1.4	1.1	0.6	1.0
8	10	12			
40	30	12			

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	0	5	55	20

Crown Closure %: 50 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Discharge

Wetted Width (m):	0.5	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.32	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 5 pH: Braided: Y

Water Temp. (°C): 4.5 02 (ppm):

Turb. (cm): 40 Cond. (µmhos):

Reach Symbol

(Fish)

DV

1 D 3.0 | 3610

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	1	CV	0.3

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	170	A	S			EL

Comments

C1 S4

C2 LS = 3%, RS = 4%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model was 400 seconds over 200 meters. The Dolly Varden caught at this site had a red belly, orange spots on the sides of the body and was white on the dorsal surface.

C5 Lat N 54 47' 45", Long W 126 48' 8.4"

C6 No additional bank texture information.

C7 DO, pH, conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 No additional fish habitat information. The culvert at this road crossing could be a barrier to fish passage upstream. The channel contained orange algae in some areas.



Photo #: A-2-32, 22-Sep-96
Site #: R92, Dolly Varden caught by electrofishing.



Photo #: A-2-33, 22-Sep-96
Site #: R92, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: ARNE 20 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 20, Unit 12, S of Llama Lake, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-9300-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 | Reach Length (km): 2.8 MA | Date: 22-Sep-96 | Time: 9:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6349 .60716 | Length surveyed (m): 150.0 GE | Survey Crew: AKL\ HK\ \ \ \ \ \ \ | Photos: A-2-21,22,23 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.9	MS
	Av. Wet. Width (m):	0.6	MS
N	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	9	MS
	Gradient (%):	4.0	CL

Pool: 90 Riffle: 0 Run: 10 Other: 0

% Side Channel: GE

% Debris Area: 80 GE

%Stable: 95 GE

Specific Data

	1.0	0.7	1.1	0.8	0.9	1.0
	0.6	0.4	0.8	0.5	0.6	0.5
	24	5	6	8	3	

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	80	0	20	0	0

Crown Closure %: 2 Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 4.0 02 (ppm):

Turb. (cm): 24 Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 E 4.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished as there was no habitat to shock.

C5 Lat N 54 46' 24.5", Long W 126 54' 10.1"

C6 No additional bank texture information. Logging was carried out right down to the banks of this stream, downstream of the road crossing.

C7 DO, pH, conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 No fish habitat exists at this site. The riparian vegetation is thick upstream of the road crossing.



Photo #: A-2-21, 22-Sep-96
Site #: A20, Looking upstream.



Photo #: A-2-22, 22-Sep-96
Site #: A20, Looking downstream.



Photo #: A-2-23, 22-Sep-96
Site #: A20, Looking upstream.

DFO/MoELP Stream Survey Form **Site Number:** ARNE 25 **Reach No.: 2**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 25, Unit 12, North of Mc Donell Lake, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-9000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 1.7 MA **Date:** 22-Sep-96 **Time:** 16:49 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6335 .60693 **Length surveyed (m):** 100.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-3-1,2 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.6	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	10.0	CL
Pool: 0 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	80	GE

Specific Data

0.5 0.4 0.6 0.4 0.7 1.0

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	15	0	25	60	0

Crown Closure % : 40 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	50	40
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 14 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry Flood Signs Ht(m): 0.2

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 E 10.0 | 4510

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: This dry site was not electrofished.

C5: Lat N 54 45' 15", Long W 126 55' 42"

C6: The banks at this site contain both fines and gravels.

C7: Water quality was not evaluated at this dry site. The mean air temperature on this day was 3.0°C

C8: No fish habitat was observed at this site. This stream, which flows into a swamp, has a very small channel, low banks, and runs over the forest floor when wet.



Photo #: A-3-1, 22-Sep-96
Site #: A25, Looking upstream in dry channel.



Photo #: A-3-2, 22-Sep-96
Site #: A25, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: RYAN 75 Reach No.: 2

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 75, Unit 12, approx. 200m from Canyon Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-8300-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 1.2 MA **Date:** 20-Sep-96 **Time:** 12:20 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6240 . 60734 **Length surveyed (m):** 200.0 GE **Survey Crew:** RH \JL \ \ \ \ \ \ \ **Photos:** B-7-24 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	0.4	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	11.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	0-5	GE
	%Stable:	0	GE

Specific Data

Cover

Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	5	0	80	15

Crown Closure % : 10 Aspect : SW

Bed Material

	Fines	Clay, silt, sand (<2mm):	40	40
	Gravels	Small (2-16mm):	30	15
		Large (16-64mm):		15
	Larges	Sm. cobble (64-128mm):	30	10
		Lge cobble (128-256mm):		10
		Bldr cobble (>256mm):		10
	Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Obstructions

C	Height (m)	Type	Location
	1	CV	0.1

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.4

Bars (%): 0 pH: Braided: N

Water Temp. (°C): O2 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

I D 11.0 | 4330

(Width, Valley: Channel, Slope) (Bed Material)

Comments

C1 S6

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished as it was dry on the sampling day.

C5 Lat N 54 47' 47.6", Long W 127 04' 15"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.9°C

C8 The culvert prevents fish passage upstream of the road crossing. However, the stream could be fish bearing below the road.

C9 The channel moves underground in many areas above the road.



Photo #: B-7-24, 1996/09/20
Site #: R75, Looking upstream through grass swale.

DFO/MoELP Stream Survey Form **Site Number:** RYAN 76 **Reach No.: 1**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 76, Unit 12, N of Canyon Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-8400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 1.2 MA **Date:** 20-Sep-96 **Time:** 13:40 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6239 . 60731 **Length surveyed (m):** 200.0 GE **Survey Crew:** RH \JL \ \ \ \ \ \ \ **Photos:** R-5-1,2,3 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.1	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	11.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	5	0	50	40

Crown Closure % : 10 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	25	10
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	65	10
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		40
Bedrock		0	0

D90 (cm): 60 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

I D 11.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.4

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location
	1	C	0.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6

C2 LS = 3%, RS = 40%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished as it was dry at the time of sampling.

C5 Lat N 54 47' 23", Long W 127 04' 22"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 4.9°C

C8 No additional fish habitat information.

C9 The steep cascade noted at this site would be a barrier to fish passage upstream.

I This reach flows through farmland.



Photo #: R-5-1, 1996/09/20
Site #: R76, Looking upstream through grassy area.



Photo #: R-5-2, 1996/09/20
Site #: R76, Looking downstream.



Photo #: R-5-3, 1996/09/20
Site #: R76, Cascade when there is water.

DFO/MoELP Stream Survey Form

Site Number: RYAN 88 **Reach No.: 2**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 88, Unit 12, s of Canyon Cr., see C5 **Stream (Gaz.):** Unnamed **Watershed Code:** 077-8400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 2.0 MW **Date:** 22-Sep-96 **Time:** 9:45 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6319 .60702 **Length surveyed (m):** 100.0 GE **Survey Crew:** RH UL \ \ \ \ \ \ \ **Photos:** None **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.6	MS
Av. Wet. Width (m):	0.5	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	26	MS
Gradient (%):	3.0	CL
Pool: 40 Riffle: 40 Run: 20 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	100	GE

Specific Data

0.5	0.3	0.6	0.5	1.0	0.7
0.2	0.4	0.7	0.5	0.6	0.5
1	2	1			
16	29	34			

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	5	0	0	45	10

Crown Closure % : 90 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	90	90
Gravels	Small (2-16mm):	10	10
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 1 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.03	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: CO

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 0 pH: Braided: Y

Water Temp. (°C): 4.0 02 (ppm):

Turb. (cm): 34 Cond. (µmhos):

Reach Symbol

(Fish)

NF

I A 3.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 2%, RS = 3%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model, was 100 seconds over 25 square meters. There was liitle available habitat to shock as the channel disappeared 50 m below the road.

C5 Lat N 54 45' 42", Long W 127 57' 02"

C6 No additional bank texture information.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 This site does not provide suitable fish habitat.

DFO/MoELP Stream Survey Form

Site Number: RYAN 90 **Reach No.: 2**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 90, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-9200-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 0.8 MA **Date:** 22-Sep-96 **Time:** 11:35 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6388 .60715 **Length surveyed (m):** 150.0 GE **Survey Crew:** RH \ JL \ \ \ \ \ \ \ **Photos:** A-2-27 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.7	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	21	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 5 Run: 85 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	90	GE

Specific Data

0.7	0.5	0.4	0.8	1.1	0.5
0.7	0.5	0.4	0.8	1.1	0.5
5					
26	20	16			

Cover

Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	20	0	5	45	25

Crown Closure %: 80 Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):	95	95
Gravels	Small (2-16mm):	5	5
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 1 Compaction: Low

Discharge

Wetted Width (m):	0.3	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.11	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 2.5 02 (ppm):

Turb. (cm): 26 Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 B 2.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 2%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model, was 400 seconds over 200 meters.

C5 Lat N 54 46' 28.1", Long W 126 50' 34.2"

C6 No additional bank texture information.

C7 DO, pH, conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8 The channel diappears 34 meters downstream of the road.



Photo #: A-2-27, 22-Sep-96
Site #: R90, Looking upstream.

DFO/MoELP Stream Survey Form

Site Number: W212

Reach No.: 4

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W212, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 078-3100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | **Reach Length (km):** 3.2 MA | **Date:** 21-Aug-97 | **Time:** 13:20 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M. : 9 .6438 .60711 | **Length surveyed (m):** 200.0 GE | **Survey Crew:** DD \UP\ \ \ \ \ \ \ | **Photos:** W-L-24,,25,W-L-3,4,5 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	5.1	MS
Av. Wet. Width (m):	4.4	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	34	MS
Gradient (%):	4.0	CL
Pool: 20 Riffle: 40 Run: 30 Other:	10	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	10	GE

Specific Data

5.0	5.0	5.4	5.5	4.6	5.0
5.5	4.4	5.1	3.9	3.9	3.8
3	2	3	5	5	6
19	22	51	29	38	47

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	40	30	0	0	10

Crown Closure % : 10 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		10	10

D90 (cm): 120 Compaction: Medium

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.46	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.3

% Unstable: 75

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 1

Bars (%): 70 pH: 7.8 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 300

Reach Symbol

(Fish)

NF

5 B 4.0 | 2251

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S5.

C2 LS=60%, RS=60%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 200V, was 611 seconds over 200 meters.

C5 No additional bank texture information.

C6 DO was not mesured at this site, the water was clear to bottom. The air temperature at this site was 13.5 C.

C7 There is good rearing habitat here in the way of pools, LOD and boulder cover. Most of the pools have spawning gravels. The stream is characterized by shallow riffles with deep pools created by LOD. More intensive sampling in recommended.



Photo #: W-L-3, 21-Aug-97
Site #: W212, Looking upstream at a 5m falls barrier and a number of cascades



Photo #: W-L-4, 21-Aug-97
Site #: W212, Looking upstream at the channel



Photo #: W-L-5, 21-Aug-97
Site #: W212, Looking downstream at the channel and a debris jam

DFO/MoELP Stream Survey Form

Site Number: W215 **Reach No.: 2**

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W215, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 **Reach Length (km):** 2.5 MA **Date:** 21-Aug-97 **Time:** 16:30 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .644260.735 **Length surveyed (m):** 150.0 GE **Survey Crew:** DD UP \ \ \ \ \ \ \ **Photos:** W-L-8,9 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.6	MS
Av. Wet. Width (m):	0.3	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	10	MS
Gradient (%):	17.0	CL
Pool: 10 Riffle: 70 Run: 20 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	80	GE

Specific Data

0.6	0.9	0.8	0.5	0.5	0.6
0.4	0.4	0.2	0.1	0.4	0.3
1	1	1	1	1	1
10	16	16	7	8	6

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	10	0	20	40

Crown Closure % : 40 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	60	30
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 26 Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.15	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.1

% Unstable: 29

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 10 pH: 7.6 Braided: Y

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 200

Reach Symbol

(Fish)

NF

1 D 17.0 | 2260

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6.

C2 LS=22%, RS=15%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 78 seconds over 155 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 17.0 C.

C7 Rearing habitat is limted at this stage by low flow. Boulders provide cover, however subterrainean flow may pose several barriers to fish passage upstream.



Photo #: W-L-8, 21-Aug-97
Site #: W215, Looking upstream at the channel



Photo #: W-L-9, 21-Aug-97
Site #: W215, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W211

Reach No.: 1

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W211, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 078-3100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | **Reach Length (km):** 1.3 MA | **Date:** 21-Aug-97 | **Time:** 10:45 | **Agency:** TEC | **Access:** H | **Fish Card:** N | **Field** ☒ **Historical** ☐

U.T.M.: 9 .6413 .60710 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** DD \UP\ \ \ \ \ \ \ | **Photos:** W-K-21,22,23,W-L-1,2 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.5	MS
Av. Wet. Width (m):	2.1	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	43	MS
Gradient (%):	8.0	CL
Pool: 20 Riffle: 20 Run: 50 Other:	10	
% Side Channel:	>40	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

3.2	3.5	2.0	2.4	2.0	2.2
3.0	2.0	2.2	1.5	1.7	2.5
2	5	3	2	2	2
41	40	47	52	36	43

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	0	0	10	40

Crown Closure % : 30 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	60	20
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	20	15
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 9 Compaction: Medium

Discharge

Wetted Width (m) :	1.1	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.54	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.2

% Unstable: 80

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.9

Bars (%): 75 pH: 7.8 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 300

Reach Symbol

(Fish)

RB DV

3 C 8.0 | 2620

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	105-142	J	R			EL
	DV	1	65	J	R			EL

Comments

C1: S3.

C2: LS=17%, RS=12%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 301 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.0 C.

C7: This site is on a new side channel. There is lots of rearing and spawning habitat found in deep pools, LOD and deep cutbanks. There are lots of RB and DV in the old side channel.



Photo #: W-K-21, 21-Aug-97
Site #: W211, Looking upstream at the channel



Photo #: W-K-22, 21-Aug-97
Site #: W211, Looking downstream at the channel

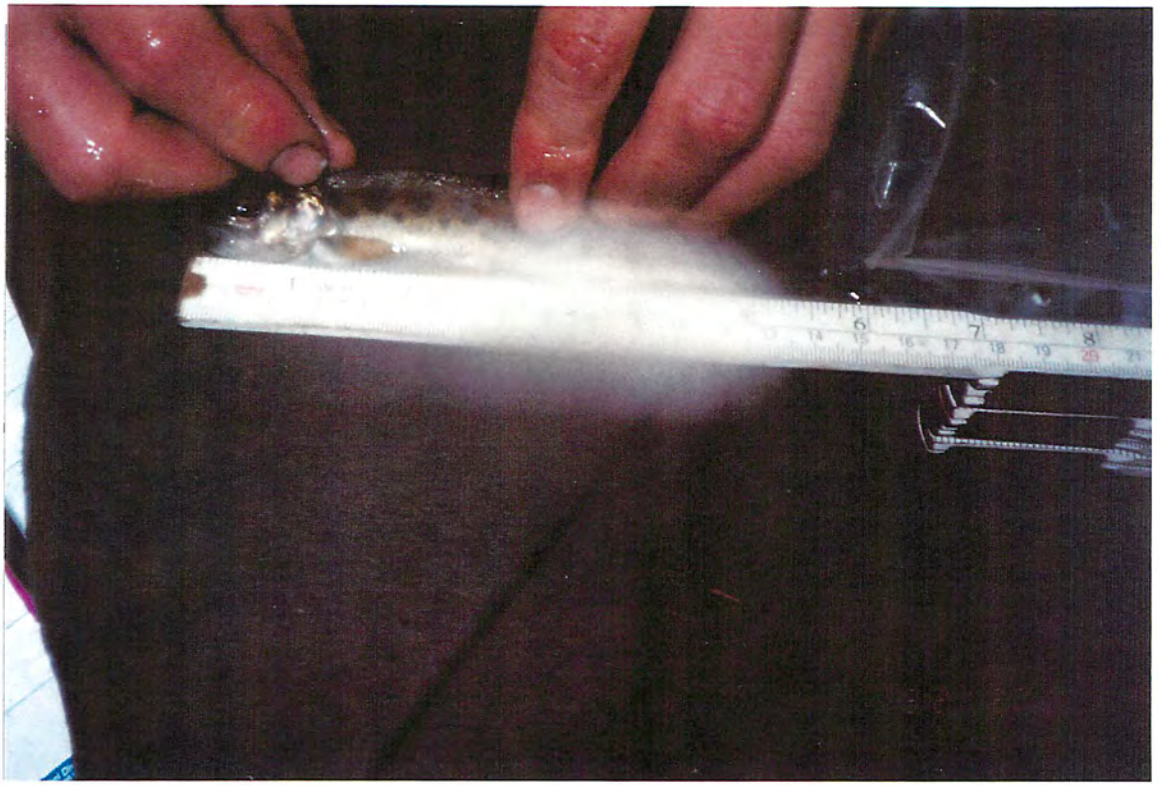


Photo #: W-K-23, 21-Aug-97
Site #: W211, Measuring fish with the meterstick

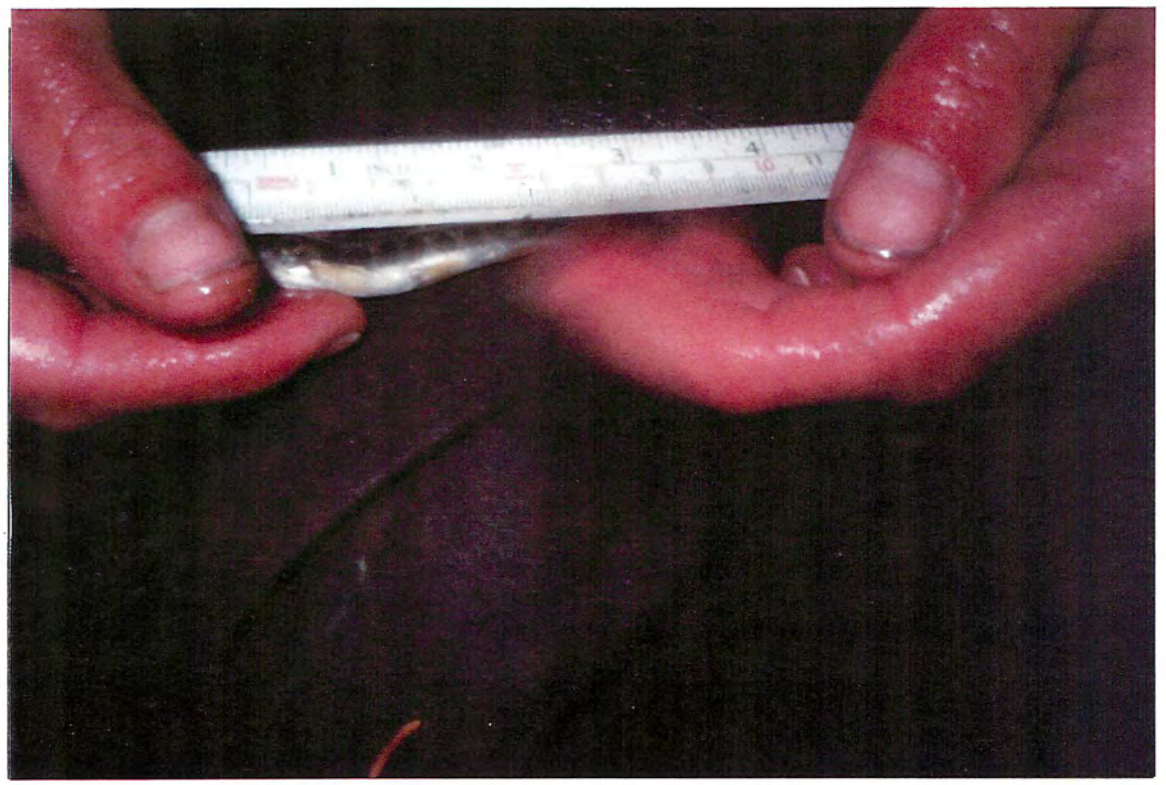


Photo #: W-K-24, 21-Aug-97
Site #: W211, Measuring fish with the meterstick



Photo #: W-K-25, 21-Aug-97
Site #: W211, Looking upstream at the confluence, note the cobble cover



Photo #: W-L-2, 21-Aug-97
Site #: W211, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W288

Reach No.: 1

Trib to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: W288, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 078-3100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | Reach Length (km): 1.3 MA | Date: 21-Aug-97 | Time: 11:30 | Agency: TEC | Access: H | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6412 .60709 | Length surveyed (m): 200.0 GE | Survey Crew: DD \JP\ \ \ \ \ \ \ | Photos: None | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	5.8	MS
Av. Wet. Width (m):	2.8	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	29	MS
Gradient (%):	7.0	CL
Pool: 20 Riffle: 20 Run: 50 Other:	10	
% Side Channel:	>40	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

5.6	5.8	5.5	6.1	6.6	5.1
2.2	2.2	3.0	2.3	4.0	2.8
4	5	4	3	5	4
20	32	27	33	28	34

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 120 | Compaction: Medium

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	20	0	10	20

Crown Closure %: 30 | Aspect: W

Discharge

Wetted Width (m):	2.1	MS
Mean Depth (m):	0.2	MS
Mean Velocity (m/s):	0.38	F
Discharge (m3/s):	0.12	F

Banks

Height (m): 0.3

% Unstable: 70

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio: 5-10

Stage: M | Flood Signs Ht(m): 1.2

Bars (%): 10 | pH: | Braided: Y

Water Temp. (°C): 9.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

RB DV

6 C 7.0 | 2350

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	105-142	J	R			EL
	DV	1	65	J	R			EL

Comments

C1: S2.

C2: LS=30%, RS=20%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model was I, 5, 300V, was 301 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO, pH and conductivity were not measured at this site, the water was clear to bottom. The mean air temperature on this day was 17.3 C.

C7: There is excellent rearing habitat here including overstream vegetation, deep pools, LOD and boulders. Spawning habitat was also observed in deep pools.

DFO/MoELP Stream Survey Form

Site Number: Y191 **Reach No.: 5**

Trib. to Canyon Cr.

TRITON Environmental Consultants Ltd.

Location: Y191, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 078-3100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 077 | Reach Length (km): 0.8 MA | Date: 21-Aug-97 | Time: 11:18 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6462 .6072550 | Length surveyed (m): 100.0 GE | Survey Crew: JP\JL\ \ \ \ \ \ \ | Photos: Y-22-3,4,5,8,9 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.6	MS
Av. Wet. Width (m):	2.6	MS
Av. Max Riffle Depth (cm):	8	MS
Av. Max Pool Depth (cm):	46	MS
Gradient (%):	5.0	CL
Pool: 20 Riffle: 10 Run: 60 Other: 10		
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

3.8	3.0	3.9	2.9	4.5	3.3
3.3	1.2	3.9	2.0	2.1	3.2
11	10	9	5	4	
55	24	38	54	61	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	0	45	5	20	5

Crown Closure % : 0 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	40	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		20
Bedrock		50	50

D90 (cm): Compaction: High

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.43	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.3

% Unstable: 5

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: CO

Valley : Channel Ratio 0-2

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 5 pH: 7.6 Braided: Y

Water Temp. (°C): 16.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Reach Symbol

(Fish)

TR

4 A 5.0 | 0145

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	TR	2	25	F	R			VO

Comments

C1: S3

C2: LS = 60%, RS = 45%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12B POW model, set at I-5-500V, was 781 seconds over 300 meters.

C5: Larges and bedrock make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 21.C.

C7: A falls is located downstream of this site, below the confluence with the tributary. Although the substrate is comprised mostly of bedrock, a fair amount of cover under boulders and bedrock outcroppings was noted. Deep pools also provide cover at this site. Spawning habitat is limited in this reach. The lake upstream may support resident populations, minnow trapping is recommended.



Photo #: Y-22-8, 21/08/97
Site #: Y191, Looking upstream at the channel



Photo #: Y-22-9, 21/08/97
Site #: Y191, Looking upstream at the channel



Photo #: Y-22-3, 21/08/97
Site #: Y191, Looking upstream at the channel, note boulder cover



Photo #: Y-22-4, 21/08/97
Site #: Y191, Looking downstream at the channel



Photo #: Y-22-5, 21/08/97
Site #: Y191, Looking upstream at the channel, small falls with pool

5.5 Coffin Creek (460-4727-000) (93 L 056, 93 L 066)

5.5.1 Sensitive Habitats and Barriers

Coffin Creek is 17.0 km long and is fed by 21 tributaries. Reaches 1 through 3 have low gradient and are unconfined. Reach 2 consists of Coffin Lake. Reach 4 has moderate gradient and is quite confined. A 10 meter falls was observed in reach 4, which delineates the upper limit of fish distribution in this system. Reach 5 is similar to reach 4, with canyon like confinement, while reach 6 has low gradient and is unconfined. The gradient and confinement increase again in reach 7. No sensitive habitats were identified by field crews working in this system. Coffin Creek was sampled at 14 locations, including reach 3 of the mainstem.

5.5.2 Fish summary Tables and Stream Classification

The historical information indicates the presence of: Dolly Varden, cutthroat trout, rainbow trout, mountain whitefish, long nose sucker and largescale sucker in Coffin Lake and cutthroat trout, Dolly Varden and rainbow trout at the confluence with the Bulkley River. Dolly Varden were caught by electrofishing in reach 3. No fish were caught above the 10 meter falls on the mainstem, resulting in a non fish bearing classification for all reaches above this barrier. A number of tributaries to Coffin Creek were sampled in this inventory, however fish were caught only in the mainstem. Several of the tributaries to Coffin Creek were dry or at low flow at the time of survey. For example sites E225 and E226 were dry and sites E227 and E228 were at low flow. Site E229, was at medium flow at the time of sampling, and sedimentation from an old cattle crossing was noted downstream of the road.

DFO/MoELP Stream Survey Form

Site Number: Y150 **Reach No.: 3**

Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y150, Unit 12; 2.0km SE of Coffin Lake **Stream (Gaz.):** Coffin Creek **Watershed Code:** 460-4727-000-000-000-000-000-000-000-000-0

Map #:	93 L 056	Reach Length (km):	2.3	MA	Date:	13-Aug-97	Time:	10:00	Agency:	TEC	Access:	V4	Fish Card:	N	Field ☒ Historical ☐
U.T.M. :	9 .6342 .60485	Length surveyed (m):	100.0	GE	Survey Crew:	JL UP\ \ \ \ \ \ \					Photos:	Y-17-5,6,6B,7	Air Photos:		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	4.0	MS	4.3	3.1	3.4	4.2	5.1	3.8
Av. Wet. Width (m):	2.4	MS	2.5	2.0	1.8	2.2	3.1	2.7
Av. Max Riffle Depth (cm):	4	MS	3	5	4	7	4	4
Av. Max Pool Depth (cm):	34	MS	33	42	38	36	35	21
Gradient (%):	7.0	CL						

Pool: 40 Riffle: 20 Run: 40 Other: 0

% Side Channel: 0 GE

% Debris Area: 0-5 GE

%Stable: 40 GE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 24 Compaction: High

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	20	0	20	20

Crown Closure % : 80 Aspect : N

Discharge

Wetted Width (m) :	2.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.33	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 10 pH: 7.1 Braided: N

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Reach Symbol

(Fish)

DV

4 C 7.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	10	F	3.1

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	6	137-170	A				EL

Comments

C1: S3.

C2: LS=11%, RS=22%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 500V, was 149 seconds over 60 meters. Shocking was stopped due to abundance of fish.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 25.0 C.

C7: The stream offers great boulder, pool and cutbank habitat. Potential spawning habitat was noted.

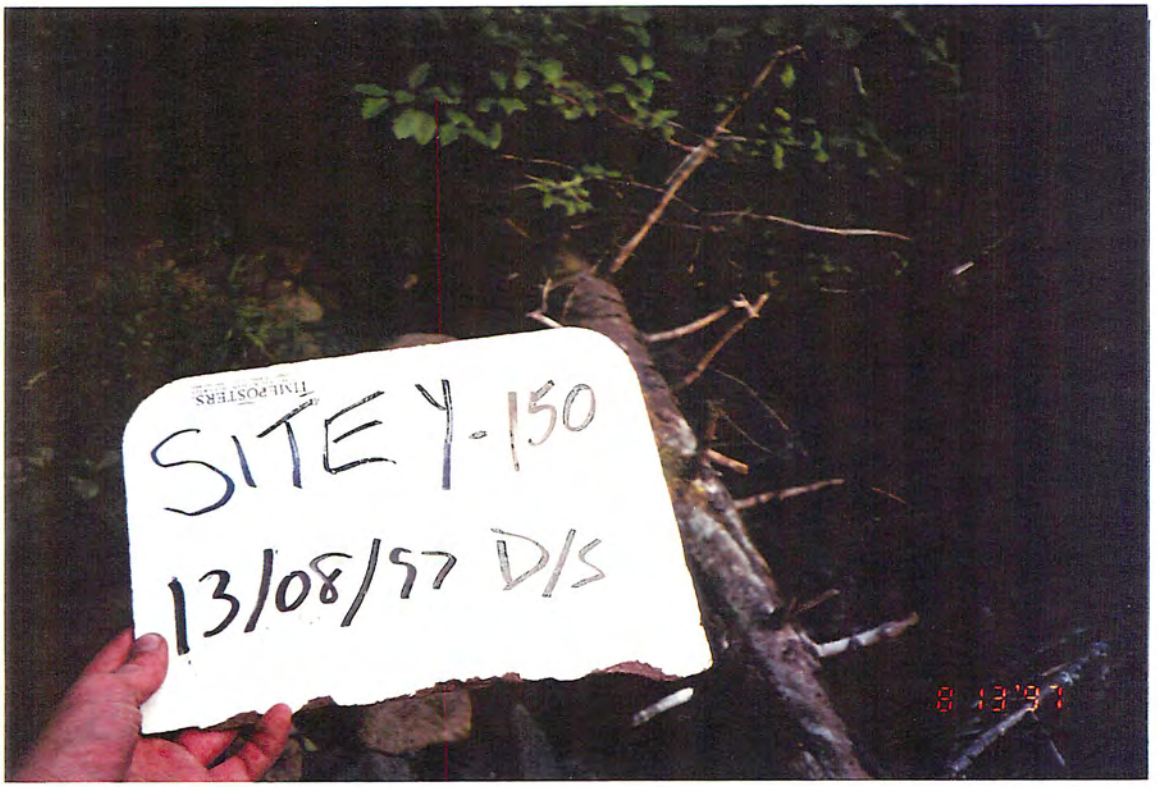


Photo #: Y-17-5, 13/08/97
Site #: Y150, Looking downstream at the channel

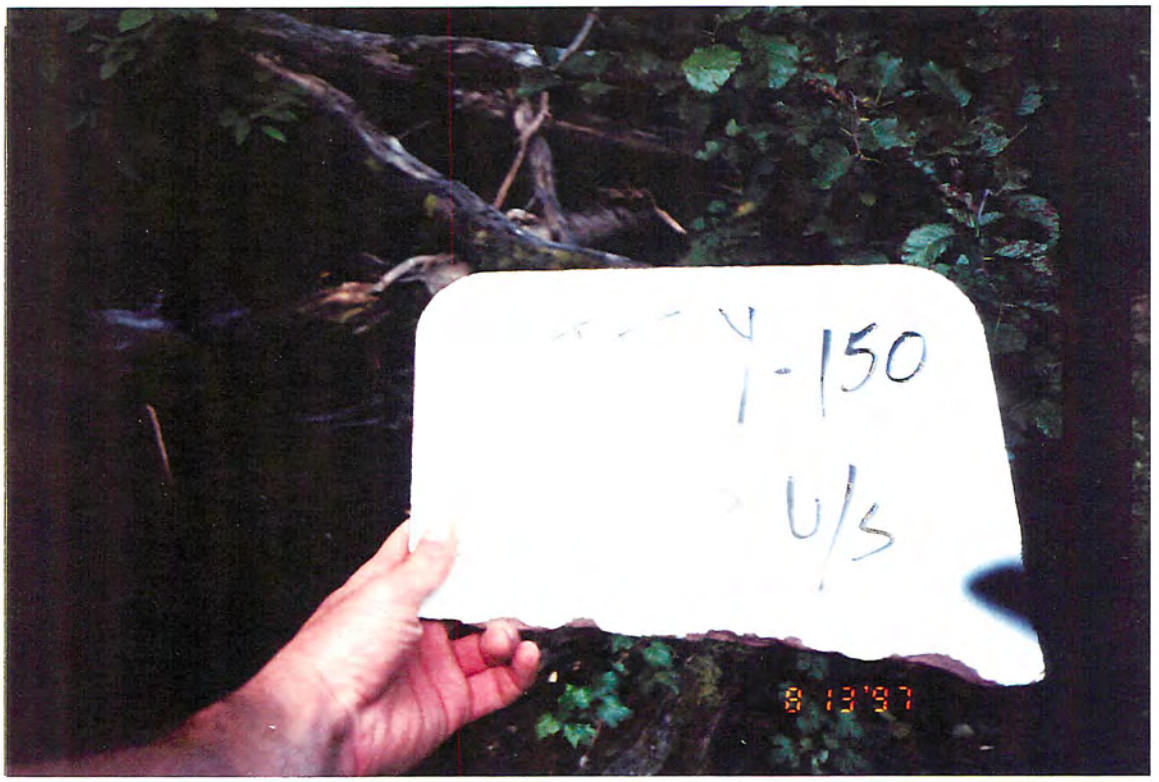


Photo #: Y-17-6, 13/08/97
Site #: Y150, Looking upstream at the channel

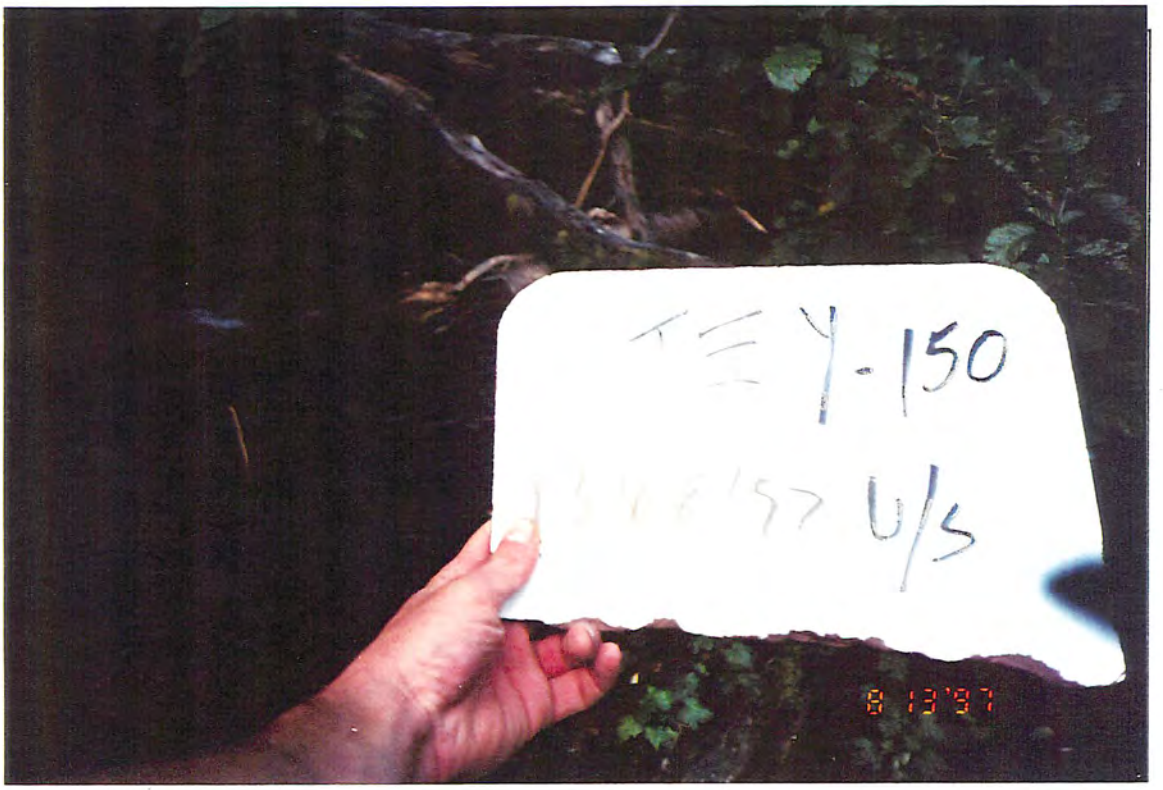


Photo #: Y-17-6B, 13/08/97
Site #: Y150, Looking upstream at the channel

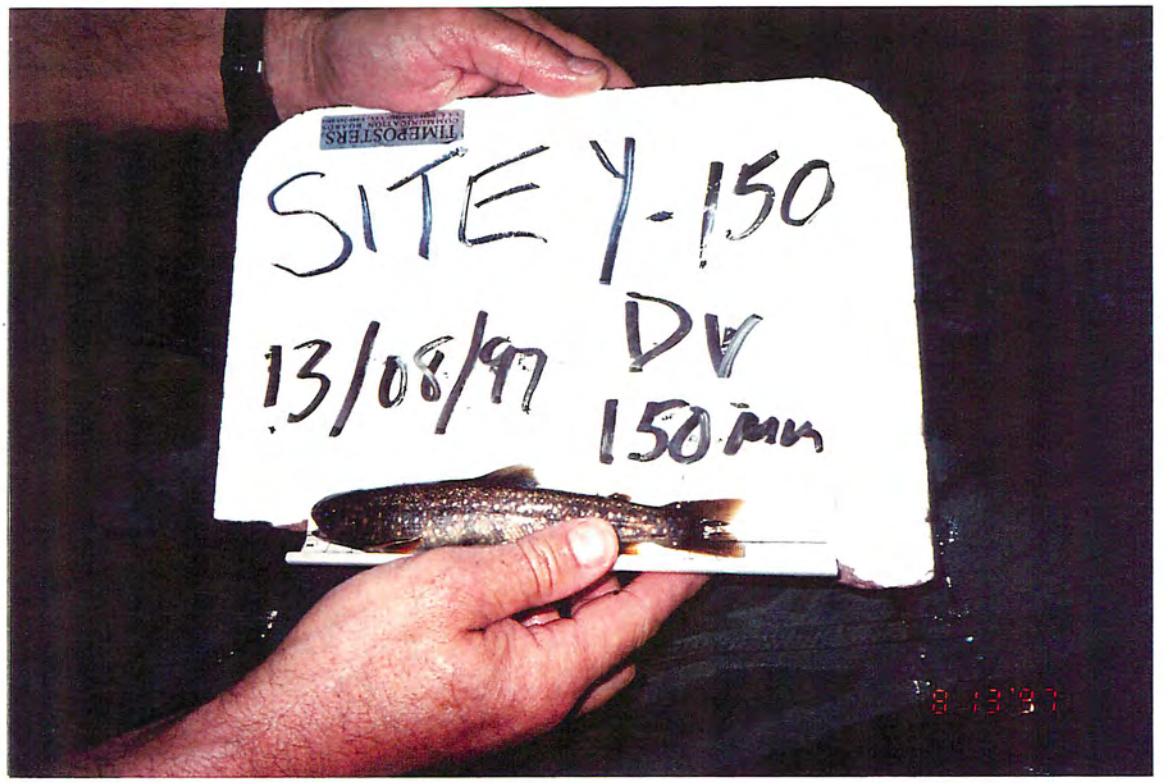


Photo #: Y-17-7, 13/08/97
Site #: Y150, Measuring fish on the fish board

DFO/MoELP Stream Survey Form

Site Number: Y153 **Reach No.:** 5

Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y153, Unit 12; 3.0km SSE from Coffin Lake **Stream (Gaz.):** Coffin Creek **Watershed Code:** 460-4247-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **Reach Length (km):** 1.8 MA **Date:** 13-Aug-97 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6342 .60471 **Length surveyed (m):** 250.0 GE **Survey Crew:** JL UP \ \ \ \ \ \ **Photos:** -12,13,14,15, Y-21-16,17 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.5	MS
Av. Wet. Width (m):	3.0	MS
Av. Max Riffle Depth (cm):	8	MS
Av. Max Pool Depth (cm):	36	MS
Gradient (%):	15.0	CL
Pool: 30 Riffle: 30 Run: 40 Other: 0		
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	10	GE

Specific Data

3.1	3.2	3.1	3.9	3.8	3.7
3.0	2.8	3.7	2.1	2.6	3.6
7	12	4	13	4	6
50	34	31	49	24	29

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	10	0	20	20

Crown Closure % : 20 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	70	20
	Lge cobble (128-256mm):		50
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 18 Compaction: Medium

Discharge

Wetted Width (m) :	2.7	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.23	F
Discharge (m3/s) :	0.05	F

Banks

Height (m): 0.2

% Unstable: 20

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

4 C 15.0 | 1270

(Width, Valley: Channel, Slope) | (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.1

Bars (%): 10 pH: 7.1 Braided: N

Water Temp. (°C): 19.0 02 (ppm):

Turb. (cm): 50 Cond. (µmhos): 80

Obstructions

C	Height (m)	Type	Location
	10	F	9.8

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S5.

C2: LS=10%, RS=29%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 600V, was 832 seconds over 250 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site. The mean air temperature on this day was 25.0 C.

C7: This stream is slightly turbid and flowing out of a wetland. There is ample cover in the form of LOD, deep pools, cutbanks and overstream vegetation. The spawning gravel is excellent and there is rearing in pools created by LOD. This reach has been adversely affected by a blown out culvert, which has blocked fish passage and created a wetland to the SW. The road has washed away and may be the cause of the turbidity. Some culvert maintenance is recommended.



Photo #: Y-17-12, 13/08/97
Site #: Y153, Looking upstream at the channel



Photo #: Y-17-13, 13/08/97
Site #: Y153, Looking upstream, note washed out culvert



Photo #: Y-17-14, 13/08/97
Site #: Y153, Looking upstream at the channel



Photo #: Y-17-15, 13/08/97
Site #: Y153, Looking downstream at the channel



Photo #: Y-21-16, 20/08/97
Site #: Y153, Looking upstream at waterfall

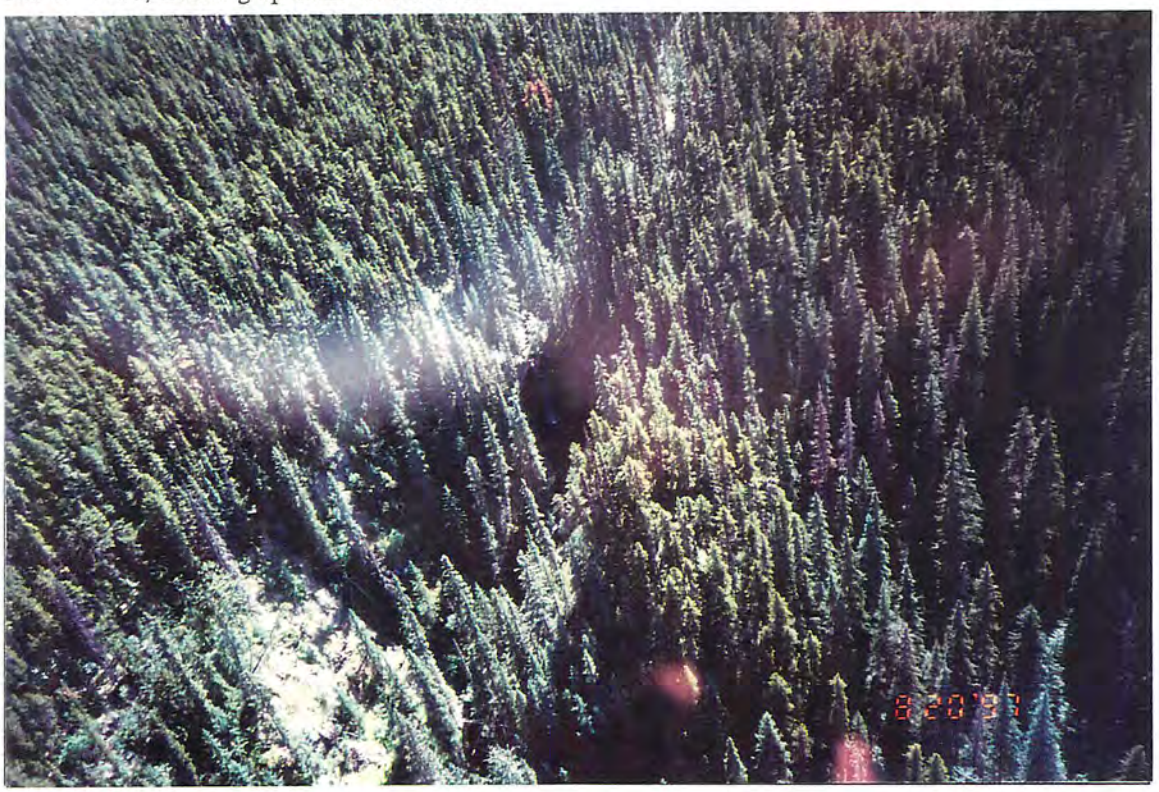


Photo #: Y-21-17, 20/08/97
Site #: Y153, Looking upstream at waterfall

DFO/MoELP Stream Survey Form

Site Number: Y184 **Reach No.:** 6

Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y184, Unit 12; 4.1km south of Coffin Lk **Stream (Gaz.):** Coffin Creek **Watershed Code:** 460-4726-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **U.T.M.:** 9 .6335 .60461 **Reach Length (km):** 2.5 MA **Length surveyed (m):** 100.0 GE **Date:** 20-Aug-97 **Time:** 10:40 **Agency:** TEC **Survey Crew:** JL UP \ \ \ \ \ \ \ **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐ **Photos:** Y-21-10,11 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.8	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	19	MS
Gradient (%):	4.0	CL
Pool: 20 Riffle: 10 Run: 70 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	60	GE

Specific Data

3.2	3.7	3.8	3.9	4.4	4.0
1.3	1.0	1.5	1.0	0.0	0.0
1	6	4	5	3	
14	17	16	10	26	31

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	25	5	0	25	15

Crown Closure % : 10 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	30	10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 24 Compaction: High

Discharge

Wetted Width (m) :	0.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.14	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 5

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.7

Bars (%): 50 pH: 7.3 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Reach Symbol

(Fish)

NF

4 D 4.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	10	F	3.1

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S5.

C2 LS=2%, RS=5%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 372 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 22.0 C.

C7 This creek is dry in the lower end of the surveyed area, but there is water above with good flow, deep pools with LOD, cutbanks and overstream vegetation cover.



Photo #: Y-21-10, 20/08/97
Site #: Y184, Looking upstream at the channel



Photo #: Y-21-11, 20/08/97
Site #: Y184, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y151 — Reach No.: 1

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y151, Unit 12; 1.4km south of Coffin Lk | Stream (Gaz.): Unnamed | Watershed Code: 066-8200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 | Reach Length (km): 1.5 MA | Date: 13-Aug-97 | Time: 11:20 | Agency: TEC | Access: V4 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6336 .60488 | Length surveyed (m): 100.0 GE | Survey Crew: JL UP \ \ \ \ \ \ | Photos: Y-17-8,9 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.5	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	18.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	5-15	GE
	%Stable:	20	GE

Specific Data: 0.6 0.5 0.7 0.4 0.7 0.4

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 24 | Compaction: Medium

Cover

Cover Total %: 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

Crown Closure %: 80 | Aspect: NE

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.0

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: Dry | Flood Signs Ht(m): 0.1

N Bars (%): 0 | pH: | Braided: N

N Water Temp. (°C): | O2 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

1 D 18.0 | 1630

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S4. The channel was dry at the time of sampling.

C2: LS=23%, RS=15%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished due to the channel being dry.

C5: No additional bank texture information.

C6: Water quality was not evaluated as the channel was dry.

C7: This stream is located running through a cutblock. The stream is dry and is a tributary to fish bearing Coffin Creek. This stream might be used for rearing in the spring when it has water.



Photo #: Y-17-8, 13/08/97
Site #: Y151, Looking upstream at the channel



Photo #: Y-17-9, 13/08/97
Site #: Y151, Looking downstream at the channel, note thick vegetation

DFO/MoELP Stream Survey Form

Site Number: Y152

Reach No.: 1

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y152, Unit 12; 0.8km south of Coffin Lk | **Stream (Gaz.):** Unnamed | **Watershed Code:** 066-7200-000-000-000-000-000-000-000-000-000-

Map #:	93 L 056	Reach Length (km):	0.8	MA	Date:	13-Aug-97	Time:	11:50	Agency:	TEC	Access:	V4	Fish Card:	N	Field	☒	Historical ☐
U.T.M.:	9 .6332 .60491	Length surveyed (m):	100.0	GE	Survey Crew:	JL\JP\ \ \ \ \ \ \					Photos:		Y-17-10,11		Air Photos:		

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	5.0	CL
Pool: 20 Riffle: 30 Run: 50 Other: 0		
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	40	GE

Specific Data

2.4	1.3	1.5	1.8	1.6	1.3
1.4	0.9	0.9	1.7	1.1	1.6
1	1	2	3	1	2
11	32	15	23	17	19

Cover

Cover Total %: 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Cthnk
30	10	0	0	20	40

Crown Closure %: 50 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	70	20
	Large (16-64mm):		50
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Discharge

Wetted Width (m):	1.2	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.19	F
Discharge (m3/s):	0.02	F

Banks

Height (m): 0.1

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio: 5-10

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 10 pH: 7.1 Braided: N

Water Temp. (°C): 14.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Reach Symbol

(Fish)

(DV)

2 C 5.0 | 3700

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3.

C2: LS=13%, RS=7%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 600V, was 289 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 25.0 C.

C7: Deep pools, runs and cutbanks provide cover for fish at this site. This tributary flows into fish bearing Coffin Creek.



Photo #: Y-17-10, 13/08/97
Site #: Y152, Looking upstream at the channel, note fine substrate

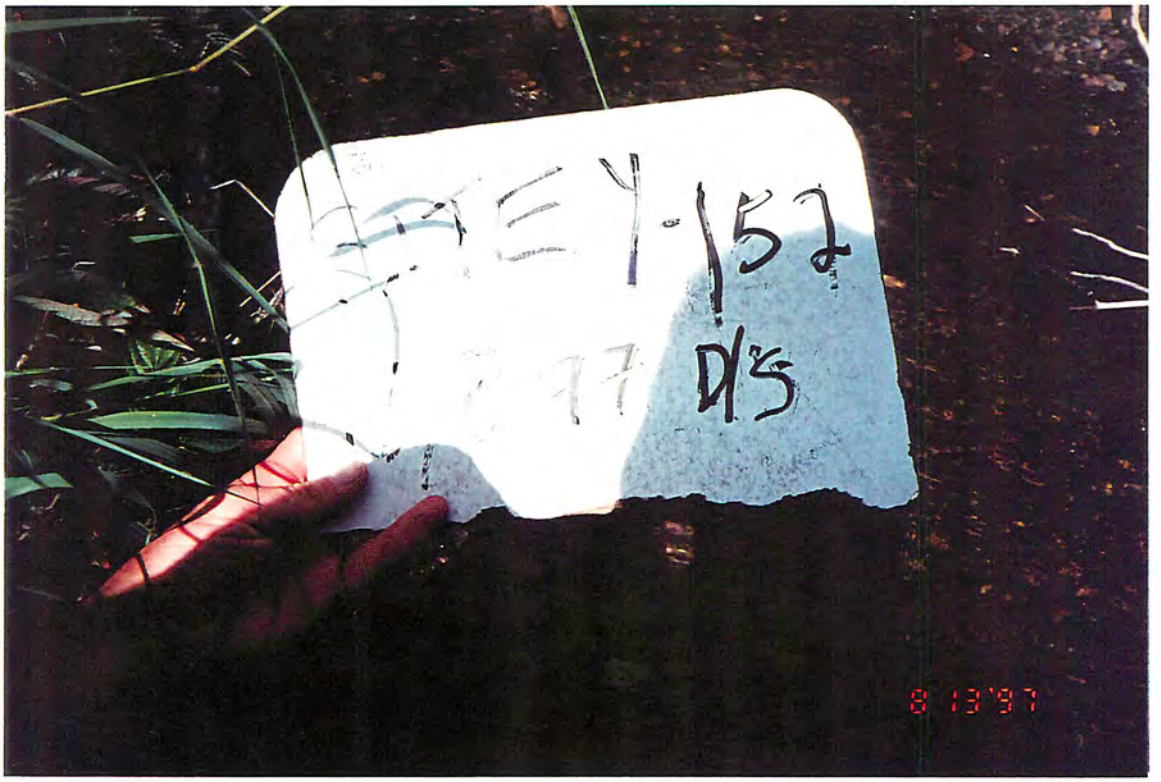


Photo #: Y-17-11, 13/08/97
Site #: Y152, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y186

Reach No.: 2

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y186, Unit 12; 1.7km SW of Coffin Lk | **Stream (Gaz.):** Unnamed | **Watershed Code:** 066-7200-000-000-000-000-000-000-000-000-000-

Map #:	93 L 056	Reach Length (km):	1.5	MA	Date:	20-Aug-97	Time:	12:54	Agency:	TEC	Access:	H	Fish Card:	N	Field ☒ Historical ☐
U.T.M.:	9 .6320 .604875	Length surveyed (m):	100.0	GE	Survey Crew:	JL \JP\ \ \ \ \ \ \							Photos:	Y-21-14,15	Air Photos:

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.1	MS	2.4	3.0	4.8	3.0	2.0	3.2
Av. Wet. Width (m):	1.2	MS	1.8	0.9	1.3	0.8	1.0	1.5
Av. Max Riffle Depth (cm):	5	MS	3	4	7	3	6	
Av. Max Pool Depth (cm):	16	MS	14	14	17	14	21	
Gradient (%):	15.0	CL						

Pool: 15 | Riffle: 30 | Run: 45 | Other: 10

% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	10	GE

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	30	0	20	20

Crown Closure % : 60 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		25
Larges	Lge cobble (128-256mm):	60	20
	Bldr cobble (>256mm):		15
Bedrock		0	0

D90 (cm): 36 Compaction: Medium

Discharge

Wetted Width (m) :	0.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.20	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.2

% Unstable: 80

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 1.4

Bars (%): 20 pH: 7.4 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 170

Reach Symbol

(Fish)

(RB) (CT)

3 C 15.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3.

C2: LS=10%, RS=14%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 486 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 24.5 C.

C7: This creek has some good boulder and pool cover. It is steep and covered with devils club and alder. Cobble was noted in the wooded area beside the channel.



Photo #: Y-21-14, 20/08/97
Site #: Y186, Looking upstream, note debris in channel



Photo #: Y-21-15, 20/08/97
Site #: Y186, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y187 **Reach No.:** 1

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y187, Unit 12; 4.2km south of Coffin Lk (at bend in road) **Stream (Gaz.):** Unnamed **Watershed Code:** 066-9300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **U.T.M.:** 9 .6339 .60458 **Reach Length (km):** 0.9 MA **Length surveyed (m):** 100.0 GE **Date:** 20-Aug-97 **Time:** 14:46 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐ **Survey Crew:** JL \JP\ \ \ \ \ \ \ **Photos:** Y-21-18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	2.0	CL
Pool: 20 Riffle: 10 Run: 70 Other: 0		
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

1.6	2.0	2.3	2.7	3.3	2.4
0.7	0.6	1.7	1.6	0.8	1.6
1	1	1	1	4	
13	9	23	19	11	

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Cbnk
15	40	0	5	20	20

Crown Closure % : 60 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	70	35
	Large (16-64mm):		35
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 10 Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.13	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.2

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.7

Bars (%): 30 pH: 7.0 Braided: Y

Water Temp. (°C): 12.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 110

Reach Symbol

(Fish)

NF

2 D 2.0 | 2710

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	10	F	3.1

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6.

C2: The side slopes were not measured.

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 225 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7: Small and large woody debris is quite abundant in the sampling area. LOD and cutbanks provide rearing cover and spawning gravels were noted.



Photo #: Y-21-18, 20/08/97
Site #: Y187, Looking upstream at the channel



Photo #: Y-21-19, 20/08/97
Site #: Y187, Looking downstream at the channel, note thick over-veg

DFO/MoELP Stream Survey Form

Site Number: Y188 Reach No.: 1

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y188, Unit 12; 3.6km south of Coffin Cr. Stream (Gaz.): Unnamed Watershed Code: 066-8800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 Reach Length (km): 1.3 MA Date: 20-Aug-97 Time: 16:11 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6335 .60465 Length surveyed (m): 100.0 GE Survey Crew: JL UP \ \ \ \ \ \ Photos: Y-21-20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.6	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	5	MS
Gradient (%):	1.0	CL
Pool: 80 Riffle: 0 Run: 20 Other:	0	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	10	GE

Specific Data

1.1	1.8	1.7	1.9	1.6	1.7
0.5	0.8				
8	3	3	5		

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 22 Compaction: Low

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	40	0	10	20	10

Crown Closure % : 80 Aspect : SE

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.3

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 6.8 Braided: N

Water Temp. (°C): 11.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 150

Reach Symbol

(Fish)

NF

2 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6. Not enough flow for discharge measurements.

C2: The side slopes were not measured.

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished, as there was not enough water.

C5: No additional bank texuture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature at this site was 26.0 C.

C7: Isolated pools make up most of the flow at this site. Rearing habitat consists of LOD, cutbanks, and overstream vegetation. The reach flows through a clearcut, heavily overgrown with fireweed.

C8: This site is located above a 10 m falls barrier.



Photo #: Y-21-20, 20/08/97
Site #: Y188, Looking upstream at the channel



Photo #: Y-21-21, 20/08/97
Site #: Y188, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y185 Reach No.: 1

Trib to Coffin Cr.

TRITON Environmental Consultants Ltd.

Location: Y185, Unit 12; 4.1km south of Coffin Cr | **Stream (Gaz.):** Unnamed | **Watershed Code:** 066-9300-000-000-000-000-000-000-000-000-000-

Map #:	93 L 056	**Reach Length (km):**	0.9	MA	**Date:**	20-Aug-97	**Time:**	11:45	**Agency:**	TEC	**Access:**	H	**Fish Card:**	N	**Field** ☒ **Historical** ☐
U.T.M. :	9 .6335 .60461	**Length surveyed (m):**	50.0	GE	**Survey Crew:**	JL \JP\ \ \ \ \ \ \					**Photos:**		Y-21-12,13	**Air Photos:**	

Channel Characteristics

	Av. Chan. Width (m):	1.9	MS
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	2.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	>15	GE
	%Stable:	20	GE

Specific Data

3.9 3.4 1.7 1.4 0.8 0.5

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	0	30	40	10

Crown Closure % : 20 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

N Bars (%): 10 pH: Braided: Y

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

2 D 2.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6. The channel was dry.

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones noted.

C4: This site was not electroshocked as the channel was dry.

C5: No additional bank texture information.

C6: Water quality was not evaluated as the channel was dry. The air temperature at this site was 22.0 C.

C7: This site was done by accident, further exploration revealed the main channel to be downstream Y187. This creek is dry at the mouth and has a muddy channel that runs through dense alder and willow. At regular flows, this could provide good rearing habitat with lots of overhead vegetation and instream vegetation cover. Cover was esitmated for regular flow.



Photo #: Y-21-12, 20/08/97
Site #: Y185, Looking upstream at the channel



Photo #: Y-21-13, 20/08/97
Site #: Y185, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E225 **Reach No.: 1**

Trib. to Coffin Lk.

TRITON Environmental Consultants Ltd.

Location: E225, Unit 12, West of the Bulkley River **Stream (Gaz.):** Unnamed **Watershed Code:** 066-8100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **Reach Length (km):** 1.3 MW **Date:** 20-Aug-97 **Time:** 12:30 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6320 .60495 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-21-25, E-22-1,2 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.9	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	3.0	CL

N Pool: 0 Riffle: 0 Run: 0 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	0	GE

Specific Data

1.0 0.9 1.1 0.8 0.9 1.0

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	0	0	80	0

Crown Closure % : 10 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Medium

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

1 D 3.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.4

Bars (%): 100 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 LS = 12%, RS = 15%

C3 No fisheries sensitive zones noted.

C4 This reach was not electrofished, it was dry at the time of sampling.

C5 No additional bank texture information.

C6 Water quality could not be measured, the mean air temperature on this day was 17.4.C.

C7 This small dry channel is filled with leaf litter and has an organic substrate. Fish movement in this system may be limited to between the larger creek downstream and the large pond upstream.



Photo #: E-22-1, 20-Aug-97
Site #: E225, Looking upstream at the channel, covered by vegetation



Photo #: E-22-2, 20-Aug-97
Site #: E225, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: E226** **Reach No.: 1**

Trib. to Coffin Lk.

TRITON Environmental Consultants Ltd.

Location: E226, Unit 12, West of Coffin Lk. Stream (Gaz.): Unnamed Watershed Code: 066-6100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 Reach Length (km): 0.7 MA Date: 20-Aug-97 Time: 13:30 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6314 .60535 Length surveyed (m): 100.0 GE Survey Crew: SJ \EM\ \ \ \ \ \ \ Photos: E-22-3,4 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	2.3	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	4.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	5-15	GE
	%Stable:	0	GE

Specific Data

2.1 3.0 2.0 2.2 2.4 2.3

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	80	55
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 25 Compaction: Medium

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	5	20	0	30	30

Crown Closure % : 90 Aspect : NE

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.7

Bars (%): 95 pH: 6.7 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Reach Symbol

(Fish)

(DV)

2 D 4.0 | 1180

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS = 4%, RS = 5%

C3 No fisheries sensitive zones noted.

C4 This dry site was not electroshocked.

C5 Fines and larges make up the bank texture at this site.

C6 Water quality could not be evaluated, the mean air temperature on this day was17.4.C.

C7 The lower 20 m of the creekflows as a trickle through gravel, otherwise the sampling area was dry. This channel is deeply incised and has a cobble substrate. The banks are lined with devil's club.



Photo #: E-22-3, 20-Aug-97
Site #: E226, Looking upstream at the channel, covered by dense riparian vegetation



Photo #: E-22-4, 20-Aug-97
Site #: E226, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E228 **Reach No.: 1**

Trib. to Coffin Lk.

TRITON Environmental Consultants Ltd.

Location: E228, Unit 12, NW of Coffin Lk. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-5300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 Reach Length (km): 2.5 MA Date: 20-Aug-97 Time: 15:30 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6311 .60511 Length surveyed (m): 100.0 GE Survey Crew: SJ \EM\ \ \ \ \ \ \ Photos: E-22-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	0.3	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	12	MS
Gradient (%):	4.0	CL
Pool: 20 Riffle: 30 Run: 50 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	10	GE

Specific Data

0.8	1.4	1.5	2.0	1.5	1.3
0.1	0.5	0.1	0.5	0.3	0.3
1	1	1	2	1	
13	11	14	12	12	

Cover

Cover Total %: 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	25	0	0	50	25

Crown Closure %: 90 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Discharge

Wetted Width (m):	0.3	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.02	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

1 D 4.0	8110
(Width, Valley: Channel, Slope)	(Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 60 pH: 8.0 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 330

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1 S4

C2 LS = 3%, RS = 6%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished, the flow stage was too low at the time of sampling.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 17.4.C.

C7 The substrate at this site consists mainly of fines with scattered patches of gravel and cobble. The fish habitat at this site is marginal, consisting of occasional pools and LOD. No suitable spawning habitat was observed and rearing habitat is limited.



Photo #: E-22-7, 20-Aug-97
Site #: E228, Looking upstream at the channel



Photo #: E-22-8, 20-Aug-97
Site #: E228, Looking downstream at the channel, overgrown with fern, cow parsnip, fireweed and alder

DFO/MoELP Stream Survey Form

Site Number: E229

Reach No.: 1

Trib. to Coffin Lk.

TRITON Environmental Consultants Ltd.

Location: E229, Unit 12, NW of Coffin Lk. **Stream (Gaz.):** Unnamed **Watershed Code:** 110-0100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **Reach Length (km):** 2.8 MA **Date:** 20-Aug-97 **Time:** 16:30 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6315 .60516 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-22-9,10,11 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.3	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	17	MS
Gradient (%):	1.0	CL
Pool: 10 Riffle: 20 Run: 70 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.5	2.0	2.2	2.3	1.9	2.6
1.2	1.0	1.1	0.9	1.2	1.4
3	3	3	2	4	
17	20	13	15	21	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	60	40

Crown Closure % : 95 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	70	35
	Large (16-64mm):		35
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Medium

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.18	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 D 1.0 | 2710

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 10 pH: 7.7 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 170

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 1%, RS = 2%

C3 No fisheries sensitive zones noted at this site.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 224 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature at this site was 17.4.C.

C7 This reach has a small channel with a fine gravel and fine organic substrate. Alder riparian cover is dense at this site. Sedimentation associated with bank trampling at the old livestock crossing was observed in the sampling area.



Photo #: E-22-9, 20-Aug-97
Site #: E229, Looking upstream at the channel



Photo #: E-22-10, 20-Aug-97
Site #: E229, Looking downstream at the channel



Photo #: E-22-11, 20-Aug-97
Site #: E229, Looking across stream at the channel, note the cattle tracks in the mud

DFO/MoELP Stream Survey Form **Site Number:** E227 **Reach No.: 2**

Trib. to Coffin Lk.

TRITON Environmental Consultants Ltd.

Location: E227, Unit 12 West of Coffin Lake. **Stream (Gaz.):** Unnamed **Watershed Code:** 066-5900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 056 **Reach Length (km):** 1.2 MA **Date:** 20-Aug-97 **Time:** 14:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .63123 .60536 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM\ \ \ \ \ \ \ **Photos:** E-22-5,6 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.6	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	17	MS
Gradient (%):	3.0	CL
Pool: 30 Riffle: 30 Run: 40 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	15	GE

Specific Data

2.0	3.0	2.5	3.2	2.7	2.3
0.6	0.9	0.7	0.8	0.5	1.0
1	2	2	2	1	
17	20	19	15	13	

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	10	0	30	40

Crown Closure % : 15 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 20 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.31	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 50 pH: 7.4 Braided: N

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Reach Symbol

(Fish)

(DV) (CT) (RB)

3 D 3.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 10%, RS = 7%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I-5-400V, was 235 seconds over 125 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 17.4.C.

C7: This channel is deeply incised and has low, steady flow over gravel/cobble substrate. Stable banks are lined devil's club and alder, which provide instream debris cover as well as overstream shading. Undercut banks and challow pools also provide cover at this site. Spawning and rearing habitat are present on site.



Photo #: E-22-5, 20-Aug-97
Site #: E227, Looking upstream at the channel



Photo #: E-22-6, 20-Aug-97
Site #: E227, Looking downstream at the channel

5.6 Deep Creek (460-4961-000) (93 L066, 93 L 067)

5.6.1 Sensitive Habitats and Barriers

The Deep Creek mainstem is 21.7 km in length and is fed by approximately 37 tributaries. In reach 1 the mainstem is characterized by low gradient and is unconfined. The gradient and confinement increase in reach 2 with the banks becoming quite steep and the gradient becoming moderately steep. Reach 3 is characterized by decreased gradient and confinement, however a 10 meter cascade was identified by field crews working on this system. Reach 4 has low gradient and is unconfined. Reach 5 is a small lake and reach 6 has low gradient, is unconfined and flows through a large wetland that has been identified as a fisheries sensitive zone. Reach 7 is a large lake. Reach 8 is a short reach flowing through a wetland and reach 9 is a small lake. Reach 10 is a small low gradient reach and Reach 11 is Farewell Lake. Reach 12 connects Farewell lake and another unnamed lake, comprising reach 13. Reach 14 is another small reach connecting two lakes, reach 15 is a small lake and reach 16 is a low gradient reach flowing through a sedge meadow. Upper Deep Creek has abundant rearing habitat, with numerous lakes. The Deep Creek system was sampled in 27 locations including reaches 1, 2, 6, 8, and 16.

5.6.2 Fish Summary Tables and Stream Classification

There are no historical fisheries records for Deep Creek, however, fish were caught in this watershed up to reach 8. Rainbow trout were caught by electrofishing in reaches 1, 2,6 and 8 of the mainstem, while cutthroat trout were caught at 3 sites located on a tributary to Deep Creek. Dolly Varden, were caught in a tributary to reach 2 and cutthroat trout were caught in a tributary to reach 3. Rainbow trout were also caught in a tributary to reach 7 and an unidentified minnow species was caught in reach 8. The mainstem of Deep Creek was classified as an S2 in reaches 1, 2 and 8 and as an S3 in reach 6. The average channel width through reach 2 ranged from 8.13 meters to 5.33 meters. The average channel width in reach 6 is 3.27 meters. The tributaries are typically S3 sized streams, with rare non fish bearing classifications and three "NC" classifications at Farewell Lake.

DFO/MoELP Stream Survey Form **Site Number: Y176** **Reach No.: 8**

Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y176, Unit 12; 0.3km NW of Farewell Lake **Stream (Gaz.):** Deep Creek **Watershed Code:** 460-4961-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 **Reach Length (km):** 0.6 MA **Date:** 18-Aug-97 **Time:** 15:20 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 651711 6054032 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL UP \ \ \ \ \ \ **Photos:** Y-20-8,9,10,10B **Air Photos:**

Channel Characteristics

			Specific Data					
	Av. Chan. Width (m):	9.6 MS	15.0	4.5	10.0	9.0	8.3	11.0
	Av. Wet. Width (m):	9.6 MS	15.0	4.5	10.0	9.0	8.3	11.0
N	Av. Max Riffle Depth (cm):	0 MS						
	Av. Max Pool Depth (cm):	75 MS	72	81	71			
	Gradient (%):	1.0 CL						

Pool: 20 Riffle: 0 Run: 80 Other: 0

% Side Channel: 0-10 GE

% Debris Area: >15 GE

%Stable: 10 GE

Bed Material

	Fines	Clay, silt, sand (<2mm):	60	60
	Gravels	Small (2-16mm):	30	15
		Large (16-64mm):		15
	Larges	Sm. cobble (64-128mm):	10	5
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 6 Compaction: Medium

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	0	35	15	0

Crown Closure % : 0 Aspect : NE

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB, C

10 D 1.0 | 6310

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m):

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 20.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 150

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	300	NA				VO
	C	2	86-100	NA				EL

Comments

C1: S2.

C2: The side slopes were not measured.

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 300V, was 613 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 24.0 C.

C7: This whole reach is impacted by beavers with several dams up to 50 cm in height. One very large RB was observed in a large beaver pond. All the LOD is stable.



Photo #: Y-20-8, 18/08/97
Site #: Y176, Looking upstream at the channel



Photo #: Y-20-9, 18/08/97
Site #: Y176, Looking upstream at the channel



Photo #: Y-20-10, 18/08/97
Site #: Y176, Looking downstream at the channel

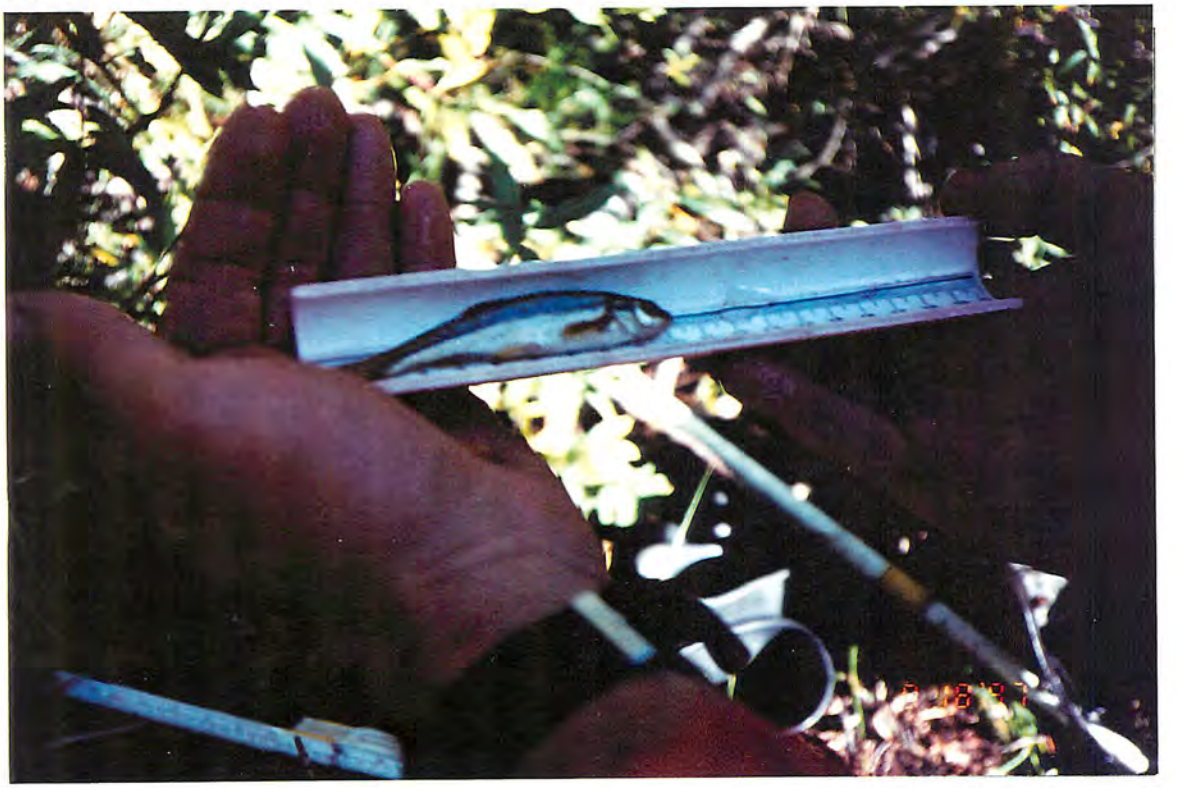


Photo #: Y-20-10B, 18/08/97
Site #: Y176, Measuring fish on the fish board

DFO/MoELP Stream Survey Form **Site Number:** JULIE 280 **Reach No.: 1**

Deep Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 280, Unit 12, 1.7km on Wakefield, at the Wakelfield brifge, see C5. **Stream (Gaz.):** Deep Creek **Watershed Code:** 460-4961-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 5.1 MA **Date:** 01-Oct-96 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6409 .60537 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD \ \ \ \ \ \ \ **Photos:** J-21-23,24, 25 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	8.1	HC	12.0	7.5	9.4	9.3	4.5	6.1
Av. Wet. Width (m):	4.0	HC	3.9	5.5	4.2	4.0	3.6	3.1
Av. Max Riffle Depth (cm):	11	MS	10	12	9	12		
Av. Max Pool Depth (cm):	44	MS	47	40				
Gradient (%):	2.5	CL						

Pool: 10 Riffle: 30 Run: 60 Other: 0

% Side Channel: GE

% Debris Area: 5 GE

%Stable: 70 GE

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	10	45	0	5	15

Crown Closure % : 30 Aspect : S

Discharge

Wetted Width (m) :	3.0	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.32	F
Discharge (m3/s) :	0.22	F

Reach Symbol

(Fish)

RB

8 C 2.5 | 0370

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	70	40
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 30 Compaction: Medium

Banks

Height (m): 0.8

% Unstable: 5

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.8

Bars (%): 25 pH: 7.2 Braided: N

Water Temp. (°C): 5.0 02 (ppm):

Turb. (cm): 47 Cond. (µmhos): 130

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	8	47-125	J	R			EL

Comments

C1: S2

C2: LS = 2%, RS = 2%

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort using a Smithroot model VII, was 129 seconds over 40 square meters. The electroshocking trial was cut short due to the obvious abundance of rainbow trout in the stream.

C5: Lat N 54 36' 43.3", Long W 126 49' 06.4"

C6: No additional bank texture information.

C7: DO was not measured at this site. The water was clear to the bottom. The air temperature high on this day was 10.8°C

C8: This site contains both rearing and spawning habitat. The stream courses through farmland in which cattle can access the creek. The bridge crossing at this site does not encroach upon the creek.

C9: The air temperature at this site was 7 degrees celcius.



Photo #: J-21-23, 1996/10/2
Site #: J280, Rainbow trout caught by electrofishing.



Photo #: J-21-24, 1996/10/2
Site #: J280, Looking downstream on Deep C.



Photo #: J-21-25, 1996/10/2
Site #: J280, Rainbow trout caught by electrofishing.

DFO/MoELP Stream Survey Form

Site Number: W195 **Reach No.: 2**

Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W195, Unit 12; 6.0km east of Bulkley R. **Stream (Gaz.):** Deep Creek **Watershed Code:** 460-4961-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 Reach Length (km): 5.7 MA Date: 18-Aug-97 Time: 11:45 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6421 .60539 Length surveyed (m): 100.0 GE Survey Crew: DD \JP \CF \ \ \ \ \ \ Photos: W-I-19,20,21,22,23 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	5.3	MS
Av. Wet. Width (m):	3.8	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	37	MS
Gradient (%):	4.0	CL
Pool: 20 Riffle: 10 Run: 70 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	75	GE

Specific Data

5.5	6.4	3.3	7.3	4.9	4.6
5.0	3.8	2.5	5.5	3.5	2.3
4	3	2	3	5	4
31	31	37	42	49	32

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	40	0	20	10

Crown Closure % : 75 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	70	30
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 49 Compaction: Medium

Discharge

Wetted Width (m) :	3.6	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.47	F
Discharge (m3/s) :	0.25	F

Banks

Height (m): 0.3

% Unstable: 40

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 1

Bars (%): 40 pH: 7.8 Braided: N

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 180

Reach Symbol

(Fish)

RB

5 C 4.0 | 2170

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	77	30-180	J	R			EL

Comments

C1: S2.

C2: LS=12%, RS=40%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at H, 5, 300V, was 222 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7: There is excellent rearing habitat here in the form of deep pool, cutbank and boulder cover. There are sections that are well shaded by alder and some spawning habitat in the pools. The creek has a diversion channel at high flow for irrigation. At this time, there isa single isolated pool with about a dozen RB in it, which were relocated to the mainstem. Cattle have free acces to the stream bed.



Photo #: W-I-19, 18-Aug-97
Site #: W195, Looking upstream at the channel



Photo #: W-I-20, 18-Aug-97
Site #: W195, Looking downstream at the channel, note the boulder and large cobble cover



Photo #: W-I-21, 18-Aug-97
Site #: W195, Measuring fish with the meterstick



Photo #: W-I-23, 18-Aug-97
Site #: W195, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: Y172 **Reach No.: 6**

Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y172, Unit 12; below an unnamed lake downstream from Farwell Lake

Stream (Gaz.): Deep Creek

Watershed Code: 460-4961-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 **Reach Length (km):** 3.4 MA **Date:** 18-Aug-97 **Time:** 10:00 **Agency:** TEC **Access:** II **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .651105.6055047 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL\JP\ \ \ \ \ \ \ **Photos:** Y-19-16,17,18 ,Y-21--9B **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.3	MS
Av. Wet. Width (m):	2.1	MS
Av. Max Riffle Depth (cm):	7	MS
Av. Max Pool Depth (cm):	33	MS
Gradient (%):	2.0	CL
Pool: 20 Riffle: 10 Run: 65 Other: 5		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

3.4	2.2	3.5	4.4	2.9	3.2
2.3	2.3	2.7	2.4	1.8	1.4
6	5	7	4	11	
36	25	45	32	26	

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	20	5	10	15	25

Crown Closure % : 15 Aspect : NW

Discharge

Wetted Width (m) :	2.4	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.12	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 10 pH: 7.3 Braided: Y

Water Temp. (°C): 16.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 120

Reach Symbol

(Fish)

RB

3 D 2.0 | 4420

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	35	30-120	J				EL

Comments

C1 S3.

C2 LS=16%, RS=11%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 358 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 17 C.

C7 This reach has abundant cutbank, deep pool, LOD and overstream vegetation cover, excellent rearing and some spawning habitat was noted at this site. Small debris at this site is composed of leaves and twigs. There are some older beaver dams in this reach.



Photo #: Y-19-16, 18/08/97
Site #: Y172, Looking upstream at the channel



Photo #: Y-19-17, 18/08/97
Site #: Y172, Looking downstream at the channel, note LOD and inveg cover



Photo #: Y-19-18, 18/08/97
Site #: Y172, Measuring fish on the fish board

DFO/MoELP Stream Survey Form **Site Number: Z156** **Reach No.: 15**

Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Z156, Unit 12 Stream (Gaz.): Deep Creek Watershed Code: 460-4961-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 Reach Length (km): 0.8 MW Date: 19-Aug-97 Time: 11:24 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .653183.6051337 Length surveyed (m): 200.0 GE Survey Crew: KG\CF\ \ \ \ \ \ Photos: Z-2-17,18 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.6	MS
Av. Wet. Width (m):	1.6	MS
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	0.5	CL
Pool: 0 Riffle: 0 Run: 100 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	100	GE

Specific Data

1.6	1.8	1.4	2.0	1.8	1.2
1.6	1.8	1.4	2.0	1.8	1.2

Cover

C6 Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
75	10	0	5	5	5

Crown Closure % : 0 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

C6	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0

Bars (%): 0 pH: 7.1 Braided: N

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Reach Symbol

(Fish)

(RB)

2 D 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 0%, RS = 0%

C3 This reach runs through a sedge meadow.

C4 The electroshocking effort at this site, using a Smithroot 12 B POW model set at 60HZ,6MS,300V, was 184 seconds over 60 meters. All available habitat was shocked.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 24.C. Discharge could not be measured as there was no flow at the time of sampling.

C7 Deep runs, 1.17 m and 1.2 m make up most of the cover at this site. The flow becomes a series of deep, isolated pools downstream of the sampling area.

C8 Two frogs were observed in the swamp associated with this stream.



Photo #: Z-20-17, 19-Aug-97
Site #: Z156, Looking upstream at the channel



Photo #: Z-20-18, 19-Aug-97
Site #: Z156, Looking downstream at the channel, flowing through a sedge meadow

DFO/MoELP Stream Survey Form **Site Number:** E213 **Reach No.:** 1

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E213, Unit 12, North of Deep Creek | Stream (Gaz.): Unnamed | Watershed Code: 069-8900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 0.9 MA | Date: 18-Aug-97 | Time: 15:00 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6487 .60560 | Length surveyed (m): 125.0 GE | Survey Crew: SJ \EM\ \ \ \ \ \ \ | Photos: E-20-24,25 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.3	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	19	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 30 Run: 60 Other:	0	
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

	3.2	2.9	1.7	4.3	3.7	3.9
	0.9	0.7	0.3	0.9	1.4	1.2
	1	1	2	1	1	
	25	32	24	10	11	12

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	50	0	0	30	10

Crown Closure % : 60 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	50	40
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 10 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 20 pH: 6.9 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 100

Reach Symbol

(Fish)

(CT)

3 C 2.0 | 4510

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 13%, RS = 5%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 153 seconds over 100 meters. Very little habitat available to shock at the time of sampling.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: A lot of LOD and other debris was noted in the channel. At this low flow stage, very little suitable habitat for fish occurs in this reach.



Photo #: E-20-24, 18-Aug-97
Site #: E213, Looking downstream at the channel



Photo #: E-20-25, 18-Aug-97
Site #: E213, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E214

Reach No.: 1

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E214, Unit 12, North of Deep Creek

Stream (Gaz.): Unnamed

Watershed Code: 069-9600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **U.T.M.:** 9 .6488 .60561

Reach Length (km): 0.6 MA **Length surveyed (m):** 100.0 GE

Date: 18-Aug-97 **Time:** 16:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

Survey Crew: SJ \EM\ \ \ \ \ \ \ **Photos:** E-21-1,2 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.2	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	13	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 40 Run: 50 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

1.9	1.7	1.9	3.2	2.3	2.2
0.7	0.7	0.6	1.3	1.5	1.5
1	2	1	1	2	
12	16	14	12	9	

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	50	0	0	35	10

Crown Closure % : 35 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Low

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT)

2 D 2.0 | 6310

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 10 pH: 7.4 Braided: N

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 90

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 8%, RS = 5%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using A Smithroot 12 B POW model, set at I-5-400V, was 197 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: This reach has low flow over a fine, silty/organic substrate. Cover for fish is limited to a small number of pools. At the time of sampling, low flows prevented access to Deep Creek.



Photo #: E-21-1, 18-Aug-97
Site #: E214, Looking upstream at the channel



Photo #: E-21-2, 18-Aug-97
Site #: E214, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z154 **Reach No.: 5**

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Z154, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 069-5500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 0.4 MA **Date:** 19-Aug-97 **Time:** 9:36 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .647584.6060198 **Length surveyed (m):** 200.0 GE **Survey Crew:** CF\KG\ \ \ \ \ \ \ **Photos:** Z-20-11,12,13 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.0	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	16	MS
Gradient (%):	1.0	CL
Pool: 20 Riffle: 10 Run: 65 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	40	GE

Specific Data

1.2	0.7	1.4	1.2	1.4	1.0
1.0	0.5	1.2	1.2	1.1	1.1
4	4	3	3	3	
17	17	14	18		

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	10	5	0	55	25

Crown Closure % : 1 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		10	10

D90 (cm): Compaction: Low

Obstructions

C	Height (m)	Type	Location
	3	C	4.6

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.16	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m):

Bars (%): 0 pH: 7.9 Braided: N

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 170

Reach Symbol

(Fish)

(CT)

1 D 1.0 | 5221

(Width, Valley: Channel, Slope) (Bed Material)

Comments

C1: S4

C2: LS=0%, RS=0%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 252 seconds over 120 meters.

C5: No additional bank texture information.

C6: The pH, DO, water temperature and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 15.8 C.

C7: This is a small stream draining a high elevation lake. There is no real fish habitat, it's poor at best. However, minnow trapping the lake is recommended and the stream will be classified as fish bearing.



Photo #: Z-20-11, 19-Aug-97
Site #: Z154, Looking upstream at the channel



Photo #: Z-20-12, 19-Aug-97
Site #: Z154, Looking downstream at the channel



Photo #: Z-20-13, 19-Aug-97
Site #: Z154, Looking upstream at a cascade

DFO/MoELP Stream Survey Form

Site Number: W200

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W200, Unit 12; 4km west of Unit 12 boundary

Stream (Gaz.): Unnamed

Watershed Code: 069-6700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **U.T.M.:** 9 .6479 .60577

Reach Length (km): 2.1 MA **Length surveyed (m):** 250.0 GE

Date: 19-Aug-97 **Time:** 12:50 **Agency:** TEC **Access:** V4 **Fish Card:** N **Field** ☒ **Historical** ☐

Survey Crew: DD \JP\ \ \ \ \ \ \ **Photos:** W-J-10,11 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.1	MS
Av. Wet. Width (m):	1.6	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	21	MS
Gradient (%):	10.0	CL
Pool: 20 Riffle: 20 Run: 40 Other:	20	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

2.0	1.7	2.4	1.7	1.8	3.3
1.9	1.7	1.7	1.0	1.6	1.9
2	3	1	3	2	3
17	26	16	20	24	22

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	40	0	10	10

Crown Closure % : 90 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	60	25
	Lge cobble (128-256mm):		25
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 34 Compaction: Medium

Discharge

Wetted Width (m) :	0.8	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT) (DV)

2 C 10.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 25 pH: 7.8 Braided: N

Water Temp. (°C): 8.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3.

C2 LS=30%, RS=35%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 500V, was 484 seconds over 250 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7 This stream has great rearing habitat including plunge pools and boulders.



Photo #: W-J-10, 19-Aug-97
Site #: W200, Looking upstream at the channel, note the cobble cover



Photo #: W-J-11, 19-Aug-97
Site #: W200, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W198

Reach No.: 3

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W198, Unit 12; 2km west of Unit 12 boundary

Stream (Gaz.): Unnamed

Watershed Code: 069-8900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **U.T.M. :** 9 .6488 .60583

Reach Length (km): 0.1 GE **Length surveyed (m):** 75.0 GE

Date: 19-Aug-97 **Time:** 10:30 **Agency:** TEC **Access:** V4 **Fish Card:** N Field ☒ Historical ☐

Survey Crew: DD \JP\ \ \ \ \ \ \ **Photos:** W-J-6,7 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	2.0	MS
	Av. Wet. Width (m):	2.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.5	CL

Pool: 0 Riffle: 0 Run: 100 Other: 0

	% Side Channel:	0	GE
	% Debris Area:	0	GE
	%Stable:		GE

Specific Data

2.0	1.5	2.0	2.2	2.5	2.0
2.0	1.5	2.0	2.2	2.5	2.0

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	0	0	0	20	40

Crown Closure % : 10 Aspect : SW

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		GE
N	Mean Depth (m) :		GE
N	Mean Velocity (m/s) :		F
N	Discharge (m3/s) :		F

Banks

Height (m): 0.0

% Unstable: 25

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT) (RB)

2 D 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.8 Braided: N

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3.

C2 LS=0%, RS=0%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 70 seconds over 80 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature at this site was 16.3 C.

C7 Deep runs and cutbanks provide rearing cover at this site. Roughly 75 meters from the lake, the substrate changed enough to apply a reach break, W199 above. It is recommended that minnow traps be placed in the lake to establish presence or absence of fish.

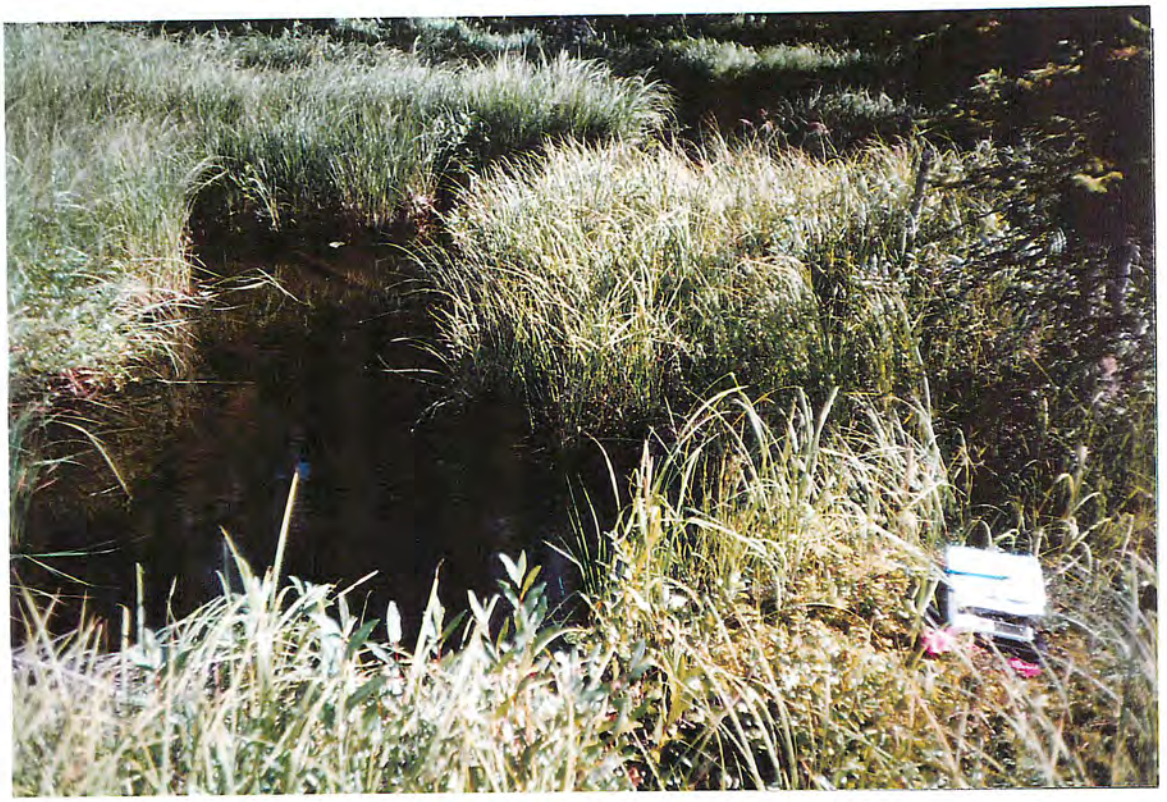


Photo #: W-J-6, 19-Aug-97
Site #: W198, Looking upstream at the channel



Photo #: W-J-7, 19-Aug-97
Site #: W198, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W199

Reach No.: 4

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W199, Unit 12; 1.8km west of Unit 12 boundary **Stream (Gaz.):** Unnamed **Watershed Code:** 069-8900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 1.1 MA **Date:** 19-Aug-97 **Time:** 11:00 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6488 .60583 **Length surveyed (m):** 160.0 GE **Survey Crew:** DD \JP \ \ \ \ \ \ \ **Photos:** W-J-8,9 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	16	MS
Gradient (%):	3.0	CL
Pool: 10 Riffle: 10 Run: 80 Other:	0	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

1.4	0.8	0.4	0.6	2.0	1.3
1.4	1.2	0.5	0.8	1.0	0.8
1	1	1	1	1	1
18	15	11	12	18	24

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	10	0	10	30

Crown Closure % : 50 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 32 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.18	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.1

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.8 Braided: N

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Reach Symbol

(Fish)

(CT) (RB)

1 C 3.0 | 3250

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=3%, RS=22%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I, 5, 400V, was 304 seconds over 160 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.5 C.

C7 This site has many silty pools filled with organic debris. At higher flow, the rearing habitat would improve however some cutbank, pool,.and LOD cover exists.

C8 Moose trails were observed around the lake and adjacent to the stream.



Photo #: W-J-8, 19-Aug-97
Site #: W199, Looking upstream at the channel



Photo #: W-J-9, 19-Aug-97
Site #: W199, Looking downstream at the channel, note moss covered substrate

DFO/MoELP Stream Survey Form **Site Number: W201** **Reach No.: 1**

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W201, Unit 12; 3.4km south of unit 12 boundary **Stream (Gaz.):** Unnamed **Watershed Code:** 069-5600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 0.4 MA **Date:** 19-Aug-97 **Time:** 14:00 **Agency:** TEC **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M.: 9 .6466 .60572 **Length surveyed (m):** 150.0 GE **Survey Crew:** DD UP \ \ \ \ \ \ **Photos:** W-J-12,13,14 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	12	MS
Gradient (%):	9.0	CL
Pool: 20 Riffle: 30 Run: 50 Other:	0	
% Side Channel:	>40	GE
% Debris Area:	5-15	GE
%Stable:	75	GE

Specific Data

1.0	1.2	1.4	1.9	1.4	1.3
0.9	0.6	0.6	0.5	0.5	0.5
1	1	1	1	1	2
23	14	8	9	10	10

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	0	0	65	5

Crown Closure % : 20 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 20 Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.23	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 7.8 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 180

Reach Symbol

(Fish)

(DV) (CT)

1 D 9.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=10%, RS=20%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 82 seconds over 100 meters. Shocking was limited due to low flow.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to bottom. The air temperature at this site was 21.5 C.

C7 The channel was dry at the road crossing. Approximately 40 meters upstream subterranian flow was observed. At high flows this stream would provide adequate rearing habitat in the form of pools, LOD cover and cutbanks. The channel at this point courses through a 300-400m pasture. Above and below this pasture the channel is shaded by alder and mature timber. About 150 m downstream of the road the channel disappears into a dry boggy area.



Photo #: W-J-12, 19-Aug-97
Site #: W201, Looking upstream at the channel



Photo #: W-J-13, 19-Aug-97
Site #: W201, Looking downstream at the channel, note the ill defined banks



Photo #: W-J-14, 19-Aug-97
Site #: W201, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: E209** **Reach No.: 2**

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E209, Unit 12, South of Deep Creek. **Stream (Gaz.):** Unnamed **Watershed Code:** 069-8500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 1.0 MA **Date:** 18-Aug-97 **Time:** 9:50 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6476 .60548 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ\EM\ \ \ \ \ \ \ **Photos:** E-20-14,15 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.5	MS
Av. Wet. Width (m):	1.5	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	26	MS
Gradient (%):	1.0	CL
Pool: 20 Riffle: 10 Run: 70 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	15	GE

Specific Data

2.0	1.5	1.7	1.4	1.1	1.5
2.0	1.5	1.5	1.2	1.2	1.5
2	3	2	2	1	
15	30	27	32	24	

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Low

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	35	0	0	35	30

Crown Closure % : 40 Aspect : E

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.01	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 6.9 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Reach Symbol

(Fish)

(DV) (CT)

2 D 1.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 9%, RS = 24%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 260 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: This creek flows slowly over a silty substrate and contains a fair bit of organic debris. Most of the cover for fish at this site is provided by overhanging vegetation, LOD and cutbanks. Willow and alder line the banks of this stream.



Photo #: E-20-14, 18-Aug-97
Site #: E209, Looking upstream at the channel, covered by alder and spruce



Photo #: E-20-15, 18-Aug-97
Site #: E209, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E211 **Reach No.: 2**

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E211, Unit 12 South of Deep Creek **Stream (Gaz.):** Unnamed **Watershed Code:** 069-8200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 1.1 MA **Date:** 18-Aug-97 **Time:** 12:20 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6486 .60542 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM\ \ \ \ \ \ \ **Photos:** E-20-19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	0.4	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	19	MS
Gradient (%):	2.0	CL

Pool: 40 Riffle: 0 Run: 60 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	20	GE
%Stable:	20	GE

Specific Data

2.0	1.7	1.9	2.2	1.5	1.6
0.5	0.1	0.4	0.5	0.6	0.3
1	1	2	1	1	
22	17	24	19	15	

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	10	0	20	40

Crown Closure % : 40 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 15 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.01	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 60 pH: 6.7 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 120

Reach Symbol

(Fish)

(DV) (CT)

2 D 2.0 | 6130

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 2%, RS = 2%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 82 seconds over 125 meters. Difficult shocking conditions due to low flows at the time of sampling.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: Impacts associated with livestock were noted in this reach. Bank trampling by cattle, resulting in sedimentation, was observed at this site. Very little suitable habitat at this low flow stage.



Photo #: E-20-19, 18-Aug-97
Site #: E211, Looking upstream at the channel



Photo #: E-20-20, 18-Aug-97
Site #: E211, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y174 **Reach No.:** 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y174, Unit 12; 2.6km NW of Farewell Lake **Stream (Gaz.):** Unnamed **Watershed Code:** 070-0100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 0.7 MA **Date:** 18-Aug-97 **Time:** 13:31 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .650253.605558 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL \JP\ \ \ \ \ \ \ **Photos:** Y-20-1,2,3,4,5 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	2.0	MS	1.2	2.2	2.1	3.4	1.6	1.5
Av. Wet. Width (m):	0.9	MS	0.9	0.8	0.7	1.2	0.4	1.4
Av. Max Riffle Depth (cm):	4	MS	5	5	3	2	3	
Av. Max Pool Depth (cm):	23	MS	20	32	24	11	26	
Gradient (%):	3.0	CL						

Pool: 20 Riffle: 25 Run: 55 Other: 0

% Side Channel: 0-10 GE

% Debris Area: >15 GE

%Stable: 50 GE

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 32 Compaction: High

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	35	10	0	10	30

Crown Closure % : 60 Aspect : SW

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.09	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.7

Bars (%): 50 pH: 7.6 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 100

Reach Symbol

(Fish)

(RB) (CT)

2 D 3.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3.

C2: LS=4%, RS=6%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at i, 5, 400V, was 225 seconds over 200 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 23.0 C.

C7: This stream is dry near the mouth, but has a good flow above with some deep pools, cutbanks, LOD and rootwads. The stream has been crossed by an ATV or snowmobile trail in the site.



Photo #: Y-20-1, 18/08/97
Site #: Y174, Looking upstream at the channel



Photo #: Y-20-2, 18/08/97
Site #: Y174, Looking downstream at the channel



Photo #: Y-20-3, 18/08/97
Site #: Y174, Looking upstream at the channel



Photo #: Y-20-4, 18/08/97
Site #: Y174, Looking downstream at the channel



Photo #: Y-20-5, 18/08/97
Site #: Y174, Looking cross-stream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y175

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y175, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 070-2300-000-000-000-000-000-000-000-000-000-

Map #:	93 L 067	Reach Length (km):	0.8	MA	Date:	18-Aug-97	Time:	14:45	Agency:	TEC	Access:	H	Fish Card: N	Field ☒ Historical ☐
U.T.M.:	9 .651711.60541	Length surveyed (m):	100.0	GE	Survey Crew:	JLJ\P \ \ \ \ \ \ \			Photos:		Y-20-6,7		Air Photos:	

Channel Characteristics

	Av. Chan. Width (m):	2.4	MS
	Av. Wet. Width (m):	1.1	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.0	CL
	Pool: 0 Riffle: 0 Run: 100 Other: 0		
	% Side Channel:	>40	GE
	% Debris Area:	>15	GE
	%Stable:	20	GE

Specific Data

1.7	1.9	2.2	2.4	2.0	4.1
0.0	0.0	0.0	2.4	2.0	2.0

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	0	15	15	20

Crown Closure %: 10 Aspect: E

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
	Sm. cobble (64-128mm):		0
Larges	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (CT)

2 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L Flood Signs Ht(m):

Bars (%): 0 pH: 6.9 Braided: Y

Water Temp. (°C): 19.5 02 (ppm):

Turb. (cm): 10 Cond. (µmhos): 110

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3.

C2 LS=0%, RS=0%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 200V, was 187 seconds.

C5 No additional bank texture information.

C6 DO was not measured at this site. The air temperature at this site was 24.0 C.

C7 At this flow stage instream vegetation and LOD provide most of the cover for fish at this site.



Photo #: Y-20-6, 18/08/97
Site #: Y175, Looking upstream at the channel



Photo #: Y-20-7, 18/08/97
Site #: Y175, Looking downstream at the channel, note instream veg

DFO/MoELP Stream Survey Form

Site Number: Y183

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y183, Unit 12; 11.4km downstream from Farewell Lk | **Stream (Gaz.):** Unnamed | **Watershed Code:** 069-1900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | **Reach Length (km):** 0.8 | MA | **Date:** 20-Aug-97 | **Time:** 8:39 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M.: 9 .6443 .605529 | **Length surveyed (m):** 100.0 | GE | **Survey Crew:** JP \JL\ \ \ \ \ \ \ | **Photos:** Y-21-8,9 | **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	2.3	MS
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	14.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	20	GE

Specific Data: 3.7 2.8 2.4 1.7 1.7 1.5

Cover

Cover Total %: 25 | GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	15	30	0	15	30

Crown Closure %: 50 | Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 50 | Compaction: Medium

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.3

% Unstable: 70

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio: 2-5

Stage: Dry | Flood Signs Ht(m): 0.4

N Bars (%): 100 | pH: | Braided: N

N Water Temp. (°C): | O2 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

(RB) (CT)

2 B 14.0 | 2440

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S3. The channel was dry.

C2: LS=48%, RS=68%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished as the channel was dry.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site, as the channel was dry.

C7: Boulder cover, LOD and cutbanks are abundant at this site. Cattle tracks were noted in and around the creek.



Photo #: Y-21-8, 20/08/97
Site #: Y183, Looking upstream at the channel



Photo #: Y-21-9, 20/08/97
Site #: Y183, Looking downstream at the channel, note dry channel

DFO/MoELP Stream Survey Form

Site Number: E208

Reach No.: 4

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E208, Unit 12, South of Deep Creek | **Stream (Gaz.):** Unnamed | **Watershed Code:** 033-7100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | **Reach Length (km):** 0.6 MA | **Date:** 18-Aug-97 | **Time:** 8:45 | **Agency:** TEC | **Access:** H | **Fish Card:** N | **Field** ☒ **Historical** ☐

U.T.M.: 9 .6481 .60536 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** SJ \EM \ \ \ \ \ \ | **Photos:** E-20-11,12,13 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	19	MS
Gradient (%):	3.0	CL
Pool: 20 Riffle: 20 Run: 60 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	25	GE

Specific Data

0.7	0.9	0.5	0.8	1.1	0.7
0.8	1.1	0.3	1.0	1.2	0.6
2	1	2	3	2	
20	17	19	15	22	

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 13 | Compaction: Medium

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	0	20	20	40

Crown Closure %: 30 | Aspect: N

Discharge

Wetted Width (m):	0.5	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.06	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L | Flood Signs Ht(m): 0.25

Bars (%): 15 | pH: 7.4 | Braided: N

Water Temp. (°C): 11.5 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 60

Reach Symbol

(Fish)

CT

1 D 3.0 | 5320

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	3	60-80	J	R			EL

Comments

C1: S4

C2: LS = 2%, RS = 1%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 192 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: This is a slow moving reach, that has silty substrate and flows through alder. Cutbanks provide most of the cover for fish at this site.

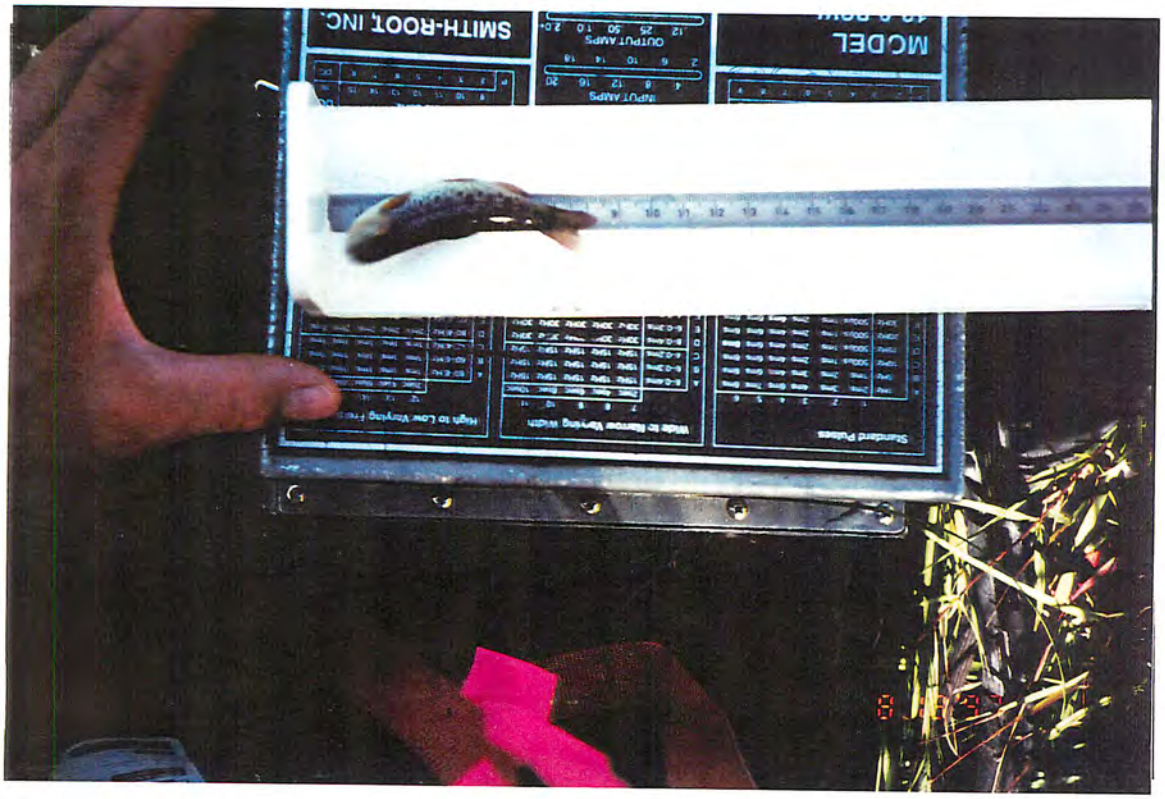


Photo #: E-20-11, 18-Aug-97
Site #: E208, Measuring trout on the fishboard



Photo #: E-20-12, 18-Aug-97
Site #: E208, Looking upstream at the channel



Photo #: E-20-13, 18-Aug-97
Site #: E208, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E210 **Reach No.: 2**

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E210, Unit 12, South of Deep Creek **Stream (Gaz.):** Unnamed **Watershed Code:** 069-8100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 0.4 MA **Date:** 18-Aug-97 **Time:** 10:45 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6482 .60544 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM\ \ \ \ \ \ \ **Photos:** E-20-16,17,18 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.9	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	27	MS
Gradient (%):	1.0	CL
Pool: 10 Riffle: 0 Run: 90 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

0.8	0.6	0.7	0.5	0.6	2.0
0.7	0.5	0.6	0.4	0.5	2.2
20	15	17	21	60	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	10	30	60

Crown Closure % : 10 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.03	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

CT

1 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 7.2 Braided: N

Water Temp. (°C): 14.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	5	60-100	J	R			EL

Comments

C1: S4

C2: LS = 1%, RS = 1%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 356 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7: Marginal rearing and no spawning habitat was observed in the sampling area. The water temperature was fairly high at this site (14.C.)



Photo #: E-20-16, 18-Aug-97
Site #: E210, Looking upstream at the channel and a crew member electrofishing



Photo #: E-20-17, 18-Aug-97
Site #: E210, Looking downstream at the channel and a crew member electrofishing

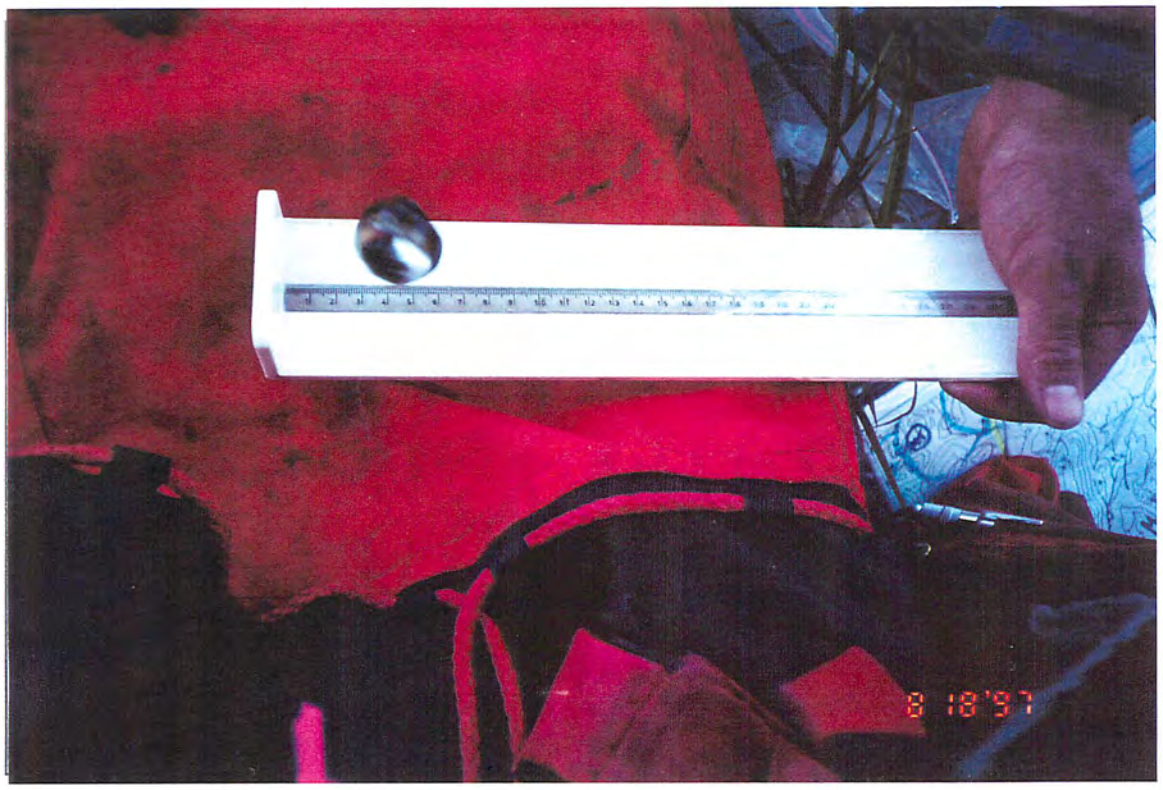


Photo #: E-20-18, 18-Aug-97
Site #: E210, Measuring fish on the fish board

DFO/MoELP Stream Survey Form

Site Number: E212 **Reach No.: 1**

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E212, Unit 12, South of Deep Creek | Stream (Gaz.): Unnamed | Watershed Code: 069-8200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 1.9 MA | Date: 18-Aug-97 | Time: 13:30 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6481 .60563 | Length surveyed (m): 60.0 GE | Survey Crew: SJ \EM \ \ \ \ \ \ \ | Photos: E-20-21,22,23 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	16	MS
Gradient (%):	3.0	CL
Pool: 10 Riffle: 40 Run: 50 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	20	GE

Specific Data

2.1	2.0	2.1	3.5	2.4	2.3
1.1	1.6	1.5	1.3	1.0	0.7
3	2	3	3	2	3
21	14	14	12	18	16

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	20	0	0	20	50

Crown Closure % : 60 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	70	30
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 10 Compaction: High

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.12	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.6

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.8

Bars (%): 70 pH: 7.6 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 110

Reach Symbol

(Fish)

CT

2 D 3.0 | 2710

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	CT	3	70-90	J	R			EL

Comments

C1 S3

C2 LS = 10%, RS = 10%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 46 seconds over 75 meters. Thirty CT were also visually observed at this site.

C5 Fines and gravels make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 15.2.C.

C7 Cover for fish is provided by stable undercut banks, LOD and pools at this site. Many fry were seen in pools and runs in the sampling area.

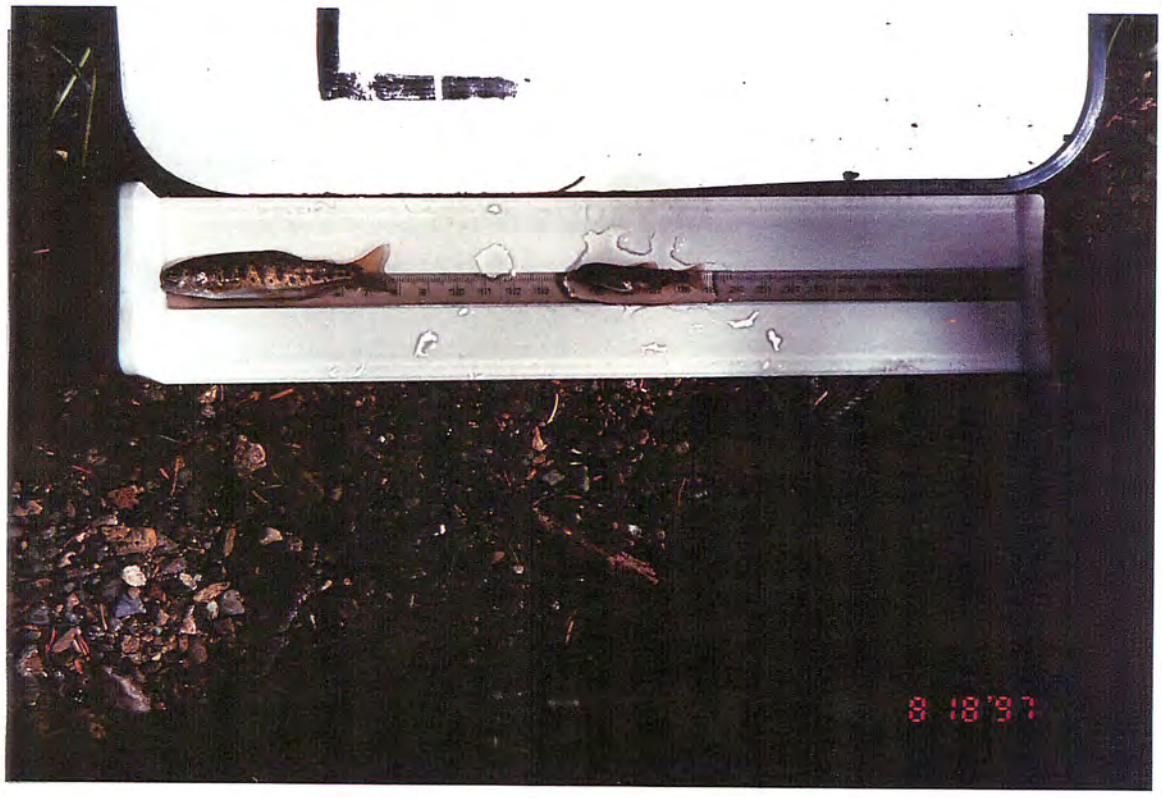


Photo #: E-20-21, 18-Aug-97
Site #: E212, Measuring trout on the fishboard



Photo #: E-20-22, 18-Aug-97
Site #: E212, Looking downstream at the channel



Photo #: E-20-23, 18-Aug-97
Site #: E212, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W202

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W202, Unit 12; 3.5km south of Unit 12 boundary

Stream (Gaz.): Unnamed

Watershed Code: 069-5500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **U.T.M. :** 9 .6462 .61572

Reach Length (km): 0.8 MA **Length surveyed (m):** 450.0 GE

Date: 19-Aug-97 **Time:** 14:50 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

Survey Crew: DD \JP\ \ \ \ \ \ \ **Photos:** -J-15,16,17,18,19,20,21, **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.4	MS
Av. Wet. Width (m):	1.8	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	16	MS
Gradient (%):	4.0	CL

Pool: 10 Riffle: 20 Run: 70 Other: 0

% Side Channel:	10-40	GE
% Debris Area:	0-5	GE
%Stable:	25	GE

Specific Data

4.0	3.1	3.3	3.4	4.1	2.4
0.5	1.6	3.0	1.8	1.7	2.3
1	1	1	3	2	2
14	20	17	16	12	18

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	60	30
	Lge cobble (128-256mm):		25
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 22 Compaction: Medium

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
35	0	50	0	5	10

Crown Closure % : 10 Aspect : SW

Discharge

Wetted Width (m) :	0.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.15	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.2

% Unstable: 75

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.9

Bars (%): 100 pH: 7.8 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Reach Symbol

(Fish)

CT

3 D 4.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	13	50-150	J	R			EL

Comments

C1 S3.

C2 LS=7%, RS=8%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 308 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7 This reach has some great rearing habitat in the form of pools and boulder cover as well as some marginal spawning habitat. Below the meadow the channel narrows to 1-2 meters with normal habitat. The channel blows out in the meadow because of the bank instability due to past logging to the streambank. The meadow is an old cutblock, now rangeland for cattle which have access to the stream.



Photo #: W-J-15, 19-Aug-97
Site #: W202, Looking upstream at the channel



Photo #: W-J-16, 19-Aug-97
Site #: W202, Looking downstream at the channel



Photo #: W-J-17, 19-Aug-97
Site #: W202, Looking downstream at the channel, note the low flow and high left bank



Photo #: W-J-18, 19-Aug-97
Site #: W202, Looking upstream at the channel



Photo #: W-J-19, 19-Aug-97
Site #: W202, Measuring fish with the meterstick



Photo #: W-J-20, 19-Aug-97
Site #: W202, Measuring fish with the meterstick



Photo #: W-J-21, 19-Aug-97
Site #: W202, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W197

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W197, Unit 12; 1.2km east of Deep Cr. | Stream (Gaz.): Unnamed | Watershed Code: 068-3700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 | Reach Length (km): 0.8 MA | Date: 18-Aug-97 | Time: 15:15 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6418 .60534 | Length surveyed (m): 100.0 GE | Survey Crew: DD \JP \CF \ \ \ \ \ \ | Photos: W-J-3,4,5 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	13	MS
Gradient (%):	3.0	CL
Pool: 10 Riffle: 20 Run: 70 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	75	GE

Specific Data

1.3	2.0	1.9	2.1	2.2	0.8
0.2	1.1	0.8	0.9	0.5	0.0
1	1	1	1	1	1
24	11	6	12		

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	50	0	20	0

Crown Closure %: 10 | Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	80	35
	Lge cobble (128-256mm):		35
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 28 | Compaction: Medium

Discharge

Wetted Width (m):	0.4	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.04	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.1

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L | Flood Signs Ht(m): 0.5

Bars (%): 95 | pH: | Braided: N

Water Temp. (°C): 15.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

CT RB

2 D 3.0 | 1180

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	4	85	J	R			EL
	SA	10	35-45	F	R			VO

Comments

C1: S3.

C2: LS=10%, RS=12%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort was not recorded.

C5: No additional bank texture information.

C6: DO, pH and conductivity were not measured at this site, the water was clear to bottom. The air temperature at this site was 24.5 C.

C7: 50 meters form the confluence with W196, the channel is dry for another 50 meters and then becomes a fine trickle. Fish were found in pools on the downstream side of the channel but not above it. Caddisfly nymphs were observed in the stream. At higher flows the stream would contain much more cover. At the time of survey the cover is minimal, restricted to small largely isolated pools. Cattle have access to the streambed.



Photo #: W-J-3, 18-Aug-97
Site #: W197, Looking upstream at a dry channel



Photo #: W-J-4, 18-Aug-97
Site #: W197, Looking downstream at a small trickle over cobble



Photo #: W-J-5, 18-Aug-97
Site #: W197, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form **Site Number:** W203 **Reach No.: 1**

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W203, Unit 12; 6.0km west of Unit 12 boundary **Stream (Gaz.):** Unnamed **Watershed Code:** 069-3400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 0.9 MA **Date:** 19-Aug-97 **Time:** 17:00 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6460 .60568 **Length surveyed (m):** 70.0 GE **Survey Crew:** DD \JP\ \ \ \ \ \ \ **Photos:** W-J-22,23,24,25 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	2.5	GE
C1	Av. Wet. Width (m):	2.0	GE
	Av. Max Riffle Depth (cm):	2	GE
	Av. Max Pool Depth (cm):	22	GE
	Gradient (%):	6.0	CL
	Pool: 40 Riffle: 20 Run: 40 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	40	GE

Specific Data

1	1	2	2	3	3
15	20	18	28	30	

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	20	0	10	20

Crown Closure % : 40 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	60	25
	Lge cobble (128-256mm):		25
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 45 Compaction: Medium

Discharge

C1	Wetted Width (m) :		
C1	Mean Depth (m) :		
C1	Mean Velocity (m/s) :		
C1	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 25

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

DV

3 B 6.0 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 20 pH: 7.8 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	2	65-115	J	R			EL

Comments

C1 S3.

C2 LS=30%, RS=30%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 102 seconds over 50 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7 Rearing habitat in the form of deep pools created by LOD and some boulder cover joined by runs and riffles over debris was noted.



Photo #: W-J-22, 19-Aug-97
Site #: W203, Looking across stream at the channel with LOD and a dead cow



Photo #: W-J-23, 19-Aug-97
Site #: W203, Looking upstream at the channel



Photo #: W-J-24, 19-Aug-97
Site #: W203, Looking downstream at the channel



Photo #: W-J-25, 19-Aug-97
Site #: W203, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: E223

Reach No.: 1

Trib. to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: E223, Unit 12, South of Deep Creek | Stream (Gaz.): Unnamed | Watershed Code: 069-2900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 1.5 MA | Date: 20-Aug-97 | Time: 8:45 | Agency: TEC | Access: H | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6454 .60553 | Length surveyed (m): 200.0 GE | Survey Crew: SJ \EM \ \ \ \ \ \ | Photos: E-21-21,22 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.5	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	17	MS
Gradient (%):	42.0	CL
Pool: 20 Riffle: 20 Run: 30 Other:	30	
% Side Channel:	0	GE
% Debris Area:	20	GE
%Stable:	5	GE

Specific Data

2.6	3.0	2.4	2.8	2.3	2.2
1.2	1.0	1.1	1.2	1.1	1.3
3	2	1	2	1	
17	20	15	19	14	

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	30	15	0	20	30

Crown Closure % : 5 | Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	80	20
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		30
Bedrock		0	0

D90 (cm): 45 | Compaction: Medium

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.05	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.4

% Unstable: 5

Fines ☐ Gravels ☐ Larges ☐ Bedrock ☒

Confinement: EN

Valley : Channel Ratio 0-2

Stage: L | Flood Signs Ht(m): 1

Bars (%): 65 | pH: 7.6 | Braided: N

Water Temp. (°C): 9.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 250

Reach Symbol

(Fish)

NF

3 A 42.0 | 1180

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 100%, RS = 95%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-300V, was 135 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 17.4.C

C7 This reach flows through a ravine over 40% gradient. The substrate is jagged and the channel contains a large amount of woody debris. This is a "flashy" system with multiple cascdes ranging in height from .4 to 2m.



Photo #: E-21-21, 20-Aug-97
Site #: E223, Looking upstream at the channel



Photo #: E-21-22, 20-Aug-97
Site #: E223, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W196 **Reach No.: 2**

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: W196, Unit 12; 0.8km east of Deep Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-3500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 2.0 MA **Date:** 18-Aug-97 **Time:** 14:20 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6418 .60535 **Length surveyed (m):** 100.0 GE **Survey Crew:** DD \JP \CF \ \ \ \ \ \ **Photos:** W-I-24,25,W-J-1,2 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	7	MS
Gradient (%):	3.0	CL
Pool: 20 Riffle: 20 Run: 60 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	80	GE

Specific Data

1.4	1.2	2.6	1.7	1.9	2.0
0.8	0.4	0.4	0.3	0.6	0.8
1	1	1	1	1	1
5	6	6	8	9	8

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 33 Compaction: Medium

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	40	0	20	10

Crown Closure % : 30 Aspect : SW

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.04	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 80 pH: 7.4 Braided: N

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 180

Reach Symbol

(Fish)

RB

2 C 3.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	21	40	F	R			EL

Comments

C1: S3.

C2: LS=18%, RS=35%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 2 seconds over 1 square meter. Only shocked long enough to catch one RB fry for identification, and to reduce the stress on the fish.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 23.5 C.

C7: This stream is almost dry and yet it is full of RB fry. It has good rearing and limited spawning capabilities. There is a fine trickle of water to rejuvenate oxygen in pools and other holding areas. It is well shaded and should be excellent rearing at higher flow. Livestock have access to the stream bed.



Photo #: W-I-24, 18-Aug-97
Site #: W196, Looking upstream at the channel, note the low flow stage



Photo #: W-I-25, 18-Aug-97
Site #: W196, Looking downstream at the channel, note the low banks

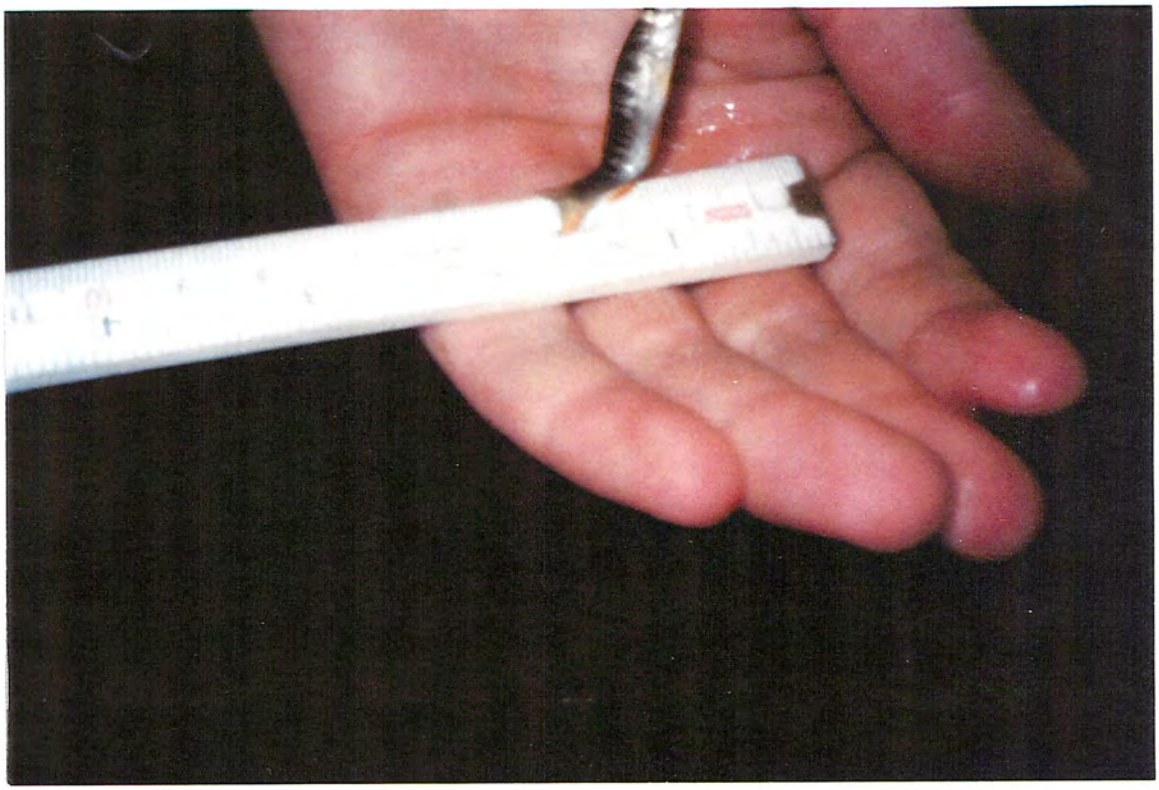


Photo #: W-J-1, 18-Aug-97
Site #: W196, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: Y171

Reach No.: 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y171, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 070-1300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | **U.T.M.:** 9 .6515 .60549 | **Reach Length (km):** 0.8 MA | **Length surveyed (m):** 100.0 GE | **Date:** 18-Aug-97 | **Time:** 11:09 | **Agency:** TEC | **Survey Crew:** JL UP \ \ \ \ \ \ \ | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐ | **Photos:** Y-19-19,20,21,22 | **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.5	MS	2.7	4.0	4.0	2.6	4.5	3.0
Av. Wet. Width (m):	2.0	MS	1.0	2.4	1.9	2.0	1.2	3.3
Av. Max Riffle Depth (cm):	5	MS	5	4	4	6	4	
Av. Max Pool Depth (cm):	46	MS	77	27	27	34	67	
Gradient (%):	2.0	CL						

Pool: 30 Riffle: 10 Run: 60 Other: 0

% Side Channel: 0-10 GE

% Debris Area: >15 GE

%Stable: 50 GE

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	20	0	0	10	30

Crown Closure % : 75 Aspect : S

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.04	F
Discharge (m3/s) :	0.00	F

Reach Symbol

(Fish)

RB

4 D 2.0 | 3700

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	70	45
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Banks

Height (m): 0.2

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.6

Bars (%): 30 pH: 7.6 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 100

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	132	5-40	F				VO

Comments

C1 S3.

C2 LS=2%, RS=1%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 707 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 15.2 C.

C7 The flow at this site consists of deep pools and deep runs with shallow riffles. There is lots of cover in the form of deep pool, LOD and cutbanks. Spawning gravels were noted.



Photo #: Y-19-19, 18/08/97
Site #: Y171, Looking upstream at the channel



Photo #: Y-19-20, 18/08/97
Site #: Y171, Looking downstream at the channel, note gravel bars



Photo #: Y-19-21, 18/08/97
Site #: Y171, Measuring fish on the fish board



Photo #: Y-19-22, 18/08/97
Site #: Y171, Measuring fish on the fish board

DFO/MoELP Stream Survey Form

Site Number: Y173 **Reach No.:** 1

Trib to Deep Cr.

TRITON Environmental Consultants Ltd.

Location: Y173, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 070-1300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 1.4 MA **Date:** 18-Aug-97 **Time:** 12:35 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6516 .60551 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL\JP\ \ \ \ \ \ \ **Photos:** Y-19-23,24 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	1.0	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	37	MS
Gradient (%):	2.0	CL
Pool: 25 Riffle: 15 Run: 60 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	60	GE

Specific Data

1.3	1.1	2.9	2.1	1.7	1.6
0.3	0.5	1.4	0.4	1.3	1.8
4	3	3	3	2	
38	41	35	52	17	

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	30	0	0	15	30

Crown Closure % : 80 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	60	40
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 4 Compaction: Medium

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.4	F
Discharge (m3/s) :	0.12	F

Banks

Height (m): 0.4

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 15 pH: 7.0 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 90

Reach Symbol

(Fish)

RB

2 D 2.0 | 4600

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	30	20-50	F				VO

Comments

C1: S3.

C2: LS=0%, RS=0%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 414 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7: This stream has great cover in the form of LOD, cutbanks and deep pools. The gravel looks like it is good for spawning and there is lots of it.



Photo #: Y-19-23, 18/08/97
Site #: Y173, Looking upstream at the channel



Photo #: Y-19-24, 18/08/97
Site #: Y173, Looking downstream at the channel, note cutbank habitat

5.7 Ganokwa Creek (460-3254-265) (93 L 075, 93 L 086, 93 L 085)

5.7.1 Sensitive Habitats and Barriers

The mainstem of Ganokwa Creek is 16.7 km in length and is fed by 23 tributaries. Reach 1 is somewhat confined and has moderately steep gradient. The gradient decreases and the confinement lessens approaching the reach 1 and 2 break. Reach 2 has steep gradient and is quite confined which is consistent through reach 3. Reach 4 has moderate to low gradient and is occasionally confined. Reach 5 has steadily increasing gradient and a small headwater lake. A number of lakes are found in the headwaters of the tributaries to this system. A 10 meter falls and a 6 meter cascade were identified in a tributary to reach 2. Some good rearing habitat was noted in reach 1 of Ganokwa Creek, which was sampled at 10 locations, including reaches 1 and 4 of the mainstem.

5.7.2 Fish Summary Tables and Stream Classification

No historical information was noted. Dolly Varden were caught by electrofishing in reach 1, but fish were not caught at any other site on this system. Ganokwa Creek was sampled in reach 1 and was classified as an S2, based on an average channel width of 9.0 m and the presence of Dolly Varden at the sampling site. The mainstem and all of its tributaries were classified as non fish bearing from reach 3 to the headwaters. The mainstem was classified as an S5 in reach 4 based on an average channel width of 3.52 meters and the lack of evidence of a resident fish population in the sampling area. The side slopes of Ganokwa Creek are very steep in reaches 2 and 3 and any land use management plans for these reaches should reflect this sensitivity.

DFO/MoELP Stream Survey Form

Site Number: RYAN 85 **Reach No.: 1**

Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 85, Unit 12, at the bridge crossing at Ganokwa Cr., see C5. **Stream (Gaz.):** Ganokwa Creek **Watershed Code:** 460-3254-265-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 9.1 MA | Date: 21-Sep-96 | Time: 15:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6319 .60748 | Length surveyed (m): 200.0 GE | Survey Crew: RH\JL\ \ \ \ \ \ \ | Photos: R-5-20,21 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	9.0	MS
Av. Wet. Width (m):	4.9	MS
Av. Max Riffle Depth (cm):	22	MS
Av. Max Pool Depth (cm):	34	MS
Gradient (%):	7.0	CL
Pool: 30 Riffle: 70 Run: 0 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	70	GE

Specific Data

8.0	10.0	8.0	11.0	7.0	10.0
5.0	4.0	4.6	4.8	6.0	5.0
25	12	30			
39	37	25			

Cover

Cover Total %: 65 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	5	25	0	55	10

Crown Closure %: 60 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):	15	5
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	80	20
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		30
Bedrock		0	0

D90 (cm): 40 Compaction: Medium

Discharge

Wetted Width (m):	0.5	MS
Mean Depth (m):	0.2	MS
Mean Velocity (m/s):	0.38	F
Discharge (m3/s):	0.03	F

Banks

Height (m): 0.4

% Unstable: 0

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Reach Symbol

(Fish)

DV

9 C 7.0 | 1180

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 2

Bars (%): 0 pH: 7.9 Braided: N

Water Temp. (°C): 5.0 02 (ppm):

Turb. (cm): 39 Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	7	40-120	J	R			EL

Comments

C1: S2

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort, using a 12 B POW model, was 200 seconds over 80m.

C5: Lat N 54 48' 21.2", Long W 126 56' 50.4"

C6: No additional bank texture information.

C7: DO and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8: Boulders and overstream vegetation provide most of the cover for fish at this site.



Photo #: R-5-20, 1996/09/21
Site #: R85, Looking upstream under bridge.



Photo #: R-5-21, 1996/09/21
Site #: R85, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: E273 **Reach No.: 4**

Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: E273, Unit 12, Ganokwa Creek headwater region. **Stream (Gaz.):** Ganokwa Creek **Watershed Code:** 460-3254-265-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 2.7 MW | Date: 08-Sep-97 | Time: 14:15 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6364 .60810 | Length surveyed (m): 200.0 GE | Survey Crew: SJ \JL \ \ \ \ \ \ \ | Photos: E-26-7,8 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.5	MS
Av. Wet. Width (m):	3.5	MS
Av. Max Riffle Depth (cm):	8	MS
Av. Max Pool Depth (cm):	61	MS
Gradient (%):	1.0	CL
Pool: 25 Riffle: 10 Run: 65 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.4	2.2	2.0	2.3	4.1	8.1
2.7	2.5	1.7	2.3	3.8	8.2
7	6	5	10	11	
19	86	69	54	102	35

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	0	0	10	50

Crown Closure % : 0 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	15
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	50	25
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 26 Compaction: Medium

Discharge

Wetted Width (m) :	1.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.81	F
Discharge (m3/s) :	0.12	F

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 40 pH: 7.6 Braided: Y

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 40

Reach Symbol

(Fish)

NF

4 D 1.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S5

C2: LS = 5%, RS = 3%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 440 seconds over 250 meters.

C5: Fines and gravels make up the bank texture at this site.

C6: DO was not measured, the water was clear to the bottom. The air temperature at this site was 20.C.

C7: This reach recieves runoff from 4-5 smaller tributaries and has some good rearing habitat in the form of cutbanks and deep pools.

C8: A beaver dam creates a pool complex that could provide overwintering habitat.

C9: This reach has been classified as non fish bearing due the absence of fish in the sampling area, which is located above a gradient barrier downstream.



Photo #: E-26-7, 08-Sep-97
Site #: E273, Looking upstream at the channel



Photo #: E-26-8, 08-Sep-97
Site #: E273, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** ARNE 18 **Reach No.: 1**

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 18, Unit 12, 1.0km NW of Ganokwa Cr., see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 050-3700-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 Reach Length (km): 4.2 MW Date: 21-Sep-96 Time: 15:35 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6312 .60751 Length surveyed (m): 180.0 GE Survey Crew: AKL\ HK\ \ \ \ \ \ \ Photos: A-2-17,18 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.4	T
	Av. Wet. Width (m):	0.6	T
N	Av. Max Riffle Depth (cm):	0	
N	Av. Max Pool Depth (cm):	63	
	Gradient (%):	0.5	CL
	Pool: 100 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	10	GE
	%Stable:	100	GE

Specific Data

1.5	1.3	
0.6	0.7	
100	50	40

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

Cover Total % : 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	5	0	40	30	5

Crown Closure % : 10 Aspect : SW

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

(DV)

I E 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Banks

Height (m): 0.0

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0

Bars (%): 0 pH: 7.1 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): 80 Cond. (µmhos): 180

Obstructions

C	Height (m)	Type	Location
	1	BD	1.2
	1	BD	2.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot 15 A model, was 143 seconds over 100 sqaure meters. The site was difficult to shock.

C5 Lat N 54 48' 21.2", Long W 126 57' 31.3"

C6 No additional bank texture information.

C7 DO, pH and conductivity were not measured at this site. The mean air temperature on this day was 3.7°C

C8 This site consists of a beaver pond and a 10 m section of free flowing stream. The beaver dams are well established barriers. The dam complex has diverted all the water into one system from the swamp upstream of the road.



Photo #: A-2-17, 21-Sep-96
Site #: A18, Looking upstream towards beaver pond.



Photo #: A-2-18, 21-Sep-96
Site #: A18, Looking downstream towards beaver dam.

DFO/MoELP Stream Survey Form

Site Number: E270

Reach No.: 2

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: E270, Unit 12, North of Astlais Mt. and the Babine Recreation Area.

Stream (Gaz.): Unnamed

Watershed Code: 050-4400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 086 **U.T.M.:** 9 .6362 .60780

Reach Length (km): 3.2 MW **Length surveyed (m):** 150.0 GE

Date: 08-Sep-97 **Time:** 11:00 **Agency:** TEC **Access:** H **Fish Card:** N : **Field** ☒ **Historical** ☐

Survey Crew: SJ \JL\ \ \ \ \ \ \ **Photos:** E-25-20,21,23,24 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.8	MS
Av. Wet. Width (m):	2.7	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	23	MS
Gradient (%):	7.0	CL
Pool: 15 Riffle: 10 Run: 65 Other:	10	
% Side Channel:	0	GE
% Debris Area:	0	GE
%Stable:	0	GE

Specific Data

6.0	3.1	3.2	3.8	3.3	3.6
3.2	2.6	1.6	2.6	2.9	3.4
6	8	4	5	7	
22	26	22	20	27	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	0	40	0	0	35

Crown Closure % : 0 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		20
Bedrock		20	20

D90 (cm): Compaction: High

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	1.05	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.4

% Unstable: 10

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Reach Symbol

(Fish)

NF

4 C 7.0 | 1162

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 20 pH: 7.9 Braided: N

Water Temp. (°C): 7.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 60

Obstructions

C	Height (m)	Type	Location
	10	F	0.6
	6	C	0.9

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S5

C2 LS = 60%, RS = 25%

C3 No fisheries sensitive zones present.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 432 seconds over 175 meters.

C5 Fines and larges make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 11.5.C.

C7 This reach flows as as series of boulder runs and riffles. Cover is provided mostly by boulders and cutbanks, with some deep pools. Potential spawning habitat in pool tailouts.

C8 No fish were caught in this reach, which is located above a 10m and a 6m falls. As such it has been classified as non fish bearing.



Photo #: E-25-20, 08-Sep-97
Site #: E270, Looking upstream at the channel



Photo #: E-25-21, 08-Sep-97
Site #: E270, Looking downstream at the channel

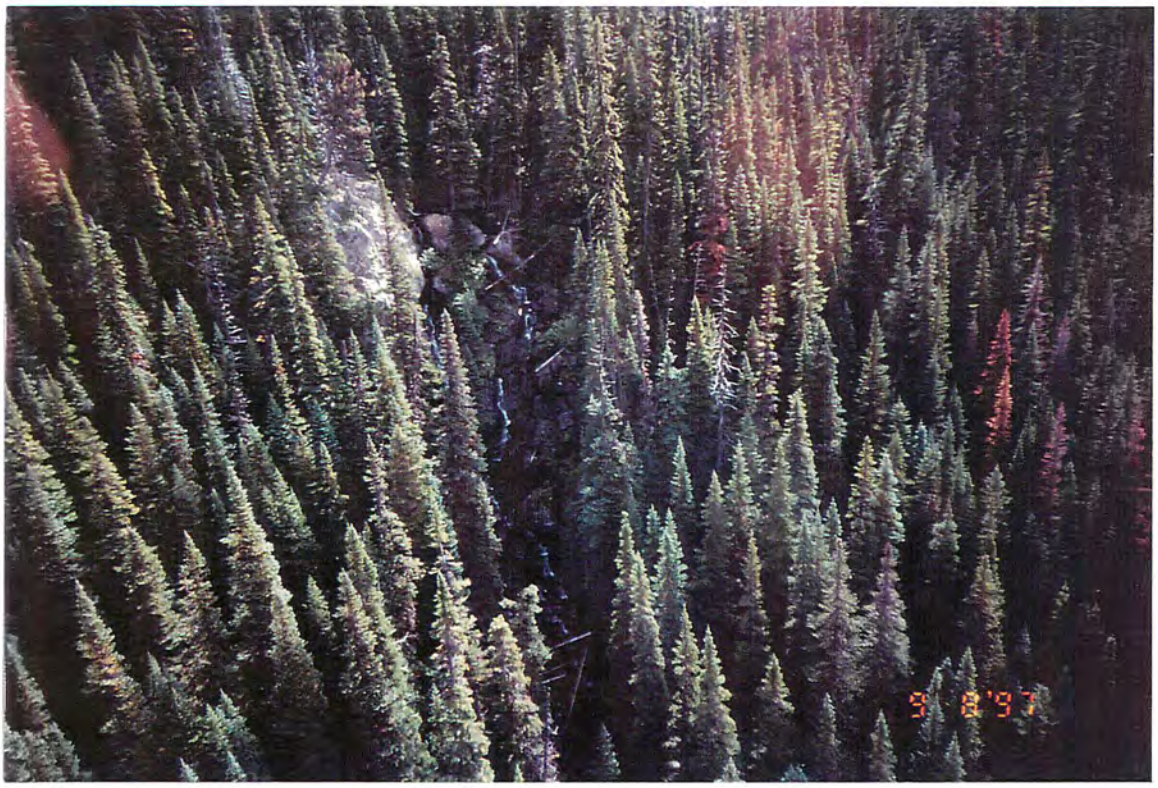


Photo #: E-25-23, 08-Sep-97
Site #: E270, Looking upstream at a series of barriers on a tributary to Ganokwa Creek

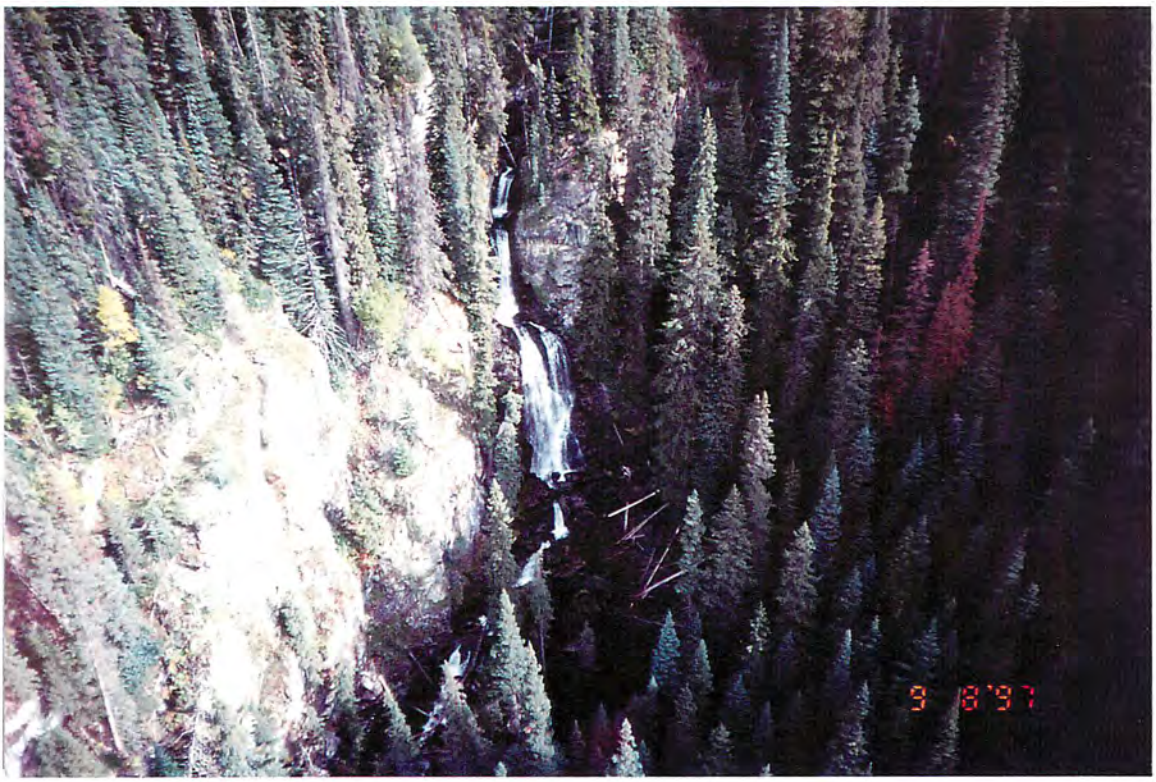


Photo #: E-25-24, 08-Sep-97
Site #: E270, Looking upstream at a series of barriers on Ganokwa Creek

DFO/MoELP Stream Survey Form | **Site Number:** E271 | **Reach No.: 1**

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: E271, Unit 12, Upper Ganokwa watershed. **Stream (Gaz.):** Unnamed **Watershed Code:** 050-7800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 086 **Reach Length (km):** 0.9 MW **Date:** 08-Sep-97 **Time:** 12:15 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6358 .60806 **Length surveyed (m):** 200.0 GE **Survey Crew:** SJ \JL \ \ \ \ \ \ \ **Photos:** E-26-1,2,3,4 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.4	MS
Av. Wet. Width (m):	3.0	MS
Av. Max Riffle Depth (cm):	7	MS
Av. Max Pool Depth (cm):	25	MS
Gradient (%):	6.0	CL
Pool: 20 Riffle: 25 Run: 45 Other: 10		
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	20	GE

Specific Data

2.8	3.1	2.3	4.2	5.0	3.2
2.5	2.6	2.1	3.8	4.5	2.7
7	8	6	5	7	
28	26	22	27	20	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	20	40	0	0	15

Crown Closure % : 0 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	60	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		20
Bedrock		10	10

D90 (cm): Compaction: High

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.51	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.3

% Unstable: 20

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 40 pH: 7.4 Braided: N

Water Temp. (°C): 8.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Reach Symbol

(Fish)

NF

3 C 6.0 | 1261

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S5

C2: LS = 20%, RS = 45%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 373 seconds over 150 meters.

C5: Gravels and larges make up the bank texture at this site.

C6: DO was not measured, the water was clear to the bottom. The air temperature at this site was 14.C.

C7: This is a high elevation reach running through a meadow. Boulders, pools and a few cutbanks provide the cover for fish at this site.



Photo #: E-26-1, 08-Sep-97
Site #: E271, Looking upstream at a series of barriers on Ganokwa Creek



Photo #: E-26-2, 08-Sep-97
Site #: E271, Looking upstream at a series of barriers on Ganokwa Creek



Photo #: E-26-3, 08-Sep-97
Site #: E271, Looking upstream at the channel, with boulder cover



Photo #: E-26-4, 08-Sep-97
Site #: E271, Looking downstream at the channel

DFO/MoELP Stream Survey Form | **Site Number:** E272 | **Reach No.:** 2

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: E272, Unit 12, Upper Ganokwa Creek watershed. **Stream (Gaz.):** Unnamed **Watershed Code:** 050-7200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 086 **Reach Length (km):** 0.8 MW **Date:** 08-Sep-97 **Time:** 13:15 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6365 .6080 **Length surveyed (m):** 200.0 GE **Survey Crew:** SJ \JL\ \ \ \ \ \ \ **Photos:** E-26-5,6 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	24	MS
Gradient (%):	2.0	CL

Pool: 10 Riffle: 5 Run: 85 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	0	GE
%Stable:	0	GE

Specific Data

1.9	1.7	0.9	0.7	0.7	1.0
1.9	1.7	0.9	0.7	0.7	0.9
6	5	4	3	5	
18	21	20	40	19	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	0	20	0	10	40

Crown Closure % : 0 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		10	10

D90 (cm): Compaction: Medium

Discharge

Wetted Width (m) :	1.6	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.20	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.3

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 10 pH: 7.4 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 40

Reach Symbol

(Fish)

NF

1 D 2.0 | 4321

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 18%, RS = 8%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 488 seconds over 200 meters.

C5 Fines and gravels make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 18.C.

C7 Undercut banks provide most of the rearing habitat in this high elevation reach.

C8 This reach has been classified as non fish bearing because no fish were caught in the sampling area, which is located above a stretch of failry steep, likely impassable gradient. The attached lakes appear to be too shallow to support a resident population.



Photo #: E-26-5, 08-Sep-97
Site #: E272, Looking upstream at the channel

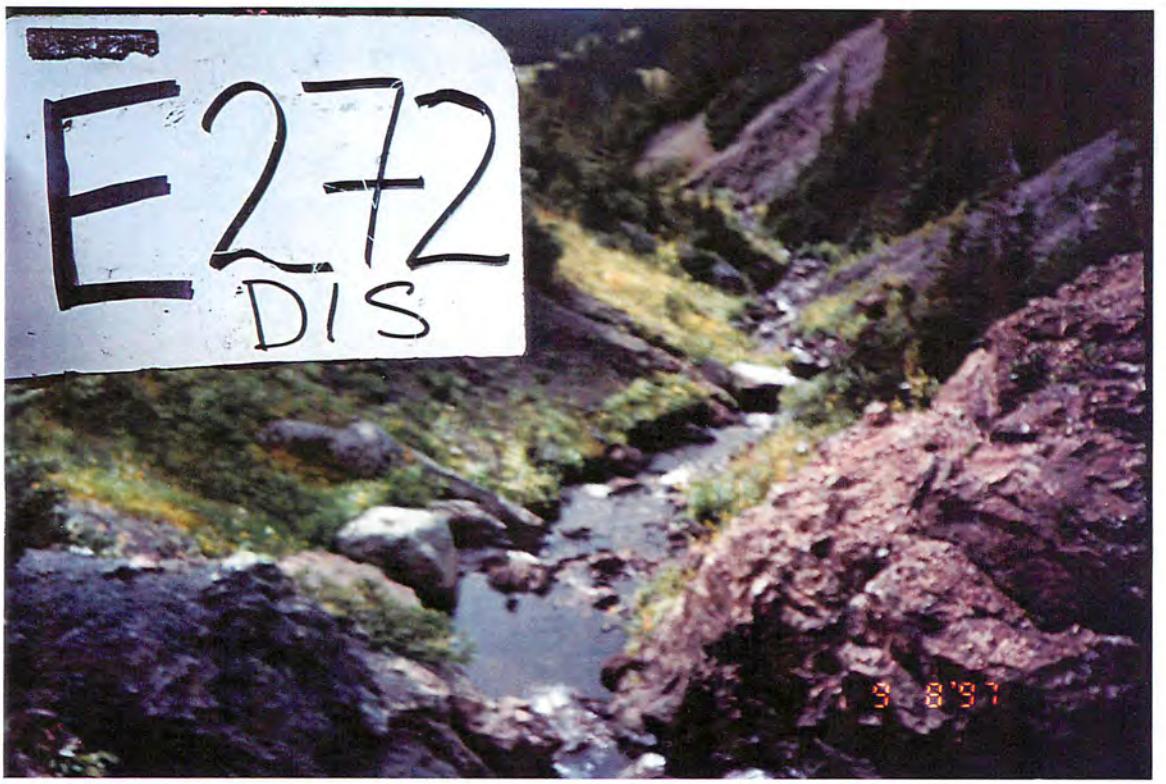


Photo #: E-26-6, 08-Sep-97
Site #: E272, Looking downstream at the channel, note steep sidewalls

5.8 Unnamed Tributary to Ganokwa Creek (460-3254-265-331) (93 L 076)

5.8.1 Sensitive Habitats and Barriers

This tributary is 4.9 km in length and is fed by 7 other tributaries. Reach 1 has low gradient and is slightly confined at the mouth, while reach 2 has low to moderate, steadily increasing gradient and is unconfined. Reach 3 is Llama Lake and reach 4 is a small inlet to Llama Lake. This is a low gradient creek with six small lakes and two marshes located roughly 900 meters upstream from the mouth. No barriers or sensitive habitats were identified by field crews working on this system, however Llama Lake would provide excellent overwintering habitat. This stream was sampled at 4 locations.

5.8.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of cutthroat trout in Llama Lake. Three sites were electroshocked on this tributary but no fish were caught. The tributaries to the main creek sampled in this inventory were classified as S3 and S4. Both A19 and R86 were classified as S3, based on an average channel width of 1.70 meters and the presence of fish habitat in the sampling areas.. Site R93 was classified as an S4 in reach one, based on an average channel width of 1.1 meters and the presence of fish habitat in the surveyed area. Site A24 was classified as an S6, based on an average channel width of 0.64 meters, 17% gradient and a lack of suitable fish habitat. The upper reaches of the tributaries sampled at A24 and R93 have very steep gradient and have been classified as non fish bearing. One tributary remains unsampled and appears to be an S4 -sized stream on the TRIM sheet.

DFO/MoELP Stream Survey Form

Site Number: ARNE 19 **Reach No.: 1**

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 19, Unit 12, S of Astlais Mtn and W of little Onion Mtn,see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-7400-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 **Reach Length (km):** 1.7 MA **Date:** 21-Sep-96 **Time:** 16:32 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6343 .60757 **Length surveyed (m):** 250.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	8	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	3.0	CL

Pool: 2 Riffle: 70 Run: 28 Other: 0

% Side Channel: GE

% Debris Area: 5 GE

%Stable: 80 GE

Specific Data

1.7	1.3	1.6	2.8	1.2	1.6
1.6	0.9	1.3	1.7	1.1	1.3
5	9	8	8		
22	22	18	18		

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	0	0	50	30

Crown Closure % : 100 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	20
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	30	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 14 Compaction: Medium

Discharge

Wetted Width (m) :	1.6	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.50	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.3

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.7 Braided: N

Water Temp. (°C): 4.5 02 (ppm):

Turb. (cm): 22 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

2 E 3.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort, using a Smithroot 15 A Model, was 252 seconds over 156 square meters.

C5: Lat N 54 48' 37.6", Long W 126 54' 36.8"

C6: No additional bank texture information.

C7: DO and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8: Some good rearing habitat, including step pool habitat, was observed at this site.

C9: This is a high energy system, with low banks. The stream has a tendency to change course where LOD interrupts the flow.The stream runs through an old clearcut that was logged right down to the banks. In addition, a mining claim is adjacent to this stream.



Photo #: A-2-19, 21-Sep-96
Site #: A19, Looking upstream.



Photo #: A-2-20, 21-Sep-96
Site #: A19, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: RYAN 86 **Reach No.:** 1

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 86, Unit 12, S of Astlain Mtn, W of little Onion, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-7500-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 **U.T.M.:** 9 .6347 .60748 **Reach Length (km):** 1.7 MA **Length surveyed (m):** 250.0 GE **Date:** 21-Sep-96 **Time:** 16:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐ **Survey Crew:** RH \JL \ \ \ \ \ \ **Photos:** R-5-22,23 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	8	MS
Gradient (%):	3.0	CL
Pool: 30 Riffle: 40 Run: 30 Other:	0	
% Side Channel:	>40	GE
% Debris Area:	0-5	GE
%Stable:	80	GE

Specific Data

1.4	2.2	2.2	1.5	1.7	1.4
0.9	0.8	0.6	0.8	0.9	0.5
8	6	6	4	3	
10	8	6	8		

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	5	0	0	65	0

Crown Closure % : 90 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	35	35
Gravels	Small (2-16mm):	35	20
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 D 3.0 | 4330

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: Y

Water Temp. (°C): 5.0 02 (ppm):

Turb. (cm): 10 Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 22%, RS = 10%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model, was 150 seconds over 250m. Shocking was limited to pools only due to the low flow stage.

C5 Lat N 54 48' 19", Long W 126 54' 14.7"

C6 No additional bank texture information.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8 This site could provide fish habitat at higher flow. The flow stage was low on the sampling day. Many channels were found at this site, some of which were not well defined.



Photo #: R-5-22, 1996/09/21
Site #: R86, Looking upstream through alder.



Photo #: R-5-23, 1996/09/21
Site #: R86, Looking downstream past culvert.

DFO/MoELP Stream Survey Form

Site Number: RYAN 93 Reach No.: 1

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 93, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-3254-265-000-000-000-000-000-000-000-000-0

Map #:	93 L 076	Reach Length (km):	0.3	MA	Date:	22-Sep-96	Time:	14:45	Agency:	TEC	Access:	V2	Fish Card:	N	Field ☒ Historical ☐
U.T.M.:	9 . 6355 . 60740	Length surveyed (m):	200.0	GE	Survey Crew:	RH\JL\ \ \ \ \ \ \					Photos:	A-2-35,36	Air Photos:		

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	16.0	CL
Pool: 10 Riffle: 75 Run: 5 Other:	10	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	10	GE

Specific Data

0.9	0.9	1.5	0.8	1.6	0.7
0.9	0.9	0.6	0.6	0.8	0.5
6	7	4			
12	18	14			

Cover

Cover Total %: 65 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	25	0	0	25	30

Crown Closure %: 80 Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	15	15
Gravels	Small (2-16mm):	70	30
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	15	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 6 Compaction: Medium

Discharge

Wetted Width (m):	0.3	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	1.50	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 5 pH: Braided: N

Water Temp. (°C): 4.5 02 (ppm):

Turb. (cm): 18 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

1 D 16.0 | 2710

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4

C2: LS = 25%, RS = 42%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 15 A model was 100 seconds over 250 meters.

C5: Lat N 54 47' 49.5", Long W 126 53' 35.2"

C6: No additional bank texture information.

C7: DO, pH and conductivity were not measured at this site. The air temperature was 6 degrees celcius.

C8: This site could provide rearing habitat. Small cascades and occasional small falls up to 75cm in height were noted in the sampling area.



Photo #: A-2-35, 22-Sep-96
Site #: R93, Looking upstream.



Photo #: A-2-36, 22-Sep-96
Site #: R93, Looking downstream, moss-covered log across channel.

DFO/MoELP Stream Survey Form

Site Number: ARNE 24

Reach No.: 1

Trib. to Ganokwa Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 24, Unit 12, north of Llama Lake, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-7700-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 | Reach Length (km): 0.7 MA | Date: 22-Sep-96 | Time: 14:45 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6349 .60741 | Length surveyed (m): 300.0 GE | Survey Crew: AKL\ HK\ \ \ \ \ \ \ | Photos: A-2-34 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.6	MS
Av. Wet. Width (m):	0.5	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	11	MS
Gradient (%):	17.0	CL

Pool: 20 Riffle: 20 Run: 40 Other: 20

% Side Channel:	10-40	GE
% Debris Area:	60	GE
%Stable:	98	GE

Specific Data

0.9	0.7	0.4	0.5	0.7	0.8
0.6	0.5	0.3	0.3	0.8	0.8
4	4				
11					

Cover

Cover Total % : 90 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	60	0	0	30	10

Crown Closure % : 25 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.12	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.3

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 6.2 02 (ppm):

Turb. (cm): 11 Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 E 17.0	8110
(Width, Valley: Channel, Slope)	(Bed Material)

Obstructions

C	Height (m)	Type	Location
	1	CV	0.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6

C2: The side slopes were not evaluated at this site.

C3: No fisheries sensitive zones were noted at this site.

C4: This site was not electrofished as too little habitat was available to shock at the time of sampling.

C5: Lat N 54 47' 35.6", Long W 126 57' 45.6"

C6: The banks at this site contain both fines and gravels.

C7: DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.0°C

C8: No fish habitat was observed at this site. Downstream of the road the gradient reaches 27% and the culvert at this crossing is a barrier to fish passage upstream. The channel is intermittent in sections and the riparian vegetation is minimal.



Photo #: A-2-34, 22-Sep-96
Site #: A24, Notebook on bank of shaded stream.

5.9 Gibson Creek (460-4961-087) (93 L 056, 93 L 057)

5.9.1 Sensitive Habitats and Barriers

The mainstem of Gibson Creek is 7.0 km in length and is fed by four tributaries. Reach 1 has low gradient and is unconfined, while reach 2 is characterized by low gradient and has four wetlands identified as fisheries sensitive zones. A network of lakes and wetlands occurs in the vicinity of the reach 1 and 2 break. The main creek and some of the tributaries are crossed by roads, highway 16 crosses reach 1. Gibson Creek was sampled at 4 locations, including reaches 1 and 3 of the mainstem.

5.9.2 Fish Summary Tables and Stream Classification

No historical records exist for Gibson Creek. However, rainbow trout were caught by electrofishing in reach 1 and cutthroat trout were caught by electrofishing in a tributary to reach 2. The mainstem of Gibson Creek was classified as an S3 in reach 1 based on the 4.2 meter average channel width and the presence of fish in the sampling area. The S3 classification is consistent through reach 3, reaches 4 and 5 were not sampled in this inventory. Both tributaries to the mainstem sampled in this inventory were classified as S4 based on average channel widths of 1.13 meters and 0.71 meters respectively and the presence of fish or fish habitat in the sampling areas. The upper reaches of most of the tributaries are characterized by steep gradient, however some of the reaches have some sections of shallow gradient. Future sampling is recommended for these reaches.

DFO/MoELP Stream Survey Form

Site Number: E298

Reach No.: 3

Gibson Cr.

TRITON Environmental Consultants Ltd.

Location: E298, Unit 12, NE of Thompson Cr. **Stream (Gaz.):** Gibson Creek **Watershed Code:** 460-4961-087-000-000-000-000-000-000-000-0

Map #: 93 L 057 | Reach Length (km): 1.1 MW | Date: 13-Sep-97 | Time: 9:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6426 .60504 | Length surveyed (m): 100.0 GE | Survey Crew: SJ \LE\ \ \ \ \ \ \ | Photos: E-28-20,21 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.0	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	7.0	CL
N Pool: 0 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.4 1.5 2.9 2.0 1.4 1.6

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	0	0	90	0

Crown Closure % : 0 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 0 Compaction: High

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT)

2 D 7.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.7

Bars (%): 100 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS = 4%, RS = 15%

C3 No fisheries sensitive zones noted.

C4 This dry site was not electrofished.

C5 Fines and larges make up the bank texture at this site.

C6 Water quality could not be measured, the air temperature at this site was 11.C.

C7 This reach does have some rearing habitat. When flowing, pools and LOD would provide most of the cover. Cattle and horses have access to this reach, impacts were noted at the crossing.



Photo #: E-28-20, 12-Sep-97
Site #: E298, Looking upstream at the channel



Photo #: E-28-21, 13-Sep-97
Site #: E298, Looking downstream at a dry channel

DFO/MoELP Stream Survey Form

Site Number: JULIE 281

Reach No.: 1

Gibson Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 281, Unit 12 , see C5. **Stream (Gaz.):** Gibson Creek **Watershed Code:** 460-4961-087-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **Reach Length (km):** 2.0 MA **Date:** 02-Oct-96 **Time:** 14:45 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6409 .60516 **Length surveyed (m):** 90.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-22-1,2 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	4.2	MS	4.0	8.0	3.6	2.9	4.0	2.9
Av. Wet. Width (m):	3.0	MS	2.5	4.5	2.9	2.4	3.1	2.6
Av. Max Riffle Depth (cm):	7	MS	7	7				
Av. Max Pool Depth (cm):	33	MS	32	34				
Gradient (%):	2.0	CL						

Pool: 60 Riffle: 10 Run: 30 Other: 0

% Side Channel: >40 GE

% Debris Area: 20 GE

%Stable: 70 GE

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	0	20	20	10

Crown Closure % : 30 Aspect : N

Discharge

Wetted Width (m) :	1.1	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.41	F
Discharge (m3/s) :	0.07	F

Reach Symbol

(Fish)

RB

4 D 2.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 19 Compaction: Medium

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0

Bars (%): 5 pH: 8.4 Braided: Y

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): 50 Cond. (µmhos): 220

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	82	J				EL

Comments

C1 S3

C2 LS = 10%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot Mark 7 model was 69 seconds over 20 square meters.

C5 Lat N 54 35' 30.9", Long W 126 49' 09.3"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water is bluey grey in colour and contains clumps of green algae. The creek appears to be impacted by high instream nutrient levels. The mean air temperature on this day was 4.95°C

C8 The grating on the the upstream side of the stream crossing is clogged with woody debris.

C9 The air temperature at this site was 7 degrees celcius.

1 Evidence of a great deal of beaver activity was noted upstream of the road.



Photo #: J-22-1, 1996/10/2
Site #: J281, Looking upstream toward culvert.



Photo #: J-22-2, 1996/10/2
Site #: J281, Looking downstream, alder swale.

DFO/MoELP Stream Survey Form

Site Number: E302 Reach No.: 1

Trib. to Gibson Cr.

TRITON Environmental Consultants Ltd.

Location: E302, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 066-4300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 | Reach Length (km): 1.8 MW | Date: 13-Sep-97 | Time: 14:45 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6426 .60516 | Length surveyed (m): 100.0 GE | Survey Crew: SJ \LE\ \ \ \ \ \ \ | Photos: E-29-5,6 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.7	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	4.0	CL
N Pool: 0 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

0.8 1.0 0.7 0.9 0.5 0.4

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	100	0

Crown Closure % : 0 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 2 Compaction: High

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.6

Bars (%): 100 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

1 D 4.0 | 7300

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S4

C2: LS = 15%, RS = 25%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished.

C5: Fines and gravels make up the bank texture at this site.

C6: Water quality not applicable.

C7: This reach has been impacted by logging and farming. This creek appears to be an ephemeral run off stream.



Photo #: E-29-5, 13-Sep-97
Site #: E302, Looking upstream at the channel



Photo #: E-29-6, 13-Sep-97
Site #: E302, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E299 Reach No.: 1

Trib. to Gibson Cr.

TRITON Environmental Consultants Ltd.

Location: E299, Unit 12, East of the Bulkley River **Stream (Gaz.):** Unnamed **Watershed Code:** 067-1900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 2.4 MW **Date:** 13-Sep-97 **Time:** 10:13 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6426 .60502 **Length surveyed (m):** 150.0 GE **Survey Crew:** SJ \LE\ \ \ \ \ \ \ **Photos:** E-28-22,23,24 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 25 Run: 65 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

1.4	1.7	1.3	0.5	0.9	1.0
1.4	1.6	1.3	0.6	1.0	1.1
3	5	6	5	7	
18	16	19	27	21	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	0	0	30	30

Crown Closure % : 10 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	20	10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 15 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.65	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.9

Bars (%): 30 pH: 8.3 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 350

Reach Symbol

(Fish)

CT

1 D 2.0 | 6220

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	1	120	A	R			EL

Comments

C1: S4

C2: LS = 5%, RS = 2%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-300V, was 279 seconds over 125 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The air temperature at this site was 12.C.

C7: Rearing habitat in this reach consists of LOD, scour pools, cutbanks and overstream vegetation. Horses use the nearby fields, significant impacts were noted at the road crossing. A salt block is located downstream of the culvert and horses have trampled the streambanks. Siltation was noted at the downstream end of the culvert.



Photo #: E-28-22, 13-Sep-97
Site #: E299, Looking downstream at the channel, which is overgrown with vegetation



Photo #: E-28-23, 13-Sep-97
Site #: E299, Looking upstream at the channel



Photo #: E-28-24, 13-Sep-97
Site #: E299, Looking downstream at the channel, note the trampled banks

5.10 Helps Creek (460-4370-000) (93 L 065, 93 L 055)

5.10.1 Sensitive Habitats and Barriers

The mainstem of Helps Creek is 10.1 km in length and is fed by 7 tributaries. Reaches 1, 2 and 3 have low gradient and are unconfined and reach 4 is a small lake. Reach 5 has steadily increasing gradient and is typically unconfined. Reach 6 has moderately steep gradient, with gradually increasing confinement culminating in an 8 meter falls and two, 2 meter cascades. Reach 7 is confined, has moderate gradient and a 4 meter falls. Reach 8 has variable gradient and is typically unconfined. Helps Creek has 2 large wetlands in direct contact with the channel in reaches 3 and 4, identified as fisheries sensitive zones. In reach 4, Helps Creek is fed by a rather large tributary system (460-4370-227) which drains a lake. The historical information indicates the presence of cutthroat trout, long nose sucker and red sided shiner in this lake. The two lakes on this system would provide excellent rearing habitat. The Helps Creek system was sampled at 12 locations, including reaches 2,5 and 8 of the mainstem.

5.10.2 Fish Summary Tables and Stream Classification

The historical records indicate that cutthroat and coho occur in the main creek and that cutthroat, longnose sucker and red sided shiner are present in a large tributary to Helps Creek. The main creek was sampled by electrofishing in reaches 2 and 5 and rainbow trout, burbot and Dolly Varden were caught. The mainstem was classified as an S3 in both of these reaches based on average channel widths of 4.98 meters and 3.22 meters and the presence of fish in the sampling areas. The large tributary to Helps Creek was classified as an S3 in reach 3 based on an average channel width of 4.07 and the presence of cutthroat trout in the sampling area. Fish were caught in only one of the smaller streams flowing into this large tributary. Rainbow trout were caught at site J238. Reach 8 of Helps Creek was classified as an S6 based on an average channel width of 2.0 meters and the absence of fish in the sampling area, located above multiple impassable barriers.

DFO/MoELP Stream Survey Form

Site Number: W22 **Reach No.: 2**

Helps Cr.

TRITON Environmental Consultants Ltd.

Location: W22, Unit 12; 4.6km on Birch St. west of Bulkley R. **Stream (Gaz.):** Helps Creek **Watershed Code:** 460-4370-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 0.2 MA **Date:** 11-Jul-97 **Time:** 11:30 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6280 .60596 **Length surveyed (m):** 100.0 GE **Survey Crew:** KA UP\ \ \ \ \ \ \ **Photos:** W-3-12,13,14,15 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	5.0	MS
	Av. Wet. Width (m):	4.2	MS
N	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	35	MS
	Gradient (%):	2.0	CL
	Pool: 30 Riffle: 0 Run: 70 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	5	GE

Specific Data

5.1	5.9	4.5	5.3	4.4	4.7
4.8	5.8	4.3	3.7	3.1	3.2
43	5	42	45	41	

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	0	20	30	10	10

Crown Closure % : 10 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 11 Compaction: Medium

Discharge

Wetted Width (m) :	3.6	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.60	F
Discharge (m3/s) :	0.32	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.6 Braided: N

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 170

Reach Symbol

(Fish)

BB RB

5 D 2.0 | 5320

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	BB	1	90	J	R			EL
	RB	4	60-100	J	R			EL

Comments

C1: S3

C2: LS=2%, RS=1%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 300V, was 113 seconds over 160 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 14.6 C.

C7: This stream has excellent rearing habitat due to deep pools, instream vegetation and cutbanks. In the surveyed area there was evidence of spawning substrate. The culverts have been well built. The stream is located between two wetlands. The actual area of the stream is 40m long. The road is flooded at the crossing.



Photo #: W-3-12, 11-Jul-97
Site #: W22, Looking upstream at the channel

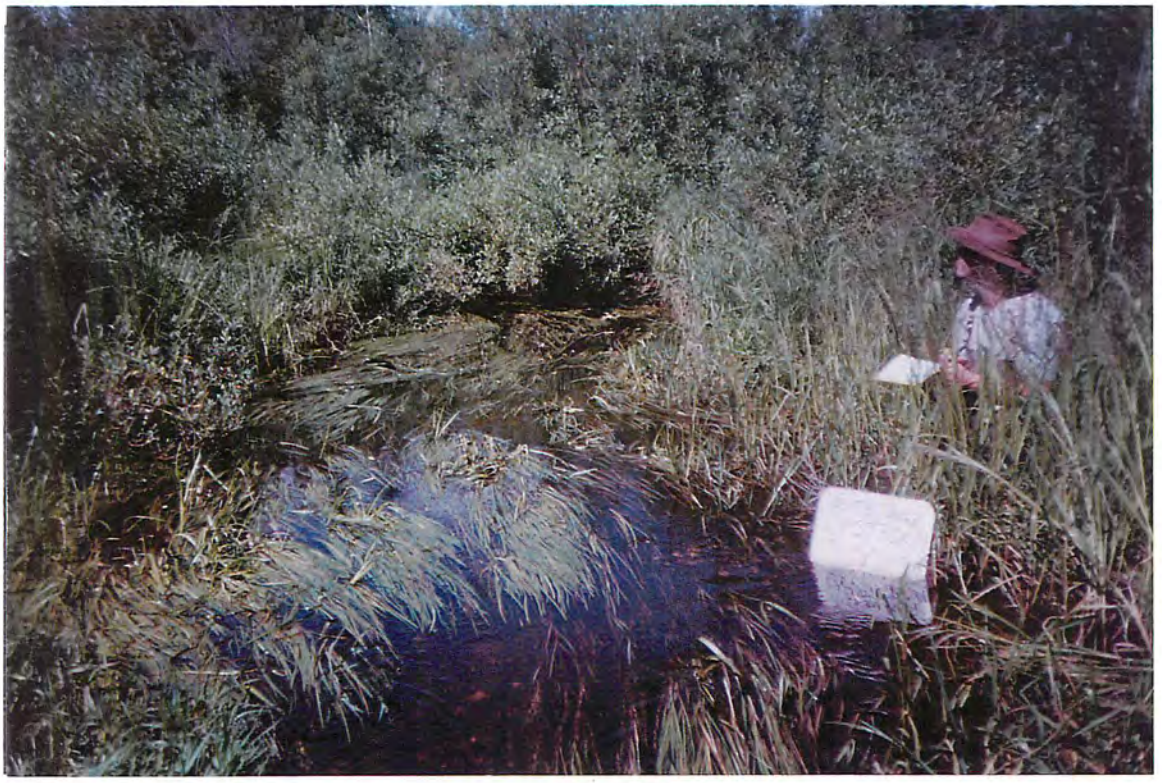


Photo #: W-3-13, 11-Jul-97
Site #: W22, Looking downstream at the channel, note the abundant instream vegetation



Photo #: W-3-14, 11-Jul-97
Site #: W22, Looking upstream at the channel



Photo #: W-3-15, 11-Jul-97
Site #: W22, Measuring fish on the fishboard

DFO/MoELP Stream Survey Form

Site Number: JULIE 241 Reach No.: 5

Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 241, Unit 12, E of Goathom Creek, see C5. **Stream (Gaz.):** Helps Creek **Watershed Code:** 460-4370-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 2.5 MA **Date:** 27-Sep-96 **Time:** 17:10 **Agency:** TEC **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6266 .60543 **Length surveyed (m):** 220.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-18,19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.2	MS
Av. Wet. Width (m):	1.6	MS
Av. Max Riffle Depth (cm):	6	MS
Av. Max Pool Depth (cm):	58	MS
Gradient (%):	7.0	CL
Pool: 30 Riffle: 35 Run: 30 Other:	5	
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

3.9	2.6	2.5	3.3	3.8	3.2
1.4	1.4	2.4	1.5	1.5	1.6
5	8	5			
50	42	60	80		

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	30	0	35	5

Crown Closure % : 40 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	70	30
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.30	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 40 pH: 7.4 Braided: Y

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): 80 Cond. (µmhos): 110

Reach Symbol

(Fish)

DV

3 B 7.0 | 1270

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	142	A	S			EL

Comments

C1: S3

C2: LS = 20%, RS = 20%

C3: No fisheries sensitive zones were noted at this site.

C4: The electroshocking effort, using a 12 B POW model was 195 seconds over 100 square meters. The electroshocking effort was cut short due to concerns regarding the impact of shocking on spawning fish. This creek was sampled at an old road crossing which seems to have forded the stream.

C5: Lat N 53 37' 12.6", Long W 127 02' 24.1"

C6: No additional bank texture information.

C7: DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 13.8°C

C8: Some nice holding and step pools occur at this site. Dolly Varden spawning habitat was observed here.

C9: This creek has several branches and appears to carry a lot of water during high flow.



Photo #: J-18-18, 1996/09/27
Site #: J241, Looking upstream, Helps C.



Photo #: J-18-20, 1996/09/27
Site #: J241, Dolly Varden char caught by electrofishing.



Photo #: J-18-24, 1996/09/28
Site #: Barrier to salmon on Helps Creek, 1.6 km upstream of Bulkley River.

DFO/MoELP Stream Survey Form

Site Number: Z245 **Reach No.: 8**

Helps Cr.

TRITON Environmental Consultants Ltd.

Location: Z245, Unit 12 **Stream (Gaz.):** Helps Creek **Watershed Code:** 460-4370-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 055 **Reach Length (km):** 2.3 MA **Date:** 13-Sep-97 **Time:** 11:19 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 626600 6051678 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG UL \ \ \ \ \ \ \ **Photos:** Z-30-25,1,2,5,6 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	2.0	MS
C1	Av. Wet. Width (m):	1.9	MS
	Av. Max Riffle Depth (cm):	5	MS
	Av. Max Pool Depth (cm):	28	MS
	Gradient (%):	11.0	CL
	Pool: 40 Riffle: 20 Run: 35 Other: 5		
	% Side Channel:	0-10	GE
	% Debris Area:	>15	GE
	%Stable:	30	GE

Specific Data

1.2	1.2	1.4	1.8	1.2	1.8
1.1	1.6	1.4	1.6	1.3	1.3
5	5	5			
31	13	30	36		

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	25	25	0	5	25

Crown Closure % : 40 Aspect : NW

Bed Material

Fines	Cluy, silt, sand (<2mm):		10	10
Gravels	Small (2-16mm):		20	10
	Large (16-64mm):			10
Larges	Sm. cobble (64-128mm):		60	20
	Lge cobble (128-256mm):			25
	Bldr cobble (>256mm):			15
Bedrock			10	10

D90 (cm): Compaction: Medium

Discharge

Wetted Width (m) :	1.1	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.42	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.5

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 15 pH: 8.0 Braided: N

Water Temp. (°C): 6.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 120

Reach Symbol

(Fish)

NF

2 B 11.0 | 1261

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	4	F	9.5
	8	F	8.1
	2	C	8.4
	2	C	8.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6. One additional measurement was taken for both channel and wetted widths; 1.6 and 1.7.

C2: LS=5%, RS=44%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 230 seconds over 100 meters on Helps Creek above the falls and then 100 seconds below the falls.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 9 C.

C7: This reach has some good rearing pools as well as some good cobble cover. It is however located above a falls.



Photo #: Z-30-25, 13-Sep-97
Site #: Z245, Looking upstream at the channel



Photo #: Z-31-1, 13-Sep-97
Site #: Z245, Looking downstream at the channel



Photo #: Z-31-2, 13-Sep-97
Site #: Z245, Looking upstream at a cascade

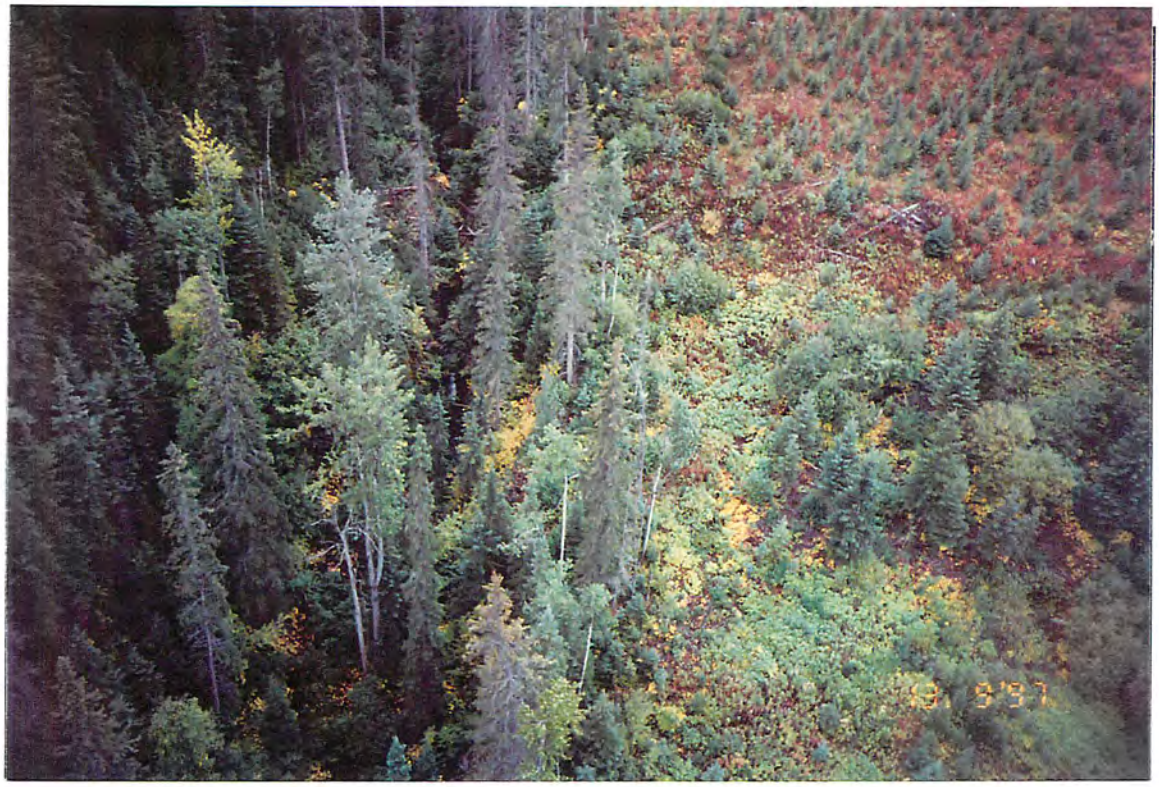


Photo #: Z-31-5, 13-Sep-97
Site #: Z245, Looking upstream at barriers on Helps Creek

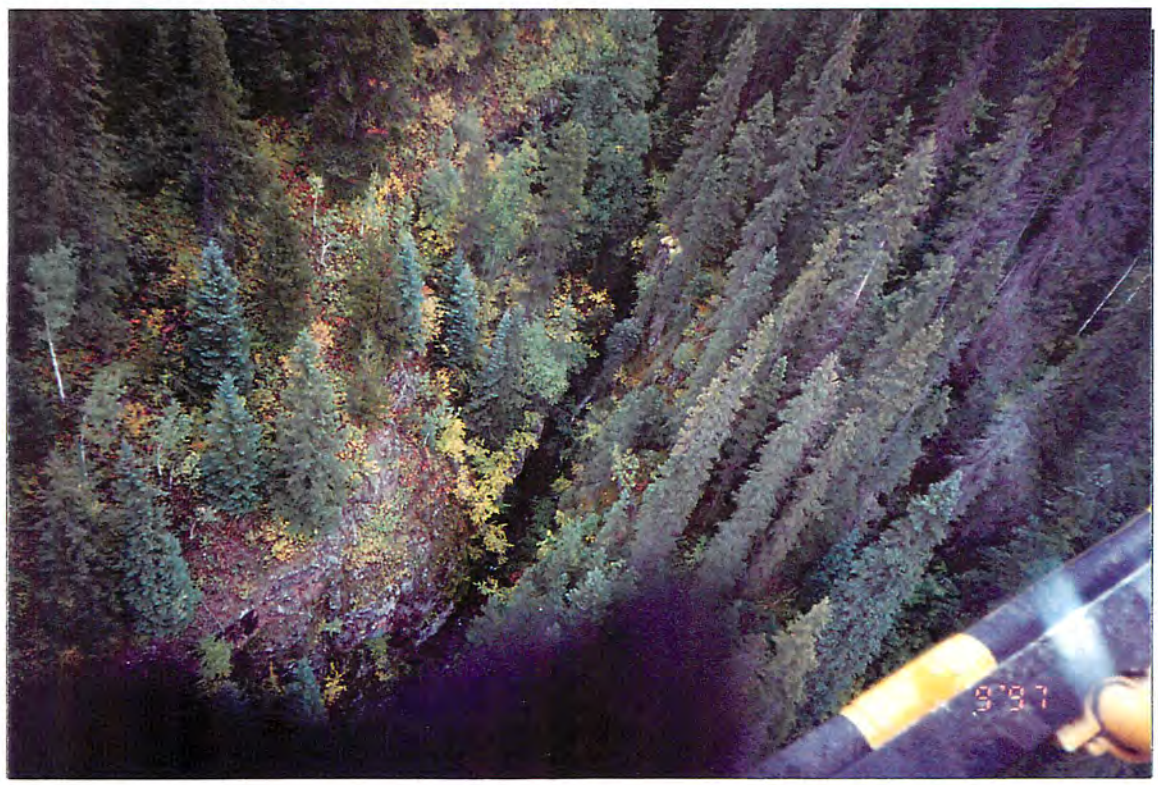


Photo #: Z-31-6, 13-Sep-97
Site #: Z245, Looking upstream at barriers on Helps Creek

DFO/MoELP Stream Survey Form

Site Number: Z246 Reach No.: 1

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: Z246 | Stream (Gaz.): Unnamed | Watershed Code: 062-8500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 055 | Reach Length (km): 1.9 MA | Date: 13-Sep-97 | Time: 12:58 | Agency: TEC | Access: FT | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 626600 6051678 | Length surveyed (m): 100.0 GE | Survey Crew: KG UL \ \ \ \ \ \ \ | Photos: Z-31-3,4 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	18	MS
Gradient (%):	13.0	CL
Pool: 30 Riffle: 20 Run: 45 Other: 5		
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

1.2	1.3	1.4	1.0	0.9	1.0
1.6	1.0	0.8	0.9		
1	7	7	6	5	
20	20	14			

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	50	15
	Bldr cobble (>256mm):		20
Bedrock		10	10

D90 (cm): | Compaction: High

Cover

Cover Total %: 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	25	15	0	15	20

Crown Closure %: 30 | Aspect: NE

Discharge

Wetted Width (m):	1.3	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.07	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: CO

Valley : Channel Ratio: 2-5

Stage: L | Flood Signs Ht(m):

Bars (%): 5 | pH: 6.7 | Braided: Y

Water Temp. (°C): 6.5 | 02 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 B 13.0 | 1350

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6

C2: LS=54%, RS=30%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 250 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO, pH and conductivity were not measured at this site, the water was clear to bottom. The air temperature at this site was 9 C.

C7: This stream has some good rearing habitat consisting of cutbank and cobble cover, but it is located above a 4m falls on Helps Creek and no fish were caught in the smapling area. It has been classified as non fish bearing.



Photo #: Z-31-3, 13-Sep-97
Site #: Z246, Looking downstream at the channel



Photo #: Z-31-4, 13-Sep-97
Site #: Z246, Looking upstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** JULIE 236 **Reach No.:** 1

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 236, Unit 12, west branch of J235, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0400-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 0.8 MA **Date:** 27-Sep-96 **Time:** 14:05 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6244 .60659 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** None **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	2.7	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	3.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	0	GE

Specific Data

2.0 2.4 2.9 3.0 3.0 2.9

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	40	0	20	30

Crown Closure % : 20 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	30	15
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 21 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 1.2

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.3

Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

3 D 3.0 | 6130

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS = 2%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 38' 40.2", Long W 127 04' 14.6"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 13.8°C

C8 This site provides very marginal cutthroat habitat, the channel does not seem to support high flows for most of the year. Trees are growing in the channel, which flows through pasture and deciduous woodland.

DFO/MoELP Stream Survey Form

Site Number: JULIE 240 **Reach No.: 1**

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 240, Unit 12, .West of Helps Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0000-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 0.2 MA **Date:** 27-Sep-96 **Time:** 16:50 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6261 .60546 **Length surveyed (m):** 80.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-16,17 **Air Photos:**

Channel Characteristics

			Specific Data
	Av. Chan. Width (m):	1.0 MS	1.4 1.3 1.0 0.5 0.9 0.9
	Av. Wet. Width (m):	0.4 MS	0.4 0.5
N	Av. Max Riffle Depth (cm):	0 MS	
	Av. Max Pool Depth (cm):	8 MS	8
	Gradient (%):	9.0 CL	
	Pool: 100 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0 GE	
	% Debris Area:	60 GE	
	%Stable:	10 GE	

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	10	0	60	20

Crown Closure % : 80 Aspect : N

Bed Material

	Fines	Clay, silt, sand (<2mm):	20	20
	Gravels	Small (2-16mm):	50	20
		Large (16-64mm):		30
	Larges	Sm. cobble (64-128mm):	30	20
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		5
	Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 5 pH: Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): 8 Cond. (µmhos): 90

Reach Symbol

(Fish)

(CT)

I	D	9.0	2530
(Width, Valley: Channel, Slope)			(Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1: S4

C2: LS = 2%, RS = 2%

C3: No fisheries sensitive zones were noted at this site.

C4: This site was not electrofished as too little water was in the channel at the time of sampling.

C5: Lat N 54 37' 23.3", Long W 127 02' 50"

C6: No additional bank texture information.

C7: Water quality was not evaluated at this site. The channel was full of leafy debris at the time of sampling. The mean air temperature on this day was 13.8°C

C8: The culvert at this road crossing is not a barrier to fish passage upstream. The habitat at the road is unsuitable for fish. Upstream of the road, the channel appears to be more of a ditch, has a high percentage of fines, and contains no fish habitat.

C9: The air temperature at this site was 14.C.



Photo #: J-18-17, 1996/09/27
Site #: J240, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: JULIE 244

Reach No.: 1

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 244, Unit 12, 5.9km along the road, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 060-9600-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 1.9 MW **Date:** 28-Sep-96 **Time:** 10:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6286 .60581 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-25,26 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.2	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	2.0	CL
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	80	GE
	%Stable:	50	GE

Specific Data

1.5 1.5 1.0 0.8 1.3 1.0

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	0	0	60	20

Crown Closure % : 80 Aspect : N

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

1 C 2.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4

C2 LS = 20%, RS = 20%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 39' 13.6", Long W 127 00' 23.1"

C6 No additional bank texture information.

C7 Water quality was not measured at this site. The mean air temperature on this day was 10.5°C

C8 Extremely marginal fish habitat occurs downstream of the road. At high water this area may be used for rearing and as such future sampling is recommended at high flow. At the road crossing the channel is undefined and is filled with grasses. Evidence of trampling by livestock was noted. No fish habitat occurs upstream of the road crossing.

C9 The air temperature at this site was 10 degrees celcius.



Photo #: J-18-25, 1996/09/28
Site #: J244, Looking downstream.



Photo #: J-18-26, 1996/09/28
Site #: J244, Looking upstream, channel through alder.

DFO/MoELP Stream Survey Form

Site Number: JULIE 239

Reach No.: 1

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 239, Unit 12, 1.4km W of Helps Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0800-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 1.2 MA **Date:** 27-Sep-96 **Time:** 15:45 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6246 .60557 **Length surveyed (m):** 200.0 GE **Survey Crew:** JP \DD \ \ \ \ \ \ **Photos:** J-18-14,15 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	28	MS
Gradient (%):	12.0	CL

Pool: 30 Riffle: 30 Run: 35 Other: 5

% Side Channel:	0	GE
% Debris Area:	20	GE
%Stable:	10	GE

Specific Data

0.9	1.4	1.5	1.4	1.8	1.6
0.6	0.4	1.1	1.0	0.6	0.3
1	1	1	2		
23	32				

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	5	30	0	50	10

Crown Closure % : 40 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	50	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 42 Compaction: Medium

Discharge

Wetted Width (m) :	0.4	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.09	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.6

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 5 pH: 7.4 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): 32 Cond. (µmhos): 90

Reach Symbol

(Fish)

(RB) (CT)

1 C 12.0 | 2350

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 LS = 55%, RS = 40%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model was 493 seconds over 200 square meters.

C5 Lat N 54 38' 02.2", Long W 127 04' 11.6"

C6 No additional bank texture information. The channel is fairly defined.

C7 DO was not measured at this site. The water ws clear to the bottom. The mean air temperature on this day was 13.8°C

C8 There are no apparent barriers to fish passage upstream within this reach. Suitable rearing but likely no spawning habitat exists at this site.

C9 The valley bottom is heavily overgrown with devils club.

1 The air temperature at this site was 14.C.



Photo #: J-18-14, 1996/09/27
Site #: J239, Looking upstream,.



Photo #: J-18-15, 1996/09/27
Site #: J239, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: JULIE 235 **Reach No.: 1**

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 235, Unit 12, South of the Telkwa airfield, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-4370-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 4.1 MW **Date:** 27-Sep-96 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6246 .60571 **Length surveyed (m):** 400.0 GE **Survey Crew:** JP\DD\ \ \ \ \ \ \ **Photos:** J-18-7,8 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	4.1	MS
Av. Wet. Width (m):	1.9	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	23	MS
Gradient (%):	2.0	CL

Pool: 60 Riffle: 20 Run: 20 Other: 0

% Side Channel:	0-10	GE
% Debris Area:	5	GE
%Stable:	10	GE

Specific Data

6.0	5.5	3.1	2.8	1.8	5.2
2.1	1.9	2.6	2.0	1.0	1.8
2	2	3			
22	34	14			

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	40	0	10	50

Crown Closure % : 20 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	50	20
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 18 Compaction: Medium

Discharge

Wetted Width (m) :	0.9	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.22	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.8

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 10 pH: 8.2 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): 34 Cond. (µmhos): 190

Reach Symbol

(Fish)

CT

4 D 2.0 | 3520

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	4	66-100	J	R			EL

Comments

C1 S3

C2 LS = 2%, RS = 2%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model was 644 seconds over 400 square meters.

C5 Lat N 54 38' 44.3", Long W 127 04' 08.7"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 13.8°C

C8 This site could be used by coho, however the presence of beaver dams is suspected downstream. These dams may prevent fish from accessing this area. This creek runs through an agricultural area. Bank erosion was noted at this site and livestock are not prevented from using the creek. A farmer in this area has a reservoir which contains cutthroat. Spawning fish at this site have been observed by locals.

C9 The air temperature at this site was 14.C.



Photo #: J-18-7, 1996/09/27
Site #: J235, Looking upstream beside pasture.



Photo #: J-18-8, 1996/09/27
Site #: J235, Looking downstream toward culvert.

DFO/MoELP Stream Survey Form

Site Number: JULIE 242 **Reach No.: 1**

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 242, Unit 12, approximately 200m upstream of the road crossing, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-4370-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 0.1 MA **Date:** 27-Sep-96 **Time:** 17:50 **Agency:** TEC **Access:** FT **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .5962 .60732 **Length surveyed (m):** 60.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-21 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	0.9	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	6.0	CL

Pool: 0 Riffle: 0 Run: 0 Other: 0

% Side Channel: 0 GE

% Debris Area: 60 GE

%Stable: 20 GE

Specific Data

1.1 0.6 1.0 1.1 0.8 0.9

Cover

Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

Crown Closure % : 80 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	90	90
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 14 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 D 6.0 | 9010

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6

C2 LS = 10%, RS = 10%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 55 36' 40", Long W 127 01' 52"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this dry site. The mean air temperature on this day was 13.8°C

C8 This reach was classifed as non fish bearing because it lacks suitable fish habitat and a continuous channel. The substrate is largely organic, with some small cobble. The streambed was covered with leafy debris at the time of sampling. The channel itself is heavily overgrown with devils club and alder.



Photo #: J-18-21, 1996/09/27
Site #: J242, Looking upstream.

DFO/MoELP Stream Survey Form

Site Number: JULIE 238 **Reach No.: 1**

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 238, Unit 12, 1.5km West of Hepls Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0700-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **U.T.M.:** 9 .6244 .60558 **Reach Length (km):** 1.9 MA **Length surveyed (m):** 80.0 GE **Date:** 27-Sep-96 **Time:** 15:00 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐ **Survey Crew:** JP\DD\ \ \ \ \ \ \ **Photos:** J-18-11,12,13 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.5	MS
Av. Wet. Width (m):	1.0	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	12	MS
Gradient (%):	9.0	CL
Pool: 30 Riffle: 30 Run: 40 Other:	0	
% Side Channel:	0	GE
% Debris Area:	50	GE
%Stable:	10	GE

Specific Data

1.5	1.3	1.5	1.3	2.3	1.0
1.2	1.3	1.3	1.0	0.6	0.5
5	5	5			
10	14	12			

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	15	0	50	25

Crown Closure % : 70 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	50	30
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 28 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.30	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

2 C 9.0 | 2530

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 8.2 Braided: N

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): 14 Cond. (µmhos): 230

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	3	40-52	J	R			EL

Comments

C1 S3

C2 LS = 30%, RS = 30%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model was 160 seconds over 40 square meters. The fish were caught upstream of the culvert at this road crossing.

C5 Lat N 54 38' 03.9", Long W 127 04' 18.2"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear to the bottom, which was covered in leafy debris. The mean air temperature on this day was 13.8°C

C8 Some suitable rearing habitat occurs at this site. There is also some marginal spawning habitat. There are no apparent barriers between this reach and the downstream fish bearing waters. There are some signs of the cutting of larger deciduous trees near the channel.

C9 The air temperature at this site was 14 degrees celcius.



Photo #: J-18-11, 1996/09/27
Site #: J238, Looking upstream, meterstick across channel.



Photo #: J-18-13, 1996/09/27
Site #: J238, Fish caught by electrofishing.

DFO/MoELP Stream Survey Form

Site Number: JULIE 243 **Reach No.: 1**

Trib to Helps Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 243, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 061-0100-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 0.9 MA **Date:** 27-Sep-96 **Time:** 18:25 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6265 .60543 **Length surveyed (m):** 80.0 HC **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-22,23 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.4	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	18	MS
Gradient (%):	11.0	CL

Pool: 30 Riffle: 25 Run: 35 Other: 10

% Side Channel: 0-10 GE

% Debris Area: 30 GE

%Stable: 60 GE

Specific Data

1.5	1.7	0.7	1.4	1.1	1.7
1.4	1.5	0.2	1.3	1.1	1.5
4	5	4	6		
16	15	20	19		

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	70	40
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 29 Compaction: Medium

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	25	10	0	20	20

Crown Closure % : 40 Aspect : NW

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.27	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 15 pH: 7.4 Braided: Y

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): 20 Cond. (µmhos): 140

Reach Symbol

(Fish)

(DV) (CT)

I	B	11.0	1720
(Width, Valley: Channel, Slope)			(Bed Material)

Obstructions

C	Height (m)	Type	Location
C9	1	C	8.1

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1: S4

C2: LS = 20%, RS = 20%

C3: No fisheries sensitive zones were noted at this site.

C4: This site was not electrofished. Dolly Varden were caught 20 m downstream at the main channel and no barriers were observed between the main creek and this site.

C5: Lat N 54 37' 11.6", Long W 127 02' 29.3"

C6: No addtional bank texture information.

C7: DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 13.8°C

C8: This stream is accessible to Dolly Varden and cutthroat at high water. A lot of step pool habitat was observed at this site. Deciduous riparian cover only was noted.

C9: A number of .6m cascades are scattered throughout the sampling area.

1: The air temperature at this site was 13.C.



Photo #: J-18-22, 1996/09/27
Site #: J243, Looking upstream, LOD in channel.



Photo #: J-18-23, 1996/09/27
Site #: J243, Looking downstream.

5.11 Lacroix Creek (460-4370-000) (93 L 066)

5.11.1 Sensitive Habitats and Barriers

The mainstem of Lacroix Creek is 12.5 km in length and is fed by 9 tributaries. Reach 1 is characterized by low gradient and is unconfined. It is also crossed by several roads, including highway 16. Reach 2 is fish bearing Round Lake which is roughly 1.8 km in length. Reach 3 also has low gradient but is somewhat confined at the headwaters, where a small lake and a swampy area are found. Reach 3 is also crossed by several roads and at one point is flanked by clusters of buildings. Lacroix Creek was sampled at 9 locations including reaches 1, 3 and 4 of the mainstem and in unnamed tributaries to Round Lake.

5.11.2 Fish Summary Tables and Stream Classification

The historical records indicate that Round Lake contains red sided shiner, northern squawfish, burbot, cutthroat trout, rainbow trout, peamouth chub and large scale sucker, and that Lacroix Creek supports cutthroat trout, rainbow trout and longnose sucker. Peamouth chub were caught by hand at Z6 in reach 3 and rainbow trout were caught in a tributary to reach 4. No other fish were caught in this system. The mainstem was classified as an S3 in reach 3 based on an average channel width of 4.60 meters and the presence of fish in the sampling area. This reach has some excellent spawning habitat. Reach 4 was classified as an S4 based on an average channel width of 0.83 meters and the presence of fish habitat in the sampling area. The tributaries to Lacroix Creek that were sampled in this inventory range in classification from S3 to "NC", including 1 S4 and 2 S6's.

DFO/MoELP Stream Survey Form

Site Number: W18 **Reach No.:** 5

Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: W18, Unit 12; north of Round Lake **Stream (Gaz.):** Lacroix Creek **Watershed Code:** 460-4726-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **U.T.M.:** 9 .6331 .60627 **Reach Length (km):** 2.9 MA **Length surveyed (m):** 100.0 GE **Date:** 10-Jul-97 **Time:** 14:50 **Agency:** TEC **Survey Crew:** KA UP \ \ \ \ \ \ \ **Access:** FT **Fish Card:** N **Field** ☒ **Historical** ☐ **Photos:** W-3-1,2,3 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.5	GE
Av. Wet. Width (m):	2.0	GE
Av. Max Riffle Depth (cm):	4	GE
Av. Max Pool Depth (cm):	20	GE
Gradient (%):	3.0	CL
Pool: 20 Riffle: 50 Run: 30 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	10	GE

Specific Data

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	10	0	30	10

Crown Closure % : 20 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 20 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.1 % Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: CO

Valley : Channel Ratio 0-2

Stage: L Flood Signs Ht(m): 0.1

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(NSC) (RB)

3 A 3.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS=20%, RS=20%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This stream appears to have good rearing habitat for high water season, due to cover and substrate. Unable to perform intensive survey because of dicontentment of land owner. Might be possible to survey stream below.



Photo #: W-3-1, 10-Jul-97
Site #: W18, Looking upstream at the channel

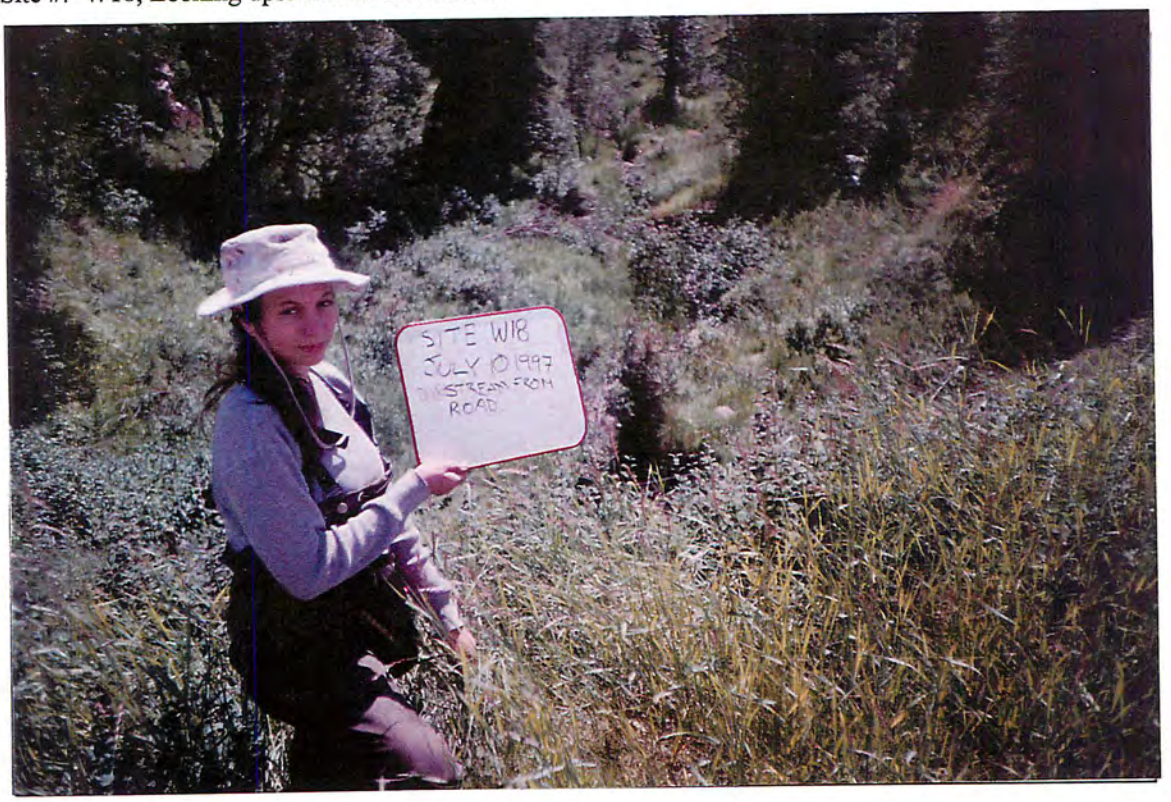


Photo #: W-3-3, 10-Jul-97
Site #: W18, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** W217 **Reach No.:** 6

Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: W217, Unit 12; 1.8km SE of McDowell Lk. **Stream (Gaz.):** Lacroix Creek **Watershed Code:** 460-4726-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **U.T.M.:** 9 .6331 .60649 **Reach Length (km):** 1.2 MA **Length surveyed (m):** 150.0 GE **Date:** 22-Aug-97 **Time:** 11:10 **Agency:** TEC **Survey Crew:** DD\JP\ \ \ \ \ \ \ **Access:** V2 **Photos:** W-L-15,16 **Fish Card:** N Field ☒ Historical ☐ **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	14	MS
Gradient (%):	10.0	CL
Pool: 20 Riffle: 30 Run: 50 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

0.9	1.0	0.8	0.7	0.8	0.8
0.8	0.4	0.6	0.9	0.3	0.5
1	2	1	1	2	1
18	17	12	18	9	10

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	30	0	40	20

Crown Closure % : 50 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 33 Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.05	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

1 C 10.0 | 4330

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.2 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 180

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=35%, RS=40%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 165 seconds over 150 meters. No fish were caught. Shocking was difficult due to low flow.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 15.0 C.

C7 At the time of sampling the flow was resricted to a trickle among cobble and boulders with the occasional pool. There is marginal rearing and no spawning habitat. A road has effectively cut-off any upstream access to fish. The gradient at the road crossing is 27%. The water here contains brown algae.There is a pooling of water above the road beside an old cutblock.



Photo #: W-L-15, 22-Aug-97
Site #: W217, Looking upstream at the channel



Photo #: W-L-16, 22-Aug-97
Site #: W217, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z6

Reach No.: 3

Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: Z6, Unit 12 164m North of Round Lake | Stream (Gaz.): Lacroix Creek | Watershed Code: 460-4726-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 | Reach Length (km): 0.2 MW | Date: 09-Jul-97 | Time: 9:52 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .63376 .605954 | Length surveyed (m): 100.0 GE | Survey Crew: JP \ KG \ DD \ \ \ \ \ \ | Photos: Z-1-19,20,21 | Air Photos:

Channel Characteristics

C1	Av. Chan. Width (m):	4.6	MS
C1	Av. Wet. Width (m):	3.0	MS
	Av. Max Riffle Depth (cm):	5	MS
	Av. Max Pool Depth (cm):	24	MS
	Gradient (%):	1.5	CL
	Pool: 30 Riffle: 10 Run: 55 Other: 5		
	% Side Channel:	>40	GE
	% Debris Area:	>15	GE
	%Stable:	20	GE

Specific Data

5.8	4.2	4.2	5.3	5.3	3.6
4.1	2.2	3.0	3.2	3.2	2.0
5	4	4	6		
14	29	58	16	14	16

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
35	45	0	5	10	5

Crown Closure %: 65 Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):		30	30
Gravels	Small (2-16mm):		60	40
	Large (16-64mm):			20
Larges	Sm. cobble (64-128mm):		10	10
	Lge cobble (128-256mm):			0
	Bldr cobble (>256mm):			0
Bedrock			0	0

D90 (cm): 7 Compaction: Medium

Discharge

Wetted Width (m):	0.8	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.37	F
Discharge (m3/s):	0.02	F

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L Flood Signs Ht(m): 1

Bars (%): 25 pH: 7.8 Braided: Y

Water Temp. (°C): 14.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 330

Reach Symbol

(Fish)

PMC

5 D 1.5 | 3610

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	PMC	50	240-230	A	S			VO

Comments

C1: S3

C2: LS = 0%, RS =0%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished due to concerns regarding the impacts of electroshocking spawners. In addition the crew was able to capture one fish by hand for photodocumentation purposes.

C5: Gravels and fines make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 15.C.

C7: Some good spawning habitat was noted in the sampling area, however, the water was quite low at the time of sampling and some fish were stranded in isolated pools. Upstream of the road crossing the channel is small and lacks riparian cover for roughly 100m.



Photo #: Z-1-19, 09-Jul-97
Site #: Z6, Looking downstream at the channel



Photo #: Z-1-20, 09-Jul-97
Site #: Z6, Looking upstream at the channel

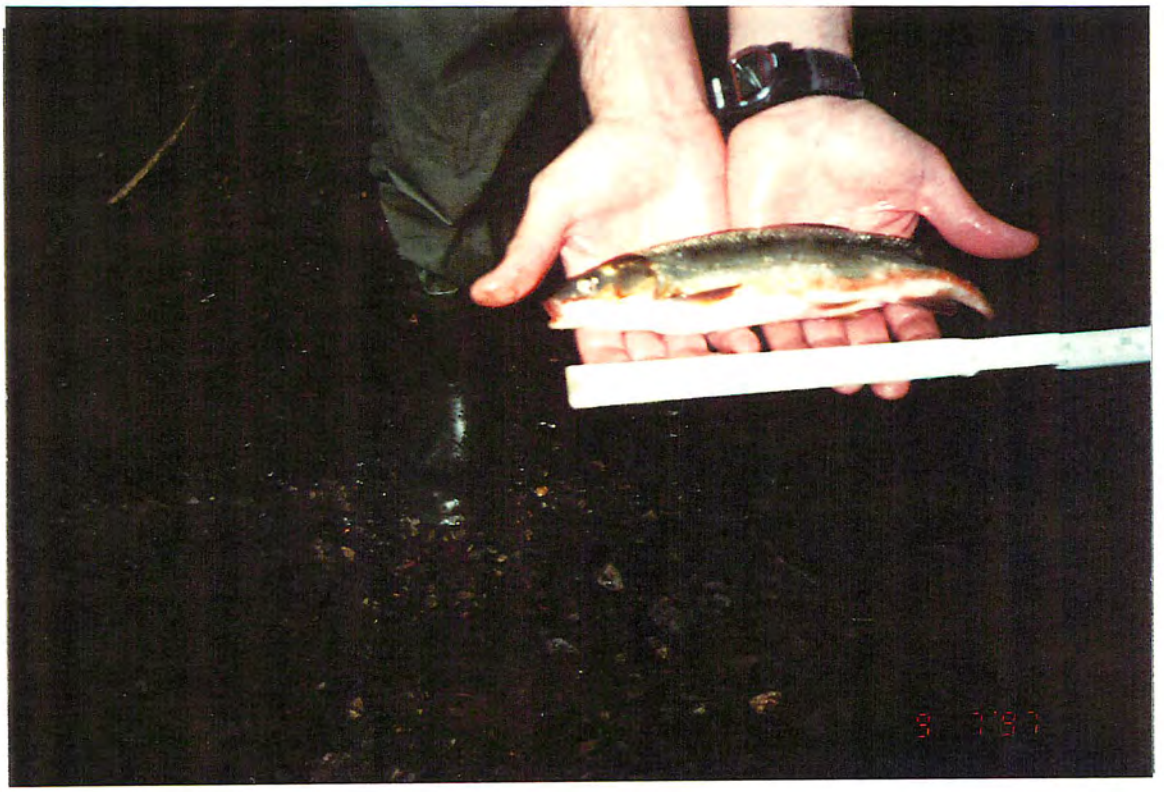


Photo #: Z-1-21, 09-Jul-97
Site #: Z6, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: JULIE 266

Reach No.: 1

Trib to Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 266, Unit 12, see C5. | Stream (Gaz.): Unnamed | Watershed Code: 068-8700-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 | Reach Length (km): 1.6 MA | Date: 29-Sep-96 | Time: 19:00 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6349 .60567 | Length surveyed (m): 60.0 GE | Survey Crew: JP \DD\ \ \ \ \ \ \ | Photos: J-20-12,13 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	3.0	MS
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	5	GE
	%Stable:	0	GE

Specific Data

3.5 3.1 3.0 2.5 2.8 3.0

Cover

Cover Total % : 5 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	100	0

Crown Closure % : 30 | Aspect : W

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 | Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry | Flood Signs Ht(m): 0.2

Bars (%): 0 | pH: | Braided: N

N Water Temp. (°C): | 02 (ppm):

Turb. (cm): | Cond. (µmhos):

Reach Symbol

(Fish)

(RB)

3 D 0.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S3

C2: LS = 2%, RS = 2%

C3: No fisheries sensitive zones were noted at this site.

C4: This dry site was not electrofished.

C5: Lat N 54 38' 21.3", Long W 126 54' 32.5"

C6: No additional bank texture information.

C7: Water quality was not evaluated at this site. The mean air temperature on this day was 4.4°C

C8: This site does not appear to contain fish habitat. Downstream of the road crossing the channel leads to a watering trough used by cattle. No barriers occur at the road, the culvert is quite wide. For the most part this site is a mud lined drainage with no cover.



Photo #: J-20-12, 1996/09/29
Site #: J266, Looking upstream in dry channel.



Photo #: J-20-13, 1996/09/29
Site #: J266, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: W17

Reach No.: 1

Trib to Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: W17, Unit 12; north of Round Lake | **Stream (Gaz.):** Unnamed | **Watershed Code:** 069-0200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 | **Reach Length (km):** 1.1 MA | **Date:** 10-Jul-97 | **Time:** 13:46 | **Agency:** TEC | **Access:** FT | **Fish Card:** N | ☐ Field ☒ Historical ☐

U.T.M. : 9 .6328 .60626 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** KA \JP\ \ \ \ \ \ \ | **Photos:** W-2-20,21,22 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.2	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	27	MS
Gradient (%):	2.5	CL
Pool: 10 Riffle: 30 Run: 60 Other:	0	
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.1	2.2	1.1	2.1	3.1	2.4
0.7	0.8	1.0	0.7	0.7	0.8
3	4	3	1	1	
31	24	24	26	31	

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	0	0	30	20	10

Crown Closure % : 10 | Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 20 | Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.25	F
Discharge (m3/s) :	0.09	F

Banks

Height (m): 0.1

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: CO

Valley : Channel Ratio 0-2

Stage: L | Flood Signs Ht(m): 0.1

Bars (%): 80 | pH: 7.8 | Braided: N

Water Temp. (°C): 14.0 | 02 (ppm):

Turb. (cm): 25 | Cond. (µmhos): 160

Reach Symbol

(Fish)

NF

2 A 2.5 | 5320

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6.

C2 LS=50%, RS=50%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, was 72 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site. The air temperature on this day was 13.7 C.

C7 This stream has been polluted by house-hold garbage, plastic bags, buckets, etc. There are numerous culverts, including one that is 0.8m. There is marginal rearing habitat at high water. The stream travels underground under substrate. A child said that he had observed a frog and a salimander in the stream.



Photo #: W-2-20, 10-Jul-97
Site #: W17, Looking downstream at the channel, note the garbage in the creek



Photo #: W-2-21, 10-Jul-97
Site #: W17, Looking upstream at the channel



Photo #: W-2-22, 10-Jul-97
Site #: W17, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** Y6 **Reach No.:** 3

Trib to Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: Y6, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-8700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 1.8 MA **Date:** 10-Jul-97 **Time:** 10:00 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .635472.6057502 **Length surveyed (m):** 250.0 GE **Survey Crew:** DD \SJ\ \ \ \ \ \ \ **Photos:** Y-1-15,16,17 **Air Photos:**

Channel Characteristics

				Specific Data					
	Av. Chan. Width (m):	0.9	MS	0.7	0.7	0.7	0.9	1.3	0.9
	Av. Wet. Width (m):	0.4	MS	0.7	0.4	0.3	0.4	0.4	0.4
N	Av. Max Riffle Depth (cm):	0	GE						
N	Av. Max Pool Depth (cm):	0	GE						
	Gradient (%):	0.5	CL						
	Pool: 0 Riffle: 0 Run: 0 Other:	100							
	% Side Channel:	0	GE						
	% Debris Area:	0-5	GE						
	%Stable:	0	GE						

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	10	70	20

Crown Closure % : 80 Aspect : SW

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

1 D 0.5 F

(Width, Valley : Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
	Sm. cobble (64-128mm):		0
Larges	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Banks

Height (m): 0.2

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m):

Bars (%): 0 pH: 7.4 Braided: N

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): 10 Cond. (µmhos): 920

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6. Many measurements were not taken at this site as the flopw was reduced to stagnant water at the time of sampling.

C2: LS=25%, RS=5%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished.

C5: No additional bank texture information.

C6: DO and flood signs were not measured at this site. The air temperature at this site was 18.0 C.

C7 There is no fish habitat at this site.



Photo #: Y-1-15, 10/07/97
Site #: Y6, Looking downstream



Photo #: Y-1-16, 10/07/97
Site #: Y6, Looking upstream, with vegetation



Photo #: Y-1-17, 10/07/97
Site #: Y6, Looking upstream, from road crossing, grassy swale through pasture.

DFO/MoELP Stream Survey Form

Site Number: W206

Reach No.: 1

Trib to Lacroix Cr.

TRITON Environmental Consultants Ltd.

Location: W206, Unit 12; 0.1km east of Lacroix

Stream (Gaz.): Unnamed

Watershed Code: 068-9900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **U.T.M.:** 9 .6327 . 60615

Reach Length (km): 2.4 MA **Length surveyed (m):** 100.0 GE

Date: 20-Aug-97 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

Survey Crew: DD \JP\ \ \ \ \ \ \ **Photos:** W-K-8,9,10 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	0.9	MS
N Av. Max Riffle Depth (cm):	0	MS
C1 Av. Max Pool Depth (cm):	22	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 10 Run: 80 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	5	GE

Specific Data

1.1	0.9	1.1	1.3	1.2	0.9
1.1	0.4	1.1	1.3	1.2	0.4
22					

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	0	60	30	0

Crown Closure %: 5 Aspect: SW

Discharge

Wetted Width (m):	0.2	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.15	F
Discharge (m3/s):	0.02	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 6.9 Braided: N

Water Temp. (°C): 19.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 390

Reach Symbol

(Fish)

RB

1 D 2.0 | 7210

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	30	F	R			EL

Comments

C1 S4.

C2 LS=1%, RS=1%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 110 seconds over 100 meters. Shocking was difficult due to shallow water and thick instream vegetation.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 24.0 C.

C7 There is limited rearing habitat here due to shallow water and lack of flow, combined with thick instream vegetation. The stream would appear even more suitable for rearing at higher flows. The substrate is covered with brown algae.

C8 A large number of frogs were observed.



Photo #: W-K-8, 20-Aug-97
Site #: W206, Looking downstream at the channel



Photo #: W-K-9, 20-Aug-97
Site #: W206, Looking upstream at the channel



Photo #: W-K-10, 20-Aug-97
Site #: W206, Indicating the size range of fish captured at the site

DFO/MoELP Stream Survey Form

Site Number: Z7

Reach No.: 1

Trib. to Round Lake.

TRITON Environmental Consultants Ltd.

Location: Z7, Unit 12, at 4.2km on Round Lake rd. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-9100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 3.1 MA **Date:** 09-Jul-97 **Time:** 10:05 **Agency:** TEC **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6350 .60595 **Length surveyed (m):** 130.0 GE **Survey Crew:** JP \DD \KG \ \ \ \ \ \ **Photos:** Z-1-22,23,24,25 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	3.0	MS
	Av. Wet. Width (m):	0.9	MS
	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	11	MS
	Gradient (%):	1.0	CL
	Pool: 80 Riffle: 0 Run: 20 Other: 0		
	% Side Channel:	10-40	GE
	% Debris Area:	>15	GE
	%Stable:	60	GE

Specific Data

4.8	3.0	2.9	2.2	1.9
0.0	2.3	0.4	1.2	0.7
10	8	14		

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	85	0	5	10	0

Crown Closure % : 40 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

C7	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 430

Reach Symbol

(Fish)

NF

3 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C7 The channel has been severely impacted by livestock at this site, as evidenced by trampled banks. The channel was discontinuous in some areas.

C1 S5.

C2 LS =0%, RS = 0%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished as the flow was too low. At the time of sampling the flow consisted of a series of sloppy pools.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to the bottom. The mean air temperature on this day was 12.C.



Photo #: Z-1-22, 09-Jul-97
Site #: Z7, Looking across stream at the channel, note the livestock impacts



Photo #: Z-1-23, 09-Jul-97
Site #: Z7, Looking downstream at the channel



Photo #: Z-1-24, 09-Jul-97
Site #: Z7, Looking upstream at the channel



Photo #: Z-1-25, 09-Jul-97
Site #: Z7, Looking across stream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y10 **Reach No.: 2**

Trib to Round Lk.

TRITON Environmental Consultants Ltd.

Location: Y10, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-9100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 2.4 MW **Date:** 10-Jul-97 **Time:** 16:20 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6362 .60628 **Length surveyed (m):** 100.0 GE **Survey Crew:** DD \SJ \ \ \ \ \ \ \ **Photos:** Y-2-1,2,3 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.1	MS	1.1	0.9	1.2	1.1	0.9	1.2
Av. Wet. Width (m):	0.7	MS	0.6	0.9	0.5	0.2	0.6	1.2
N Av. Max Riffle Depth (cm):	0	MS						
Av. Max Pool Depth (cm):	11	MS	12	10	10			
Gradient (%):	5.0	CL						

Pool: 100 Riffle: 0 Run: 0 Other: 0

% Side Channel:	0	GE
% Debris Area:	0	GE
%Stable:		GE

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Cthnk
20	0	20	20	20	20

Crown Closure % : 0 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
	Sm. cobble (64-128mm):		4
Larges	Lge cobble (128-256mm):	10	4
	Bldr cobble (>256mm):		2
Bedrock		0	0

D90 (cm): 35 Compaction: Low

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.1

% Unstable: 100

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.5 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Reach Symbol

(Fish)

NF

I D 5.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6. Riffles were not noted.

C2: LS=6%, RS=11%

C3: No fisheries sensitive zones noted.

C4: There was too little flow at the time of sampling to electrofish.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 21.0 C.

C7: This site has no fish habitat. It consists of a mud channel that has been heavily impacted by livestock. There are a few small areas of gravel/boulder substrate.



Photo #: Y-2-1, 11/07/97
Site #: Y10, Looking upstream, at the road crossing.



Photo #: Y-2-2, 11/07/97
Site #: Y10, Looking downstream , with cattle impacts



Photo #: Y-2-3, 11/07/97
Site #: Y10, Looking upstream, below the cattle impacted area.

DFO/MoELP Stream Survey Form

Site Number: Z50

Seymour Cr.

Reach No.: 1

TRITON Environmental Consultants Ltd.

Location: Z50, Unit 12, Bulkley Valley Exhibition grounds | **Stream (Gaz.):** Seymour Cr. | **Watershed Code:** 460-3738-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 | Reach Length (km): 4.6 MW | Date: 18-Jul-97 | Time: 13:48 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .619926.6070689 | Length surveyed (m): 100.0 GE | Survey Crew: JL \KG \ \ \ \ \ \ \ | Photos: Z-7-3,4 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	4.1	MS
Av. Wet. Width (m):	3.3	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	28	MS
Gradient (%):	1.0	CL
Pool: 5 Riffle: 0 Run: 95 Other: 0		
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	30	GE

Specific Data

4.0	4.1	4.6	3.9	4.0	3.7
3.2	3.3	3.0	3.2	3.8	3.1
27	30	26			

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 15 | Compaction: Low

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	20	0	0	40	35

Crown Closure % : 45 | Aspect : E

Discharge

Wetted Width (m) :	1.7	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.51	F
Discharge (m3/s) :	0.65	F

Banks

Height (m): 0.7

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) TR

4 C 1.0	8110
(Width, Valley: Channel, Slope)	(Bed Material)

Confinement: OC

Valley : Channel Ratio: 5-10

Stage: L | Flood Signs Ht(m): 0.8

Bars (%): 0 | pH: 7.4 | Braided: N

Water Temp. (°C): 9.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 82

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	20	40-60	J	R			VO

Comments

C1: S3.

C2: LS=32%, RS=7%

C3: No fisheries sensitive zones notes.

C4: The electroshocking effort, using a Smithroot 15 A model, was 600 seconds over 200 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 20 C.

C7: This reach provides rearing habitat, but the habitat itself is not very good.



Photo #: Z-7-3, 18-Jul-97
Site #: Z50, Looking upstream at the channel



Photo #: Z-7-4, 18-Jul-97
Site #: Z50, Looking downstream at the channel

Reconnaissance Level Fish and Fish Habitat Inventory in the Bulkley T.S.A.

(Working Unit #12 - Coffin)

Volume 2

Reconnaissance Level Fish & Fish Habitat Inventory in the Bulkley TSA
Working Unit #12 – Coffin (Volume 2)
Bulkley R BULK 460-472700 COFFIN CR 093L10
Pacific Inland Resources Smithers, BC Triton Environmental Consultants Ltd Richmond, BC 1998

TRITON
Environmental Consultants Ltd.

5.12 Lyon Creek (460-3254-265-159) (93 L 086)

5.12.1 Sensitive Habitats and Barriers

The mainstem of Lyon Creek is 10.1 km in length and is fed by roughly 9 tributaries. Reach 1 has low, steadily increasing gradient and is unconfined, and reach 2 has moderate, steadily increasing gradient. Reach 3 has steep impassable gradient and is somewhat confined. No sensitive habitats or distinct barriers were identified in this system. Lyon Creek was sampled in 6 locations, including reaches 1 and 2 of the mainstem, and in Tamara Brook, Badley Creek, and two unnamed tributaries to the mainstem.

5.12.2 Fish Summary Tables and Stream Classification

There are no historical records for Lyon Creek. The mainstem was electrofished and Dolly Varden were captured in reaches 1 and 2. No fish were caught in the unnamed tributaries. Lyon Creek was sampled in reach 1 and was classified as an S3 based on an average channel width of 3.45 meters and the presence of Dolly Varden in the sampling area. Reach 2 was classified as an S2 based on an average channel width of 5.46 meters and the presence of fish in the sampling area. Excellent spawning habitat was identified in this reach. The two unnamed tributaries were classified as S6 and S3. Badley Creek was classified as an S3 and Tamara Brook was classified as an S6.

DFO/MoELP Stream Survey Form

Site Number: E275

Reach No.: 2

Lyon Cr.

TRITON Environmental Consultants Ltd.

Location: E275, Unit 12, SW of Pyramid Mtn. **Stream (Gaz.):** Lyon Creek **Watershed Code:** 460-3254-265-159-000-000-000-000-000-000-000-0

Map #: 93 L 086 **U.T.M.:** 9 .6310 .60791 **Reach Length (km):** 1.7 MA **Length surveyed (m):** 100.0 GE **Date:** 09-Sep-97 **Time:** 8:52 **Agency:** TEC **Survey Crew:** SJ \JL \ \ \ \ \ \ \ **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐ **Photos:** E-26-11,12,13,14,15 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	5.5	MS
Av. Wet. Width (m):	4.9	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	31	MS
Gradient (%):	12.0	CL
Pool: 10 Riffle: 40 Run: 40 Other:	10	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	15	GE

Specific Data

4.2	4.3	4.0	9.5	5.3
3.1	4.0	3.8	8.5	5.0
7	3	6	7	4
35	45	22	28	25

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	70	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		30
Bedrock		0	0

D90 (cm): 75 Compaction: Medium

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	40	20	0	0	10

Crown Closure %: 20 Aspect: SW

Discharge

Wetted Width (m):	2.9	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.27	F
Discharge (m3/s):	0.06	F

Banks

Height (m): 0.2

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio: 5-10

Stage: M Flood Signs Ht(m): 1

Bars (%): 0 pH: 8.0 Braided: Y

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 150

Reach Symbol

(Fish)

DV

6 C 12.0 | 1270

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	5	C	8.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	7	50-145	J	R			EL

Comments

C1 S2

C2 LS = 48%, RS = 14%

C3 No fisheries sensitive zones noted at this site.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 259 seconds over 100 meters.

C5 Fines and larges make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 9.C.

C7 This site has some very complex rearing habitat, inlcuding plunge pools, scour pools, LOD, boulders and cutbanks. Excellent spawning habitat was also noted.

C8 The 5C listed in the obstructions section is upstream of the sampling area and mosst likely represents the upper limits of fish distribution in this stream.



Photo #: E-26-11, 10-Sep-97
Site #: E275, Looking upstream at the channel



Photo #: E-26-12, 10-Sep-97
Site #: E275, Looking downstream at the channel

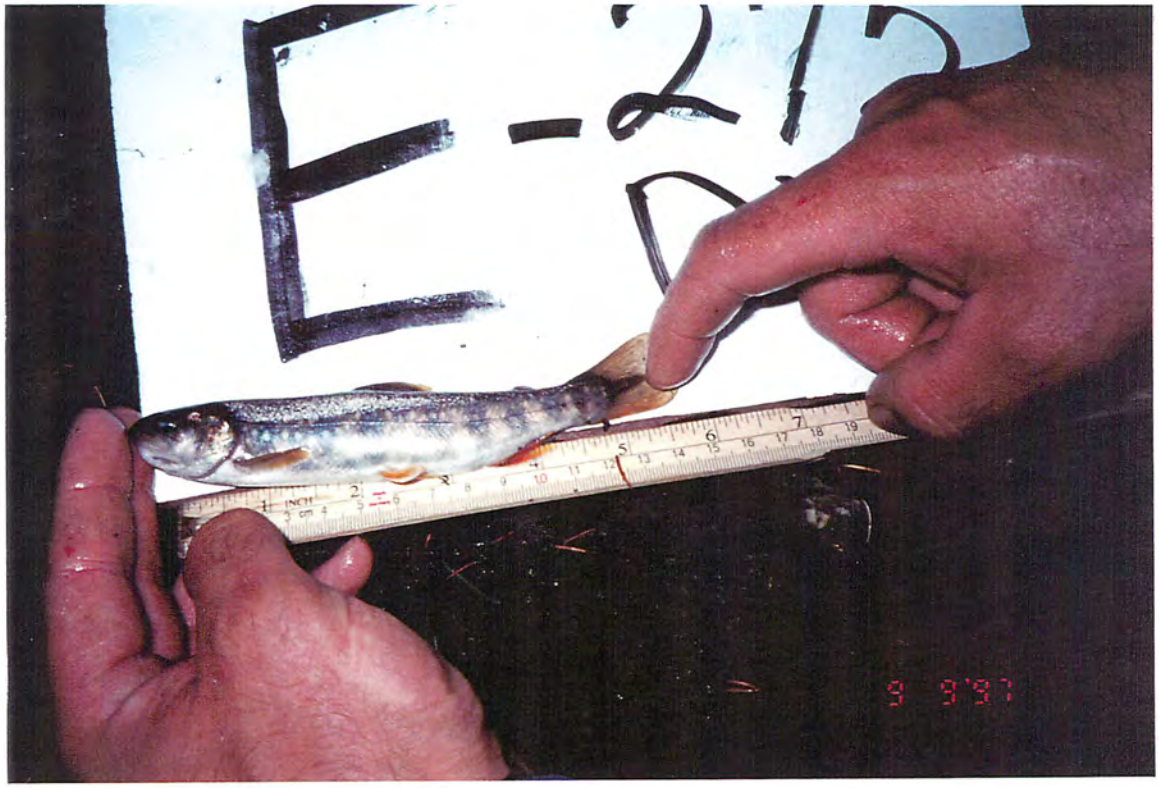


Photo #: E-26-13, 10-Sep-97
Site #: E275, Measuring Dolly Varden with a meterstick

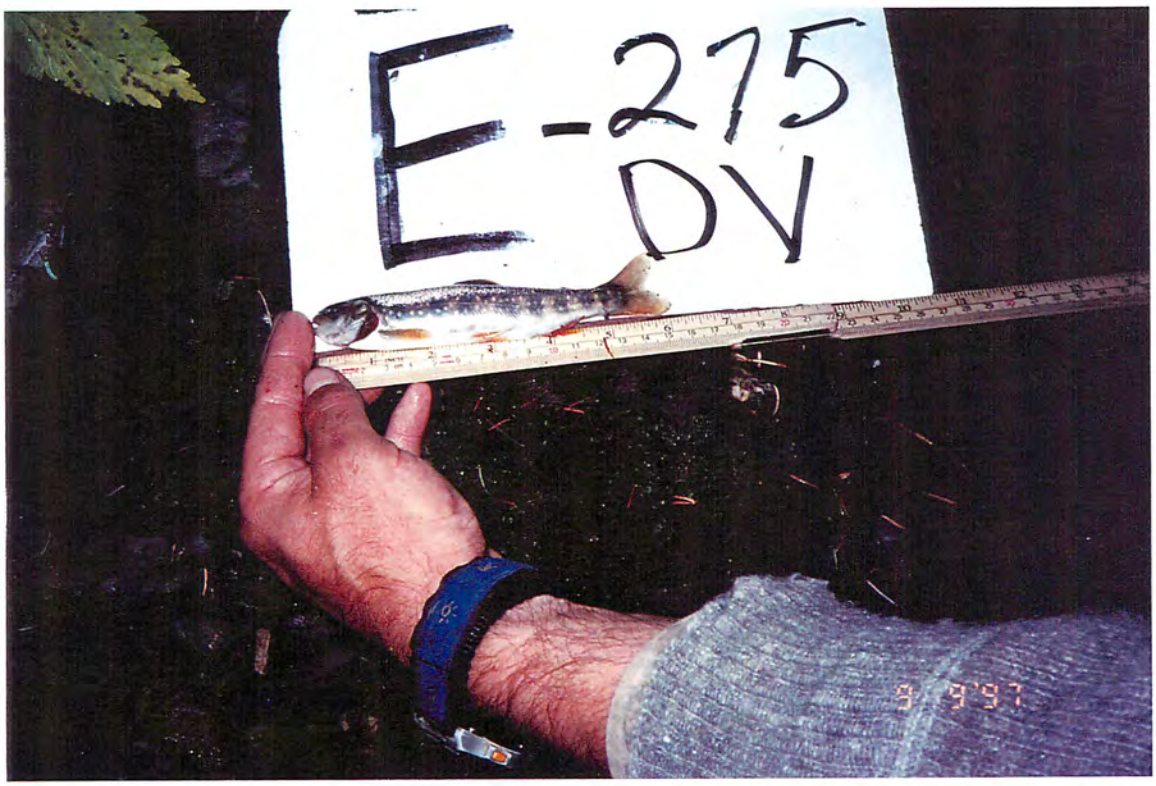


Photo #: E-26-14, 10-Sep-97
Site #: E275, Measuring Dolly Varden with a meterstick

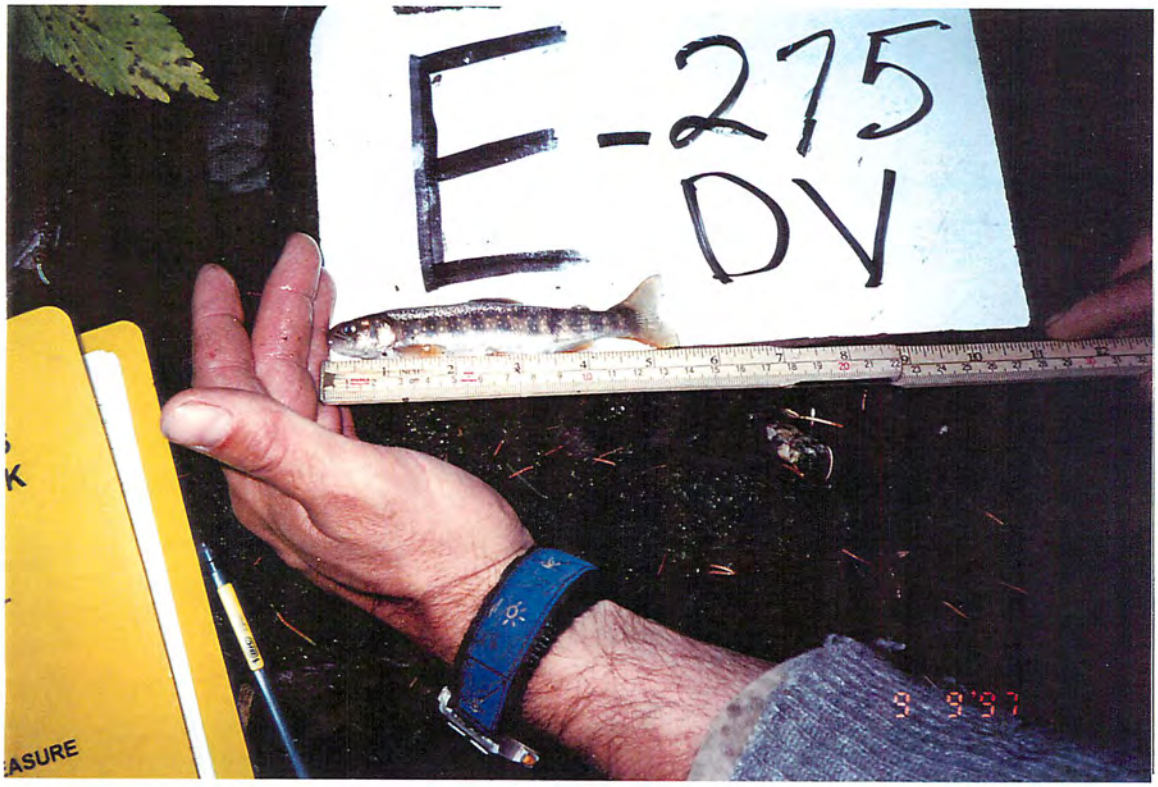


Photo #: E-26-15, 10-Sep-97
Site #: E275, Measuring Dolly Varden with a meterstick

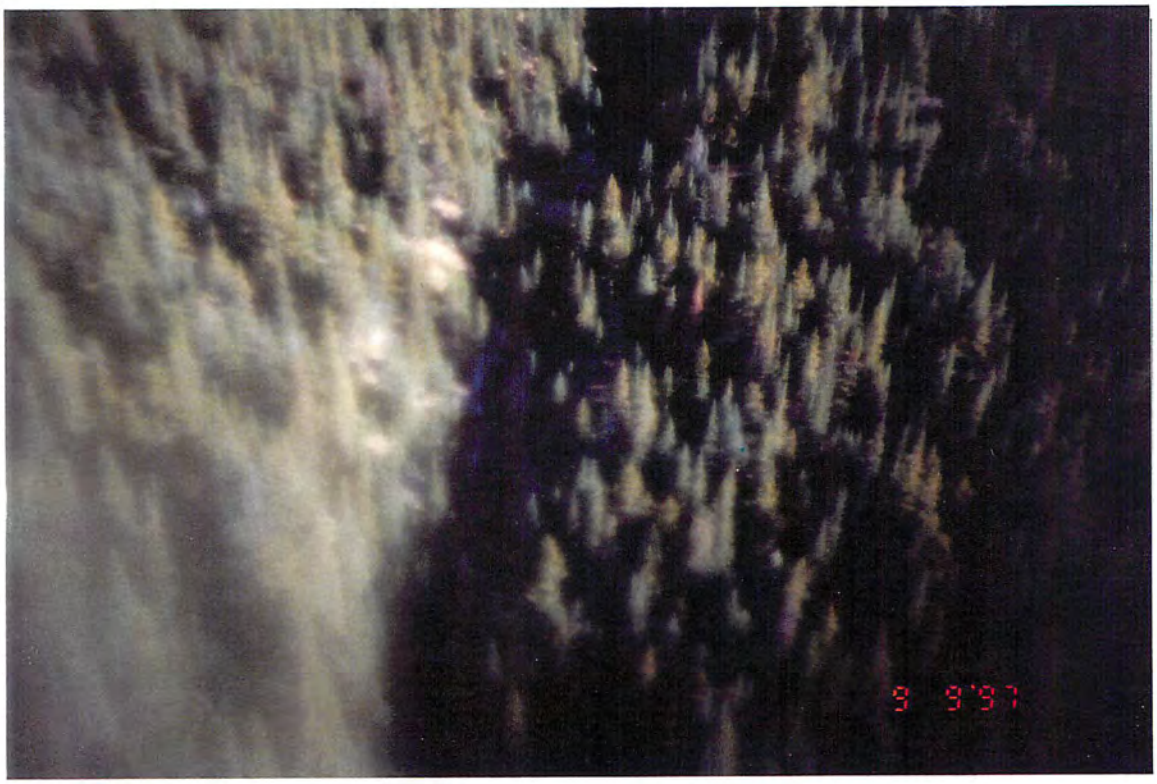


Photo #: E-26-16, 10-Sep-97
Site #: E275, Looking upstream at a series of barrierson Lyon Creek

DFO/MoELP Stream Survey Form

Site Number: RYAN 83 **Reach No.: 1**

Lyon Cr.

TRITON Environmental Consultants Ltd.

Location: RYAN 83, Unit 12, trib to Ganokwa Cr., see C5. **Stream (Gaz.):** Lyon Creek **Watershed Code:** 460-3254-265-159-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 4.4 MA | Date: 21-Sep-96 | Time: 13:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6294 . 60761 | Length surveyed (m): 250.0 GE | Survey Crew: RH\UL\ \ \ \ \ \ \ | Photos: R-5-15,16,17 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.4	MS
Av. Wet. Width (m):	2.9	MS
Av. Max Riffle Depth (cm):	15	MS
Av. Max Pool Depth (cm):	21	MS
Gradient (%):	7.0	CL
Pool: 10 Riffle: 45 Run: 45 Other:	0	
% Side Channel:		GE
% Debris Area:	0-5	GE
%Stable:	85	GE

Specific Data

4.0	3.6	3.8	3.0	2.8	3.5
2.2	2.2	3.0	3.5	3.2	3.3
10	15	20			
18	20	25			

Bed Material

Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	75	20
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		25
Bedrock		0	0

D90 (cm): 30 Compaction: Medium

Cover

Cover Total % : 65 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	5	10	0	65	15

Crown Closure % : 75 Aspect : SW

Discharge

Wetted Width (m) :	2.2	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.24	F
Discharge (m3/s) :	0.12	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 1

Bars (%): 0 pH: 7.9 Braided: N

Water Temp. (°C): 4.0 02 (ppm):

Turb. (cm): 25 Cond. (µmhos):

Reach Symbol

(Fish)

DV

3 D 7.0 | 1270

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	3	100-170	J	R			EL

Comments

C1 S3

C2 The side slopes were not taken at this site.

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot, 15A model, was 80 seconds over 60m. A local resident reported a large number of fish sightings at this stream.

C5 Lat N 54 49' 02.5", Long w 126 59' 9.4"

C6 No additional bank texture information.

C7 DO, pH, conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8 Excellent fish habitat was observed at this site.



Photo #: R-5-15, 1996/09/21
Site #: R83, Looking upstream toward culverts.



Photo #: R-5-16, 1996/09/21
Site #: R83, Looking upstream, channel through alder.



Photo #: R-5-17, 1996/09/21
Site #: R83, Dolly Varden char caught by electrofishing.

DFO/MoELP Stream Survey Form **Site Number:** ARNE 16 **Reach No.: 1**

Trib. to Lyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 16, Unit 12, 400m downstream of the confluence of Badley and Lyon creeks. **Stream (Gaz.):** Unnamed **Watershed Code:** 050-2800-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 3.1 MA | Date: 21-Sep-96 | Time: 13:48 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6290 .60759 | Length surveyed (m): 250.0 GE | Survey Crew: AKL\ HK\ \ \ \ \ \ \ | Photos: A-2-13,14 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.9	MS
Av. Wet. Width (m):	0.8	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	11	MS
Gradient (%):	1.0	CL
Pool: 60 Riffle: 20 Run: 20 Other:	0	
% Side Channel:		GE
% Debris Area:	>15	GE
%Stable:	80	GE

Specific Data

2.2	2.5	1.7	1.8	1.2	2.3
0.8	1.0	0.9	0.8	0.7	0.6
2	3	1	2	7	
15	12	10	8		

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	50	0	0	40	10

Crown Closure % : 70 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	20
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 8 Compaction: Low

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.05	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.4

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): 15 Cond. (µmhos):

Reach Symbol

(Fish)

(DV)

2 E 1.0 | 5320

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				VO

Comments

C1 S3

C2 LS = 1%, RS = 1%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished as the water level was too low at the time of sampling.

C5 Lat N 54 48 49.1", Long W 126 59' 33.1"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8 This site would provide good rearing habitat, with lots of LOD cover, at high flows. Some sections of the creek run underground at this site. The culvert at this road crossing is not a barrier to fish passage upstream.



Photo #: A-2-13, 21-Sep-96
Site #: A16, Looking upstream, moss-covered LOD.



Photo #: A-2-14, 21-Sep-96
Site #: A16, Looking downstream in dry channel.

DFO/MoELP Stream Survey Form **Site Number:** ARNE 15 **Reach No.: 1**

Trib. to Lyon Cr.

TRITON Environmental Consultants Ltd.

Location: ARNE 15, Unit 12, 400m downstream of the confluence of Badley and Lyon creeks, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-4200-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 086 | Reach Length (km): 0.4 MA | Date: 21-Sep-96 | Time: 13:20 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6286 .60759 | Length surveyed (m): 150.0 GE | Survey Crew: AKL\ HK\ \ \ \ \ \ \ | Photos: A-2-10,11,12 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.0	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	8.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	25	GE
	%Stable:	80	GE

Specific Data: 1.0 0.8 0.9 1.2 1.3

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	5	95	0

Crown Closure %: 60 Aspect: S

Bed Material

	Fines	Clay, silt, sand (<2mm):	30	30
	Gravels	Small (2-16mm):	50	20
		Large (16-64mm):		30
	Larges	Sm. cobble (64-128mm):		20
		Lge cobble (128-256mm):	20	0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 13 Compaction: Medium

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio: N/A

Stage: Dry Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

I E 8.0 | 3520

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	3	F	0.2

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6

C2 LS = 10%, RS = 5%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 48' 49.4", Long W 126 59' 55.5"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8 The use of this site by fish is likely only in the first 15 meters of the reach. The culvert gradient (10%) is too steep for fish passage. The channel disappears 50m upstream of the road crossing.

C9 A newly constructed channel, to which fish have no access, was found downstream of the road. Vegetation was observed throughout the channel upstream of the road crossing. In addition the stream resembles a gully upstream of the road crossing.



Photo #: A-2-10, 21-Sep-96
Site #: A15, Looking upstream.



Photo #: A-2-11, 21-Sep-96
Site #: A15, Looking downstream in dry channel.



Photo #: A-2-12, 21-Sep-96
Site #: A15, Looking downstream, overview of new channel.

5.13 McDowell Creek (460-4353-000) (93 L 065, 93 L 066)

5.13.1 Sensitive Habitats and Barriers

The mainstem of Mc Dowell Creek is 12.1 km in length and is fed by 8 tributaries. Reach 1 is moderately confined, has low gradient and is crossed by highway 16. Reach 2 also has moderate gradient but is somewhat confined. Reach 3 has low gradient and is quite confined with a 6 meter falls at the reach 2 and 3 break. Reaches 4 and 6 are small lakes, reach 5 has low gradient and is unconfined. Three of the lakes associated with this creek have wetlands along their shorelines which have been identified as fisheries sensitive zones. McDowell Creek was sampled in 5 locations, including reaches 1, 2, 3 and 5of the mainstem.

5.13.2 Fish Summary Tables and Stream Classification

No historical records were found for McDowell Creek. However, coho and rainbow trout were caught by electrofishing in reach 1 and rainbow trout were caught by electrofishing in reach 2 and in reach 3, above the 6 meter falls. Reach 1 was classified as an S3 based on an average channel width of 2.35 meters and 1.88 meters and the presence of fish in the sampling areas. Reach 2 was classified as an S3 based on an average channel width of 4.80 meters and the presence of rainbow trout in the sampling area. This classification is consistent through reach 3. The mainstem was sampled again in reach 5 and was classified as an S4. The outlet of McDowell Lake was classified as an "NC" by field crews working in this system. The remaining lakes in this system could provide suitable rearing and most likely overwintering habitat.

DFO/MoELP Stream Survey Form

Site Number: JULIE 233 **Reach No.: 1**

Mc Dowell Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 233, Unit 12, downstream of highway 16, see C5. **Stream (Gaz.):** Mc Dowell Creek **Watershed Code:** 460-4353-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 3.8 MA **Date:** 27-Sep-96 **Time:** 10:40 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .6276 .60604 **Length surveyed (m):** 118.0 HC **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-18-1,2,3,4 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.3	MS
Av. Wet. Width (m):	0.7	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	18	MS
Gradient (%):	5.0	CL
Pool: 95 Riffle: 5 Run: 0 Other: 0		
% Side Channel:	0-10	GE
% Debris Area: 20		GE
%Stable:	10	GE

Specific Data

2.0	2.1	3.1	2.0	2.4	2.5
0.5	0.9	0.3	0.7	0.3	1.5
1	1				
17	18	20			

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	50	0	25	25

Crown Closure % : 50 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	20	15
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 40 Compaction: Low

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.20	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.5

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 10 pH: 7.2 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): 20 Cond. (µmhos): 400

Reach Symbol

(Fish)

CO, RB

2 D 5.0 | 3250

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	0	CV	0.1
	1	C	0.5

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	42-30	J	R			EL
C4	CO	1	73	J	R			EL

Comments

C1 S3

C2 LS = 10%, RS = 10%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a 12 B POW model, was 142 seconds over 15 square meters. In addition to the fish listed in the summary, roughly 25 juvenile coho, ranging from 60-80 mm in length, were seen in this stream.

C5 Lat N 54 40' 29.8", Long W 127 01' 12.7"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear to the streambed, which was covered in leafy debris at the time of sampling. The mean air temperature on this day was 13.8°C

C8 This site provides rearing habitat until the cascade barrier. All pools contained large amounts of fry. The culvert at this road crossing may be a barrier to juvenile fish. The stream was sampled next to a greenhouse.

C9 The creek was dry upstream of Highway 16 at the time of the survey. The creek runs dry at certain times of the year according to a greenhouse employee. Water quality testing at high water is recommended. At the highway crossing. a strong sulphur smell was noted.

1 The air temperature at this site was 17.C.



Photo #: J-18-1, 1996/09/27
Site #: J233, Looking upstream, channel through alder.



Photo #: J-18-2, 1996/09/27
Site #: J233, Looking downstream.



Photo #: J-18-3, 1996/09/27
Site #: J233, Looking upstream toward culvert at Hwy.16.



Photo #: J-18-4, 1996/09/27
Site #: J233, Looking upstream from culvert at Hwy. 16.

DFO/MoELP Stream Survey Form

Site Number: W13 **Reach No.: 1**

McDowell Cr.

TRITON Environmental Consultants Ltd.

Location: W13, Unit 12; east of Hwy 16 **Stream (Gaz.):** McDowell Creek **Watershed Code:** 460-4353-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 4.0 MA **Date:** 10-Jul-97 **Time:** 10:18 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6298 .60601 **Length surveyed (m):** 100.0 GE **Survey Crew:** KA \JP\ \ \ \ \ \ \ **Photos:** W-2-12,13 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.9	MS
	Av. Wet. Width (m):	1.5	MS
	Av. Max Riffle Depth (cm):	13	MS
C1	Av. Max Pool Depth (cm):	41	MS
	Gradient (%):	1.5	CL
	Pool: 30 Riffle: 30 Run: 40 Other:	0	
	% Side Channel:	0	GE
	% Debris Area:	5-15	GE
	%Stable:	25	GE

Specific Data

1.2	2.7	2.9	1.4	1.4	1.7
1.1	1.8	2.4	1.1	1.3	1.4
14	12	10	17	14	13
32	30	24	41	35	37

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	10	0	0	35	30

Crown Closure % : 30 Aspect : NE

Bed Material

	Fines	Clay, silt, sand (<2mm):	40	40
	Gravels	Small (2-16mm):	40	20
		Large (16-64mm):		20
	Larges	Sm. cobble (64-128mm):	20	10
		Lge cobble (128-256mm):		10
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

Wetted Width (m) :	2.3	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.29	F
Discharge (m3/s) :	0.15	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

2 D 1.5 | 4420

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 8.4 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): 26 Cond. (µmhos): 140

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	100-150	A	S			VO

Comments

C1 S3. Three additional measurements were taken for pool depth; 58, 39 and 70.

C2 LS=2%, RS=2%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, was 583 seconds over 100 meters. Unable to capture the two RB's sighted due to high turbidity.

C5 No additional bank texture information.

C6 DO was not measured at this site. The mean air temperature on this day was 13.7 C.

C7 There is good rearing habitat in deep pools. The stream runs through farmland. It has high conductivity.



Photo #: W-2-12, 10-Jul-97
Site #: W13, Looking upstream at the channel



Photo #: W-2-13, 10-Jul-97
Site #: W13, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W16 **Reach No.:** 2

McDowell Cr.

TRITON Environmental Consultants Ltd.

Location: W16, Unit 12; 1.5km up Widen Rd **Stream (Gaz.):** McDowell Creek **Watershed Code:** 460-3602-245-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 2.3 MA **Date:** 10-Jul-97 **Time:** 13:00 **Agency:** TEC **Access:** FT **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6313 .60628 **Length surveyed (m):** 120.0 GE **Survey Crew:** KA \JP\ \ \ \ \ \ \ **Photos:** W-2-17,18,19 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	4.8	MS
C1	Av. Wet. Width (m):	2.3	MS
C1	Av. Max Riffle Depth (cm):	11	MS
	Av. Max Pool Depth (cm):	24	MS
	Gradient (%):	3.0	CL
	Pool: 20 Riffle: 40 Run: 40 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

3.7	4.0	6.2	3.1	4.4	4.5
3.3	3.0	2.0	1.8	1.9	2.2
10	11	12	8	15	17
23	22	23	24	25	26

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	30	0	10	30

Crown Closure %: 10 Aspect: SE

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	50	20
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Discharge

Wetted Width (m):	1.9	MS
Mean Depth (m):	0.9	MS
Mean Velocity (m/s):	0.48	F
Discharge (m3/s):	0.62	F

Banks

Height (m): 0.3

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 2

Bars (%): 20 pH: 8.3 Braided: N

Water Temp. (°C): 16.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 100

Reach Symbol

(Fish)

RB

5 B 3.0 | 2530

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	11	160-175	A				EL

Comments

C1 S3. One additional measurement was taken for channel width, wetted width and riffle depth; they were 6.8, 2.1 and 7.0 respectively.

C2 LS= 12% , RS=11%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, was 339 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom, the mean air temperature on this day was 13.7 C.

C7 This creek runs through farmland and cows access the stream. There is lots of spawning habitat of small gravel. There is little other cover in the stream. In high water there may be more pools available. A local farmer said that fish come from the lake further upstream in the spring, but he hadn't seen any this year, though there were lots of fish in the creek at the time. He also said that the creek drops quite low in high summer.

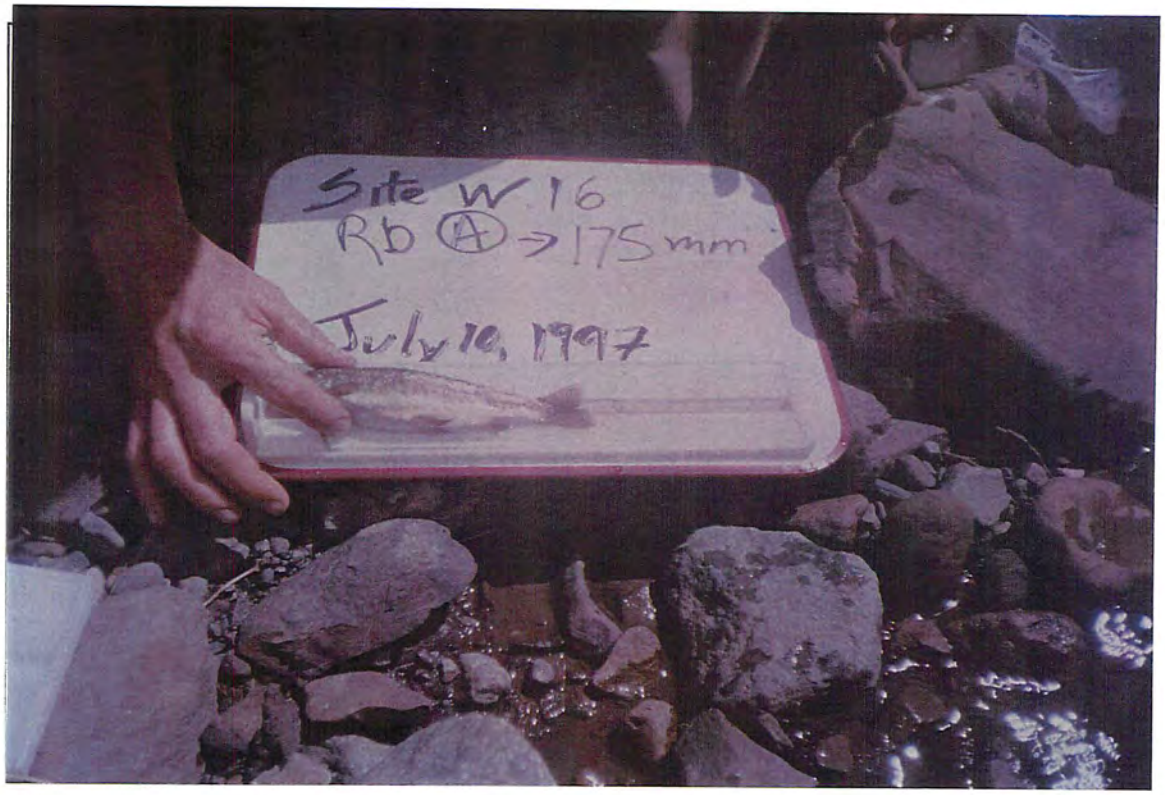


Photo #: W-2-17, 10-Jul-97
Site #: W16, Measuring fish on the fishboard



Photo #: W-2-18, 10-Jul-97
Site #: W16, Looking upstream at the channel



Photo #: W-2-19, 10-Jul-97
Site #: W16, Looking downstream at the channel, note the slumping left bank

DFO/MoELP Stream Survey Form **Site Number: W216** **Reach No.: 3**

McDowell Cr.

TRITON Environmental Consultants Ltd.

Location: W216, Unit 12; 2.7km SE of McDowell Lk. Stream (Gaz.): McDowell Creek Watershed Code: 460-4353-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 Reach Length (km): 2.9 MA Date: 22-Aug-97 Time: 9:05 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6311 .60638 Length surveyed (m): 200.0 GE Survey Crew: DD \JP\ \ \ \ \ \ \ Photos: W-L-10,11,1213,14 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.0	MS
Av. Wet. Width (m):	1.5	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	3.0	CL
Pool: 15 Riffle: 40 Run: 35 Other: 10		
% Side Channel:	0	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

3.6	2.8	2.4	4.5	2.5	2.3
1.7	1.9	1.3	0.9	1.4	2.0
3	2	2	2	2	2
12	15	11	24	13	15

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	0	60	0	10	0

Crown Closure %: 15 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		10	10

D90 (cm): 64 Compaction: Medium

Discharge

Wetted Width (m):	0.7	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.36	F
Discharge (m3/s):	0.02	F

Banks

Height (m): 0.1

% Unstable: 80

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.9

Bars (%): 75 pH: 7.7 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Reach Symbol

(Fish)

RB

3 C 3.0 | 2341

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	6	R	6.7

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	185-200	A	R			EL

Comments

C1 S3.

C2 LS=22%, RS=30%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 500V, was 240 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 12.0 C.

C7 This stream has good rearing habitat with lots of boulder cover and pools. There is limited spawning habitat. There is a 6m bedrock chute 150m downstream which is a likely barrier to upstream migration. The lake upstream of the sampling area supports a resident population of fish. Cattle have access to the channel.



Photo #: W-L-10, 22-Aug-97
Site #: W216, Looking upstream at the channel



Photo #: W-L-11, 22-Aug-97
Site #: W216, Looking downstream at the channel, note the cobble cover

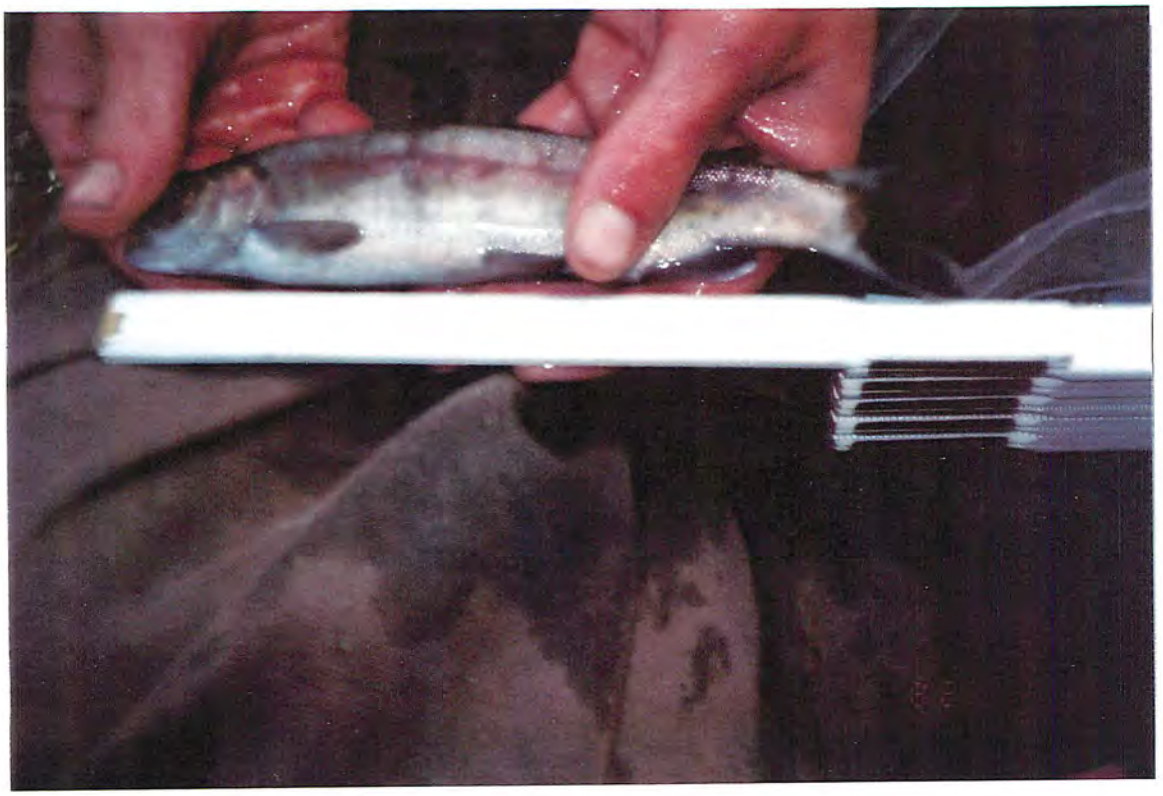


Photo #: W-L-12, 22-Aug-97
Site #: W216, Measuring fish with the meterstick



Photo #: W-L-14, 22-Aug-97
Site #: W216, Looking upstream at a cascade barrier

DFO/MoELP Stream Survey Form

Site Number: W219 **Reach No.:** 5

Trib to McDowell Cr.

TRITON Environmental Consultants Ltd.

Location: W219, Unit 12; 1.1km west of McDowell Lk. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-5700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 1.6 MA **Date:** 22-Aug-97 **Time:** 13:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6306 .60675 **Length surveyed (m):** 200.0 GE **Survey Crew:** DD \JP\ \ \ \ \ \ \ **Photos:** W-L-18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	13	MS
Gradient (%):	3.0	CL
Pool: 10 Riffle: 10 Run: 80 Other:	0	
% Side Channel:	0	GE
% Debris Area:	>15	GE
%Stable:	40	GE

Specific Data

0.6	0.9	0.9	0.8	0.5	1.0
0.6	0.8	0.3	0.8	0.6	0.7
1	1	1	1	1	1
19	14	12	8	10	

Cover

Cover Total % : 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	20	0	0	50	20

Crown Closure % : 70 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.11	F
Discharge (m3/s) :	0.02	F

Banks

Height (m): 0.2

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

1 C 3.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.3 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4.

C2 LS=35%, RS=25%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 201 seconds over 200 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 19.0 C.

C7 This stream reach contains marginal rearing and no spawning habitat. This site was logged to the streambanks.



Photo #: W-L-18, 22-Aug-97
Site #: W219, Looking downstream at the channel



Photo #: W-L-19, 22-Aug-97
Site #: W219, Looking upstream at the channel

5.14 Unnamed Tributaries to McQuarrie Lake (460-7449-000) (93 L 057)

5.14.1 Sensitive Habitats and Barriers

McQuarrie Lake, the headwaters of McQuarrie Creek, is fed by 26 tributaries and is surrounded by 4 smaller lakes. Wooded wetlands were noted at the northwestern corner of McQuarrie Lake and marshes were noted in the vicinity of the smaller lakes. No other sensitive habitats were observed. Barriers were not noted at any of the sample sites. Eight inlets to McQuarrie Lake were sampled in this inventory, including the McQuarrie mainstem.

5.14.2 Fish summary Tables and Stream Classification

The historical information indicates the presence of rainbow trout and long nose sucker in McQuarrie Lake. Rainbow trout were caught by electrofishing at 6 sites. The main creek was classified as an S3 based on an average channel width of 1.80 meters and the presence of rainbow trout in the sampling area. The remaining tributaries were classified as S3 and S4 in the lower reaches, with the upper reaches classified as non fish bearing due to steep to extreme gradient. One site was classified as "NC" based on the absence of a defined channel in the sampling area.

DFO/MoELP Stream Survey Form

Site Number: Y181 Reach No.: 2

Trib to McQuarrie Cr.

TRITON Environmental Consultants Ltd.

Location: Y181, Unit 12; 1.6km west of the north end of McQuarrie Lk. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-7449-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 **Reach Length (km):** 0.9 MA **Date:** 19-Aug-97 **Time:** 14:30 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6474 .60517 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL \JP\ \ \ \ \ \ \ **Photos:** Y-20-23, Y-21-1,2,3,4 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	1.8	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	24	MS
Gradient (%):	3.0	CL
Pool: 15 Riffle: 10 Run: 75 Other:	0	
% Side Channel:	0	GE
% Debris Aren:	>15	GE
%Stable:	15	GE

Specific Data

1.8	1.9	2.0	1.0	2.1	2.0
1.9	1.5	1.4	1.4	2.1	2.3
2	4	3	6	2	
17	16	24	15	50	

Cover

Cover Total %: 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	30	0	10	15	20

Crown Closure %: 40 Aspect: SE

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	30	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 17 Compaction: Medium

Discharge

Wetted Width (m):	0.4	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.72	F
Discharge (m3/s):	0.22	F

Banks

Height (m): 0.3

% Unstable: 25

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

2 D 3.0 | 3430

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 1

Bars (%): 10 pH: 7.1 Braided: N

Water Temp. (°C): 14.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	200	A				EL
	RB	1	56	J				EL

Comments

C1: S3.

C2: The side slopes were not measured.

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 00V, was 622 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 23.0 C.

C7: This stream flows through an old beaver pond/swampy area and gradually changes from a fines to a cobble substrate. Cover is abundant, including pools, LOD and cutbanks. Some of the gravels may be suitable for spawning.



Photo #: Y-21-1, 19/08/97
Site #: Y181, RB, meterstick and photoboard



Photo #: Y-21-2, 19/08/97
Site #: Y181, RB on fishboard



Photo #: Y-21-3, 19/08/97
Site #: Y181, Looking upstream at the channel



Photo #: Y-21-4, 19/08/97
Site #: Y181, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z155 **Reach No.:** 1

Trib. to McQuarrie L.

TRITON Environmental Consultants Ltd.

Location: Z155, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 067-8200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 3.0 MW **Date:** 19-Aug-97 **Time:** 10:29 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6500 . 605290 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG\CF\ \ \ \ \ \ \ **Photos:** Z-20-14,15,16 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.5	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	8	MS
Gradient (%):	3.0	CL
Pool: 30 Riffle: 15 Run: 55 Other: 0		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	60	GE

Specific Data

1.5	1.7	1.5	1.2	1.5	1.4
1.3	0.8	1.1	0.5	0.6	1.3
2	7	2			
8	11	6			

Cover

Cover Total % : 45 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	70	5	0	10	10

Crown Closure % : 20 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	40	25
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	30	10
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 22 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.07	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0

Bars (%): 15 pH: 7.6 Braided: Y

Water Temp. (°C): 10.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 80

Reach Symbol

(Fish)

RB

2 D 3.0 | 3430

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	TR	10	30	F	R			VO
	RB	13	30-100	J	R			EL

Comments

C1: S3

C2: LS = 0%, RS = 0%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at 60hz, 6ms, 300V , was 153 seconds over 50 meters. The shocking effort was cut short due to the obvious abundance of fish.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 18.C.

C7: This reach provides rearing and spawning habitat, but not overwintering habitat.



Photo #: Z-20-14, 19-Aug-97
Site #: Z155, Looking upstream at the channel



Photo #: Z-20-15, 19-Aug-97
Site #: Z155, Looking downstream at the channel



Photo #: Z-20-16, 19-Aug-97
Site #: Z155, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: E222

Reach No.: 1

Trib. to McQuarrie Lk

TRITON Environmental Consultants Ltd.

Location: E222, Unit 12, West of Mcquarrie Lk. **Stream (Gaz.):** Unnamed **Watershed Code:** 067-7300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 0.6 MA **Date:** 19-Aug-97 **Time:** 16:45 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6503 .60491 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-21-19,20 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.9	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	14	MS
Gradient (%):	17.0	CL
Pool: 20 Riffle: 20 Run: 30 Other: 30		
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	0	GE

Specific Data

0.9	0.8	1.4	0.6	1.0	0.7
0.9	0.9	1.4	0.6	1.0	0.8
3	3	3	2	2	
13	12	15	17	14	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	0	0	20	30

Crown Closure % : 30 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.53	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

1 D 17.0	7210
(Width, Valley: Channel, Slope)	(Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.6 Braided: Y

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 120

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 The side slopes were not measured.

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 243 seconds over 125 meters.

C5 No additional bank texture information.

C6 DO was not meausured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7 Roughly 30% of the flow at this site is comprised of cascades. A section of 25% gradient was observed, however, fish passage could be facilitated by step pool habitat noted by the crew. Currently the creek flows around roots and underneath sections of roots which completely close over the channel.



Photo #: E-21-19, 19-Aug-97
Site #: E222, Looking upstream at the channel and moss lined banks



Photo #: E-21-20, 20-Aug-97
Site #: E222, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** Y182 **Reach No.: 1**

Trib to McQuarrie Lk

TRITON Environmental Consultants Ltd.

Location: Y182, Unit 12; NW corner of McQuarrie Lk **Stream (Gaz.):** Unnamed **Watershed Code:** 067-9300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 1.2 MA **Date:** 19-Aug-97 **Time:** 15:37 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6493 .60519 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL UP \ \ \ \ \ \ **Photos:** Y-21-5,6,7 **Air Photos:**

Channel Characteristics

			Specific Data					
	Av. Chan. Width (m):	1.7 MS	2.5	0.9	1.9	1.5	2.0	1.6
	Av. Wet. Width (m):	0.7 MS	1.4	0.3	0.3	0.5	0.2	1.5
N	Av. Max Riffle Depth (cm):	0 MS						
	Av. Max Pool Depth (cm):	16 MS	10	28	21	12	10	
	Gradient (%):	5.0 CL						
	Pool: 100 Riffle: 0 Run: 0 Other: 0							
	% Side Channel:	0-10 GE						
	% Debris Area:	>15 GE						
	%Stable:	40 GE						

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	60	30
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):		20
	Lge cobble (128-256mm):	30	5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 27 Compaction: High

Cover

Cover Total %: 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	30	5	0	10	25

Crown Closure %: 75 Aspect: S

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.2

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

2 D 5.0 | 1630

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 70 pH: 7.0 Braided: Y

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	63	J				EL
	TR	40	20-35	F				VO

Comments

C1: S3.

C2: LS=10%, RS=2%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at II, 4, 400V, was 95 seconds over 50 meters. There was limited habitat to shock.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 23.0 C.

C7: This stream is almost dry with isolated pools of water, some of which are connected by a trickle through cobble. The cover was estimated for modcrate flow. Fry were observed in several of the isolated pools and a juvenile was captured in the uppermost pool surveyed.



Photo #: Y-21-5, 19/08/97
Site #: Y182, Looking upstream at the channel



Photo #: Y-21-6, 19/08/97
Site #: Y182, Looking downstream at the channel



Photo #: Y-21-7, 19/08/97
Site #: Y182, RB on fishboard and photoboard

DFO/MoELP Stream Survey Form **Site Number: Y180** **Reach No.: 1**

Trib to McQuarrie Lk.

TRITON Environmental Consultants Ltd.

Location: Y180, Unit 12; 1.6km west of the north end of McQuarrie Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 067-9900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 0.1 MA **Date:** 19-Aug-97 **Time:** 13:34 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6473 .6051741 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL UP \ \ \ \ \ \ **Photos:** Y-20-19,20,21,22 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	0.9	MS	0.5	0.7	1.2	1.0	1.2	0.9
Av. Wet. Width (m):	0.6	MS	0.5	0.4	0.5	0.5	0.9	0.8
Av. Max Riffle Depth (cm):	3	MS	2	2	4	3	2	
Av. Max Pool Depth (cm):	14	MS	20	9				
Gradient (%):	6.0	CL						

Pool: 10 Riffle: 20 Run: 70 Other: 0

% Side Channel: >40 GE

% Debris Area: >15 GE

%Stable: 50 GE

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	20	0	0	20	30

Crown Closure %: 40 Aspect: N

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	50	40
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	10
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 7 Compaction: Medium

Discharge

Wetted Width (m):	0.4	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.10	F
Discharge (m3/s):	0.03	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 7.0 Braided: Y

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 70

Reach Symbol

(Fish)

(RB)

1 D 6.0 | 4510

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4.

C2: LS=2%, RS=5%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 600V, was 622 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 24.0 C.

C7: Two channels were found in the sampling area. They are very close to one another and dry up and disappear about 50-100 meters upstream. The smaller channel was measured since they weren't directly connected. The mainstem contains RB so it was assumed that at higher flows that this creek could provide rearing habitat. The cover was estimated for moderate flow.



Photo #: Y-20-19, 19/08/97
Site #: Y180, Looking upstream at the channel



Photo #: Y-20-20, 19/08/97
Site #: Y180, Looking downstream at the channel



Photo #: Y-20-21, 19/08/97
Site #: Y180, Looking upstream at the channel



Photo #: Y-20-22, 19/08/97
Site #: Y180, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y177 **Reach No.: 1**

Trib to McQuarrie Lk.

TRITON Environmental Consultants Ltd.

Location: Y177, Unit 12; 200m west of McQuarrie Lk **Stream (Gaz.):** Unnamed **Watershed Code:** 460-7449-858-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 **Reach Length (km):** 0.9 MA **Date:** 19-Aug-97 **Time:** 9:30 **Agency:** TEC **Access:** H **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M.: 9 .649182.6050290 **Length surveyed (m):** 300.0 GE **Survey Crew:** JL \JP\ \ \ \ \ \ \ **Photos:** Y-20-10C,11,12,13,14 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.2	MS
Av. Wet. Width (m):	1.5	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	25	MS
Gradient (%):	6.0	CL
Pool: 15 Riffle: 30 Run: 50 Other:	5	
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

1.4	2.4	2.0	2.8	3.0	1.4
0.9	1.7	1.7	2.0	1.6	0.9
7	3	6	4	4	
24	35	25	20	21	

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	30	0	0	20	35

Crown Closure % : 40 Aspect : NE

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	50	25
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	40	25
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 18 Compaction: High

Discharge

Wetted Width (m) :	1.2	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.36	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

2 D 6.0 | 1540

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 5 pH: 7.7 Braided: Y

Water Temp. (°C): 9.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	TR	20	30-40	F				VO
	RB	3	64-100	J				EL

Comments

C1: S3.

C2: LS=3%, RS=05

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 500V, was 200 seconds over 200 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 16.3 C

C7: Upstream the stream changes with increases in gradient, D90, LOD and cascades, but it still has very good habitat in the upper most area surveyed, including deep pools, LOD and cutbank cover. Spawning habitat was observed. Fry were observed throughout the area above small debris jams and small cascades. Cascades over LOD make up 5% of the flow.



Photo #: Y-20-11, 19/08/97
Site #: Y177, Looking upstream at the channel



Photo #: Y-20-12, 19/08/97
Site #: Y177, Looking downstream at the channel



Photo #: Y-20-13, 19/08/97
Site #: Y177, Measuring fish on the fish board



Photo #: Y-20-14, 19/08/97
Site #: Y177, Measuring fish on the fish board



Photo #: Y-21-9B, 20/08/97
Site #: Y177, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z161

Reach No.: 1

Trib. to McQuarrie Lk.

TRITON Environmental Consultants Ltd.

Location: Z161, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 067-8100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 0.6 MA **Date:** 19-Aug-97 **Time:** 15:52 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .651335.6049920 **Length surveyed (m):** 200.0 GE **Survey Crew:** KG \CF \ \ \ \ \ \ **Photos:** Z-20-24,25, Z-21-1 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.2	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	6.0	CL
Pool: 45 Riffle: 5 Run: 45 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

1.2	1.3	1.4	0.8	1.3	1.0
1.0	0.8	1.2	0.7	1.0	0.9
4	2	4			
20	16	15	8	16	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
45	5	0	0	40	10

Crown Closure % : 70 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 13 Compaction: Low

Discharge

C6	Wetted Width (m) :		GE
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

RB

1 D 6.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 0 pH: 7.6 Braided: N

Water Temp. (°C): 14.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 60

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	2	43	J	R			EL

Comments

C1: S4

C2: LS = 0%, RS = 0%

C3: Sedges line the lakeshore at this site.

C4: The electroshocking effort at this site, using a Smithroot 12 B POW model, set at 60HZ, 6MS, 400V, was 190 seconds over 75 meters. Little habitat was available for sampling in this reach.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was rust coloured and filled with algae in some areas. The air temperature at this site was 19.C.

C7: While the sampling area contains little to no suitable fish habitat, it still supports fish. After roughly 200m downstream of the lake, the habitat in this stream improves, the substrate contains more gravels and cobble.



Photo #: Z-20-24, 19-Aug-97
Site #: Z161, Looking upstream at the channel



Photo #: Z-20-25, 19-Aug-97
Site #: Z161, Looking downstream at the channel, note the heavy fern cover



Photo #: Z-21-1, 19-Aug-97
Site #: Z161, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: Y178 **Reach No.:** 1

Trib to McQuarrie Lk

TRITON Environmental Consultants Ltd.

Location: Y178, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 067-8800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 | Reach Length (km): 0.6 MA | Date: 19-Aug-97 | Time: 11:04 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .649041.6050490 | Length surveyed (m): 220.0 HC | Survey Crew: JL \JP\ \ \ \ \ \ \ | Photos: Y-20-15,16,17 | Air Photos:

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	1.6	MS	1.5	1.6	1.5	1.6	1.7	2.0
Av. Wet. Width (m):	1.5	MS	1.7	1.6	1.5	1.5	0.8	1.6
Av. Max Riffle Depth (cm):	3	MS	2	3	4			
Av. Max Pool Depth (cm):	33	MS	64	29	30	22	22	
Gradient (%):	2.0	CL						

Pool: 15 Riffle: 5 Run: 80 Other: 0

% Side Channel: 10-40 GE

% Debris Area: >15 GE

%Stable: 80 GE

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	35	0	0	15	35

Crown Closure %: 70 Aspect: E

Discharge

Wetted Width (m):	0.9	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.08	F
Discharge (m3/s):	0.01	F

Reach Symbol

(Fish)

RB

2 D 2.0 | 8200

(Width, Valley: Channel, Slope) | (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	20	15
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):		0
	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 2 Compaction: Low

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 150

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	TR	20	30-40	F				VO
	RB	2	54-57	J				EL

Comments

C1: S3.

C2: LS=9%, RS=12%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 214 seconds over 200 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 18.0 C.

C7: There is lots of cover here in the form of moss covered LOD and cutbanks. Gravels near the mouth of the stream look suitable for spawning. Fry were observed in the channel 130m upstream from the mouth, where the stream contains moss covered LOD.



Photo #: Y-20-15, 19/08/97
Site #: Y178, Looking upstream at the channel, note cutbanks



Photo #: Y-20-16, 19/08/97
Site #: Y178, Looking downstream at the channel



Photo #: Y-20-17, 19/08/97
Site #: Y178, Measuring fish on the fish board

5.15 Robin Creek (460-4879-000) (93 L 066, 93 L 067)

5.15.1 Sensitive Habitats and Barriers

The mainstem of Robin Creek is 15.9 km in length and is fed by 15 tributaries. Reaches 1 through 4 of Robin Creek are characterized by low gradient and minimal confinement. The mainstem is crossed twice by roads, including highway 16 and the tributaries are crossed many times. Reach 2 flows through an area of heavy agricultural development and has been seriously impacted in some areas. For example in reach 2 at site Y7, the sampling crew noted that the riparian cover had been completely removed. The upper reaches of Robin Creek (6, 7 and 8) and its tributaries have varied, moderate to slightly steep gradient. Reach 9 has steep impassable gradient. No significant barriers to fish migration were identified. Robin creek was sampled at 29 locations, including reaches 2 and 6 of the mainstem and in deJong, Gardner, Lemieux and Vanderven Creeks.

5.15.2 Fish Summary Tables and Stream Classification

No historical information exists for this creek and no fish were caught in the mainstem, however some of the tributaries are fish bearing. The mainstem was classified as an S2 in reach 2 based on an average channel width of 5.47 and the presence of accessible fish habitat in the sampling area. It was sampled again in reach 6 and was classified as an S3, based on an average channel width of 3.57 meters and the presence of accessible fish habitat. Cutthroat trout were caught by electrofishing at sites Z8 (Vanderven Creek), Z9 (de Jong Creek) and Y9 (Lemieux Creek), all of which are tributaries to Robin Creek. Suckers were observed at site Y8 in reach 3 of Lemieux Creek and long nose dace and northern squawfish were identified at Z11 in reach 1 of Lemieux Creek. Rainbow trout were also caught by electrofishing in reach 2 of Vanderven Creek. Vanderven, de Jong and Lemieux Creeks are characterized by low to moderate gradient until the upper reaches which typically have borderline steep gradient. No fish were caught in the tributaries to reach 3, 5 and above of Robin Creek, including Gardner Creek. A small S4 sized tributary was identified in reach 8 of Robin Creek. This stream flows into Robin Creek above a very confined section in reach 7. Two large tributary systems to reach 1 of Robin were classified as non fish bearing due to a lack of suitable fish habitat. The habitat was particularly poor at site Z12, which was located in a reach where the channel has poorly defined banks and is accessible to livestock.

DFO/MoELP Stream Survey Form

Site Number: Z10

Reach No.: 6

Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Z10, Unit 12, at 7.8km on Round Lake rd. | Stream (Gaz.): Robin Creek | Watershed Code: 460-4879-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 | Reach Length (km): 3.6 MW | Date: 09-Jul-97 | Time: 13:01 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .63848 . 605954 | Length surveyed (m): 150.0 GE | Survey Crew: JP \DD \KG \ \ \ \ \ \ | Photos: Z-2-11,12,13 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	3.6	MS
Av. Wet. Width (m):	1.8	MS
Av. Max Riffle Depth (cm):	7	MS
Av. Max Pool Depth (cm):	27	MS
Gradient (%):	5.0	CL
Pool: 10 Riffle: 65 Run: 25 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	40	GE

Specific Data

3.7	4.6	3.0	4.2	3.2	2.7
1.4	1.6	1.5	2.3	2.2	1.6
9	5	6	7	6	
25	17	23	44		

Cover

Cover Total %: 45 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	35	10	0	45	5

Crown Closure %: 55 Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	25
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 26 Compaction: Medium

Discharge

Wetted Width (m):	2.8	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.46	F
Discharge (m3/s):	0.09	F

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT)

4 D 5.0 | 2350

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 5 pH: 7.6 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 110

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 9%, RS = 61%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort at this site, using a Smithroot Type VII model, set at 400V, 55HZ, 6MS, was 196 seconds over 175 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to the bottom.

C7: Some good rearing and spawning habitat observed in the sampling area. Pools are somewhat limited.



Photo #: Z-2-12, 09-Jul-97
Site #: Z10, Looking upstream at the channel



Photo #: Z-2-13, 09-Jul-97
Site #: Z10, Looking downstream at the channel, note heavy brush cover

DFO/MoELP Stream Survey Form

Site Number: E9

Reach No.: 2

Trib to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: E9, Unit 12; across Kerr Rd 1.3km from Bend

Stream (Gaz.): Unnamed

Watershed Code: 068-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **U.T.M.:** 9 .6410 .60550

Reach Length (km): 1.2 ? **Length surveyed (m):** 100.0 GE

Date: 11-Jul-97 **Time:** 10:30 **Agency:** TEC **Survey Crew:** JL \EM\ \ \ \ \ \ \

Access: V2 **Fish Card:** N Field ☒ Historical ☐ **Photos:** E-1-13,14 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.1	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	7.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	10	GE

Specific Data

2.1 0.6 0.8 1.0 1.1 0.9

Bed Material

	Fines	Clay, silt, sand (<2mm):	90	90
	Gravels	Small (2-16mm):	10	5
		Large (16-64mm):		5
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Medium

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	0	50	10	10

Crown Closure % : 40 Aspect : SW

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 70

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

1 B 7.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: Dry Flood Signs Ht(m): 0.3

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6.

C2: LS=30%, RS=25%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished, no habitat was available to shock.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site. The mean air temperature on this day was 14.6 C.

C7: The creek bed consisits of soft mud and the banks are unstable. Trees are growing in the creek bed. Isolated patches of gravel were seen.



Photo #: E-1-13, 11-Jul-97
Site #: E9, Looking downstream at the channel.



Photo #: E-1-14, 11-Jul-97
Site #: E9, Looking upstream at the channel.

DFO/MoELP Stream Survey Form

Site Number: Z153

Reach No.: 1

Trib. to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Z153, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 460-4879-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 | Reach Length (km): 0.8 MW | Date: 19-Aug-97 | Time: 8:38 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .642348.6062884 | Length surveyed (m): 100.0 GE | Survey Crew: CF\KG\ \ \ \ \ \ | Photos: Z-20-9,10 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.0	MS
Av. Wet. Width (m):	0.3	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	12	MS
Gradient (%):	8.0	CL
Pool: 30 Riffle: 25 Run: 40 Other:	5	
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	60	GE

Specific Data

1.1	1.0	0.9	1.1	0.9	1.0
0.6	0.4	0.2	0.2	0.0	0.2
1	2	2			
13	9	18	7		

Cover

Cover Total %: 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	55	5	0	20	15

Crown Closure %: 65 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	60	25
	Large (16-64mm):		35
Larges	Sm. cobble (64-128mm):	20	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 30 Compaction: High

Discharge

Wetted Width (m):	0.9	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.01	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio: 5-10

Stage: L | Flood Signs Ht(m):

Bars (%): 15 | pH: 7.6 | Braided: Y

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 160

Reach Symbol

(Fish)

(RB)

1 C 8.0 | 2620

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4

C2: LS= 12.5%, RS= 2%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 177 seconds over 100 meters.

C5: No additional bank texture information

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 16.3 C.

C7: This is a small stream which would provide rearing habitat at higher flows. This is not great habitat, but this area could be used by DV.



Photo #: Z-20-9, 19-Aug-97
Site #: Z153, Looking upstream at the channel, note the dense understory



Photo #: Z-20-10, 19-Aug-97
Site #: Z153, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: E10** **Reach No.: 4**

Trib to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: E10, Unit 12; 600m north of Kerr Rd | Stream (Gaz.): Unnamed | Watershed Code: 068-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 0.2 MA | Date: 11-Jul-97 | Time: 11:39 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M. : 9 .6422 .60555 | Length surveyed (m): 100.0 GE | Survey Crew: JL \EM \ \ \ \ \ \ | Photos: E-1-15,16,17 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.7	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	13.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
	% Debris Area:	0	GE
	%Stable:	10	GE

Specific Data

1.3 1.0 0.5 0.3 0.7 0.4

Bed Material

	Fines	Clay, silt, sand (<2mm):	40	40
	Gravels	Small (2-16mm):	30	15
		Large (16-64mm):		15
	Larges	Sm. cobble (64-128mm):	30	15
		Lge cobble (128-256mm):		15
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 5 Compaction: Medium

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
50	0	0	0	0	50

Crown Closure % : 10 Aspect : W

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.3

% Unstable: 90

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.4

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 D 13.0 | 4330

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6.

C2: The side slopes were not measured at this site.

C3: No fisheries sensitive zones noted.

C4: This site was not electroshocked due to there being no water.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site. The mean air temperature on this day was 14.6 C.

C7: This is a dry creek bed, that runs west downstream from the road. It now drains upstream to the east as a raoad ditch. No creek was found upstream of the road crossing.



Photo #: E-1-15, 11-Jul-97
Site #: E10, Looking upstream at the channel.



Photo #: E-1-16, 11-Jul-97
Site #: E10, Looking upstream at the channel.



Photo #: E-1-17, 11-Jul-97
Site #: E10, Looking downstream at the channel.

DFO/MoELP Stream Survey Form

Site Number: E11

Reach No.: 6

Trib to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: E11, Unit 12; 1.1km north of E10 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-4500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 3.4 MA **Date:** 11-Jul-97 **Time:** 12:13 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6422 .60567 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL \EM \ \ \ \ \ \ **Photos:** E-1-18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	0.4	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	33	MS
Gradient (%):	14.0	CL
Pool: 70 Riffle: 30 Run: 0 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	10	GE

Specific Data

0.9	0.9	0.6	1.8	1.2	1.4
0.4	0.2	0.3	0.5	0.4	
1	1	1	1	1	1
33					

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	15	0	0	40	25

Crown Closure % : 60 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	15
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Low

Discharge

Wetted Width (m) :	0.3	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.19	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: FC

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.4

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 B 14.0 | 5320

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6.

C2: LS=4%, RS=12%

C3: No fisheries sensitive zones noted.

C4: This site was not electroshocked, as there was not enough water.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site. The mean air temperature on this day was 14.6 C.

C7: There is no creek here, just pools with small intermitant riffles.

C8: This site does not provide suitable rearing, spawning or overwintering habitat.



Photo #: E-1-18, 11-Jul-97
Site #: E11, Looking upstream, with LOD and riparian cover



Photo #: E-1-19, 11-Jul-97
Site #: E11, Looking downstream, with LOD, riparian cover

DFO/MoELP Stream Survey Form

Site Number: Z12

Reach No.: 5

Trib. to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Z12, Unit 12, at 1.4km on Kerr Rd. | Stream (Gaz.): Unnamed | Watershed Code: 068-4200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 | Reach Length (km): 1.1 MW | Date: 09-Jul-97 | Time: 15:25 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .63988 . 605467 | Length surveyed (m): 125.0 GE | Survey Crew: JP \DD \KG \ \ \ \ \ \ | Photos: Z-2-14,15,16 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.1	MS
N	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	0-5	GE
	%Stable:	70	GE

Specific Data: 1.7 1.4 1.4 0.8 0.7 0.7

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	20	80	0

Crown Closure % : 80 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

1 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m):

Bars (%): 0 pH: Braided: Y

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6

C2: LS = 0%, RS = 1%

C3: No fisheries sensitive zones noted.

C4: This dry site was not electrofished.

C5: No additional bank texture information.

C6: Water quality could not be evaluated at this dry site. The mean air temperature on this day was 12.0.C.

C7: This creek is ill defined in some areas and is accessible to livestock. No suitable fish habitat was observed in the sampling area.



Photo #: Z-2-17, 09-Jul-97
Site #: Z12, Looking downstream at the channel



Photo #: Z-2-18, 09-Jul-97
Site #: Z12, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z13

Reach No.: 1

Trib. to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Z13, Unit 12, 820m u/s, at the confluence with Robin Cr., at highway 16

Stream (Gaz.): Unnamed

Watershed Code: 068-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 | Reach Length (km): 3.8 MW | Date: 09-Jul-97 | Time: 15:46 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .63892 . 605365 | Length surveyed (m): 120.0 GE | Survey Crew: JP \DD \KG \ \ \ \ \ \ | Photos: Z-2-17,18 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.5	MS
	Av. Wet. Width (m):	1.2	MS
N	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	15	MS
	Gradient (%):	1.0	CL
	Pool: 10 Riffle: 0 Run: 90 Other: 0		
	% Side Channel:	10-40	GE
	% Debris Area:	>15	GE
	%Stable:	50	GE

Specific Data

2.4	1.9	1.6	1.0	1.0	0.8
2.0	1.7	1.2	0.8	0.8	0.6
15	11	18			

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	25	0	10	60	5

Crown Closure %: 80 | Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 | Compaction: Low

Discharge

Wetted Width (m):	0.6	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.05	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: M | Flood Signs Ht(m): 0.4

Bars (%): 5 | pH: 7.4 | Braided: Y

Water Temp. (°C): 14.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 510

Reach Symbol

(Fish)

NF

2 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6

C2: LS = 0%, RS = 0%

C3: No fisheries sensitive zones present.

C4: The electroshocking effort was not recorded at this site.

C5: No additional bank texture information.

C6: DO was not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 12.C.

C7: No suitable fish habitat was observed in the sampling area.



Photo #: Z-2-19, 09-Jul-97
Site #: Z13, Looking downstream at the channel



Photo #: Z-2-20, 09-Jul-97
Site #: Z13, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z211

Reach No.: 2

Trib to Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Z211, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-4300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 2.3 MW **Date:** 08-Sep-97 **Time:** 12:30 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 .640725.6055074 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG\LE\ \ \ \ \ \ **Photos:** Z-26-24, Z-27-1 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.6	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	5.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	50	GE

Specific Data

1.5 1.8 1.6 2.0 1.2 1.6

Cover

Cover Total % : 90 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	0	0	70	0

Crown Closure % : 60 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

2 D 5.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.3

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6. Discharge, wetted width, and riffle and pool depth were not measured as the creek was dry.

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished due to there being no water in the creek.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is almost an "NC". The channel is ill defined and filled with vegetation.

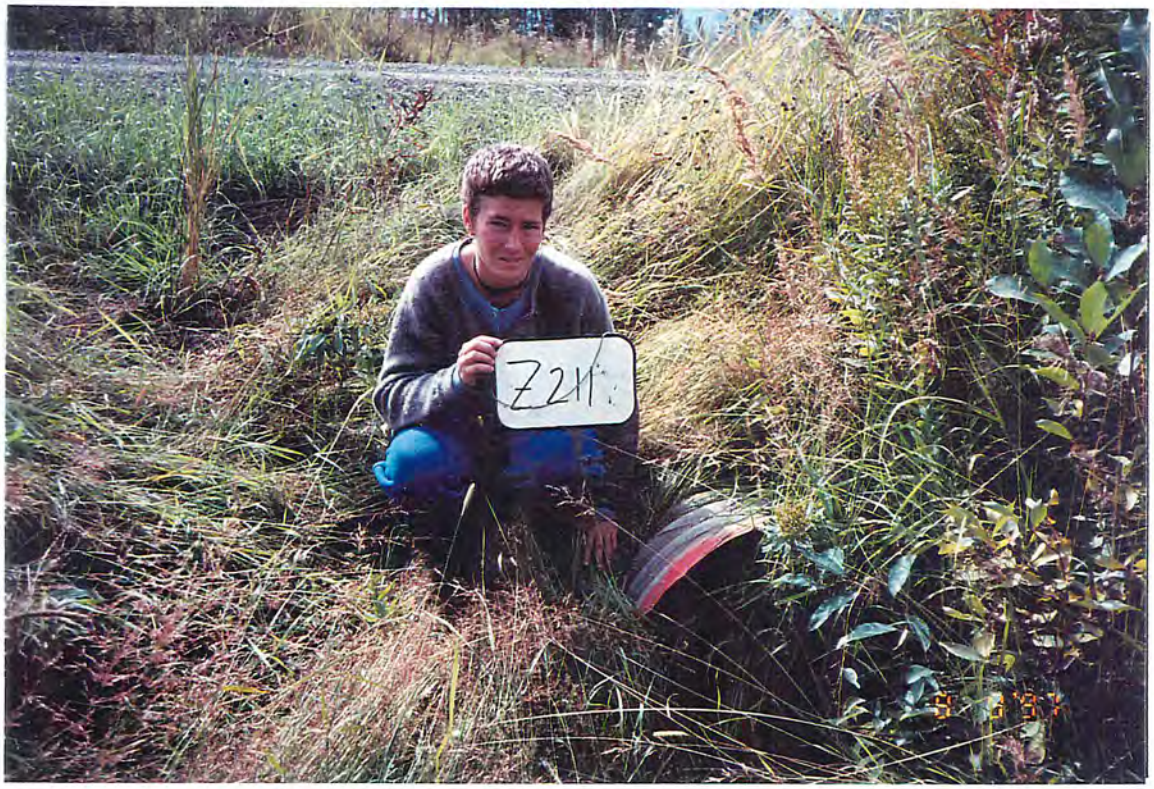


Photo #: Z-26-24, 08-Sep-97
Site #: Z211, Looking downstream at the channel



Photo #: Z-27-1, 08-Sep-97
Site #: Z211, Looking upstream at the channel, heavily overgrown with vegetation

DFO/MoELP Stream Survey Form

Site Number: Y7 **Reach No.:** 2

Robin Cr.

TRITON Environmental Consultants Ltd.

Location: Y7, Unit 12 **Stream (Gaz.):** Robin Creek **Watershed Code:** 460-4879-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 4.2 MA **Date:** 10-Jul-97 **Time:** 11:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6370 .60567 **Length surveyed (m):** 350.0 GE **Survey Crew:** DD\SJ\ \ \ \ \ \ \ **Photos:** Y-1-18,19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	5.5	MS
Av. Wet. Width (m):	2.9	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	40	MS
Gradient (%):	1.5	CL
Pool: 0 Riffle: 30 Run: 70 Other: 0		
% Side Channel:	0	GE
% Debris Area:	0	GE
%Stable:		GE

Specific Data

5.8	6.0	5.5	5.6	5.0	4.9
2.1	2.0	1.8	5.2	3.9	2.6
5	5	4	5	7	
40					

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	95	0	5

Crown Closure %: 0 Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	80	40
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):		5
	Lge cobble (128-256mm):	10	5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

Wetted Width (m):	1.9	MS
Mean Depth (m):	0.2	MS
Mean Velocity (m/s):	0.64	F
Discharge (m3/s):	0.18	F

Banks

Height (m): 1.0

% Unstable: 10

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio | 10+ |

Stage: M Flood Signs Ht(m): 0.6

Bars (%): 35 pH: 8.8 Braided: N

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 150

Reach Symbol

(Fish)

(CT)

6 D 1.5 | 1810

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S2.

C2: LS=5%, RS=22%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at F, 6, 600V, was 486 seconds over 350 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 18.5 C.

C7: Low habitat complexity was observed in the sampling area. The elevated pH here may have an impact on fish.



Photo #: Z-1-22, 09-Jul-97
Site #: Z7, Looking across stream at the channel, note the livestock impacts



Photo #: Z-1-23, 09-Jul-97
Site #: Z7, Looking downstream at the channel



Photo #: Z-1-24, 09-Jul-97
Site #: Z7, Looking upstream at the channel



Photo #: Z-1-25, 09-Jul-97
Site #: Z7, Looking across stream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z9

Reach No.: 1

De Jong Cr.

TRITON Environmental Consultants Ltd.

Location: Z9, Unit 12, at 6.9km on the Round Lake rd. **Stream (Gaz.):** De Jong Creek **Watershed Code:** 068-7800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 1.0 MW **Date:** 09-Jul-97 **Time:** 12:48 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6375 .60593 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD \KG \ \ \ \ \ \ **Photos:** Z-2-6,7,8,9,10 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.7	MS
Av. Wet. Width (m):	2.2	MS
Av. Max Riffle Depth (cm):	11	MS
Av. Max Pool Depth (cm):	29	MS
Gradient (%):	2.0	CL
Pool: 5 Riffle: 65 Run: 30 Other:	0	
% Side Channel:	10-40	GE
% Debris Area:	5-15	GE
%Stable:	60	GE

Specific Data

3.2	3.5	4.4	4.4	3.2	3.6
2.3	2.8	2.6	2.4	1.6	1.7
8	10	15	12		
31	42	13			

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	40	5	0	45	5

Crown Closure % : 60 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	25
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	40	25
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 22 Compaction: High

Discharge

Wetted Width (m) :	2.4	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.51	F
Discharge (m3/s) :	0.09	F

Banks

Height (m): 0.1

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 15 pH: 7.8 Braided: Y

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 130

Reach Symbol

(Fish)

CT

4 C 2.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	3		J	R			EL

Comments

C1: S3

C2: LS = 11%, RS = 14%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort using a Smithroot Type VII model, set at 500V at 55HZ, was 110 seconds over 50 meters. The electroshocking was limited as the crew was working on private property.

C5: Gravels and fines make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The mean air temperature on this day was 12.0 .C.

C7: Some good spawning and rearing habitat was noted in the sampling area. Livestock have direct access to this creek, as evidenced by cattle tracks on the stream banks.



Photo #: Z-2-5, 09-Jul-97
Site #: Z9, Looking across stream at the channel



Photo #: Z-2-6, 09-Jul-97
Site #: Z9, Looking downstream at the channel



Photo #: Z-2-7, 09-Jul-97
Site #: Z9, Looking upstream at the channel, note the cobble riffle



Photo #: Z-2-8, 09-Jul-97
Site #: Z9, Measuring fish on the fishboard



Photo #: Z-2-9, 09-Jul-97
Site #: Z9, Measuring fish on the fishboard

DFO/MoELP Stream Survey Form

Site Number: Z14

Reach No.: 1

Gardner Cr.

TRITON Environmental Consultants Ltd.

Location: Z14, Unit 12, 2.5km East of Highway 16 **Stream (Gaz.):** Gardner Creek **Watershed Code:** 460-4879-111-097-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 2.2 MA **Date:** 09-Jul-97 **Time:** 16:22 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .63977 .6056465 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD \KG \ \ \ \ \ \ **Photos:** Z-2-19,20 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	2.7	MS
	Av. Wet. Width (m):	0.8	MS
	Av. Max Riffle Depth (cm):	3	MS
C6	Av. Max Pool Depth (cm):	22	MS
	Gradient (%):	2.0	CL
	Pool: 25 Riffle: 35 Run: 40 Other: 0		
	% Side Channel:	10-40	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

2.5	2.5	2.3	2.0	3.9	2.8
0.5	0.8	0.9	0.5	0.9	1.2
2	4	4			
21	13	12	25	25	19

Cover

Cover Total % : 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	5	5	5	65	10

Crown Closure % : 40 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	30
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 40 Compaction: Medium

Discharge

Wetted Width (m) :	0.5	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.11	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.1

% Unstable: 60

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(CT)

3 B 2.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: CO

Valley : Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.6

Bars (%): 5 pH: 7.4 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 110

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S3

C2: LS = 2-%, RS = 43%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot Type VII model set at 600V, 60HZ at ^ms, was 136 seconds over 300 meters.

C5: Fines and gravels make up the bank texture at this site.

C6: DO was not measured at this site, the water was clear to the bottom. The air temperature at this site was 14.C.

C7: This stream may have some more suitable habitat closer to the mouth and likely carries a lot of flow during freshet.



Photo #: Z-2-22, 09-Jul-97
Site #: Z14, Looking upstream at the channel



Photo #: Z-2-21, 09-Jul-97
Site #: Z14, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E12 **Reach No.:** 2

Gardner Cr.

TRITON Environmental Consultants Ltd.

Location: E12, Unit 12; 2km north of E11 **Stream (Gaz.):** Gardener Creek **Watershed Code:** 068-6900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 5.4 MA **Date:** 11-Jul-97 **Time:** 13:00 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6422 .60580 **Length surveyed (m):** 100.0 GE **Survey Crew:** JL \EM\ \ \ \ \ \ \ **Photos:** E-1-20,21 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	9	MS
Gradient (%):	12.0	CL
Pool: 10 Riffle: 40 Run: 50 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

3.5	1.4	1.2	1.5	2.0	1.0
0.8	0.6	0.4	0.6	0.4	0.8
1	1	2	2	1	
7	15	7	10	5	

Cover

Cover Total % : 5 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	20	40	0	10	20

Crown Closure % : 50 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 15 Compaction: Medium

Discharge

Wetted Width (m) :	0.6	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :		
Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.5 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 100

Reach Symbol

(Fish)

(DV)

2 D 12.0 | 3250

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3.

C2 LS=45%, RS=50%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, was 100 seconds. No fish were caught.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 14.6 C.

C7 The banks have been trampled by cattle at this site. Siltation problems were noted.



Photo #: E-1-20, 11-Jul-97
Site #: E12, Looking downstream at the channel.



Photo #: E-1-21, 11-Jul-97
Site #: E12, Looking upstream at the channel.

DFO/MoELP Stream Survey Form

Site Number: Y8 **Reach No.:** 3

Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: Y8, Unit12 **Stream (Gaz.):** Lemieux Creek **Watershed Code:** 460-4879-111-000-000-000-000-000-000-000-000-0

Map #:	93 L 066	**Reach Length (km):**	1.5	MW	**Date:**	10-Jul-97	**Time:**	13:00	**Agency:**	TEC	**Access:**	V2	**Fish Card:**	N	**Field**	☒	**Historical** ☐
U.T.M. :	9 .6391 .60564	**Length surveyed (m):**	100.0	GE	**Survey Crew:**	DD \SJ \ \ \ \ \ \ \					**Photos:**		Y-1-20,21,22		**Air Photos:**		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	5.0	MS	6.0	7.0	3.7	4.0	4.5	4.9
Av. Wet. Width (m):	2.7	MS	2.4	1.6	2.4	2.8	4.0	3.2
Av. Max Riffle Depth (cm):	4	MS	5	4	5	4		
Av. Max Pool Depth (cm):	64	MS	80	40	80	70	50	
Gradient (%):	1.0	CL						

Pool: 40 Riffle: 10 Run: 50 Other: 0

% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	25	GE

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
50	30	0	0	10	10

Crown Closure % : 20 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
	Sm. cobble (64-128mm):		0
Larges	Lge cobble (128-256mm):	0	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 5 Compaction: Low

Discharge

Wetted Width (m) :	1.4	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.58	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 1.2

Bars (%): 5 pH: 8.1 Braided: Y

Water Temp. (°C): 17.0 02 (ppm):

Turb. (cm): 8 Cond. (µmhos): 120

Reach Symbol

(Fish)

(CT) SU

5 D 1.0 | 8200

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	SU	15	50-150	J	R			VO

Comments

C1 S3.

C2 LS=20%, RS=12%

C3 No fisheries sensiitve zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at F, 7, 600V, was 322 seconds over 100 meters. Juvenile suckers and fry of an unknown species were seen.

C5 No additional bank texture infornaiton.

C6 DO was not measured at this site. The air temperature at this site was 20.0 C.

C7 This site consists of a series of old blown out beaver dams. Deep pool and glide habitat was noted in the sampling area. High turbidity was observed.



Photo #: Y-1-20, 10/07/97
Site #: Y8, Looking downstream



Photo #: Y-1-21, 10/07/97
Site #: Y8, Looking upstream



Photo #: Y-1-22, 10/07/97
Site #: Y8, Looking upstream, in a beaver dam area

DFO/MoELP Stream Survey Form **Site Number:** E216 **Reach No.: 6**

Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: E216, Unit 12, South of Robin Creek. **Stream (Gaz.):** Lemieux Creek **Watershed Code:** 460-4879-111-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 **Reach Length (km):** 3.5 MA **Date:** 19-Aug-97 **Time:** 10:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6437 .60614 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM\ \ \ \ \ \ \ **Photos:** E-21-6,7 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	23	MS
Gradient (%):	10.0	CL
Pool: 30 Riffle: 20 Run: 40 Other:	10	
% Side Channel:	0	GE
% Debris Area:	15	GE
%Stable:	25	GE

Specific Data

1.6	2.4	1.6	1.2	2.0	1.9
1.5	1.3	0.5	1.4	1.2	1.8
5	4	3	5	4	
20	30	25	20	20	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	25	20	0	15	25

Crown Closure % : 60 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	70	20
	Lge cobble (128-256mm):		30
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

Discharge

Wetted Width (m) :	1.1	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.14	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.5

% Unstable: 0

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 B 10.0 | 0370

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 25 pH: 7.6 Braided: N

Water Temp. (°C): 8.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 27%, RS = 13%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 360 seconds over 150 meters.

C5 Fines, gravels and larges make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C

C7 This site has some excellent rearing cover. LOD, plunge pools cutbanks and overstream vegetation are abundant. It is likely that a barrier occurs downstream of the site.



Photo #: E-21-6, 19-Aug-97
Site #: E216, Looking upstream at the channel, note the mosses on the substrate



Photo #: E-21-7, 19-Aug-97
Site #: E216, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Y9 **Reach No.:** 5

Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: Y9, Unit 12, reach 6 of the mainstem. **Stream (Gaz.):** Lemieux Creek **Watershed Code:** 460-4879-111-000-000-000-000-000-000-000-000-0

Map #:	93 L 066	**Reach Length (km):**	3.8	MW	**Date:**	10-Jul-97	**Time:**	14:30	**Agency:**	TEC	**Access:**	V2	**Fish Card:**	N	**Field**	☒	**Historical** ☐
U.T.M. :	9 .6383 .60579	**Length surveyed (m):**	100.0	GE	**Survey Crew:**	DD \SJ \ \ \ \ \ \ \							**Photos:**	Y-1-23,24,25	**Air Photos:**		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.1	MS	3.6	2.8	3.4	2.9	3.3	2.9
Av. Wet. Width (m):	2.5	MS	2.0	2.6	2.7	2.4	2.3	2.7
Av. Max Riffle Depth (cm):	5	GE	7	5	4	5	5	
N Av. Max Pool Depth (cm):	0	GE						
Gradient (%):	2.0	CL						
Pool: 0 Riffle: 40 Run: 60 Other: 0								
% Side Channel:	0	GE						
% Debris Area:	0-5	GE						
%Stable:	0	GE						

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	60	40
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		10
Larges	Lge cobble (128-256mm):	10	0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 11 Compaction: Medium

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	0	0	80	10

Crown Closure % : 80 Aspect : SE

Discharge

Wetted Width (m) :	1.3	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.51	F
Discharge (m3/s) :	0.10	F

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.7

Bars (%): 10 pH: 8.2 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 90

Reach Symbol

(Fish)

CT

3 D 2.0 | 3610

(Width, Valley : Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	1	28	F	R			EL

Comments

C1: S3. Pools were not observed in the sampling area.

C2: LS=5%, RS=7%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, was 226 seconds over 100 meters. CT were caught in the small cobble at this site.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 18.0 C.

C7: Overstream vegetaiton and cobble provide cover for fish at this site. A local reported that spawning salmon were seen in this creek before the beaver dams were put in place.



Photo #: Y-1-23, 10/07/97
Site #: Y9, Looking downstream, toward culvert



Photo #: Y-1-24, 10/07/97
Site #: Y9, Looking upstream

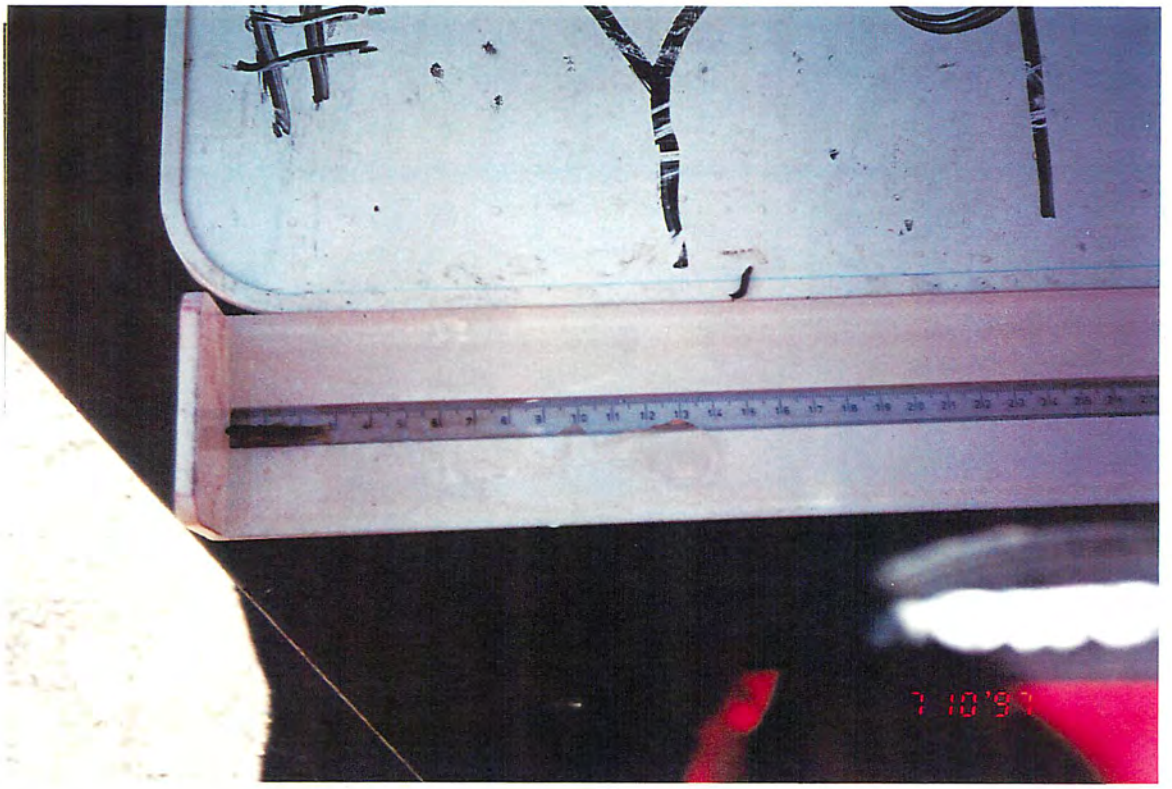


Photo #: Y-1-25, 10/07/97
Site #: Y9, Measuring fish on the fish board

DFO/MoELP Stream Survey Form

Site Number: Z11 **Reach No.: 1**

Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: Z11, Unit 12, at the highway 16 crossing. **Stream (Gaz.):** Lemieux Creek **Watershed Code:** 460-4879-111-000-000-000-000-000-000-000-000-0

Map #:	93 L 066	Reach Length (km):	2.3	MA	Date:	09-Jul-97	Time:	15:00	Agency:	TEC	Access:	V2	Fish Card:	N	Field ☒ Historical ☐
U.T.M. :	9 .63852 . 605467	Length surveyed (m):	150.0	GE	Survey Crew:	JP \DD \KG \ \ \ \ \ \					Photos:	Z-2-14,15,16	Air Photos:		

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	4.0	MS	4.8	2.8	3.1	3.8	4.5	4.8
Av. Wet. Width (m):	1.9	MS	2.2	1.8	1.3	1.0	1.8	3.3
Av. Max Riffle Depth (cm):	0	MS						
Av. Max Pool Depth (cm):	37	MS	37					
N Gradient (%):	2.0	MA						
Pool: 10 Riffle: 0 Run: 90 Other: 0								
% Side Channel:	10-40	GE						
% Debris Area:	5-15	GE						
%Stable:	50	GE						

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	15	0	20	50	0

Crown Closure % : 65 Aspect : W

Discharge

Wetted Width (m) :	1.8	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.16	F
Discharge (m3/s) :	0.06	F

Banks

Height (m): 0.2

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 1

Bars (%): 0 pH: 7.8 Braided: Y

Water Temp. (°C): 18.0 02 (ppm):

Turb. (cm): 30 Cond. (µmhos): 160

Reach Symbol

(Fish)

LNC NSC

4 D 2.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NSC	5	50-80	J	R			EL
	LNC	1	60	J	R			EL

Comments

C1: S3

C2: LS = 0%, RS = 0%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort at this site, using a Smithroot Type VII set at 500V, 60HZ, 6 MS, was 120 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site. The mean air temperature on this day was 12.0. C.

C7: This site provides rearing habitat.

C8: A western toad was observed in the sampling area.



Photo #: Z-2-14, 09-Jul-97
Site #: Z11 Measuring fish with the meterstick



Photo #: Z-2-16, 09-Jul-97
Site #: Z11, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form

Site Number: E219

Reach No.: 8

Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: E219, Unit 12, upstream of E216.

Stream (Gaz.): Lemieux Creek

Watershed Code: 460-4879-111-000-000-000-000-000-000-000-000-0

Map #: 93 L 067 **U.T.M. :** 9 .6549 .60622

Reach Length (km): 1.0 MA **Length surveyed (m):** 100.0 GE

Date: 19-Aug-97 **Time:** 13:30 **Agency:** TEC **Survey Crew:** SJ \EM \ \ \ \ \ \

Access: H **Fish Card:** N **Field** ☒ **Historical** ☐

Photos: E-21-12,13,14 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.1	MS	2.0	3.0	2.7	3.5	4.0	3.2
Av. Wet. Width (m):	3.1	MS	2.0	3.0	2.7	3.5	4.0	3.2
Av. Max Riffle Depth (cm):	0	MS						
Av. Max Pool Depth (cm):	81	MS	150	60	50	45	100	
Gradient (%):	1.0	CL						

Pool: 30 Riffle: 0 Run: 70 Other: 0

% Side Channel: 0-10 GE

% Debris Area: 0-5 GE

%Stable: 0 GE

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	20	0	80

Crown Closure % : 0 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Medium

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.6 Braided: N

Water Temp. (°C): 17.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 60

Reach Symbol

(Fish)

NF

3 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	20	C	9.0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S5

C2 LS = 30%, RS = 2%

C3 No fisheries sensitive zones present.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at 285 seconds over 100 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7 This reach is located above a 20m cascade, which prevents fish access upstream.



Photo #: E-21-12, 19-Aug-97
Site #: E219, Looking downstream at the channel



Photo #: E-21-13, 19-Aug-97
Site #: E219, Looking upstream at the channel flowing through a meadow

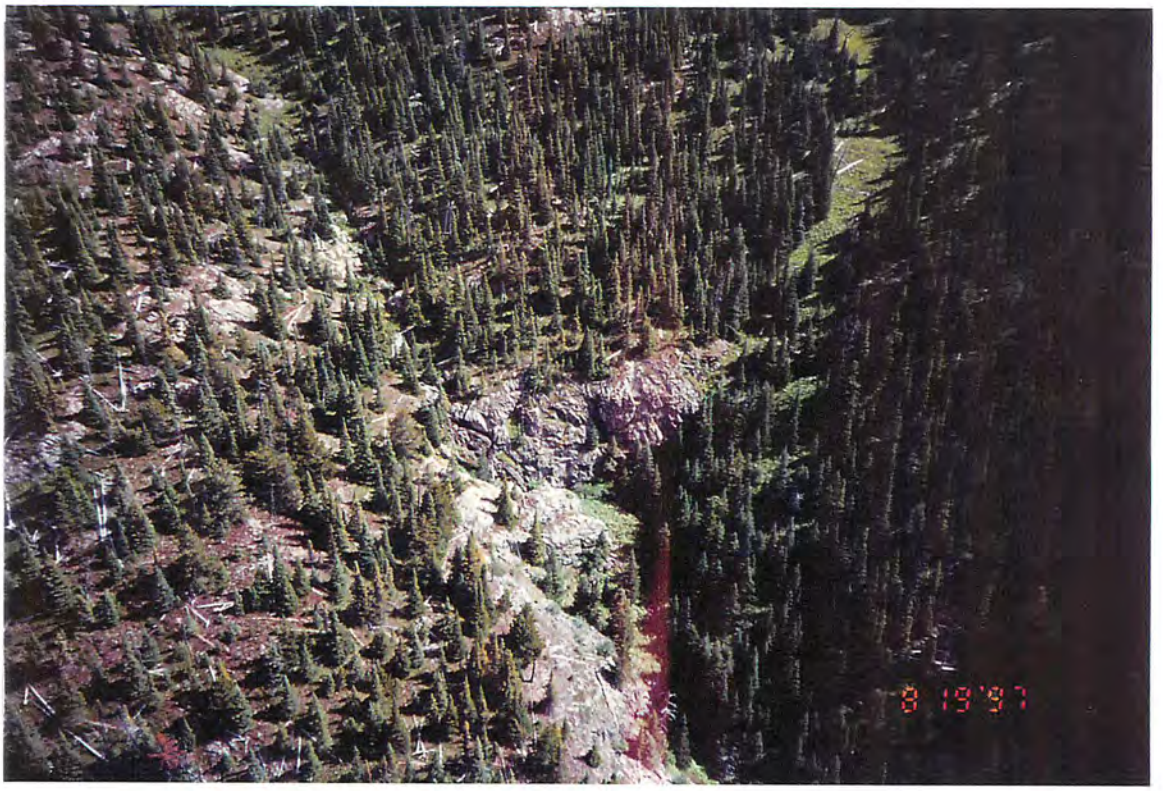


Photo #: E-21-14, 19-Aug-97
Site #: E219, Looking upstream at a cascade barrier

DFO/MoELP Stream Survey Form

Site Number: E215

Reach No.: 1

Trib. to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: E215, Unit 12, South of Lemieux Cr. | Stream (Gaz.): Unnamed | Watershed Code: 070-5600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 0.8 MA | Date: 19-Aug-97 | Time: 8:45 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6439 .60611 | Length surveyed (m): 100.0 GE | Survey Crew: SJ \EM \ \ \ \ \ \ | Photos: E-21-4,5 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	1.5	CL
Pool: 20 Riffle: 20 Run: 50 Other:	10	
% Side Channel:	0-10	GE
% Debris Area: 25		GE
%Stable:	20	GE

Specific Data

1.1	1.3	1.2	3.0	1.3	2.0
0.7	0.2	0.3	1.0	0.6	1.0
1	1	1	2	1	
20	12	11	15	17	

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	35	0	0	25	40

Crown Closure %: 30 Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

Wetted Width (m):	0.6	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.02	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 5

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L | Flood Signs Ht(m): 0.3

Bars (%): 40 | pH: 7.3 | Braided: Y

Water Temp. (°C): 7.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 90

Reach Symbol

(Fish)

(DV)

2 D 1.5 | F

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 5%, RS = 5%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 241 seconds over 145 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7 This reach flows over silt and woody debris, through a stand of mature timber. The cover for fish at this site is provided by cutbanks and LOD, but rearing habitat is limited by low flows.



Photo #: E-21-4, 19-Aug-97
Site #: E215, Looking upstream at the channel



Photo #: E-21-5, 19-Aug-97
Site #: E215, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E217

Reach No.: 1

Trib. to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: E217, Unit 12, North of Lemieux Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 070-5300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 | Reach Length (km): 1.3 MA | Date: 19-Aug-97 | Time: 10:45 | Agency: TEC | Access: H | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6434 .60619 | Length surveyed (m): 100.0 GE | Survey Crew: SJ \EM \ \ \ \ \ \ \ | Photos: E-21-8,9 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	22	MS
Gradient (%):	15.0	CL
Pool: 20 Riffle: 30 Run: 30 Other: 20		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	50	GE

Specific Data

1.3	1.4	2.0	2.3	1.8	1.2
0.7	1.1	1.3	2.0	1.6	1.0
2	3	2	3	3	
20	17	30	21	24	

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	25	20	0	10	30

Crown Closure % : 50 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	70	25
	Lge cobble (128-256mm):		35
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

Discharge

Wetted Width (m) :	0.7	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.15	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

2 B 15.0 | 1270

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 30 pH: 7.7 Braided: N

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 35%, RS = 16%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 197 seconds over 100 meters.

C5 Fines and gravels make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature at this site was 16.3.C.

C7 Some good rearing cover; comprised of step pools, abundant LOD, boulders and cutbanks was observed at this site. Cascades, ranging in size from .1-.4m make up 20% of the flow at this site.



Photo #: E-21-8, 19-Aug-97
Site #: E217, Looking upstream at the channel



Photo #: E-21-9, 19-Aug-97
Site #: E217, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: E218** **Reach No.: 1**

Trib. to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: E218, Unit 12, North of Lemieux Creek **Stream (Gaz.):** Unnamed **Watershed Code:** 068-6700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **U.T.M. :** 9 .6433 .62000 **Reach Length (km):** 4.5 MA **Length surveyed (m):** 100.0 GE **Date:** 19-Aug-97 **Time:** 11:45 **Agency:** TEC **Access:** H **Fish Card:** N **Field** ☒ **Historical** ☐ **Survey Crew:** SJ \EM \ \ \ \ \ \ \ **Photos:** E-21-10,11 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.3	MS
Av. Wet. Width (m):	0.4	MS
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	10	MS
Gradient (%):	13.0	CL

Pool: 20 Riffle: 0 Run: 50 Other: 30

% Side Channel: 0-10 GE

% Debris Area: 15 GE

%Stable: 20 GE

Specific Data

0.5	0.2	0.3	0.4	0.2	0.5
0.5	0.3	0.3	0.4	0.2	0.4
10	12	11	8	9	

Cover

Cover Total % : 5 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	30	0	0	30	40

Crown Closure % : 25 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Medium

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV)

1 C 13.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0.1

Bars (%): 0 pH: 7.6 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 340

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C1 S4

C2 LS = 16%, RS = 17%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished as the water levels were too low at the time of sampling.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7 This reach has occasional subterrainean flow and is seasonally wet. Marginal fish habitat at best occurs in the sampling area.



Photo #: E-21-10, 19-Aug-97
Site #: E218, Looking upstream at the channel



Photo #: E-21-11, 19-Aug-97
Site #: E218, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: W209** **Reach No.: 1**

Trib to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: W209, Unit 12; 1.4 km east of Lemieux Cr. Stream (Gaz.): Unnamed Watershed Code: 068-5700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 2.5 MA Date: 20-Aug-97 Time: 16:45 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6398 .60584 Length surveyed (m): 60.0 GE Survey Crew: DD \JP\ \ \ \ \ \ \ Photos: W-K-17,18 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.8	MS
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	3.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	5-15	GE
	%Stable:	5	GE

Specific Data

0.6 0.5 0.7 1.1 0.8 1.0

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	100	0

Crown Closure %: 60 Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	60	40
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 6 Compaction: Medium

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.3

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

(DV) (CT) (RB)

1 D 3.0 | 4600

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4.

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished due to the channel being dry.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site due to the channel being dry. The air temperature at this site was 24.0 C.

C7 The stream could provide rearing habitat at higher flows since it is connected to fish bearing Lemieux Creek.



Photo #: W-K-17, 20-Aug-97
Site #: W209, Looking upstream at a dry channel



Photo #: W-K-18, 20-Aug-97
Site #: W209, Looking downstream at a dry channel

DFO/MoELP Stream Survey Form

Site Number: W194 **Reach No.: 2**

Trib to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: W194, Unit 12; 1.5km north of Gardner Cr **Stream (Gaz.):** Unnamed **Watershed Code:** 068-5700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 4.1 MA **Date:** 18-Aug-97 **Time:** 9:45 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .6421 .60592 **Length surveyed (m):** 50.0 GE **Survey Crew:** DD \JP \CF \ \ \ \ \ \ **Photos:** W-I-17,18 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.3	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	11.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	80	GE

Specific Data

1.3 1.0 1.8 1.5 1.2 1.0

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	30	0	20	10

Crown Closure % : 90 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	20	0
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 29 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB) (CT)

1 C 11.0 | 8020

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 6.5 Braided: N

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 120

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S4.

C2: LS=30%, RS=30%

C3: No fisheries sensitive zones noted.

C4: This dry site was not electrofished.

C5: No additional bank texture information.

C6: DO was not measured at this site. The air temperature at this site was 9.0 C.

C7: The water sample and temperature were taken from scattered isolated pools located below the culvert. This site could provide rearing habitat at higher flows in the form of pool and LOD cover. There are gravels and boulders near the culvert from the road building. Fish could inhabit this reach at high flow.



Photo #: W-I-17, 18-Aug-97
Site #: W194, Looking upstream at the channel



Photo #: W-I-18, 18-Aug-97
Site #: W194, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W207 **Reach No.: 1**

Trib to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: W207, Unit 12; 0.3km east of Lemieux Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-6300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 1.5 MA **Date:** 20-Aug-97 **Time:** 15:15 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6397 .60594 **Length surveyed (m):** 100.0 GE **Survey Crew:** DD \JP\ \ \ \ \ \ \ **Photos:** W-K-11,12,13,14,15 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	3.1	MS
Av. Wet. Width (m):	1.9	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	21	MS
Gradient (%):	5.0	CL
Pool: 20 Riffle: 20 Run: 60 Other:	0	
% Side Channel:	0	GE
% Debris Area:	5-15	GE
%Stable:	20	GE

Specific Data

3.6	2.9	2.7	3.1	3.7	2.6
2.2	2.3	2.0	1.5	2.0	1.5
1	3	2	2	4	3
17	26	24	22	18	21

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 34 Compaction: Medium

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	40	0	30	10

Crown Closure % : 70 Aspect : SW

Discharge

Wetted Width (m) :	1.0	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.23	F
Discharge (m3/s) :	0.02	F

Reach Symbol

(Fish)

CT DV RB

3 C 5.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Banks

Height (m): 0.2

% Unstable: 80

Fines ☐ Gravels ☐ Larges ☒ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.8

Bars (%): 75 pH: 7.6 Braided: N

Water Temp. (°C): 11.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 200

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	6	120-155	J	R			EL
	RB	1	51	J	R			EL
	DV	1	155	J	R			EL

Comments

C1: S3.

C2: LS=19%, RS=45%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 318 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 27.0 C.

C7: This tributary has plenty of rearing habitat, mostly in the form of boulder cover. Some pools contain spawning gravels. The reach is well shaded. Lots of caddis nymphs and other aquatic insects were noted. Livestock have access to the channel.



Photo #: W-K-11, 20-Aug-97
Site #: W207, Looking upstream at the channel, note the cobble cover



Photo #: W-K-12, 20-Aug-97
Site #: W207, Looking downstream at the channel



Photo #: W-K-13, 20-Aug-97
Site #: W207, Measuring fish with the meterstick



Photo #: W-K-14, 20-Aug-97
Site #: W207, Measuring fish with the meterstick



Photo #: W-K-15, 20-Aug-97
Site #: W207, Measuring fish with the meterstick

DFO/MoELP Stream Survey Form **Site Number: Z212** **Reach No.: 1**

Trib to Lemieux Cr.

TRITON Environmental Consultants Ltd.

Location: Z212, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-5800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 067 **Reach Length (km):** 2.6 MW **Date:** 08-Sep-97 **Time:** 13:20 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M.: 9 .642296.6058462 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG\LE\ \ \ \ \ \ **Photos:** Z-27-2,3 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.2	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	8.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0	GE
	% Debris Area:	>15	GE
	%Stable:	0	GE

Specific Data

1.4 1.4 1.1 1.3 1.2 1.0

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	10	0	80	0

Crown Closure %: 10 Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	60	25
	Large (16-64mm):		35
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 16 Compaction: High

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.3

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 D 8.0 | 2620

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6. Discharge, wetted width, and pool and riffle depth measurements were not taken as the creek was dry.

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electroshocked due to the creek being dry.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 The channel has been worked over with machinery. Cows have trampled some of the banks. This creek flows through a residential and agricultural area.



Photo #: Z-27-2, 08-Sep-97
Site #: Z212, Looking downstream at the channel



Photo #: Z-27-3, 08-Sep-97
Site #: Z212, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z8

Reach No.: 1

Vanderven Cr.

TRITON Environmental Consultants Ltd.

Location: Z8, Unit 12, at 6.1km on Round Lake rd. **Stream (Gaz.):** Vanderven Creek **Watershed Code:** 068-7100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 1.9 MW **Date:** 09-Jul-97 **Time:** 11:19 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .63694 . 605951 **Length surveyed (m):** 100.0 GE **Survey Crew:** JP \DD \KG \ \ \ \ \ \ **Photos:** Z-2-1,2,3,4,5 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	4.1	MS
Av. Wet. Width (m):	2.3	MS
Av. Max Riffle Depth (cm):	13	MS
Av. Max Pool Depth (cm):	22	MS
Gradient (%):	4.0	CL
Pool: 20 Riffle: 40 Run: 35 Other: 5		
% Side Channel:	0-10	GE
% Debris Area:	>15	GE
%Stable:	40	GE

Specific Data

5.3	3.9	3.6	3.6	4.0
3.8	2.1	1.2	2.0	2.2
20	10	10	15	12
22				

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	25	15	5	30	15

Crown Closure % : 60 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	10
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):	50	30
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 23 Compaction: High

Discharge

Wetted Width (m) :	3.3	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.13	F

Banks

Height (m): 0.2

% Unstable: 0

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.7

Bars (%): 10 pH: 8.1 Braided: Y

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Reach Symbol

(Fish)

CT

4 D 4.0 | 1450

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	4	110-140	J				EL

Comments

C1 S3

C2 LS =6%, RS =5%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot Type VII model set at 500V at 55HZ, was 223 seconds over 150 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to the bottom. The mean air temperature on this day was 12.0.C.

C7 Rearing and spawning habitat was observed at this site. A property owner mentioned that in stream flows appear to have decreased over the years. Garbage was noted in the channel.



Photo #: Z-2-1, 09-Jul-97
Site #: Z8, Measuring fish on the fishboard



Photo #: Z-2-2, 09-Jul-97
Site #: Z8, Measuring fish on the fishboard



Photo #: Z-2-3, 09-Jul-97
Site #: Z8, Looking downstream at the channel



Photo #: Z-2-4, 09-Jul-97
Site #: Z8, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z256

Reach No.: 5

Vanderven Cr.

TRITON Environmental Consultants Ltd.

Location: Z256, Unit 12 | **Stream (Gaz.):** Vanderven Creek | **Watershed Code:** 078-6500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | **Reach Length (km):** 1.4 MA | **Date:** 16-Sep-97 | **Time:** 13:25 | **Agency:** TEC | **Access:** V2 | **Fish Card:** N | Field ☒ Historical ☐

U.T.M.: 9 .637162.6064754 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** KG \DD \ \ \ \ \ \ \ | **Photos:** Z-31-23,24 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.1	MS
Av. Wet. Width (m):	1.1	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	1.5	CL

Pool: 10 Riffle: 10 Run: 80 Other: 0

% Side Channel:	0	GE
% Debris Area:	30	GE
%Stable:	90	GE

Specific Data

1.6	0.7	0.8	1.3	1.0	1.1
1.1	0.7	1.0	1.3	1.2	1.1
1	2	1	1	1	1
19	14	19	16	12	12

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	0	0	30	20

Crown Closure %: 60 Aspect: W

Bed Material

Fines	Clay, silt, sand (<2mm):	90	90
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 26 Compaction: Low

Discharge

Wetted Width (m):	0.7	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.10	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.1

% Unstable: 80

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 0 pH: 7.3 Braided: N

Water Temp. (°C): 9.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 170

Reach Symbol

(Fish)

(DV RB)

1 D 1.5 | 9010

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S4

C2 LS=15%, RS=20%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 348 seconds over 125 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 10.4 C.

C7 The rearing habitat in this stream is marginal with cutbanks and deep runs. Currently the bottom of the stream is covered with 20+ cm of fine detritus. There are golden brown algae blooms in several sections of this site.



Photo #: Z-31-23, 16-Sep-97
Site #: Z256, Looking upstream at the channel, note the slow flow



Photo #: Z-31-24, 16-Sep-97
Site #: Z256, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W204 **Reach No.: 2**

Vanderven Cr.

TRITON Environmental Consultants Ltd.

Location: W204, Unit 12; 2.0km NW of deLong Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-7100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 4.0 MA **Date:** 20-Aug-97 **Time:** 9:30 **Agency:** TEC **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6372 .60633 **Length surveyed (m):** 180.0 GE **Survey Crew:** DD \JP\ \ \ \ \ \ \ **Photos:** W-K-1,2,3,4 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	2.2	MS
Av. Wet. Width (m):	1.8	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	4.0	CL
Pool: 10 Riffle: 20 Run: 70 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

1.5	2.2	2.1	2.4	2.6	2.4
1.4	1.7	2.1	1.8	2.4	1.5
2	2	2	2	1	2
18	17	37	15	16	15

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	10	10	30	20

Crown Closure % : 20 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	50	25
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 20 Compaction: Medium

Discharge

Wetted Width (m) :	1.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.11	F
Discharge (m3/s) :	0.01	F

Banks

Height (m): 0.1

% Unstable: 60

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0.5

Bars (%): 10 pH: 7.2 Braided: Y

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 160

Reach Symbol

(Fish)

RB

2 D 4.0 | 3520

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	11	55	J	R			EL

Comments

C1 S3.

C2 LS=35%, RS=50%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 500V, was 421 seconds over 180 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 12.5 C.

C7 This stream has good rearing habitat in the form of deep pools, cutbanks and overstream vegetation. Debris jams also provide cover at this site. Suitable spawning substrate was also observed.



Photo #: W-K-1, 20-Aug-97
Site #: W204, Looking upstream at the channel



Photo #: W-K-2, 20-Aug-97
Site #: W204, Looking downstream at the channel

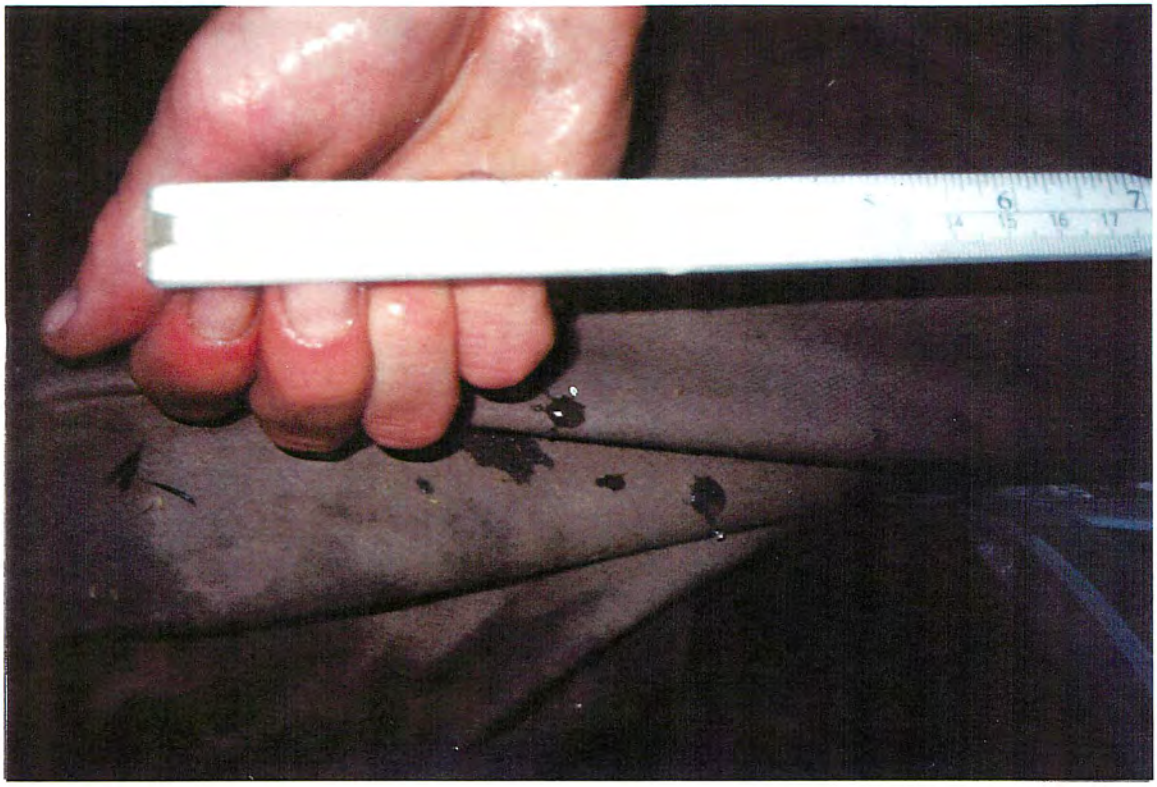


Photo #: W-K-3, 20-Aug-97
Site #: W204, Measuring fish with the meterstick



Photo #: W-K-4, 20-Aug-97
Site #: W204, Indicating the size range of fish captured at this site

DFO/MoELP Stream Survey Form

Site Number: Z209 **Reach No.: 1**

Trib to Vanderven Cr.

TRITON Environmental Consultants Ltd.

Location: Z209, Unit 12 **Stream (Gaz.): Unnamed** **Watershed Code:** 068-7200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 1.3 MA **Date:** 08-Sep-97 **Time:** 11:37 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .636550.6059424 **Length surveyed (m):** 100.0 GE **Survey Crew:** KG\LE\ \ \ \ \ \ **Photos:** Z-26-20,21 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.1	MS
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	7.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
	% Debris Area:	0-5	GE
	%Stable:	100	GE

Specific Data

2.0 1.6 0.6 0.8 0.7 0.7

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	25	75	0

Crown Closure % : 0 Aspect : SE

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 10 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.5

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

1 D 7.0 | 5320

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6. Dischrge, wetted width, riffle depth, pool depth could not be measured at this dry site.

C2 LS=0%, RS=0%

C3 No fisheries sensitive zones noted.

C4 This dry site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 Cows have direct access to this channel, which runs through a pasture. The stream is different above road; less confined, higher gradient (10%).



Photo #: Z-26-20, 08-Sep-97
Site #: Z209, Looking upstream at the channel



Photo #: Z-26-21, 08-Sep-97
Site #: Z209, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: W205

Reach No.: 1

Trib to Vanderven Cr.

TRITON Environmental Consultants Ltd.

Location: W205, Unit 12; 0.5km SE of site W204 | Stream (Gaz.): Unnamed | Watershed Code: 068-7600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 | Reach Length (km): 1.0 MA | Date: 20-Aug-97 | Time: 11:00 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6372 .60627 | Length surveyed (m): 100.0 GE | Survey Crew: DD \JP\ \ \ \ \ \ \ | Photos: W-K-5,6,7 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	1.2	MS
Av. Wet. Width (m):	0.6	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	14	MS
Gradient (%):	5.0	CL
Pool: 10 Riffle: 20 Run: 70 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	5-15	GE
%Stable:	50	GE

Specific Data

0.8	1.2	0.9	1.4	1.5	1.5
0.4	0.3	0.7	1.0	0.6	0.4
1	1	1	1	1	1
12	5	18	14	15	17

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	5	0	45	10

Crown Closure %: 60 | Aspect: S

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	50	25
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 15 | Compaction: Medium

Discharge

Wetted Width (m):	0.3	MS
Mean Depth (m):	0.0	MS
Mean Velocity (m/s):	0.16	F
Discharge (m3/s):	0.04	F

Banks

Height (m): 0.1

% Unstable: 40

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: M | Flood Signs Ht(m): 0.3

Bars (%): 10 | pH: 7.3 | Braided: Y

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 220

Reach Symbol

(Fish)

RB

1 D 5.0 | 3520

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	42	F	R			EL

Comments

C1 S4.

C2 LS=45%, RS=40%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 61 seconds over 60 meters. Shocking was difficult due to the dense willow cover.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 16.0 C.

C7 The stream is well shaded with a small amount of boulder, pool and cutbank habitat. Mayfly nymphs were observed.



Photo #: W-K-5, 20-Aug-97
Site #: W205, Looking upstream at the channel



Photo #: W-K-6, 20-Aug-97
Site #: W205, Looking downstream at the channel



Photo #: W-K-7, 20-Aug-97
Site #: W205, Measuring fish with the meterstick

5.16 Thompson Creek (460-5117-000) (93 L056, 93 L 057)

5.16.1 Sensitive Habitats and Barriers

The Thompson Creek mainstem is 18.37 km in length and has approximately 20 tributaries. Reach 1 has low gradient, is typically unconfined and is flanked by buildings on both banks. Reach 2 has low gradient, is unconfined and crossed by 2 roads. Reach 3 is FishPan Lake. The mainstem is crossed by a pipeline crossing and several roads. The Thompson Creek system was sampled at 8 locations, including reaches 1 and 2 of the mainstem.

5.16.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of cutthroat, Dolly Varden and rainbow trout in Fishpan Lake, as well as spawning pink salmon in a large side channel to the Thompson Creek mainstem. Dolly Varden and cutthroat trout were caught by electrofishing in reach 2 of the mainstem and cutthroat trout were caught by electroshocking in a tributary to reach 2. The mainstem of Thompson Creek was classified as an S3 in reach 1 based on an average channel width of 3.12 meters and the presence of suitable habitat observed in the sampling area, this classification is consistent through reach 2.

Fish were caught in only tributary to Thompson Creek, which was classified as an S3 based on the presence of cutthroat trout at the site and an average channel width of 2.08 meters. Site Z160, in the upper reaches of a tributary to Thompson Creek was classified as an S3 based on an average channel width of 3.31 meters and the presence of marginal rearing habitat. Abandoned flow channels were noted at this site and the banks were low and poorly defined in some spots. This reach is located above a section of steep gradient, which is suspected to prevent fish passage upstream. The tributaries associated with this creek are characterized by steep gradient in the upper reaches, with the lower reaches accessible to fish. Fish were caught in only one S3 sized tributary to the mainstem and 3 of the tributaries to reach 2 were classified as "NC" based on the lack of a defined channel in the sampling areas.

DFO/MoELP Stream Survey Form

Site Number: JULIE 282 **Reach No.: 1**

Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: JULIE 282, Unit 12 , at highway 16, .5km South on the Walcott Rd, see C5. **Stream (Gaz.):** Thompson Creek **Watershed Code:** 460-5177-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 056 **Reach Length (km):** 4.6 MA **Date:** 02-Oct-96 **Time:** 15:15 **Agency:** TEC **Access:** V2 **Fish Card:** N **Field** ☒ **Historical** ☐

U.T.M. : 9 . 6416 . 60494 **Length surveyed (m):** 250.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-22-3,4 **Air Photos:**

Channel Characteristics

			Specific Data					
Av. Chan. Width (m):	3.1	MS	3.2	3.3	3.1	3.3	3.2	2.6
Av. Wet. Width (m):	2.5	MS	3.5	3.1	2.0	3.0	1.3	2.2
Av. Max Riffle Depth (cm):	10	MS	10	9				
Av. Max Pool Depth (cm):	42	MS	42	44	40			
Gradient (%):	2.5	CL						

Pool: 10 Riffle: 20 Run: 70 Other: 0

% Side Channel: GE

% Debris Area: 5 GE

%Stable: 70 GE

Cover

Cover Total % : 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	5	40	0	15	15

Crown Closure % : 40 Aspect : NW

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		20
	Lge cobble (128-256mm):	60	20
	Bldr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 40 Compaction: Medium

Discharge

Wetted Width (m) :	1.3	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.41	F
Discharge (m3/s) :	0.04	F

Banks

Height (m): 0.4

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(RB)

3 C 2.5 | 1360

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.4

Bars (%): 5 pH: 7.7 Braided: N

Water Temp. (°C): 6.0 02 (ppm):

Turb. (cm): 44 Cond. (µmhos): 180

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 10%, RS = 10%

C3 No fisheries sensitive zones were noted at this site.

C4 The electroshocking effort, using a Smithroot Mark 7 model, was 804 seconds over 500 square meters.

C5 Lat N 54 34 20.2", Long W 126 48' 33"

C6 No additional bank texture information.

C7 DO was not measured at this site. The water was clear to the bottom. The water was blue grey and slightly milky in colour at the time of sampling. The mean air temperature on this day was 4.95°C

C8 The culvert is not a barrier to fish passage upstream. This stream courses through agricultural land. Some riparian vegetation has been left at this site. Future fish and water quality sampling is recommended.

C9 The air temperature at this site was 6.C.



Photo #: J-22-3, 1996/10/2
Site #: J282, Looking upstream beside pasture.



Photo #: J-22-4, 1996/10/2
Site #: J282, Looking downstream, boulder cover.

DFO/MoELP Stream Survey Form

Site Number: Z160

Reach No.: 5

Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: Z160, Unit 12 | **Stream (Gaz.):** Thompson Creek | **Watershed Code:** 067-4600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 | **Reach Length (km):** 1.8 MW | **Date:** 19-Sep-97 | **Time:** 14:56 | **Agency:** TEC | **Access:** H | **Fish Card:** N | Field ☒ Historical ☐

U.T.M. : 9 .648727.6045572 | **Length surveyed (m):** 100.0 GE | **Survey Crew:** KG\CF\ \ \ \ \ \ | **Photos:** Z-20-22,23 | **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.8	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	5	MS
Av. Max Pool Depth (cm):	22	MS
Gradient (%):	4.0	CL
Pool: 25 Riffle: 25 Run: 45 Other:	5	
% Side Channel:	10-40	GE
% Debris Area:	5-15	GE
%Stable:	30	GE

Specific Data

1.4	1.4	1.4	1.9	2.8	2.0
1.1	1.0	1.1	1.8	1.4	1.2
6	5	6	5	2	
18	24	26	18		

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
35	20	0	0	30	15

Crown Closure % : 40 | Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	15
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):	40	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 17 | Compaction: Medium

Discharge

Wetted Width (m) :	1.1	MS
Mean Depth (m) :	0.1	MS
Mean Velocity (m/s) :	0.11	F
Discharge (m3/s) :	0.03	F

Banks

Height (m): 0.1

% Unstable: 20

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L | Flood Signs Ht(m): 0.2

Bars (%): 25 | pH: 7.9 | Braided: Y

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 170

Reach Symbol

(Fish)

(RB)

2 D 4.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S3

C2 LS = 0%, RS = 0%

C3 No fisheries sensitive zones were noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at 60HZ,6MS,400V, was 281 seconds over 160 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the waterr was clear to the bottom. The air temperature at this site was 15.C.

C7 This reach has some good pool and large cobble rearing cover, however the channel itself is unstable. The banks are not deeply cut in parts of the sampling area because this is a new channel. A second well defined but abandoned channel was found east of the stream along the edge of the nearby meadow.



Photo #: Z-20-22, 19-Aug-97
Site #: Z160, Looking upstream at the channel



Photo #: Z-20-23, 19-Aug-97
Site #: Z160, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number:** E296 **Reach No.: 2**

Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E296, Unit 12, East of the Bulkley River. **Stream (Gaz.):** Thompson Creek **Watershed Code:** 460-5177-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 Reach Length (km): 5.5 MW Date: 12-Sep-97 Time: 15:00 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6440 .60475 Length surveyed (m): 250.0 GE Survey Crew: SJ\LE\ \ \ \ \ \ \ Photos: E-27-12,13,14,15,16 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	4.2	MS
Av. Wet. Width (m):	3.6	MS
Av. Max Riffle Depth (cm):	4	MS
Av. Max Pool Depth (cm):	28	MS
Gradient (%):	4.0	CL
Pool: 10 Riffle: 40 Run: 50 Other:	0	
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	0	GE

Specific Data

3.2	4.1	5.8	3.8	3.9	4.1
2.9	3.8	4.5	3.0	3.2	3.9
2	4	5	7	4	
32	23	32	34	27	21

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	10	30	0	20	10

Crown Closure % : 0 Aspect : N

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 42 Compaction: Medium

Discharge

Wetted Width (m) :	1.7	MS
Mean Depth (m) :	0.2	MS
Mean Velocity (m/s) :	0.27	F
Discharge (m3/s) :	0.07	F

Banks

Height (m): 0.1

% Unstable: 50

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

DV,CT

4 C 4.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 30 pH: 8.3 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 280

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	5	60-85	J	R			EL
C4	CT	11	25-194	J				EL

Comments

C1 S3

C2 LS = 50%, RS = 11%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-300V, was 302 seconds over 100 meters. Juvenile and adult CT were caught at this site.

C5 Fines and gravels make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 15.C.

C7 Excellent rearing and spawning habitat was observed in the sampling area. This reach has been strongly impacted by logging, road building and livestock activity. Cows have direct access to the creek in this reach, resulting in trampled banks and siltation. Previous logging has resulted in the removal of riparian vegetation in the vicinity of the cutblock. Trees were felled directly over the channel. The bridge crossing is no longer functioning.



Photo #: E-28-12, 12-Sep-97
Site #: E296, Looking upstream at the channel, note mosses on the substrate



Photo #: E-28-13, 12-Sep-97
Site #: E296, Looking downstream at the channel



Photo #: E-28-14, 12-Sep-97
Site #: E296, Looking across stream at the channel, note the planks in the right center

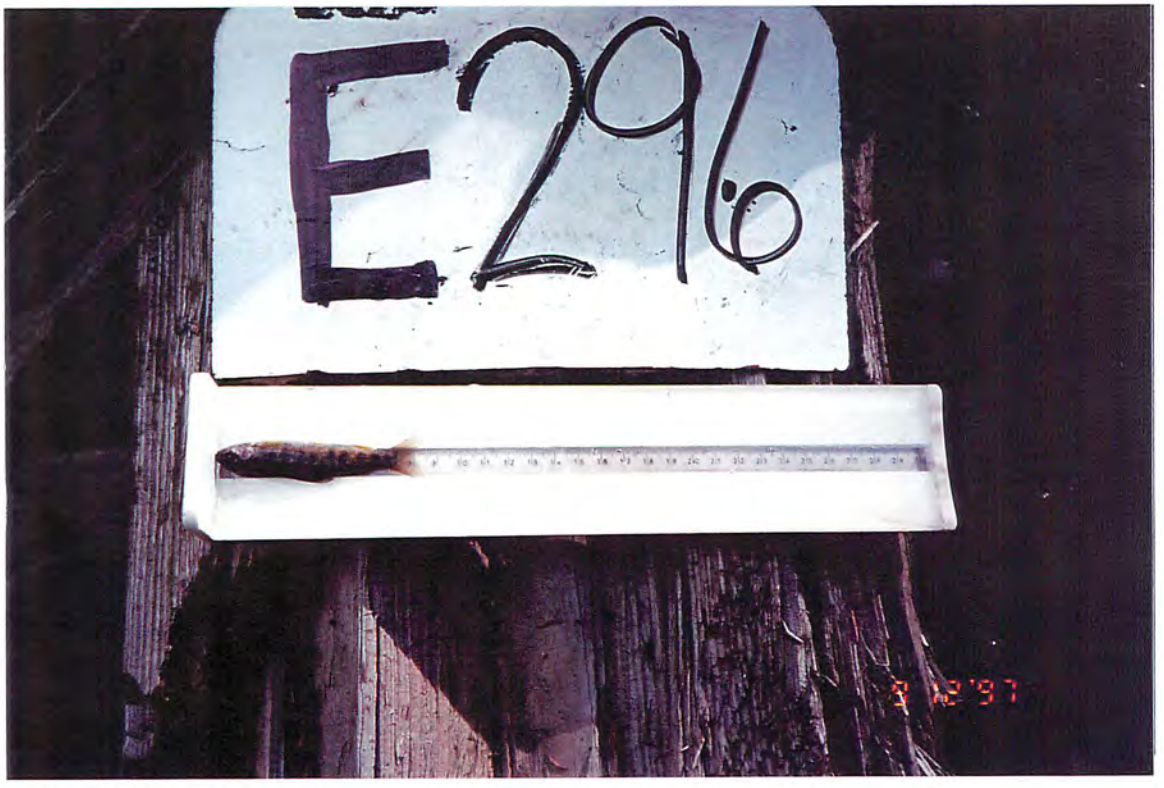


Photo #: E-28-15, 12-Sep-97
Site #: E296, Measuring fish on the fish board

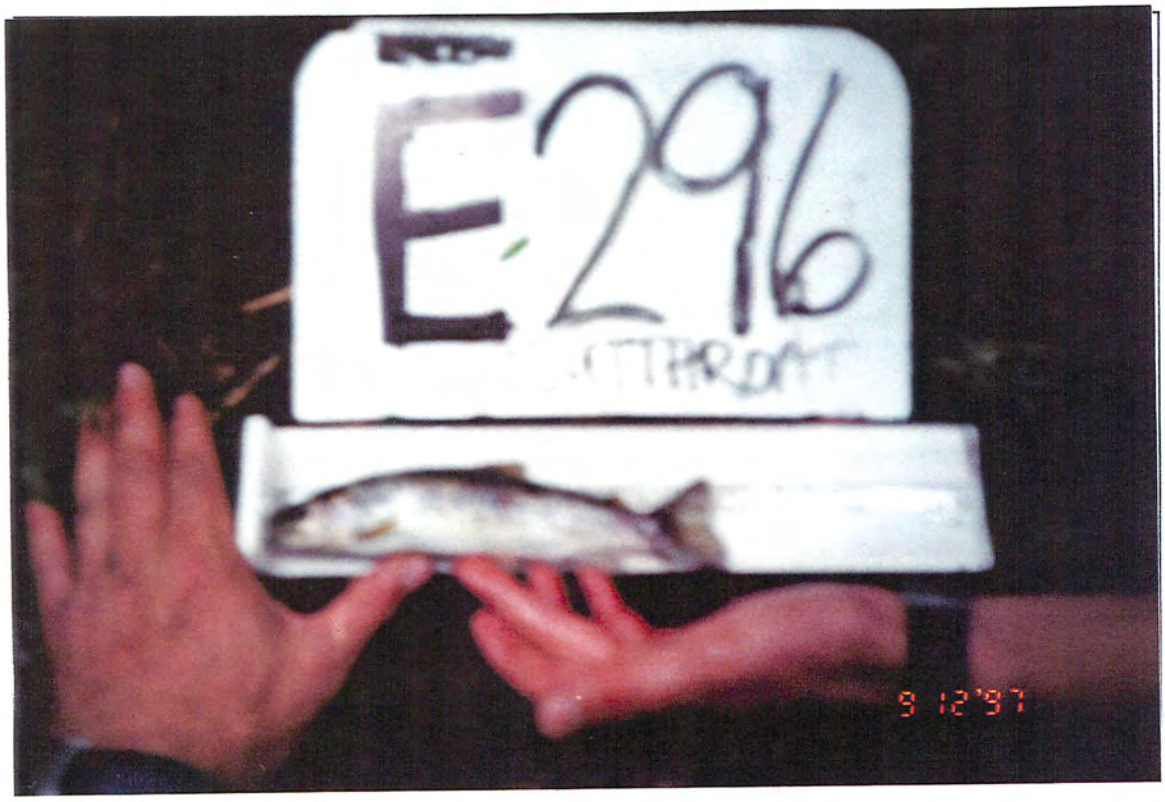


Photo #: E-28-16, 12-Sep-97
Site #: E296, Measuring cutthroat trout on the fish board

DFO/MoELP Stream Survey Form

Site Number: E14

Reach No.: 1

Trib. to Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E14, Unit 12; 1km east of Hwy 16 | Stream (Gaz.): Unnamed | Watershed Code: 067-3900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 | Reach Length (km): 0.7 MA | Date: 11-Jul-97 | Time: 15:22 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6449 .60459 | Length surveyed (m): 100.0 GE | Survey Crew: JL \EM\ \ \ \ \ \ \ | Photos: E-1-24, E-2-1 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.4	MS
Av. Max Riffle Depth (cm):	3	MS
Av. Max Pool Depth (cm):	14	MS
Gradient (%):	5.0	CL
Pool: 20 Riffle: 30 Run: 50 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	10	GE

Specific Data

0.5	0.8	0.7	1.0	0.9	0.8
0.9	0.1	0.2	0.1	0.8	0.2
2	2	4	3	2	3
14	11	14	19	10	

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
50	10	0	10	20	10

Crown Closure %: 30 Aspect: N

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	50	30
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 9 Compaction: Medium

Discharge

Wetted Width (m):	0.6	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.05	F
Discharge (m3/s):	0.00	F

Banks

Height (m): 0.2

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio: 10+

Stage: L | Flood Signs Ht(m): 0.2

Bars (%): 5 | pH: 7.0 | Braided: N

Water Temp. (°C): 10.0 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 140

Reach Symbol

(Fish)

(DV)

1 D 5.0 | 1450

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S4.

C2: LS=8%, RS=6%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 200V, was 50 seconds.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 14.6 C.

C7: This is a series of small pools and riffles. Cover for fish is fairly abundant at this site, which is located in a farmer's field. Reed canary grass lines the banks.



Photo #: E-1-24, 11-Jul-97
Site #: E14, Looking downstream at the channel.



Photo #: E-2-1, 11-Jul-97
Site #: E14, Looking upstream at the channel

DFO/MoELP Stream Survey Form **Site Number: E297** **Reach No.: 1**

Trib. to Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E297, Unit 12, NW of Thompson Cr. Stream (Gaz.): Unnamed Watershed Code: 006-7310-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.5 MW Date: 12-Sep-97 Time: 16:17 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6443 .60476 Length surveyed (m): 250.0 GE Survey Crew: SJ\LE\ \ \ \ \ \ \ Photos: E-27-17,18,19 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.1	MS
Av. Wet. Width (m):	0.9	MS
Av. Max Riffle Depth (cm):	1	MS
Av. Max Pool Depth (cm):	17	MS
Gradient (%):	7.0	CL
Pool: 10 Riffle: 25 Run: 65 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.6	2.7	2.1	2.1	1.1	1.9
1.1	0.6	1.3	1.1	0.7	0.7
1	1	2	1	1	
20	28	10	14	15	

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	30	5	0	5	20

Crown Closure % : 20 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):	40	15
	Lge cobble (128-256mm):		15
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 25 Compaction: High

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
C7	Discharge (m3/s) :		

Banks

Height (m): 0.3

% Unstable: 30

Fines ☐ Gravels ☒ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.6

Bars (%): 100 pH: 7.8 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 210

Reach Symbol

(Fish)

CT

2 D 7.0 | 2440

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	1	91	J				EL

Comments

C1 S3

C2 LS = 5%, RS = 5%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 72 seconds over 100 meters.

C5 Fines, gravels and larges make up the bank texture at this site.

C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 17.C.

C7 This reach moves underground 50 m upstream of the confluence with Thompson Cr. Some good rearing and spawning habitat would be found here at higher flows. The flow was too low at the time of sampling to measure discharge.



Photo #: E-28-17, 12-Sep-97
Site #: E297, Measuring cutthroat trout on the fish board



Photo #: E-28-18, 12-Sep-97
Site #: E297, Looking downstream at the channel



Photo #: E-28-19, 12-Sep-97
Site #: E297, Looking upstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E220

Reach No.: 3

Trib. to Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E220, Unit 12, East of Thompson Cr. | Stream (Gaz.): Unnamed | Watershed Code: 460-5177-361-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 | Reach Length (km): 1.4 MA | Date: 19-Aug-97 | Time: 14:30 | Agency: TEC | Access: H | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6471 .60475 | Length surveyed (m): 200.0 GE | Survey Crew: SJ \EM\ \ \ \ \ \ \ | Photos: E-21-15,16 | Air Photos:

Channel Characteristics

Av. Chan. Width (m):	2.4	MS
Av. Wet. Width (m):	1.2	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	15	MS
Gradient (%):	2.0	CL
Pool: 10 Riffle: 30 Run: 60 Other:	0	
% Side Channel:	0-10	GE
% Debris Area:	0-5	GE
%Stable:	0	GE

Specific Data

2.4	1.6	0.7	3.2	4.1	2.3
1.9	1.2	0.3	0.9	1.4	1.3
1	2	3	1	1	
10	17	8	12	19	23

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	10	10	30	40

Crown Closure %: 0 | Aspect: SW

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	50	20
	Lge cobble (128-256mm):		20
	Bldr cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 18 | Compaction: Medium

Discharge

Wetted Width (m):	1.2	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.12	F
Discharge (m3/s):	0.01	F

Banks

Height (m): 0.1

% Unstable: 30

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L | Flood Signs Ht(m): 0.5

Bars (%): 0 | pH: 7.5 | Braided: N

Water Temp. (°C): 12.5 | 02 (ppm):

Turb. (cm): | Cond. (µmhos): 80

Reach Symbol

(Fish)

NF

2 D 2.0 | 3250

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1: S6

C2: LS = 10%, RS = 8%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 215 seconds over 150 meters.

C5: No additional bank texture information.

C6: DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7: This reach has a stable gravel/cobble substrate, overlain by fine organic sedimentation. No fish were shocked or observed but freshwater shrimp were caught in the slow moving section of the creek running through a meadow.

C8: Steep, most likely impassable gradient was noted downstream of the sampling area and as a result, this reach has been classified as non fish bearing.



Photo #: E-21-15, 19-Aug-97
Site #: E220, Looking downstream at the channel



Photo #: E-21-16, 19-Aug-97
Site #: E220, Looking upstream at the channel and willow cover

DFO/MoELP Stream Survey Form

Site Number: E221

Reach No.: 2

Trib. to Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E221, Unit 12, East of Thompson Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 067-5800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 2.0 MA **Date:** 19-Aug-97 **Time:** 16:00 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6475 .60472 **Length surveyed (m):** 400.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-21-17,18 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	1.7	MS
Av. Wet. Width (m):	1.3	MS
Av. Max Riffle Depth (cm):	2	MS
Av. Max Pool Depth (cm):	29	MS
Gradient (%):	7.0	CL
Pool: 20 Riffle: 20 Run: 60 Other:	0	
% Side Channel:	10-40	GE
% Debris Area:	5-15	GE
%Stable:	0	GE

Specific Data

1.5	1.6	1.8	2.2	1.2	2.0
1.2	1.0	1.6	0.9	1.1	2.0
2	2	2	3	2	
22	34	22	34	31	32

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	0	0	80	10

Crown Closure % : 0 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	20	10
	Lge cobble (128-256mm):		10
	Bldr cobble (>256mm):		0
Bedrock		10	10

N D90 (cm): Compaction: Medium

Discharge

Wetted Width (m) :	0.2	MS
Mean Depth (m) :	0.0	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.00	F

Banks

Height (m): 0.3

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

2 D 7.0 | 5221

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.3 Braided: N

Water Temp. (°C): 7.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 140

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 S6

C2 LS = 5%, RS = 10%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 171 seconds over 200 meters.

C5 No additional bank texture information.

C6 DO was not measured, the water was clear to the bottom. The mean air temperature on this day was 16.3.C.

C7 The fine organic substrate at this site makes it unsuitable for spawning. This site also has no rearing or overwintering habitat.



Photo #: E-21-17, 19-Aug-97
Site #: E221, Looking upstream at the channel



Photo #: E-21-18, 19-Aug-97
Site #: E221, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: E300

Reach No.: 1

Trib. to Thompson Cr.

TRITON Environmental Consultants Ltd.

Location: E300, Unit 12, North of Thompson Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 006-7800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.8 MW Date: 13-Sep-97 Time: 11:45 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M.: 9 .6438 .60482 Length surveyed (m): 400.0 GE Survey Crew: SJ \LE\ \ \ \ \ \ \ Photos: E-28-25,26,27 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	3.5	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	16.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	>40	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

Cover Total %: 5 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	90	0	0	0

Crown Closure %: 0 Aspect: SW

Bed Material

	Fines	Clay, silt, sand (<2mm):	80	80
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	20	0
		Lge cobble (128-256mm):		10
		Bldr cobble (>256mm):		10
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m):		
N	Mean Depth (m):		
N	Mean Velocity (m/s):		
N	Discharge (m3/s):		

Banks

Height (m): 0.0

% Unstable: 100

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m):

Bars (%): 0 pH: 8.1 Braided: Y

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos): 440

Reach Symbol

(Fish)

NF

4 D 16.0 | 8020

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				VO

Comments

C1 S5

C2 Side slopes were not measured.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 DO was not measured, the mean air temperature on this day was 11.4.C.

C7 This reach has been heavily impacted by cattle, the channel has been trampled and is undefined in many areas.

C8 This reach has been classified as non fish bearing because the channel is undefined in many areas due to trampling, it lacks suitable fish habitat and connects with an abandoned flow channel.



Photo #: E-28-25, 13-Sep-97
Site #: E300, Looking upstream at the channel



Photo #: E-28-26, 13-Sep-97
Site #: E300, Looking downstream at the channel



Photo #: E-28-27, 13-Sep-97
Site #: E300, Cattle tracks at the sample site

5.17 Tyhee Creek and Victor Creek (460-4309-000) (460-4309-559) (93 L 065, 93 L 075)

5.17.1 Sensitive Habitats and Barriers

The mainstem of Tyhee Creek is 1.8 km in length, has low gradient and is crossed by several roads, including highway 16. It drains fish bearing Tyhee Lake, which is 4.1 km in length. The mainstem of Victor Creek is 4.8 km, has low gradient and is unconfined in reach 1. Reach 2 has moderately steep gradient while reach 3 has steep gradient and drains a headwater lake in reach 4. Only Victor Creek, Tyhee Creek and two unnamed tributaries to Tyhee Lake were sampled. Four tributaries were identified in this area.

5.17.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of cutthroat trout at the mouth of Tyhee Creek and the following species in Tyhee Lake:

- rainbow trout
- cutthroat trout
- pigmy whitefish
- prickly sculpin
- longnose sucker
- red sided shiner
- northern squawfish
- burbot
- peamouth chub
- giant pigmy whitefish.

Victor Creek was sampled in reaches 1 and 3. It was classified as an S3 in reach 1, based on an average channel width of 1.82 meters and the presence of fish habitat in the sampling area. It was classified as an S6 in reach 3 based on an average channel width of 0.80 meters and a lack of suitable fish habitat associated in part with the steep (19%) gradient identified in the sampling area. The mainstem of Tyhee Creek was sampled in reach 1 and was classified as an S3 based on an average channel width of 4.50 meters and the presence of cutthroat trout in the sampling area. One unnamed tributary to Tyhee Lake was classified as an S4 based on an average channel width of 1.2 meters average channel width and the presence of fish habitat in the sampling area. The other tributary was classified as "NC" based on the lack of evidence of a defined channel.

DFO/MoELP Stream Survey Form

Site Number: W21

Reach No.: 1

Tyhee Cr.

TRITON Environmental Consultants Ltd.

Location: W21, Unit 12; 400m along Tyhee Laked Rd., crosses Hwy 16 **Stream (Gaz.):** Tyhee Creek **Watershed Code:** 460-4309-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 065 **Reach Length (km):** 1.4 MA **Date:** 11-Jul-97 **Time:** 9:50 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6275 .60617 **Length surveyed (m):** 250.0 GE **Survey Crew:** KA UP \ \ \ \ \ \ **Photos:** W-3-9,10,11 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	4.5	MS
C1	Av. Wet. Width (m):	2.1	MS
	Av. Max Riffle Depth (cm):	6	MS
	Av. Max Pool Depth (cm):	36	MS
	Gradient (%):	1.0	CL
	Pool: 50 Riffle: 10 Run: 40 Other:	0	
	% Side Channel:	0-10	GE
	% Debris Area:	>15	GE
	%Stable:	40	GE

Specific Data

4.0	3.1	3.4	6.0	5.2	3.4
2.9	2.5	1.7	1.1	2.0	2.6
4	6	3	4	14	4
41	43	42	24	25	42

Cover

Cover Total % : 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
30	25	0	0	25	20

Crown Closure % : 75 Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	60	60
Gravels	Small (2-16mm):	30	20
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 6 Compaction: Low

Discharge

Wetted Width (m) :	2.2	MS
Mean Depth (m) :	0.3	MS
Mean Velocity (m/s) :	0.17	F
Discharge (m3/s) :	0.08	F

Banks

Height (m): 0.2

% Unstable: 60

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 1

Bars (%): 30 pH: 8.4 Braided: N

Water Temp. (°C): 13.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 210

Reach Symbol

(Fish)

CT

5 C 1.0 | 6310

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location
	1	BD	0.7

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	2	20-30	J	R			EL
	SA	100	20-30	J	R			VO

Comments

C1 S3. One additional measurement was taken for both channel and wetted widths; 6.6 and 2.2.

C2 LS=1.5%, RS=2%

C3 No fisheries sensitive zones noted.

C4 The electroshocking effort, using a Smithroot 12 B POW model set for 200V, was for 516 seconds over 250 meters.

C5 No additional bank texture information.

C6 DO was not measured at this site, the water was clear to bottom. The mean air temperature on this day was 14.6 C.

C7 This stream has some deep pools that are possibly favourable for rearing. It also has nice overstream vegetation cover. Abundant sediment with low compaction in some areas. The stream below the culvert is of low velocity and is accessible to livestock. There is a beaver dam 100m from the road.



Photo #: W-3-9, 11-Jul-97
Site #: W21, Looking at a beaver dam



Photo #: W-3-10, 11-Jul-97
Site #: W21, Looking upstream at the channel

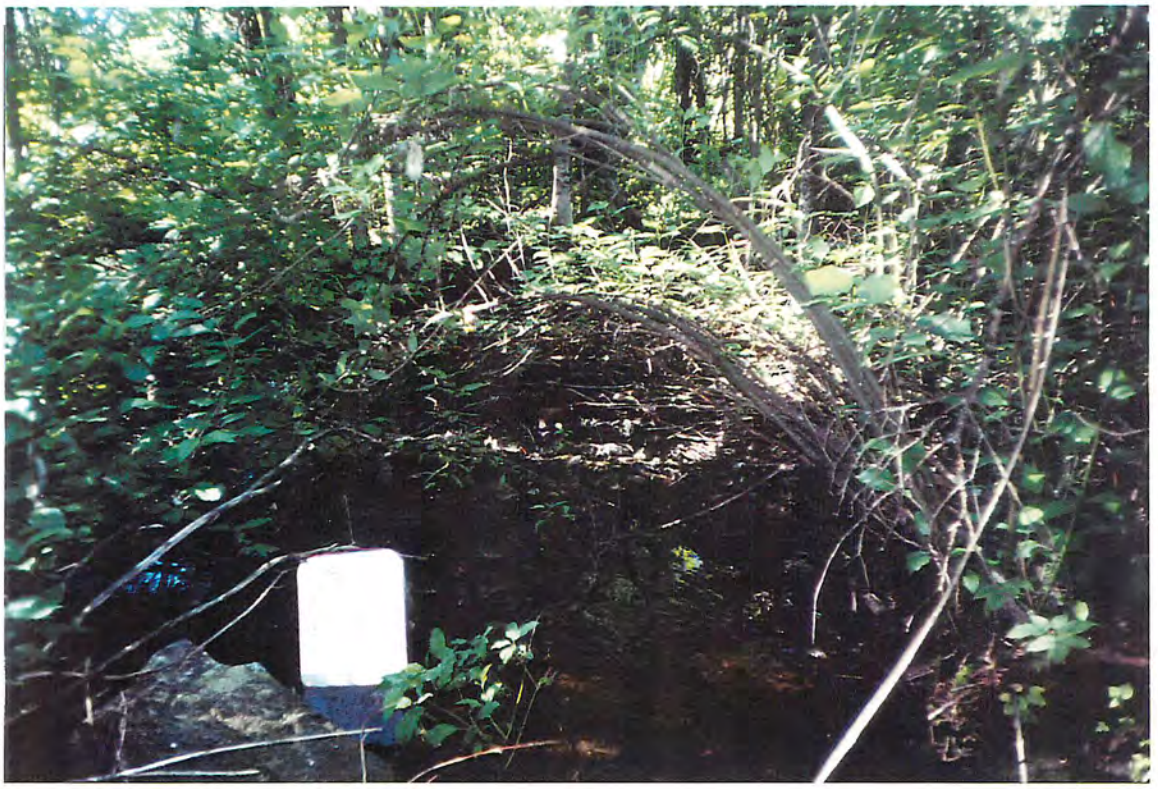


Photo #: W-3-11, 11-Jul-97
Site #: W21, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: RYAN 81 **Reach No.: 1**

Trib. to Tyhee L.

TRITON Environmental Consultants Ltd.

Location: RYAN 81, Unit 12, 580m E of Tyhee Lake, see C5. **Stream (Gaz.):** Victor Creek **Watershed Code:** 460-4309-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 | Reach Length (km): 0.5 MA | Date: 21-Sep-96 | Time: 11:00 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M. : 9 .6276 .60646 | Length surveyed (m): 200.0 GE | Survey Crew: RH \JL\ \ \ \ \ \ \ | Photos: R-5-11,12 | Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	1.8	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.5	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	0-5	GE
	%Stable:	10	GE

Specific Data

2.1 2.0 1.5 1.7 1.8 1.8

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	15	0	0	70	15

Crown Closure % : 65 Aspect : W

Bed Material

	Fines	Clay, silt, sand (<2mm):	30	30
	Gravels	Small (2-16mm):	55	30
		Large (16-64mm):		25
	Larges	Sm. cobble (64-128mm):	15	10
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 13 Compaction: Medium

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S3

C2 LS = 11%, RS = 13%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 42' 53", Long W 127 1' 05"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8 This site is located below the road. Above the road the substrate contains more fines.

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.2

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.8 Braided: N

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 380

Reach Symbol

(Fish)

(DV)

2 D 1.5 | 3610

(Width, Valley: Channel, Slope) (Bed Material)



Photo #: R-5-11, 1996/09/21
Site #: R81, Looking upstream.



Photo #: R-5-12, 1996/09/21
Site #: R81, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: ARNE 13 **Reach No.: 1**

Trib. to Tyhee L.

TRITON Environmental Consultants Ltd.

Location: ARNE 13, Unit 12, trib to Tyhee Lake, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-4309-007-580-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 0.9 MA **Date:** 21-Sep-96 **Time:** 10:10 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6270 .60662 **Length surveyed (m):** 150.0 GE **Survey Crew:** AKL\ HK\ \ \ \ \ \ \ **Photos:** A-2-4,5,6 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	1.1	MS
	Av. Wet. Width (m):	0.3	MS
N	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	4	MS
	Gradient (%):	2.5	CL
	Pool: 95 Riffle: 0 Run: 5 Other: 0		
	% Side Channel:		GE
	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

0.7	0.6	1.1	2.4	1.3	0.8
0.1	0.1	0.1	1.2	0.3	0.3
6	2				

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	90	10

Crown Closure % : 5 Aspect : W

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	50	10
	Large (16-64mm):		40
Larges	Sm. cobble (64-128mm):	40	40
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 12 Compaction: Medium

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.4

% Unstable: 80

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

(DV) (RB)

1	D	2.5	1540
(Width, Valley: Channel, Slope)			(Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0

Bars (%): 0 pH: 8.2 Braided: N

Water Temp. (°C): 11.0 02 (ppm):

Turb. (cm): 6 Cond. (µmhos): 630

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S4

C2 LS = 0%, RS = 0%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished. No fish habitat was observed at the time of sampling.

C5 Lat N 54 43' 37.3", Long W 127 01' 40.4"

C6 No additional bank texture information. The banks at this site are 2 m high in some areas and are eroding.

C7 DO, pH and conductivity were not measured at this site. The water was clear to the bottom. The mean air temperature on this day was 3.7°C

C8 Marginal habitat exists at this site, however there are no barriers between this stream and the lake, so it still may provide fish habitat. No overwintering habitat was found at this site and rearing habitat is limited.



Photo #: A-2-4, 21-Sep-96
Site #: A13, Looking upstream.



Photo #: A-2-5, 21-Sep-96
Site #: A13, Looking downstream.



Photo #: A-2-6, 21-Sep-96
Site #: A13, Looking downstream towards road.

DFO/MoELP Stream Survey Form **Site Number:** RYAN 80 **Reach No.: 1**

Trib. to Tyhee L.

TRITON Environmental Consultants Ltd.

Location: RYAN 80, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 051-9400-000-000-000-000-000-000-000-000-0

Map #: 93 L 075 **Reach Length (km):** 2.2 MA **Date:** 21-Sep-96 **Time:** 10:30 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6256 .60664 **Length surveyed (m):** 200.0 GE **Survey Crew:** RH\JL\ \ \ \ \ \ \ **Photos:** R-5-10 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	0.8	MS
	Av. Wet. Width (m):	0.0	MS
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	5.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:	0-10	GE
	% Debris Area:	>15	GE
	%Stable:	50	GE

Specific Data

1.1 0.8 0.6 1.2 0.4 0.7

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	0	0	90	0

Crown Closure % : 70 Aspect : SE

Bed Material

0	Fines	Clay, silt, sand (<2mm):	90	90
	Gravels	Small (2-16mm):	10	5
		Large (16-64mm):		5
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

D90 (cm): 2 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

I D 5.0 | 9100

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				VO

Comments

C1 S6

C2 LS = 3%, RS = 3%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 43' 55.6", Long W 127 02' 55.2"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site. The mean air temperature on this day was 3.7°C

C8 No fish habitat was observed in this intermittent stream . This stream does not appear to be accessible to fish.

C9 The culvert at this site is in relatively poor condition.



Photo #: R-5-10, 1996/09/21
Site #: R80, Looking upstream.

DFO/MoELP Stream Survey Form

Site Number: W220

Reach No.: 3

Victor Cr.

TRITON Environmental Consultants Ltd.

Location: W220, Unit 12; 2.4km west of McDowell Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 460-4309-559-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **U.T.M.:** 9 .6290 .60657 **Reach Length (km):** 2.4 MA **Length surveyed (m):** 100.0 GE **Date:** 22-Aug-97 **Time:** 14:20 **Agency:** TEC **Survey Crew:** JP \DD \ \ \ \ \ \ \ **Access:** V2 **Photos:** W-L-20,21 **Fish Card:** N **Field** ☒ **Historical** ☐ **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.8	MS
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	MS
Av. Max Pool Depth (cm):	20	MS
Gradient (%):	19.0	CL
Pool: 100 Riffle: 0 Run: 0 Other: 0		
% Side Channel:	10-40	GE
% Debris Area:	>15	GE
%Stable:	20	GE

Specific Data

0.8 0.6 1.5 0.8 0.4 0.7

20

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):	10	5
	Lge cobble (128-256mm):		5
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 11 Compaction: Medium

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	0	0	0	90	0

Crown Closure % : 40 Aspect : S

Discharge

N	Wetted Width (m) :	
N	Mean Depth (m) :	
N	Mean Velocity (m/s) :	
N	Discharge (m3/s) :	

Banks

Height (m): 0.0

% Unstable: 80

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: OC

Valley : Channel Ratio 5-10

Stage: Dry Flood Signs Ht(m): 0.2

Bars (%): 60 pH: Braided: Y

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

1 C 19.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 S6.

C2 LS=45%, RS=65%

C3 No fisheries sensitive zones noted.

C4 This dry site was not electroshocked

C5 No additional bank texture information.

C6 DO, pH, water temperature and conductivity were not measured at this site, the water was clear to bottom. The air temperature at this site was 20.0 C.

C7 This consisted of an ill defined channel below a road crossing. There were large pools of water above the road. Two culverts were placed too high in the road bed, resulring in the current 2.5 m drop from one of the culverts. This reach is a borderline S6 and the channel measurements were based on marginal channel definition. There was no water going through the culvert at the time of sampling. There were a few isolated pools, but no real flow. The channel above the culvert is the same as below, dry.



Photo #: W-L-20, 22-Aug-97
Site #: W220, Looking upstream at the channel, culvert barriers and garbage



Photo #: W-L-21, 22-Aug-97
Site #: W220, Looking downstream at the channel

DFO/MoELP Stream Survey Form **Site Number: Z7** **Reach No.: 1**

Trib. to Round Lake.

TRITON Environmental Consultants Ltd.

Location: Z7, Unit 12, at 4.2km on Round Lake rd. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-9100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 3.1 MA **Date:** 09-Jul-97 **Time:** 10:05 **Agency:** TEC **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐

U.T.M. : 9 .6350 .60595 **Length surveyed (m):** 130.0 GE **Survey Crew:** JP \DD \KG \ \ \ \ \ \ **Photos:** Z-1-22,23,24,25 **Air Photos:**

Channel Characteristics

C1	Av. Chan. Width (m):	3.0	MS
	Av. Wet. Width (m):	0.9	MS
	Av. Max Riffle Depth (cm):	0	MS
	Av. Max Pool Depth (cm):	11	MS
	Gradient (%):	1.0	CL
	Pool: 80 Riffle: 0 Run: 20 Other: 0		
	% Side Channel:	10-40	GE
	% Debris Area:	>15	GE
	%Stable:	60	GE

Specific Data

4.8	3.0	2.9	2.2	1.9
0.0	2.3	0.4	1.2	0.7
10	8	14		

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	85	0	5	10	0

Crown Closure % : 40 Aspect : S

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: Low

Discharge

C7	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

3 D 1.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.4 Braided: Y

Water Temp. (°C): 15.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 430

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	NF			NA				VO

Comments

C7: The channel has been severely impacted by livestock at this site, as evidenced by trampled banks. The channel was discontinuous in some areas.

C1: S5.

C2: LS =0%, RS = 0%

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished as the flow was too low. At the time of sampling the flow consisted of a series of sloppy pools.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to the bottom. The mean air temperature on this day was 12.C.



Photo #: Y-1-18, 10/07/97
Site #: Y7, Looking upstream, with Steve electrofishing.



Photo #: Y-1-19, 10/07/97
Site #: Y7, Looking downstream, toward the culvert

DFO/MoELP Stream Survey Form

Site Number: Y10

Reach No.: 2

Trib to Round Lk.

TRITON Environmental Consultants Ltd.

Location: Y10, Unit 12 | **Stream (Gaz.):** Unnamed | **Watershed Code:** 068-9100-000-000-000-000-000-000-000-000-000-

Map #:	93 L 066	**Reach Length (km):**	2.4	MW	**Date:**	10-Jul-97	**Time:**	16:20	**Agency:**	TEC	**Access:**	V2	**Fish Card:**	N	**Field** ☒ **Historical** ☐
U.T.M.:	9 .6362 .60628	**Length surveyed (m):**	100.0	GE	**Survey Crew:**	DD \SJ \ \ \ \ \ \					**Photos:**		Y-2-1,2,3		**Air Photos:**

Channel Characteristics

				Specific Data					
	Av. Chan. Width (m):	1.1	MS	1.1	0.9	1.2	1.1	0.9	1.2
	Av. Wet. Width (m):	0.7	MS	0.6	0.9	0.5	0.2	0.6	1.2
N	Av. Max Riffle Depth (cm):	0	MS						
	Av. Max Pool Depth (cm):	11	MS	12	10	10			
	Gradient (%):	5.0	CL						
	Pool: 100 Riffle: 0 Run: 0 Other: 0								
	% Side Channel:	0	GE						
	% Debris Area:	0	GE						
	%Stable:		GE						

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	0	20	20	20	20

Crown Closure % : 0 Aspect : E

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

I D 5.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):		4
	Lge cobble (128-256mm):	10	4
	Bldr cobble (>256mm):		2
Bedrock		0	0

D90 (cm): 35 Compaction: Low

Banks

Height (m): 0.1

% Unstable: 100

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.5

Bars (%): 0 pH: 7.5 Braided: N

Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 190

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: S6. Riffles were not noted.

C2: LS=6%, RS=11%

C3: No fisheries sensitive zones noted.

C4: There was too little flow at the time of sampling to electrofish.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom. The air temperature at this site was 21.0 C.

C7: This site has no fish habitat. It consists of a mud channel that has been heavily impacted by livestock. There are a few small areas of gravel/boulder substrate.



Photo #: Y-2-1, 11/07/97
Site #: Y10, Looking upstream, at the road crossing.



Photo #: Y-2-2, 11/07/97
Site #: Y10, Looking downstream , with cattle impacts



Photo #: Y-2-3, 11/07/97
Site #: Y10, Looking upstream, below the cattle impacted area.

DFO/MoELP Stream Survey Form

Site Number: E13

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: E13, Unit12; 1km east of Hwy 16 **Stream (Gaz.):** Unnamed **Watershed Code:** 000-0000-000-000-000-000-000-000-000-000-0

Map #: 93 L 057 **U.T.M. :** 9 .6449 .60454 **Reach Length (km):** 0.0 MA **Length surveyed (m):** 100.0 GE **Date:** 11-Jul-97 **Time:** 14:50 **Agency:** TEC **Survey Crew:** JL \EM\ \ \ \ \ \ \ **Access:** V2 **Fish Card:** N ☐ Field ☒ Historical ☐ **Photos:** E-1-22,23 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	2.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : W

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0 % Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 2.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: NC.

C2: The side slopes at this site were not measured.

C3: No fisheries sensitive zones noted.

C4: This site was not electrofished.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site.

C7: There is no creek here, just a culvert under the road and some scattered boulders in the hayfield below the road. This appears to be some kinf of seasonal drainage.



Photo #: E-1-22, 11-Jul-97
Site #: E13, Looking downstream, with vegetation.

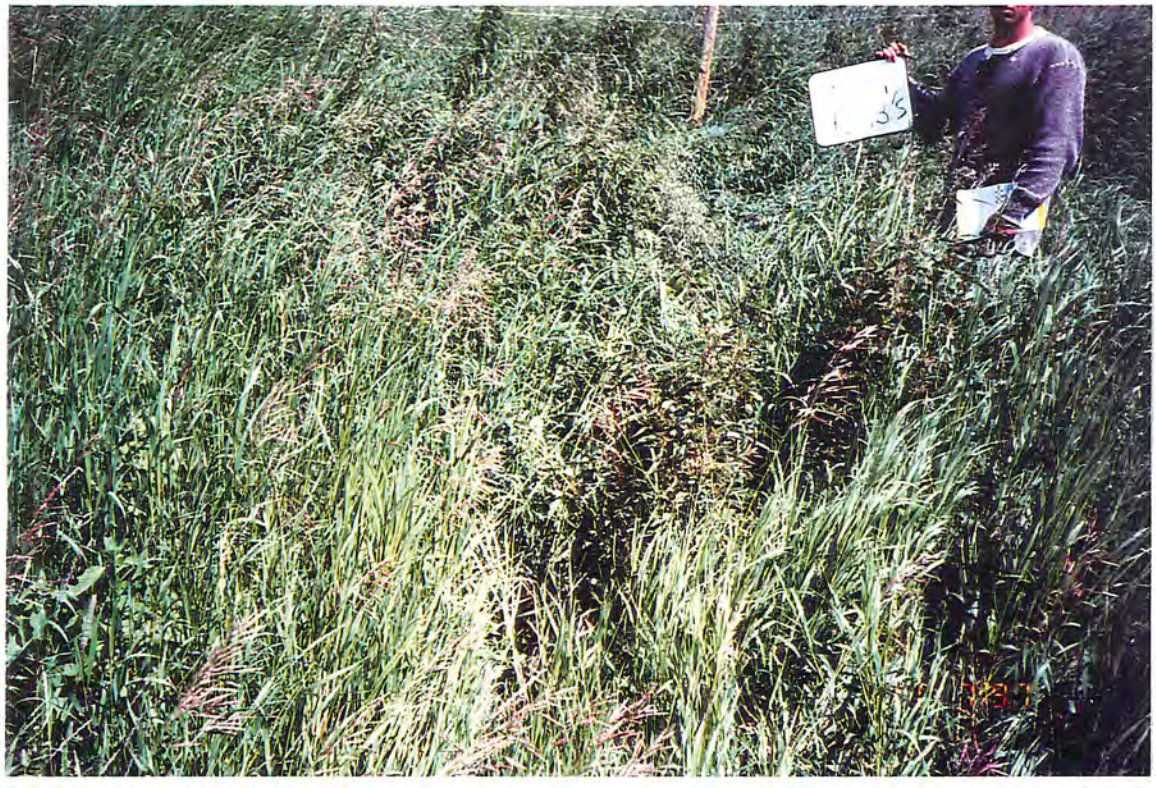


Photo #: E-1-23, 11-Jul-97
Site #: E13, Looking upstream, with vegetation.

DFO/MoELP Stream Survey Form **Site Number:** E231 **Reach No.:** 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: E231, Unit 12, South of Canyon Creek Stream (Gaz.): Unnamed Watershed Code: 078-0800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 Reach Length (km): 0.0 GE Date: 21-Aug-97 Time: 10:30 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6345 .60692 Length surveyed (m): 500.0 AE Survey Crew: SJ \EM\ \ \ \ \ \ \ Photos: E-22-14 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	2.0	MA
N	Pool: 0 Riffle: 0 Run: 100 Other: 0		
N	% Side Channel:	>40	GE
N	% Debris Area: 0		GE
	%Stable:		GE

Specific Data

Cover

Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

Crown Closure % : 0 Aspect : N

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

0 E 2.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

Stage: L N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: NC

C2: Side slopes not applicable.

C3: A very large swamp, which comes into contact with Canyon Creek, occurs in this area and has been classified as a fisheries sensitive zone.

C4: This site was not electrofished.

C5: Bank texture not applicable.

C6: Water quality not applicable.

C7: Some water was observed flowing downslope into a very large swamp. An outlet was not found.



Photo #: E-22-14, 21-Aug-97
Site #: E231, Looking at an NC

DFO/MoELP Stream Survey Form **Site Number: E232** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: E232, Unit 12, South of Canyon Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-2100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 0.0 GE **Date:** 21-Aug-97 **Time:** 11:15 **Agency:** TEC **Access:** H **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6349 .60673 **Length surveyed (m):** 100.0 GE **Survey Crew:** SJ \EM \ \ \ \ \ \ **Photos:** E-22-15 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	5.0	MA

N Pool: 100 Riffle: 0 Run: 0 Other: 0

N % Side Channel: GE

N % Debris Area: 0 GE

%Stable: GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : E

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 5.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 No fisheries sensitive zones present.

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 Water quality not applicable.

C7 The creek indicated on the map does not exist at this location. The area consists of mature second growth forest and a number of alder swales. Despite extensive searching, the crew did not find a channel within 300 m of the area indicated on the map. Future sampling recommended at the outlet of the attached lake.



Photo #: E-22-15, 21-Aug-97
Site #: E232, Looking at an alder swale

DFO/MoELP Stream Survey Form **Site Number: E294** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: E294, Unit 12, East of the Bulkley River, East of Thompson Cr. Stream (Gaz.): Unnamed Watershed Code: 067-3800-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.0 GE Date: 12-Sep-97 Time: 12:15 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6447 .60462 Length surveyed (m): 200.0 GE Survey Crew: SJ\LE\ \ \ \ \ \ \ Photos: E-20-9 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	13.0	MA

N Pool: 100 Riffle: 0 Run: 0 Other: 0

N % Side Channel: GE

N % Debris Area: 0 GE

%Stable: GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : W

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: L N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 13.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 Fisheries sensitive zones not applicable.

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 Water quality not applicable.

C7 A creek may have flowed in this area at one time, however, the combined effects of logging and ranching appear to have obliterated the original channel. A defined channel was noted for 25m, but the cows have trampled the banks and the channel. An occasional stagnant pool was found in the sampling area.

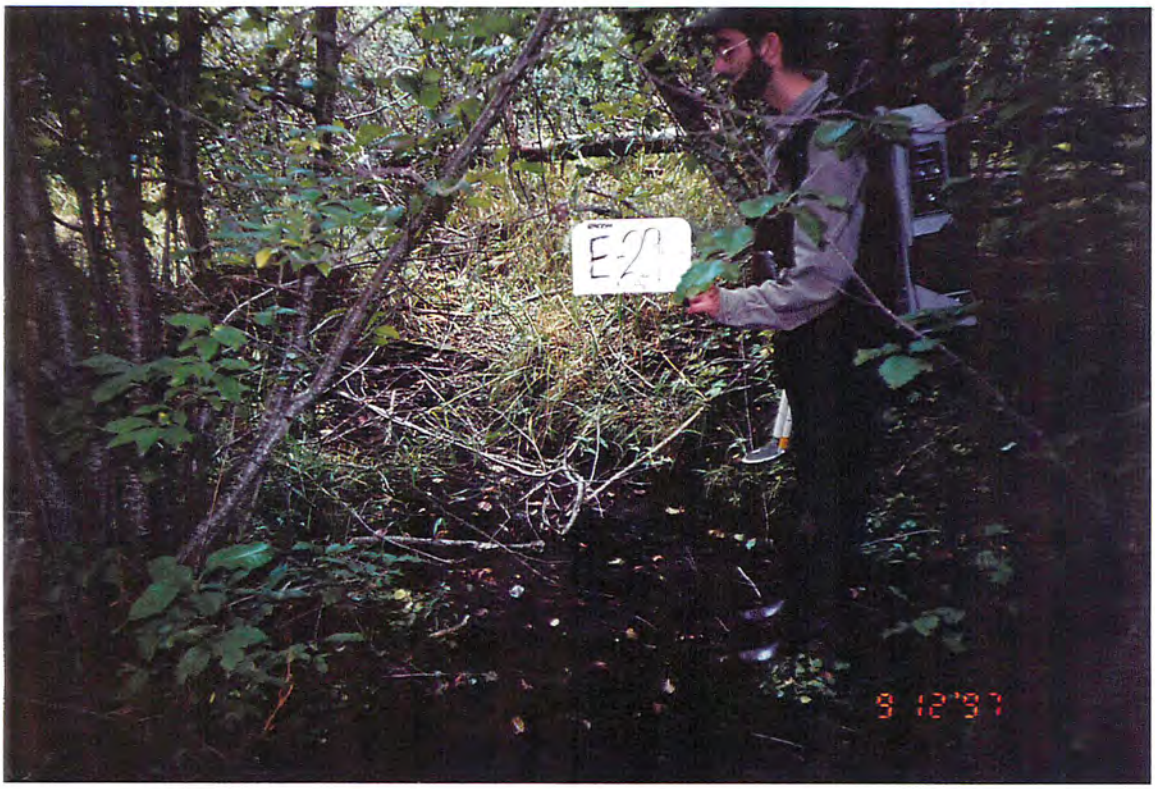


Photo #: E-28-9, 12-Sep-97
Site #: E294, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number:** E295 **Reach No.:** 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: E295, Unit 12, East of the Bulkley and east of Thompson Cr. Stream (Gaz.): Unnamed Watershed Code: 067-3600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.0 GE Date: 12-Sep-97 Time: 13:15 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6445 .60465 Length surveyed (m): 150.0 GE Survey Crew: SJ \LE\ \ \ \ \ \ \ Photos: E-27-10,11 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.0	GE
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	8.0	CL

Pool: 100 Riffle: 0 Run: 0 Other: 0

% Side Channel: GE

% Debris Area: 0 GE

%Stable: GE

Specific Data

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

Crown Closure % : 0 Aspect : W

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 10

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio N/A

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 0 pH: 7.9 Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): Cond. (µmhos): 500

Reach Symbol

(Fish)

NF

0 E 8.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 No fisheries sensitive zones noted.

C4 This NC was not electrofished.

C5 No additional bank texture information.

C6 Water quality not applicable. The air temperature at this site was 16.C.

C7 A defined channel, roughly .3-.6 m in width was observed approximately 50 m away from the mainstem. Otherwise this is not a creek.

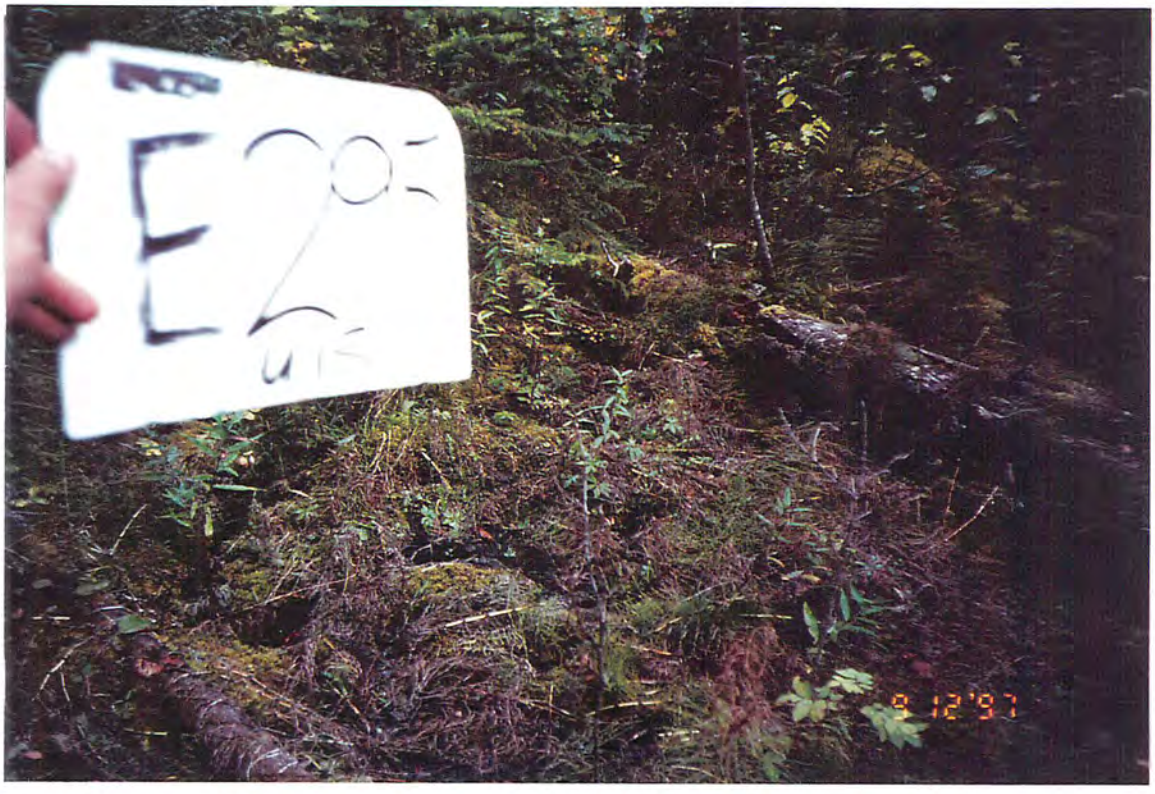


Photo #: E-28-10, 12-Sep-97
Site #: E295, Looking at an "NC"

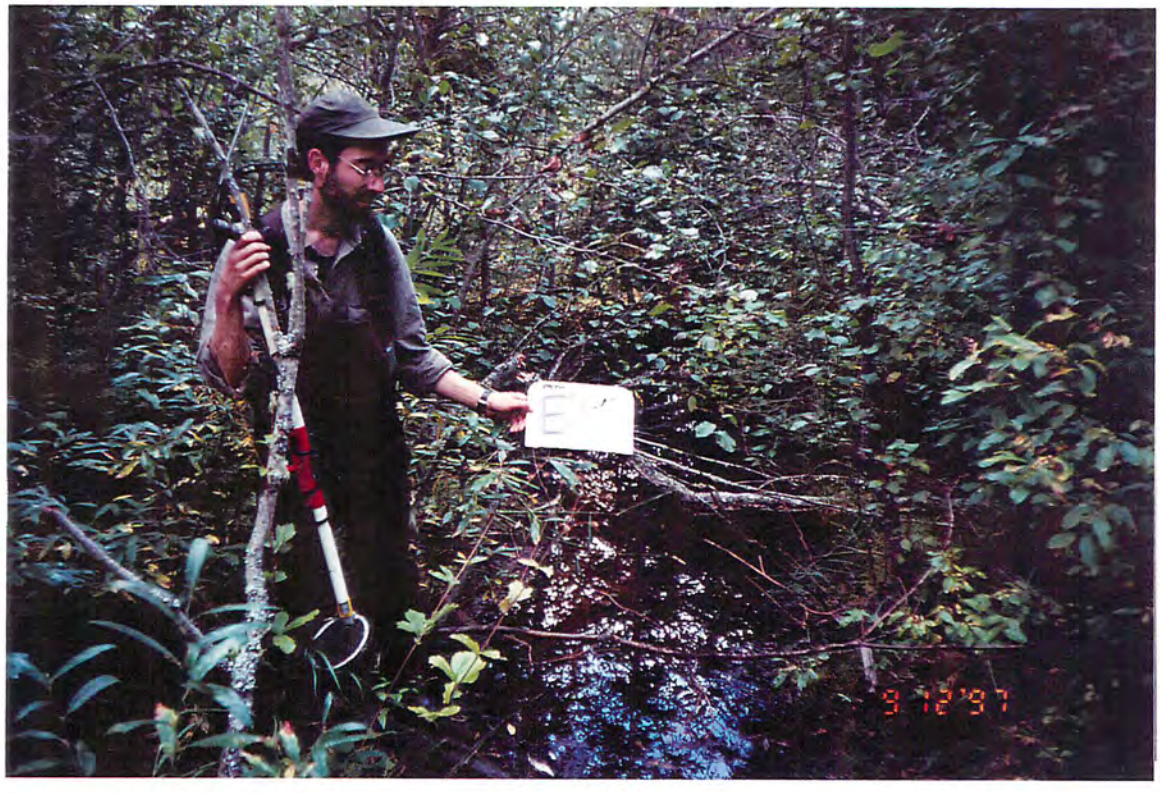


Photo #: E-28-11, 12-Sep-97
Site #: E295, Looking at an "NC"

DFO/MoELP Stream Survey Form

Site Number: JULIE 259

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: JULIE 259, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2500-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 **Reach Length (km):** 0.0 GE **Date:** 29-Sep-96 **Time:** 14:55 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6306 .60562 **Length surveyed (m):** 60.0 GE **Survey Crew:** JP \DD\ \ \ \ \ \ \ **Photos:** J-19-25 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	25.0	CL

N Pool: 0 Riffle: 0 Run: 0 Other: 0

N % Side Channel:

N % Debris Area: 0 GE

%Stable: 0 GE

Specific Data

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

N Cover Total % : 0

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 70 Aspect : N

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

0 E 25.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Banks

N Height (m): 0.0

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 NC

C2 LS = 40%, RS = 40%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 38' 11.5", Long w 126 58' 37"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site.

C8 This site contains no fish habitat. This site begins as a gully, below the powerline, then runs at a 30% slope for approximately 40m . It then becomes an alder swale. Checking the bottom end at the Bulkley is recommended to confirm that no channel, that could be accessed at high flow, exists.

C9 The air temperature at this site was 10 degrees celcius.



Photo #: J-19-25, 1996/09/29
Site #: J259, Not a creek, this is a gully.

DFO/MoELP Stream Survey Form **Site Number: JULIE 265** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: JULIE 265, Unit 12, see C5. Stream (Gaz.): Unnamed Watershed Code: 068-8400-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 066 Reach Length (km): 0.0 GE Date: 29-Sep-96 Time: 18:30 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6356 .60545 Length surveyed (m): 60.0 GE Survey Crew: JP\DD\ \ \ \ \ \ \ Photos: J-20-11 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.0	GE
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:		
N	% Debris Area: 0		GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 20 Aspect : NW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Blder cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0 % Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry Flood Signs Ht(m): 0.2

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): O2 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 0.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 LS = 1%, RS = 1%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 37' 11", Long W 126 53' 56.1"

C6 No additional bank texture information.

C7 Water quality could not be evaluated at this site.

C8 What appears to be a 5 m wide and 1m deep drainage ditch was observed downstream of the road crossing. The drainage has been blocked off at the road. No defined channel occurs upstream of the road.

C9 The air temperature at this site was 6 degrees celcius.



Photo #: J-20-11, 1996/09/29
Site #: J265, Looking upstream, grassy swale.

DFO/MoELP Stream Survey Form **Site Number:** RYAN 73 **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: RYAN 73, Unit 12, 3km E of the bulkley River, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 000-0000-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 085 **Reach Length (km):** 0.0 GE **Date:** 20-Sep-96 **Time:** 10:45 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6206 .60746 **Length surveyed (m):** 150.0 GE **Survey Crew:** RH \JL \ \ \ \ \ \ \ **Photos:** B-7-19,20 **Air Photos:**

Channel Characteristics

	Av. Chan. Width (m):	0.0	GE
	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	1.0	GE
	Pool: 0 Riffle: 0 Run: 0 Other: 0		
	% Side Channel:		GE
	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 80 Aspect : NW

Bed Material

	Fines	Clay, silt, sand (<2mm):	80	80
	Gravels	Small (2-16mm):	10	5
		Large (16-64mm):		5
	Larges	Sm. cobble (64-128mm):	10	5
		Lge cobble (128-256mm):		5
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 14 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0 % Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 1.0 | 8110

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry Flood Signs Ht(m):

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 LS = 1%, RS = 16%

C3 No fisheries sensitive zones were noted at this site.

C4 This site was not electrofished.

C5 Lat N 54 48' 24.4", Long W 127 07' 28.2"

C6 No defined channel was observed at this site.

C7 Water quality was not evaluated at this site.

C8 No fish habitat was observed at this site.



Photo #: B-7-19, 1996/09/20
Site #: R73, Not a creek.



Photo #: B-7-20, 1996/09/20
Site #: R73, Not a creek.

DFO/MoELP Stream Survey Form

Site Number: RYAN 91 **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: RYAN 91, Unit 12, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 078-3300-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 0.0 GE **Date:** 22-Sep-96 **Time:** 12:20 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6405 .60719 **Length surveyed (m):** 150.0 GE **Survey Crew:** RH \ JL \ \ \ \ \ \ \ **Photos:** None **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	0.5	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:		GE
N	% Debris Area:	>15	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 65 Aspect : SW

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

C6 Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 D 0.5 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones are present at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 46' 38.2", Long W 126 48' 57.8"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site.

C8 No fish habitat was observed at this site.

DFO/MoELP Stream Survey Form

Site Number: RYAN 94

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: RYAN 94, Unit 12, 1.0km S of Canyon Creek, see C5. **Stream (Gaz.):** Unnamed **Watershed Code:** 077-9100-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 **Reach Length (km):** 0.0 GE **Date:** 22-Sep-96 **Time:** 17:00 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6329 .60700 **Length surveyed (m):** 180.0 GE **Survey Crew:** RH \JL \ \ \ \ \ \ \ **Photos:** A-3-3 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	3.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:		GE
N	% Debris Area:	5-15	GE
	%Stable:	90	GE

Specific Data

Cover

N Cover Total % : 0

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 60 Aspect : E

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
	Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Obstructions

C	Height (m)	Type	Location

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Comments

C1 NC

C2 LS = 0%, RS = 1%

C3 No fisheries sensitive zones were noted at this site.

C4 This dry site was not electrofished.

C5 Lat N 54 45' 33.2", Long W 126 56' 9.6"

C6 No additional bank texture information.

C7 Water quality was not evaluated at this site.

C8 No fish habitat was observed at this site.

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

Height (m): 0.1

% Unstable: 0

Fines ☒ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: UC

Valley : Channel Ratio 10+

Stage: Dry Flood Signs Ht(m): 0.1

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 D 3.0 | F

(Width, Valley: Channel, Slope) (Bed Material)



Photo #: A-3-3, 22-Sep-96
Site #: R94, Not a creek.

DFO/MoELP Stream Survey Form **Site Number: W14** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: W14, Unit 12; Hubert Rd. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-2900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 0.0 MA **Date:** 10-Jul-97 **Time:** 11:22 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6305 .60598 **Length surveyed (m):** 60.0 GE **Survey Crew:** KA \JP\ \ \ \ \ \ \ **Photos:** W-2-14 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	2.0	MA

N Pool: 0 Riffle: 0 Run: 0 Other: 0

N % Side Channel: GE

N % Debris Area: 0 GE

%Stable: 0 GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : S

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Blder cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 2.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

N Confinement: N/A

N Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 LS=9%, RS=16%

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 There is a definite depression in the land. From the air it would look like a stream.



Photo #: W-2-14, 10-Jul-97
Site #: W14, Looking at an "NC"(Photoboard should read site#W14)

DFO/MoELP Stream Survey Form **Site Number:** W15 **Reach No.:** 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: W15, Unit 12 200m up Bree Road at Dorsay Lake **Stream (Gaz.):** Unnamed **Watershed Code:** 069-0500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 **Reach Length (km):** 0.0 MA **Date:** 10-Jul-97 **Time:** 12:05 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M.: 9 .6319 .60610 **Length surveyed (m):** 30.0 GE **Survey Crew:** KA UP \ \ \ \ \ \ \ **Photos:** W-2-15,16 **Air Photos:**

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : NW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 4.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

N Confinement: N/A

N Valley : Channel Ratio N/A

Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This was a creek. At about 35m from the lake there has been a road built. A creek did at one point run from the lake and crossd the path of the road. It appears that in the last year or soit was filled in with gravel and dirt just above the road crossing. As a result there is no water flowing and no visible banks, therefore this can not be called a creek. Below the crossing, remnants of the chanel were observed.



Photo #: W-2-15, 10-Jul-97
Site #: W15, Looking at an "NC"



Photo #: W-2-16, 10-Jul-97
Site #: W15, Looking at an "NC"

DFO/MoELP Stream Survey Form

Site Number: W184

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: W184, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 051-7900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 075 | Reach Length (km): 0.0 MA | Date: 14-Aug-97 | Time: 16:30 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ Historical ☐

U.T.M.: 9 .6216 .60728 | Length surveyed (m): 100.0 GE | Survey Crew: KA \DD\ \ \ \ \ \ \ | Photos: W-H-12 | Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : W

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 4.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes at this site were not measured.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is merely a damp depression in pasture land, no fish habitat was found in the sampling area.



Photo #: W-H-12, 14-Aug-97
Site #: W184, Looking at an "NC"

DFO/MoELP Stream Survey Form

Site Number: W208

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: W208, Unit 12; 0.2km east of Lemieux Cr. **Stream (Gaz.):** Unnamed **Watershed Code:** 068-6500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 0.0 MA Date: 20-Aug-97 Time: 16:00 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6399 .60597 Length surveyed (m): 50.0 GE Survey Crew: DD \JP\ \ \ \ \ \ \ Photos: W-K-16 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	7.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : SW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 7.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site. The air temperature at this site was 24.0 C.

C7 This is a gulley not a creek.



Photo #: W-K-16, 20-Aug-97
Site #: W208, Looking at an "NC", a muddy gully at the road crossing

DFO/MoELP Stream Survey Form **Site Number: W218** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: W218, Unit 12; 0.2km south of McDowell Lk. **Stream (Gaz.):** McDowell Creek **Watershed Code:** 460-4353-000-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 Reach Length (km): 0.0 MA Date: 22-Aug-97 Time: 13:00 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .6321 .60661 Length surveyed (m): 100.0 GE Survey Crew: DD \JP\ \ \ \ \ \ \ Photos: W-L-17 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	1.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : SW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 1.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electroshocked.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This site is just road drainage for about 40m from the road. No defined channel was observed beyond this point.



Photo #: W-L-17, 22-Aug-97
Site #: W218, Looking at an "NC"

DFO/MoELP Stream Survey Form

Site Number: Y15 **Reach No.:** 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: Y15, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-7600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 **Reach Length (km):** 0.0 MA **Date:** 11-Jul-97 **Time:** 15:45 **Agency:** TEC **Access:** V2 **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 .6379 .60641 **Length surveyed (m):** 50.0 GE **Survey Crew:** DD\SJ\ \ \ \ \ \ \ **Photos:** Y-2-13 **Air Photos:**

Channel Characteristics

Specific Data

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	6.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:		GE

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 Aspect : S

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Reach Symbol

(Fish)

NF

0 E 6.0 | 0000

(Width, Valley: Channel, Slope) | (Bed Material)

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):		0
		Lge cobble (128-256mm):	0	0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1: NC.

C2: The side slopes at this site were not measured.

C3: No fisheries sensitive zones noted.

C4: This site was not electroshocked.

C5: No additional bank texture information.

C6: Water quality was not evaluated at this site.

C7: This is just a boggy depression with alder and standing water.



Photo #: Y-2-13, 11/07/97
Site #: Y15, Boggy depression with water, no defined channel.

DFO/MoELP Stream Survey Form

Site Number: Y14

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: Y14, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 068-8700-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | Reach Length (km): 0.0 MA | Date: 11-Jul-97 | Time: 15:15 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6383 .60637 | Length surveyed (m): 50.0 GE | Survey Crew: DD \SJ\ \ \ \ \ \ \ | Photos: Y-2-11,12, | Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	8.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:		GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 Aspect : SE

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 8.0 | 0000

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones were noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is a small boggy area that drains into a sink hole, seeping to the SW.



Photo #: Y-2-11, 11/07/97
Site #: Y14, Looking at a sinkhole, no defined channel.



Photo #: Y-2-12, 11/07/97
Site #: Y14, Looking at a sinkhole, no defined channel.

DFO/MoELP Stream Survey Form **Site Number: Y179** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Y179, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 067-8600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.0 GE Date: 19-Aug-97 Time: 12:30 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 649305 6050189 Length surveyed (m): 100.0 GE Survey Crew: JL \JP\ \ \ \ \ \ \ Photos: Y-20-18 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	13.5	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : E

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 14.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): O2 (ppm):

Turb. (cm): Cond. (µmhos):

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This muddy channel, which extends for 5-10 meters, disappears with into a muddy swampy area. The ground crew walked 150 m in the area, but found no channel.



Photo #: Y-20-18, 19/08/97
Site #: Y179, Photoboard in alder covered depression , NC

DFO/MoELP Stream Survey Form **Site Number: Z15** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z15, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 068-5600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 0.0 GE Date: 09-Jul-97 Time: 17:04 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .639777. 605539 Length surveyed (m): 100.0 GE Survey Crew: JP \DD \KG \ \ \ \ \ \ Photos: Z-2-21,22,23 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Bed Material

Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):	0	0
	Lge cobble (128-256mm):		0
	Bldr cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 0 Compaction: High

Cover

Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

Crown Closure % : 0 Aspect : W

Discharge

Wetted Width (m) :

Mean Depth (m) :

Mean Velocity (m/s) :

Discharge (m3/s) :

Banks

Height (m): 0.0

% Unstable: 0

Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Confinement: N/A

Valley : Channel Ratio N/A

Stage: Dry Flood Signs Ht(m):

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 4.0 | F

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1. NC

C2. Side slopes not applicable.

C3 Fisheries sensitive zones not applicable

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 Water quality not applicable.

C7 With the exception of a small valley, no evidence of a stream was found in the sampling area, located in a planted field.



Photo #: Z-2-23, 09-Jul-97
Site #: Z15, Not a creek.

DFO/MoELP Stream Survey Form **Site Number: Z157** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z157, Unit 12 **Stream (Gaz.):** Unnamed **Watershed Code:** 068-0900-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 **Reach Length (km):** 0.0 GE **Date:** 19-Aug-97 **Time:** 12:04 **Agency:** TEC **Access:** FT **Fish Card:** N Field ☒ Historical ☐

U.T.M. : 9 ,652087.6052238 **Length surveyed (m):** 160.0 GE **Survey Crew:** KG \CF\ \ \ \ \ \ \ **Photos:** Z-20-19 **Air Photos:**

Channel Characteristics

Av. Chan. Width (m):	0.0	GE
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	15.0	MA

N Pool: 0 Riffle: 0 Run: 0 Other: 0

% Side Channel: GE

% Debris Area: 0 GE

%Stable: 0 GE

Specific Data

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	

N Crown Closure % : 0 N Aspect : E

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 15.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 No fisheries sensitive zones present.

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 The air temperature at this site was 25.C.

C7 This is a wet patch of earth, 50 m upstream from the lake. Below this area is a run of stagnant rust coloured water in sedges. Neither well defined banks nor alluvial substrate were observed in the sampling area. The crew walked as additional 100 m to locate a channel and found only wet earth and one dry subterrainean flow hole.



Photo #: Z-20-19, 19-Aug-97
Site #: Z157, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z158** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z158, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 068-1100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.0 GE Date: 19-Aug-97 Time: 13:00 Agency: TEC Access: FT Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .652285.6052155 Length surveyed (m): 100.0 GE Survey Crew: KG\CF\ \ \ \ \ \ \ Photos: Z-20-20 Air Photos:

Channel Characteristics

	Av. Chan. Width (m):	0.0	GE
	Av. Wet. Width (m):	0.0	GE
	Av. Max Riffle Depth (cm):	0	GE
	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	0.5	GE

N Pool: 0 Riffle: 0 Run: 0 Other: 0

% Side Channel: GE

% Debris Area: 0 GE

%Stable: 0 GE

Specific Data

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Clbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : E

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: UC

N Valley : Channel Ratio 10+

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 D 0.5 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 No fisheries sensitive zones present.

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 The air temperature at this site was 25.C.

C7 This site is an alder swale located roughly 10m upstream from the lakeshore. Neither well defined banks, nor alluvial substrate were observed.



Photo #: Z-20-20, 19-Aug-97
Site #: Z158, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z159** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z159, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 068-1200-000-000-000-000-000-000-000-000-000-

Map #: 93 L 057 Reach Length (km): 0.0 GE Date: 19-Aug-97 Time: 13:54 Agency: TEC Access: H Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .652625.6051752 Length surveyed (m): 50.0 GE Survey Crew: KG\CF\ \ \ \ \ \ \ Photos: Z-20-21 Air Photos:

Channel Characteristics

Av. Chan. Width (m):	0.0	GE
Av. Wet. Width (m):	0.0	GE
Av. Max Riffle Depth (cm):	0	GE
Av. Max Pool Depth (cm):	0	GE
Gradient (%):	13.0	MA

N Pool: 0 Riffle: 0 Run: 0 Other: 0

% Side Channel: GE

% Debris Area: 0 GE

%Stable: 0 GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : E

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction: Low

Discharge

N Wetted Width (m) :

N Mean Depth (m) :

N Mean Velocity (m/s) :

N Discharge (m3/s) :

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 13.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 Side slopes not applicable.

C3 No fisheries sensitive zones present.

C4 This site was not electrofished.

C5 Bank texture not applicable.

C6 The air temperature at this site was 25.C.

C7 A channel was not found at this site. The crew walked around for some time tryting to find a channel and found nothing. Trout were observed however in the channel between the two smaller lakes south of Farewell Lake.



Photo #: Z-20-21, 19-Aug-97
Site #: Z159, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z208** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z208, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 068-9600-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 0.0 GE Date: 08-Sep-97 Time: 11:19 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .633119.6059152 Length surveyed (m): 50.0 GE Survey Crew: KG\LE\ \ \ \ \ \ \ Photos: Z-26-19 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	8.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	

N Crown Closure % : 0 N Aspect : SE

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

Stage: Dry N Flood Signs Ht(m):

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 02 (ppm):

Turb. (cm): Cond. (µmhos):

Reach Symbol

(Fish)

NF

0 E 8.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 There is no indication of a creek at this location. The crew found a culvert draining a road ditch.



Photo #: Z-26-19, 08-Sep-97
Site #: Z208, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z210** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z210, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 068-4300-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 0.0 GE Date: 08-Sep-97 Time: 12:15 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .640217.6054601 Length surveyed (m): 0.0 GE Survey Crew: KG\LE\ \ \ \ \ \ Photos: Z-26-22,23 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.5	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	0	0	0	0	0

N Crown Closure % : 0 Aspect : SW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0 % Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Reach Symbol

(Fish)

NF

0 E 5.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 No channel was noted, this is now pasture.



Photo #: Z-26-22, 08-Sep-97
Site #: Z210, Looking at an "NC"



Photo #: Z-26-23, 08-Sep-97
Site #: Z210, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z213** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z213, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 069-0400-000-000-000-000-000-000-000-000-000-

Map #: 93 L 066 Reach Length (km): 0.0 GE Date: 08-Sep-97 Time: 14:00 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .632107.6062257 Length surveyed (m): 0.0 GE Survey Crew: KG\LE\ \ \ \ \ \ \ Photos: Z-27-4,5 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
	Gradient (%):	7.0	CL
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : SE

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0 % Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 7.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

N Confinement: N/A

N Valley : Channel Ratio N/A

Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electroshocked due to there being to water.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is no longer a creek. It is an agricultural area with many cows. The channel is sporadically defined and now provides some road drainage.



Photo #: Z-27-4, 08-Sep-97
Site #: Z213, Looking upstream at the channel



Photo #: Z-27-5, 08-Sep-97
Site #: Z213, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: Z254

Reach No.: 0

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z254, Unit 12 | Stream (Gaz.): Unnamed | Watershed Code: 068-7100-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 | Reach Length (km): 0.0 GE | Date: 16-Sep-97 | Time: 12:33 | Agency: TEC | Access: V2 | Fish Card: N | Field ☒ | Historical ☐

U.T.M.: 9 .6372 .60656 | Length surveyed (m): 100.0 GE | Survey Crew: DD \KG\ \ \ \ \ \ \ | Photos: Z-31-21 | Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : W

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Reach Symbol

(Fish)

NF

0 E 4.0 | 0000

(Width, Valley: Channel, Slope) | (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is more of a gully. The channel is not continuous nor is it well defined. Above the road isolated pools were noted. This site is shown on the map as mainstem Vanderven Creek.



Photo #: Z-31-21, 16-Sep-97
Site #: Z254, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z255** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z255, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 078-6500-000-000-000-000-000-000-000-000-000-

Map #: 93 L 076 Reach Length (km): 0.0 GE Date: 16-Sep-97 Time: 12:57 Agency: TEC Access: V2 Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .637107.6065150 Length surveyed (m): 100.0 GE Survey Crew: KG\DD\ \ \ \ \ \ \ Photos: Z-31-22 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	4.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : SW

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

Reach Symbol

(Fish)

NF

0 E 4.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

N Confinement: N/A

N Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NG

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is a gully not a creek.



Photo #: Z-31-22, 16-Sep-97
Site #: Z255, Looking at an "NC"

DFO/MoELP Stream Survey Form **Site Number: Z257** **Reach No.: 0**

Not a creek

TRITON Environmental Consultants Ltd.

Location: Z257, Unit 12 Stream (Gaz.): Unnamed Watershed Code: 460-3254-391-000-000-000-000-000-000-000-000-0

Map #: 93 L 076 Reach Length (km): 0.0 GE Date: 16-Sep-97 Time: 15:35 Agency: TEC Access: FT Fish Card: N Field ☒ Historical ☐

U.T.M. : 9 .632713.6071158 Length surveyed (m): 100.0 GE Survey Crew: DD\KG\ \ \ \ \ \ \ Photos: Z-31-25 Air Photos:

Channel Characteristics

N	Av. Chan. Width (m):	0.0	GE
N	Av. Wet. Width (m):	0.0	GE
N	Av. Max Riffle Depth (cm):	0	GE
N	Av. Max Pool Depth (cm):	0	GE
N	Gradient (%):	5.0	MA
N	Pool: 0 Riffle: 0 Run: 0 Other: 0		
N	% Side Channel:	0	GE
N	% Debris Area:	0	GE
	%Stable:	0	GE

Specific Data

Cover

N Cover Total % : 0 GE

	Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
N	0	0	0	0	0	0

N Crown Closure % : 0 N Aspect : S

Bed Material

N	Fines	Clay, silt, sand (<2mm):	0	0
N	Gravels	Small (2-16mm):	0	0
		Large (16-64mm):		0
N	Larges	Sm. cobble (64-128mm):	0	0
		Lge cobble (128-256mm):		0
		Bldr cobble (>256mm):		0
N	Bedrock		0	0

N D90 (cm): 0 N Compaction:

Discharge

N	Wetted Width (m) :		
N	Mean Depth (m) :		
N	Mean Velocity (m/s) :		
N	Discharge (m3/s) :		

Banks

N Height (m): 0.0

% Unstable: 0

N Fines ☐ Gravels ☐ Larges ☐ Bedrock ☐

N Confinement: N/A

N Valley : Channel Ratio N/A

N Stage: Dry N Flood Signs Ht(m): 0

N Bars (%): 0 pH: Braided: N

N Water Temp. (°C): 0.0 02 (ppm): 0.0

Turb. (cm): 0 Cond. (µmhos): 0

Reach Symbol

(Fish)

NF

0 E 5.0 | 0000

(Width, Valley: Channel, Slope) (Bed Material)

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				NA

Comments

C1 NC

C2 The side slopes were not measured at this site.

C3 No fisheries sensitive zones noted.

C4 This site was not electrofished.

C5 No additional bank texture information.

C6 Water quality was not evaluated at this site.

C7 This is not a creek by definition. It has a low gradient and is in a boggy area with isolated pools filled with debris and spagnum moss.



Photo #: Z-31-25, 16-Sep-97
Site #: Z257, Looking at an "NC"

5.18 Fish Age, Growth and Other Observations

Fish catch data were compiled for all records that contained a discrete size measurement. These data were summarised and plotted in histograms by species, the results are presented in Figures 2a through 2i. Species caught in Working Unit 12 included rainbow trout, Dolly Varden, burbot, minnows, coho, cutthroat trout, long nose dace, northern squawfish, and trout (general). The following table summarises the numbers of fish caught in each size class.

Table 8. Catch Data by Species and by Size Class (mm) in Working Unit 12

	RB	DV	BB	C	CO	CT	LNC	NSC	TR
0-25						1			2
25-50	44	2				2		1	10
50-75	30	5			2	3	1	2	
75-100	14	2	1	2	1	8		2	
100-125	5	4				4			
125-150	3	7				4			
150-175	3	8				1			
175-200	4					1			
200-225									
225-250									
250-275									
275-300	1								
300-325									
325-350									
350-375									
375-400									
400-425									
425-450									
450-475									
475-500	1								
>500									

5.19 Rare and Endangered Species

No rare or endangered species were observed in this working unit.

5.20 Wildlife Observations

Beaver and moose sign, as well as a moose and an unidentified frog species were noted in this working unit. Table 7 summarizes the wildlife observations for working unit 12.

5.21 Recommendations for Future Sampling

Ninety nine sites were classified as fish bearing, despite the fact that no fish were caught at the sample sites. Typically, fish presence is inferred in these streams due to the presence of suitable fish habitat in the sampling area and/or the lack of obvious barriers to fish migration. A number of sites in this working unit were dry at the time of sampling. Table 6 summarizes all of the sites in unit 12 for which future sampling is recommended. However, future sampling is strongly recommended for the following reaches:

- E227, reach 1 of a tributary to Coffin Lake
- E236, reach 2 of Burbridge Creek
- W212, reach 4 of a tributary to reach 7 of Canyon Creek
- Z154, reach 4 of a tributary to reach 3 of Deep Creek

Site E227, on a tributary to Coffin Lake, has potential rearing and spawning habitat and appears to be accessible from fish bearing Coffin Lake. No fish were caught in this reach which was at low flow at the time of survey. Future sampling at higher flows is recommended. Reach 2 of Burbridge Creek, sampled at E236 has potential rearing habitat, however multiple beaver dams may be preventing fish migration into the sampling area. Minnow trapping this reach is recommended.

Site W212 is located in reach 2 of a large tributary to Canyon Creek. This large system contains a 7 meter falls at the reach 2 and 3 break, and was sampled above the barrier at 7 different locations. A visual observation of a trout was made above the falls, but no fish were caught by electrofishing at any of the 7 sites. Future sampling is recommended for W212 and to a lesser degree, sites Y191 and Y192. located in reach 5 and a tributary to reach 5 of the same stream.

Site Z154, located on a tributary to Deep Creek, has marginal fish habitat and is not accessible from Deep Creek; however it drains a very large lake which was not minnow trapped in this inventory. As such future fish sampling in this lake is recommended.

6.0 CONCLUSION AND RECOMMENDATIONS

Working unit 12 is highly developed in some areas like Round Lake and Canyon Creek, and the effects of agricultural activity on streams were noted. Impacts ranged from the total removal of riparian vegetation in some reaches (Z209, 93 L 066) to the presence of garbage in the streams (Z8, 93 L 066). In some cases, livestock have unrestricted access to streams, resulting in bank trampling and erosion (Z7,93 L 066). Additional impacts include multiple road crossings as in the case of the stream sampled at Z13, 93 L 066, which is crossed once by highway 16, and 4 more times by residential roads. The limits to fish distribution in this working unit appear to be associated with impassable barriers and the impacts of human activity. Fish were typically caught where these problems do not exist.

7.0 REFERENCES

Department of Fisheries & Oceans and Ministry of Environment. 1989. Fish Habitat Inventory & Information Program: Stream Survey Field Guide. Department of Fisheries & Oceans and Ministry of Environment.

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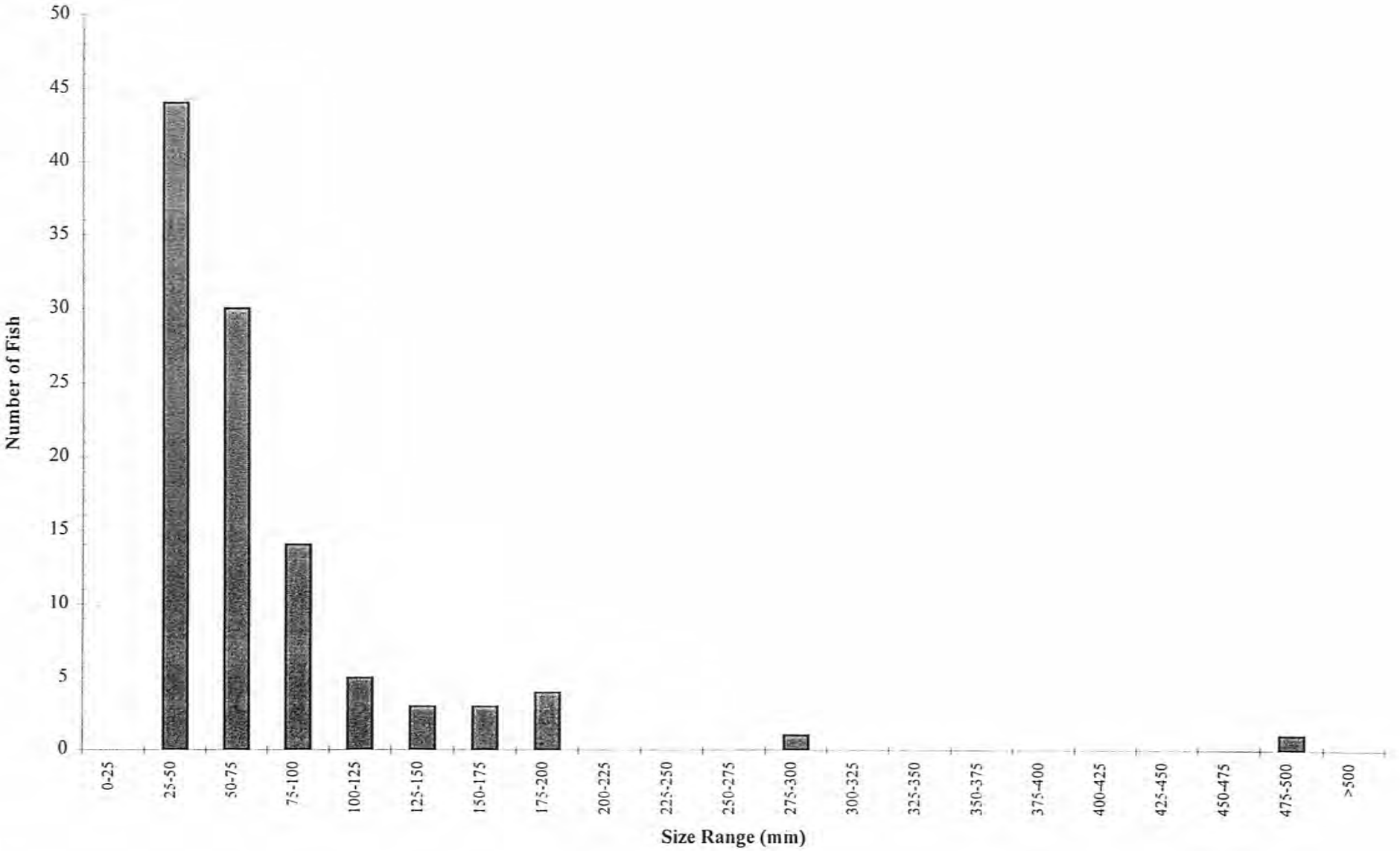
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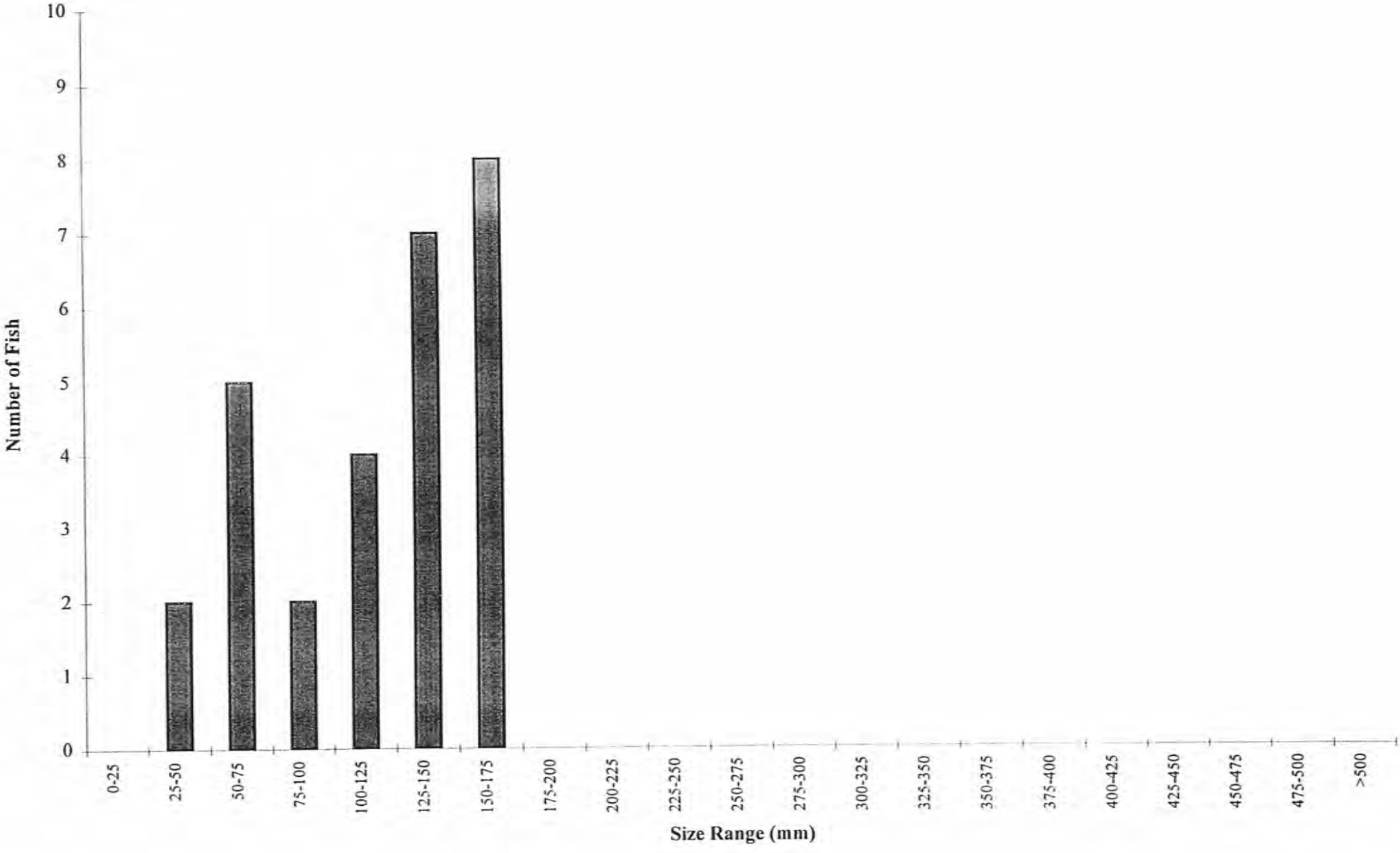
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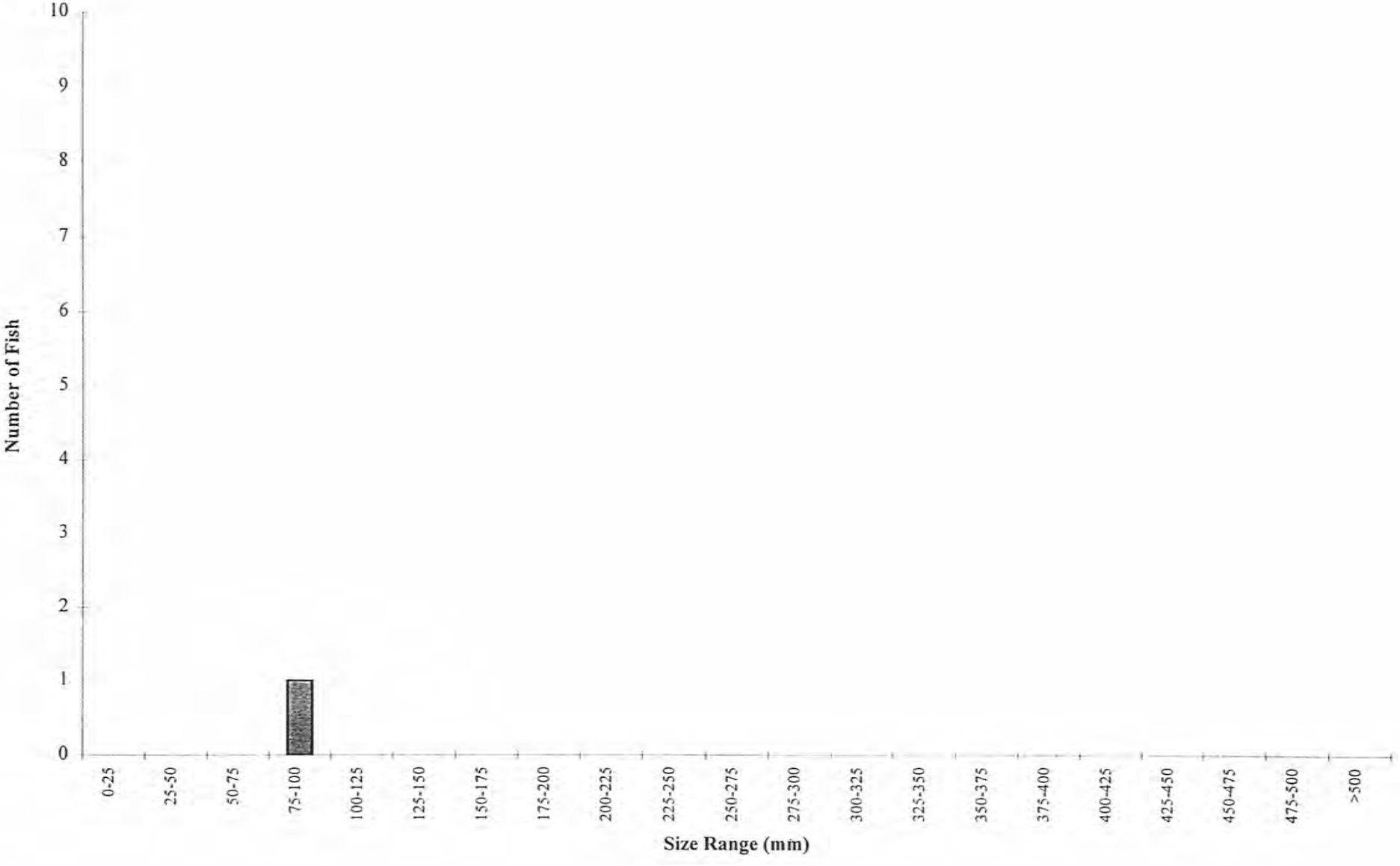
Working Unit 12 - Rainbow Trout



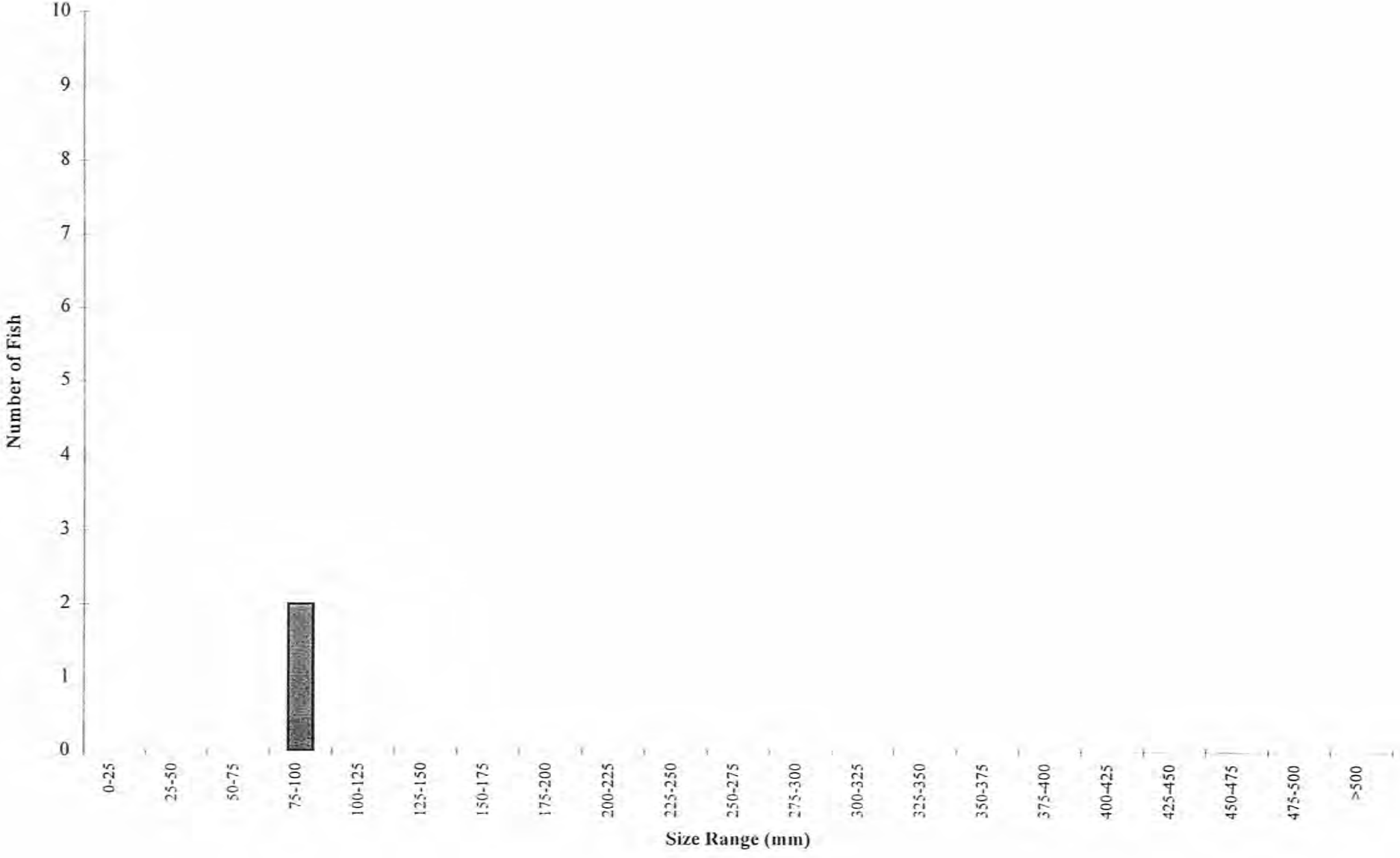
Working Unit 12 - Dolly Varden



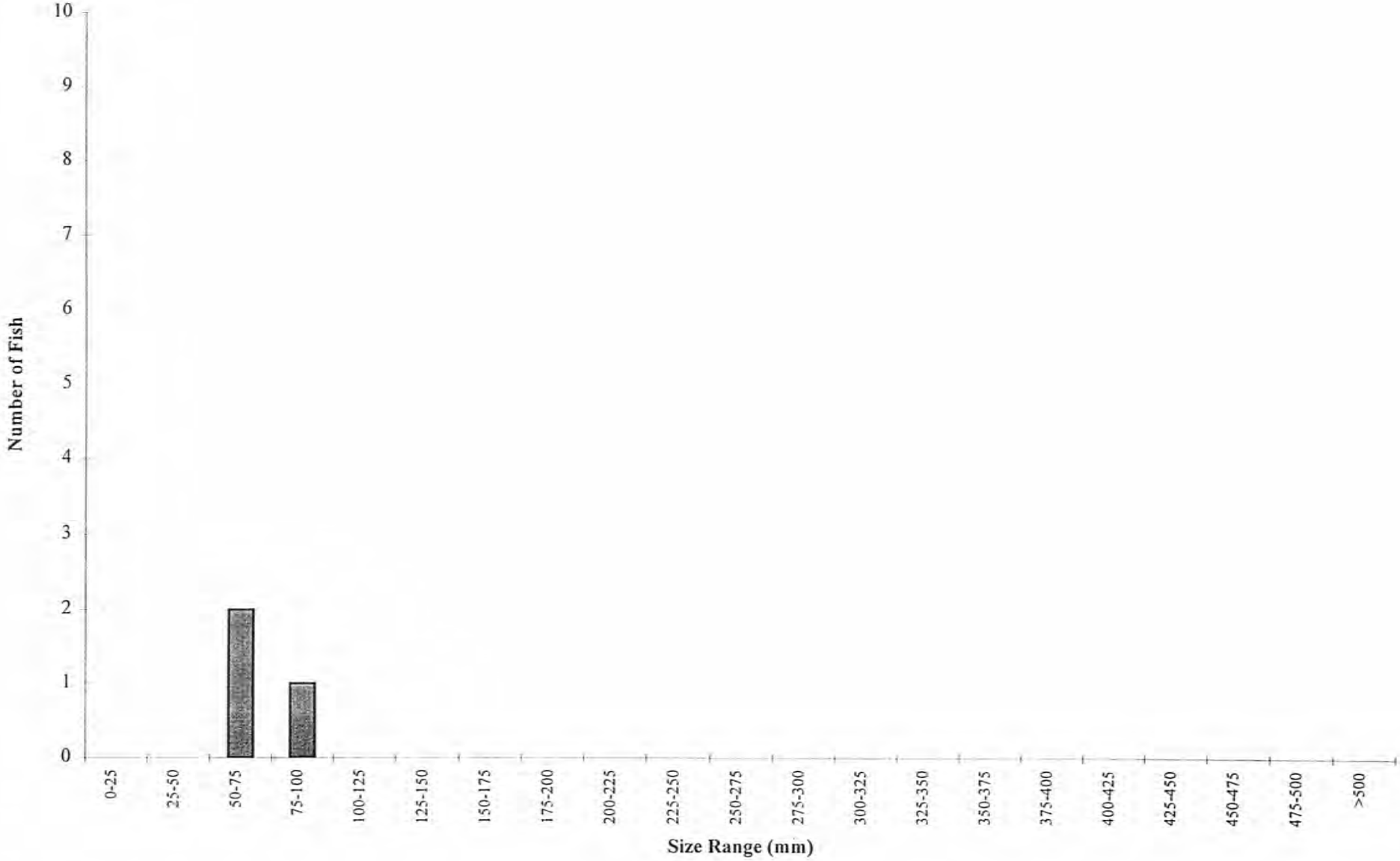
Working Unit 12 - Burbot



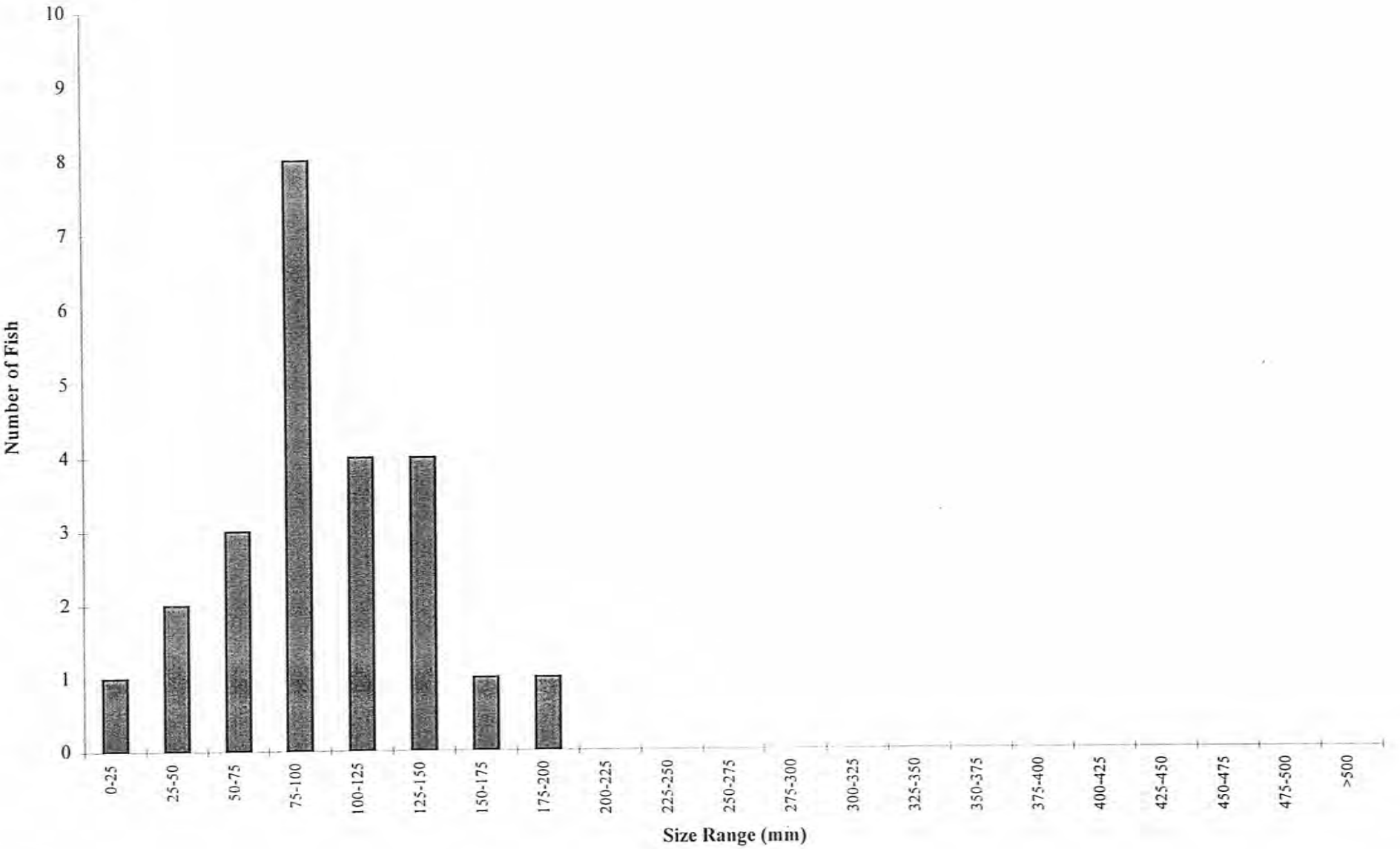
Working Unit 12 - Minnows



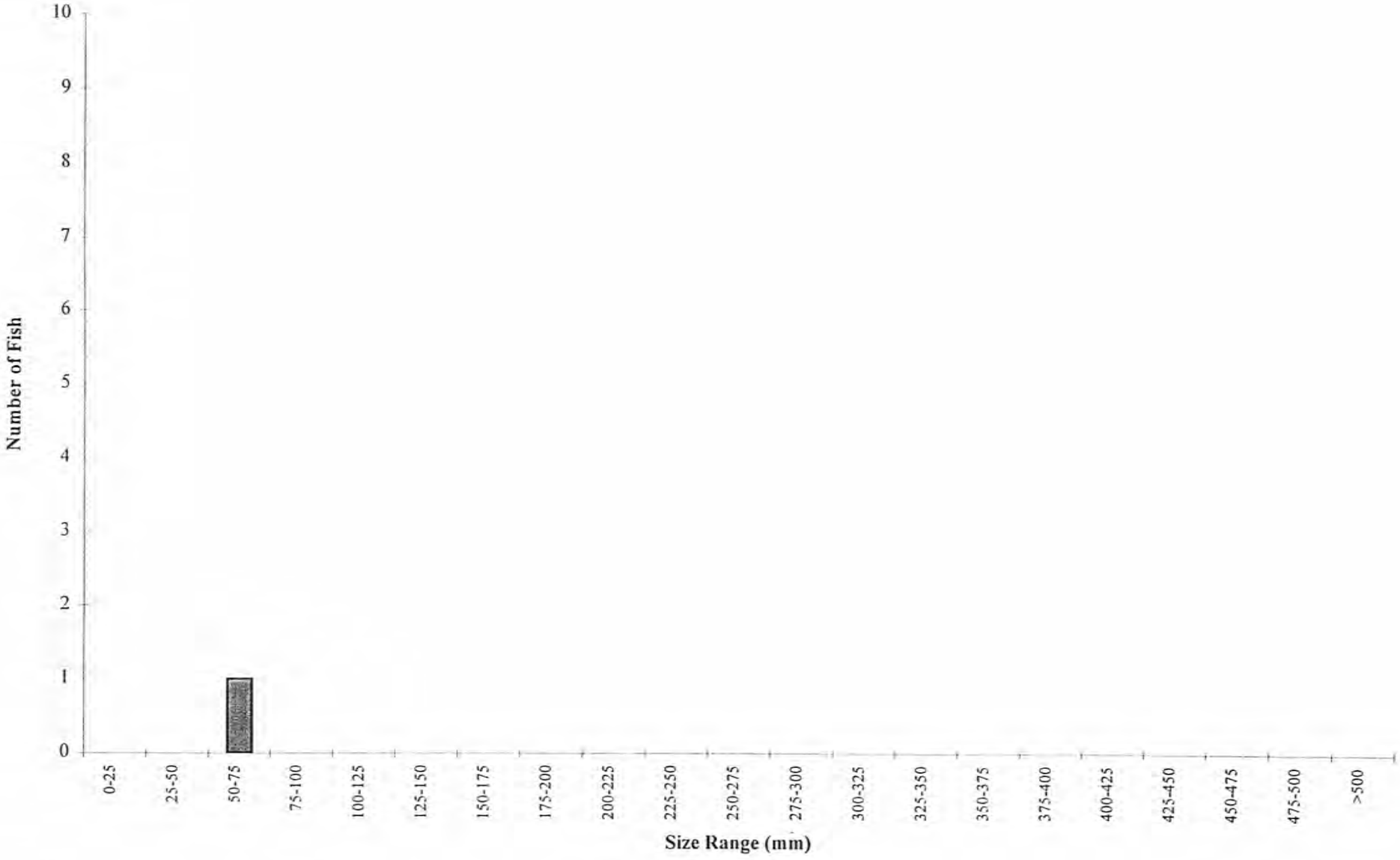
Working Unit 12 - Coho



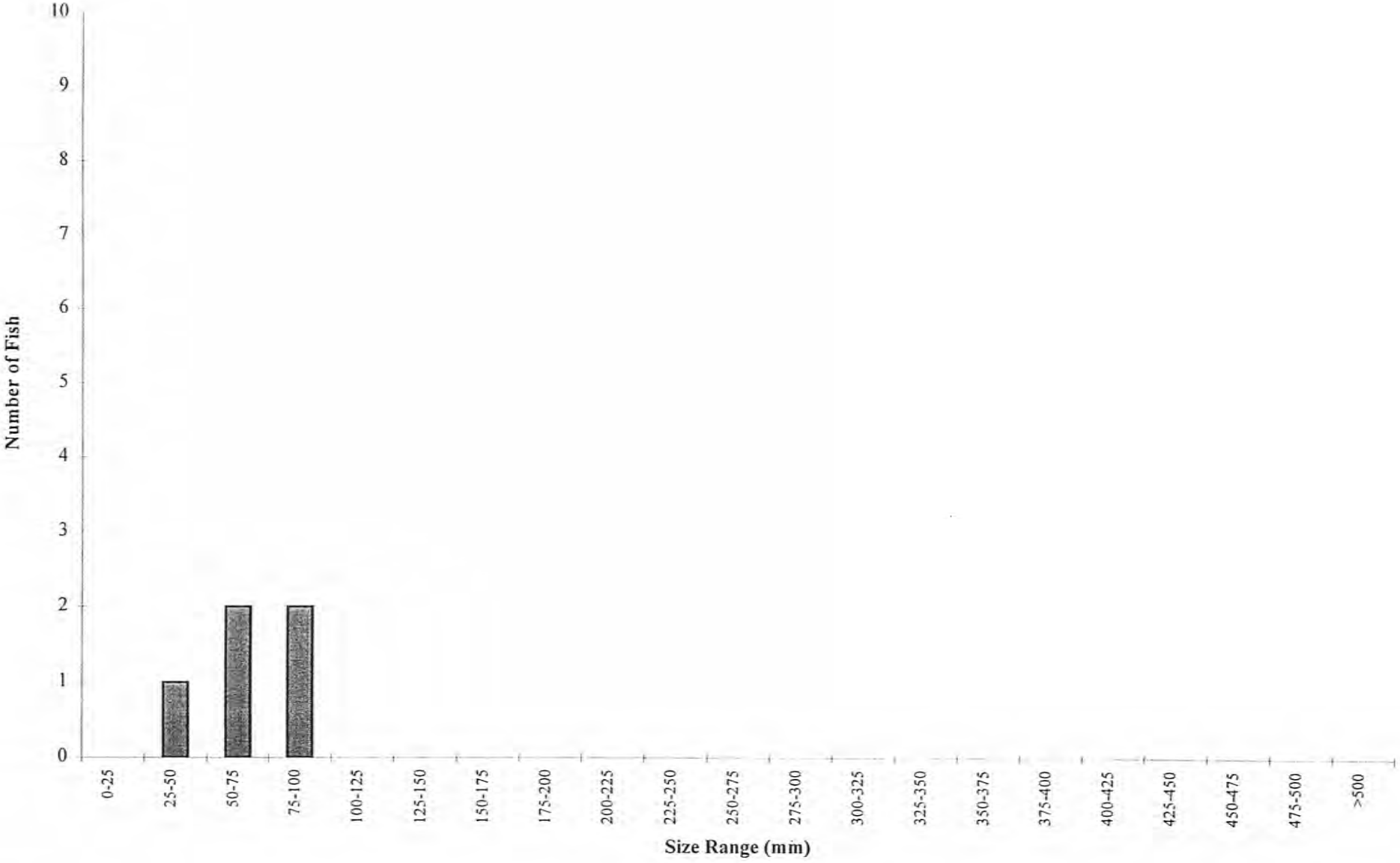
Working Unit 12 - Cutthroat Trout



Working Unit 12 - Long Nose Dace



Working Unit 12 - Northern Squawfish



Working Unit 12 - Trout

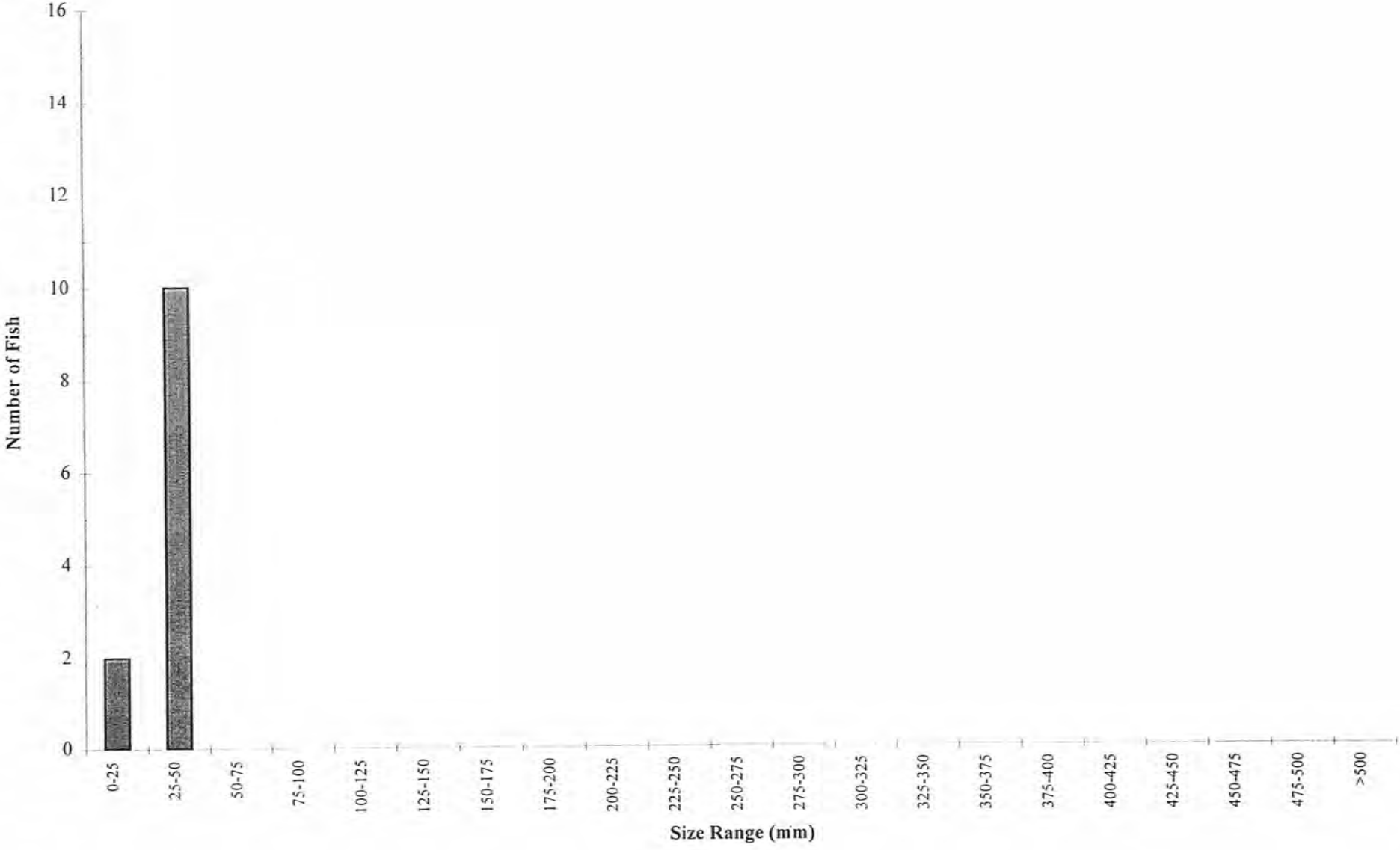


Table 1. Riparian Management Areas and Stream Classification

	Channel Width(m)	Reserve Zone	Management Zone Width	Total RMA Width
Fish Bearing				
S1	>20.0	50	20	70
S2	>5.0-20.0	30	20	50
S3	1.5-5.0	20	20	40
S4	<1.5	0	30	30
Non Fish Bearing				
S5	>=3.0	0	30	30
S6	<3.0	0	20	20

Table 2. Summary of Water Quality Data Collected in Working Unit 12 in 1996 and 1997

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
050-1900-000-000-000	Trib. to Badley Cr.	RYAN 84, Unit 12	93 L 086	9 .6303 .60259	1	09/21/96	TEC			
068-1700-000-000-000	Trib to Bulkley R.	JULIE 262, Unit 12	93 L 066	9 .6335 .60545	1	09/29/96	TEC			
068-2200-000-000-000	Trib to Bulkley R.	JULIE 260, Unit 12	93 L 066	9 .6307 .60557	1	09/29/96	TEC	7.50	6.00	70.00
061-0400-000-000-000	Trib to Bulkley R.	JULIE 237, Unit 12	93 L 065	9 .6231 .60558	2	09/26/96	TEC			
068-2200-000-000-000	Trib to Bulkley R.	JULIE 263, Unit 12	93 L 066	9 .6300 .60543	2	09/29/96	TEC	7.50	6.00	70.00
068-2800-000-000-000	Trib to Bulkley R.	W20, Unit 12	93 L 066	9 .6310 .60582	1	07/10/97	TEC			
068-2900-000-000-000	Trib to Bulkley R.	W19, Unit 12	93 L 066	9 .6306 .60589	1	07/10/97	TEC	8.00	9.00	43.00
066-2900-000-000-000	Trib to Bulkley R.	Y155, Unit 12	93 L 056	9 .6376 .60488	1	08/13/97	TEC	6.70	18.00	80.00
068-2400-000-000-000	Trib to Bulkley R.	JULIE 264, Unit 12	93 L 066	9 .6307 .60540	1	09/29/96	TEC			
066-1800-000-000-000	Trib to Bulkley R.	JULIE 283, Unit 12	93 L 056	9 .6417 .60470	2	10/02/96	TEC	7.80	6.00	180.00
066-3300-000-000-000	Trib to Bulkley R.	JULIE 284, Unit 12	93 L 056	9 .6371 .60499	1	10/02/96	TEC			
062-8900-000-000-000	Trib to Bulkley R.	Z244, Unit 12	93 L 055	9 .6282 .60520	1	09/13/97	TEC	7.82	7.50	140.00
068-2200-000-000-000	Trib to Bulkley R.	Z243, Unit 12	93 L 055	9 .628407.6050211	3	09/13/97	TEC	7.55	6.50	50.00
066-2800-000-000-000	Trib to Bulkley R.	JULIE 285, Unit 12	93 L 056	9 .6372 .60497	1	10/02/96	TEC		6.00	180.00
066-2800-000-000-000	Trib to Bulkley R.	Y154, Unit 12	93 L 056	9 .6364 .60485	1	08/13/97	TEC			
068-1800-000-000-000	Trib to Bulkley R.	JULIE 261, Unit 12	93 L 066	9 .6320 .60544	1	09/29/96	TEC	7.30	7.50	80.00
051-5300-000-000-000	Trib. to Bulkley R.	RYAN 87, Unit 12	93 L 075	9 .6214 .60666	1	09/21/96	TEC			
066-1700-000-000-000	Trib. to Bulkley R.	E301, Unit 12	93 L 056	9 .6406 .60470	2	09/13/97	TEC			
051-5400-000-000-000	Trib. to Bulkley R.	ARNE 14, Unit 12	93 L 075	9 .6243 . 60687	1	09/21/96	TEC			
066-2000-000-000-000	Trib. to Bulkley R.	E303, Unit 12	93 L 056	9 . 6394 . 604752	1	09/13/97	TEC	7.43	11.00	100.00
051-5300-000-000-000	Trib. to Bulkley R.	Y275, Unit 12	93 L 075	9 .62268 .60655	2	09/16/97	TEC	7.57	11.00	510.00
066-3300-000-000-000	Trib. to Bulkley R.	E224, Unit 12	93 L 056	9 .6362 .60500	3	08/20/97	TEC			
460-3254-624-000-000	Burbridge Cr.	Y11, Unit 12	93 L 077	9 .6437 .60660	4	07/11/97	TEC	7.40	13.00	170.00
460-3254-624-000-000	Burbridge Cr.	E235, Unit 12	93 L 076	9 .6390 .60677	1	08/21/97	TEC	7.40	12.00	160.00
460-3254-624-000-000	Burbridge Cr.	E236, Unit 12	93 L 076	9 .6407 .60675	2	08/21/97	TEC	6.80	12.50	330.00
100-3400-000-000-000	Trib to Burbridge Cr.	Y13, Unit 12	93 L 077	9 .6422 .60652	1	07/11/97	TEC	7.40	8.50	70.00
460-3254-000-000-000	Canyon Cr.	Y44, Unit 12	93 L 076	9 .6406 .60697	7	07/16/97	TEC	7.40	13.00	140.00
460-3254-000-000-000	Canyon Cr.	E269, Unit 12	93 L 086	9 .6386 .60772	9	09/08/97	TEC	7.77	5.50	90.00
460-3254-000-000-000	Canyon Cr.	HASLETT 106, Unit 12	93 L 087	9 .6414 .60754	7	08/21/96	TEC		8.00	
078-2800-000-000-000	Trib to Canyon Cr.	Y45, Unit 12	93 L 076	9 .6406 .60701	1	07/15/97	TEC	7.60	10.00	50.00
078-3200-000-000-000	Trib to Canyon Cr.	Y43, Unit 12	93 L 077	9 .6416 .60716	1	07/16/97	TEC	7.90	9.00	140.00
000-0000-000-000-000	Trib to Canyon Cr.	Y190, Unit 12	93 L 077	9 .6464 .607441	9	08/21/97	TEC	7.40	10.50	180.00
000-0000-000-000-000	Trib to Canyon Cr.	Y189, Unit 12	93 L 077	9 .6465 .60742	1	08/21/97	TEC	7.50	10.00	170.00
078-3800-000-000-000	Trib to Canyon Cr.	W215, Unit 12	93 L 077	9 .644260.735	2	08/21/97	TEC	7.60	8.00	200.00
078-3100-000-000-000	Trib to Canyon Cr.	W288, Unit 12	93 L 076	9 .6412 .60709.	1	08/21/97	TEC		9.00	

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
100-4100-000-000-000	Trib to Canyon Cr.	W213, Unit 12	93 L 077	9 .6437 .60704	1	08/21/97	TEC	7.60	10.50	200.00
078-3000-000-000-000	Trib to Canyon Cr.	W214, Unit 12	93 L 077	9 .6442 .60700	2	08/21/97	TEC	7.70	9.00	
078-3100-000-000-000	Trib to Canyon Cr.	W212, Unit 12	93 L 077	9 .6438 .60711	4	08/21/97	TEC	7.80	9.00	300.00
078-3100-000-000-000	Trib to Canyon Cr.	W211, Unit 12	93 L 076	9 .6413 .60710	1	08/21/97	TEC	7.80	9.00	300.00
078-3000-000-000-000	Trib to Canyon Cr.	W210, Unit 12	93 L 076	9 .6413 .60707	1	08/21/97	TEC	7.80	8.00	220.00
078-2000-000-000-000	Trib. to Canyon Cr.	E233, Unit 12	93 L 076	9 .6355 .60673	1	08/21/97	TEC	7.40	17.00	210.00
077-8300-000-000-000	Trib. to Canyon Cr.	E230, Unit 12	93 L 076	9 .6303 .60705	1	08/21/97	TEC	7.40	13.00	60.00
078-2400-000-000-000	Trib. to Canyon Cr.	E234. Unit 12	93 L 076	9 .6361 .60672	1	08/21/97	TEC	6.80	16.50	330.00
077-9200-000-000-000	Trib. to Canyon Cr.	E268, Unit 12	93 L 086	9 .6377 .60747	1	09/08/97	TEC	7.64	5.50	110.00
077-9200-000-000-000	Trib. to Canyon Cr.	RYAN 90, Unit 12	93 L 076	9 .6388 .60715	2	09/22/96	TEC		2.50	
051-8800-000-000-000	Trib. to Canyon Cr.	E307, Unit 12	93 L 075	9 .6269 .60721	4	09/15/97	TEC	7.96	8.00	300.00
078-4100-000-000-000	Trib. to Canyon Cr.	RYAN 92, Unit 12	93 L 076	9 .6413 .60743	1	09/22/96	TEC		4.50	
077-9000-000-000-000	Trib. to Canyon Cr.	ARNE 25, Unit 12	93 L 076	9 .6335 .60693	2	09/22/96	TEC			
078-3900-000-000-000	Trib. to Canyon Cr.	ARNE 23, Unit 12	93 L 076	9 .6410 .60734	1	09/22/96	TEC		5.00	
078-3600-000-000-000	Trib. to Canyon Cr.	ARNE 22, Unit 12	93 L 076	9 .6405 .60721	1	09/22/96	TEC		4.50	
077-9500-000-000-000	Trib. to Canyon Cr.	ARNE 21, Unit 12	93 L 076	9 .6368 .60716	1	09/22/96	TEC		3.50	
100-3600-000-000-000	Trib. to Canyon Cr.	Y194, Unit 12	93 L 077	9 .645173.6070883	1	08/21/97	TEC	7.60	10.00	220.00
051-8400-000-000-000	Trib. to Canyon Cr.	RYAN 76, Unit 12	93 L 075	9 .6239 . 60731	1	09/20/96	TEC			
077-9300-000-000-000	Trib. to Canyon Cr.	ARNE 20, Unit 12	93 L 076	9 .6349 .60716	1	09/22/96	TEC		4.00	
078-3700-000-000-000	Trib. to Canyon Cr.	Y195, Unit 12	93 L 077	9 .6421 .60729	1	08/21/97	TEC	7.30	15.00	160.00
051-8300-000-000-000	Trib. to Canyon Cr.	RYAN 75, Unit 12	93 L 075	9 .6240 . 60734	2	09/20/96	TEC			
100-3700-000-000-000	Trib. to Canyon Cr.	Y193, Unit 12	93 L 077	9 .646126.6071712	1	08/21/97	TEC	7.40	9.50	200.00
100-3800-000-000-000	Trib. to Canyon Cr.	Y192, Unit 12	93 L 077	9 .6463 .6072133	1	08/21/97	TEC	7.80	10.00	240.00
078-3100-000-000-000	Trib. to Canyon Cr.	Y191, Unit 12	93 L 077	9 .6462 .6072550	5	08/21/97	TEC	7.60	16.00	140.00
051-8000-000-000-000	Trib. to Canyon Cr.	RYAN 74, Unit 12	93 L 075	9 .6225 .60740	1	09/20/96	TEC			
480-6972-427-000-000	Trib. to Canyon Cr.	HASLETT 107, Unit 12	93 L 076	9 .6411 .60743	1	08/21/96	TEC		9.00	
077-8400-000-000-000	Trib. to Canyon Cr.	RYAN 88, Unit 12	93 L 076	9 .6319 .60702	2	09/22/96	TEC		4.00	
460-3254-005-190-000	Trib. to Canyon Cr.	RYAN 89, Unit 12	93 L 076	9 .6356 .60715	1	09/22/96	TEC		3.00	
460-4727-000-000-000	Coffin Cr.	Y150, Unit 12	93 L 056	9 .6342 .60485	3	08/13/97	TEC	7.10	15.00	80.00
460-4247-000-000-000	Coffin Cr.	Y153, Unit 12	93 L 056	9 .6342 .60471	5	08/13/97	TEC	7.10	19.00	80.00
460-4726-000-000-000	Coffin Cr.	Y184, Unit 12	93 L 056	9 .6335 .60461	6	08/20/97	TEC	7.30	12.00	70.00
066-7200-000-000-000	Trib to Coffin Cr.	Y152, Unit 12	93 L 056	9 .6332 .60491	1	08/13/97	TEC	7.10	14.00	140.00
066-7200-000-000-000	Trib to Coffin Cr.	Y186, Unit 12	93 L 056	9 .6320 .604875	2	08/20/97	TEC	7.40	12.00	170.00
066-9300-000-000-000	Trib to Coffin Cr.	Y187, Unit 12	93 L 056	9 .6339 .60458	1	08/20/97	TEC	7.00	12.50	110.00
066-8800-000-000-000	Trib to Coffin Cr.	Y188, Unit 12	93 L 056	9 .6335 .60465	1	08/20/97	TEC	6.80	11.50	150.00
066-8200-000-000-000	Trib to Coffin Cr.	Y151, Unit 12	93 L 056	9 .6336 .60488	1	08/13/97	TEC			
066-9300-000-000-000	Trib to Coffin Cr.	Y185, Unit 12	93 L 056	9 .6335 .60461	1	08/20/97	TEC			
066-5300-000-000-000	Trib. to Coffin Lk.	E228, Unit 12	93 L 056	9 .6311 .60511	1	08/20/97	TEC	8.00	12.00	330.00
066-5900-000-000-000	Trib. to Coffin Lk.	E227, Unit 12	93 L 056	9 .63123 . 60536	2	08/20/97	TEC	7.40	8.00	160.00

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
066-8100-000-000-000	Trib. to Coffin Lk.	E225, Unit 12	93 L 056	9 .6320 .60495	1	08/20/97	TEC			
110-0100-000-000-000	Trib. to Coffin Lk.	E229, Unit 12	93 L 056	9 .6315 .60516	1	08/20/97	TEC	7.70	9.00	170.00
066-6100-000-000-000	Trib. to Coffin Lk.	E226, Unit 12	93 L 056	9 .6314 .60535	1	08/20/97	TEC	6.70	9.00	130.00
068-7800-000-000-000	De Jong Cr.	Z9, Unit 12	93 L 066	9 .6375 .60593	1	07/09/97	TEC	7.80	13.00	130.00
460-4961-000-000-000	Deep Cr.	Y176, Unit 12	93 L 067	9 .651711.6054032	8	08/18/97	TEC	7.40	20.00	150.00
460-4961-000-000-000	Deep Cr.	W195, Unit 12	93 L 067	9 .6421 .60539	2	08/18/97	TEC	7.80	10.00	180.00
460-4961-000-000-000	Deep Cr.	JULIE 280, Unit 12	93 L 066	9 .6409 .60537	1	10/01/96	TEC	7.20	5.00	130.00
460-4961-000-000-000	Deep Cr.	Y172, Unit 12	93 L 067	9 .651105.6055047	6	08/18/97	TEC	7.30	16.00	120.00
070-1300-000-000-000	Trib to Deep Cr.	Y173, Unit 12	93 L 067	9 .6516 .60551	1	08/18/97	TEC	7.00	9.00	90.00
070-0100-000-000-000	Trib to Deep Cr.	Y174, Unit 12	93 L 067	9 .650253.605558	1	08/18/97	TEC	7.60	12.00	100.00
070-2300-000-000-000	Trib to Deep Cr.	Y175, Unit 12	93 L 067	9 .651711.60541	1	08/18/97	TEC	6.90	19.50	110.00
069-5500-000-000-000	Trib to Deep Cr.	Z154, Unit 12	93 L 067	9 .647584.6060198	5	08/19/97	TEC	7.90	13.00	170.00
068-3700-000-000-000	Trib to Deep Cr.	W197, Unit 12	93 L 066	9 .6418 .60534	1	08/18/97	TEC		15.00	
069-1900-000-000-000	Trib to Deep Cr.	Y183, Unit 12	93 L 067	9 .6443 .605529	1	08/20/97	TEC			
068-3500-000-000-000	Trib to Deep Cr.	W196, Unit 12	93 L 066	9 .6418 .60535	2	08/18/97	TEC	7.40	11.00	180.00
069-8900-000-000-000	Trib to Deep Cr.	W199, Unit 12	93 L 067	9 .6488 .60583	4	08/19/97	TEC	7.80	7.00	80.00
070-1300-000-000-000	Trib to Deep Cr.	Y171, Unit 12	93 L 067	9 .6515 .60549	1	08/18/97	TEC	7.60	9.00	100.00
069-3400-000-000-000	Trib to Deep Cr.	W203, Unit 12	93 L 067	9 .6460 .60568	1	08/19/97	TEC	7.80	9.00	130.00
069-6700-000-000-000	Trib to Deep Cr.	W200, Unit 12	93 L 067	9 .6479 .60577	1	08/19/97	TEC	7.80	8.50	160.00
069-5500-000-000-000	Trib to Deep Cr.	W202, Unit 12	93 L 067	9 .6462 .61572	1	08/19/97	TEC	7.80	12.00	130.00
069-5600-000-000-000	Trib to Deep Cr.	W201, Unit 12	93 L 067	9 .6466 .60572	1	08/19/97	TEC	7.80	12.00	180.00
069-8900-000-000-000	Trib to Deep Cr.	W198, Unit 12	93 L 067	9 .6488 .60583	3	08/19/97	TEC	7.80	7.00	80.00
069-8100-000-000-000	Trib. to Deep Cr.	E210, Unit 12	93 L 067	9 .6482 .60544	2	08/18/97	TEC	7.20	14.00	80.00
033-7100-000-000-000	Trib. to Deep Cr.	E208, Unit 12	93 L 067	9 .6481 .60536	4	08/18/97	TEC	7.40	11.50	60.00
069-8500-000-000-000	Trib. to Deep Cr.	E209, Unit 12	93 L 067	9 .6476 .60548	2	08/18/97	TEC	6.90	9.00	160.00
069-2900-000-000-000	Trib. to Deep Cr.	E223, Unit 12	93 L 067	9 .6454 .60553	1	08/20/97	TEC	7.60	9.00	250.00
069-8200-000-000-000	Trib. to Deep Cr.	E211, Unit 12	93 L 067	9 .6486 .60542	2	08/18/97	TEC	6.70	9.00	120.00
069-8200-000-000-000	Trib. to Deep Cr.	E212, Unit 12	93 L 067	9 .6481 .60563	1	08/18/97	TEC	7.60	9.00	110.00
069-8900-000-000-000	Trib. to Deep Cr.	E213, Unit 12	93 L 067	9 .6487 .60560	1	08/18/97	TEC	6.90	9.00	100.00
069-9600-000-000-000	Trib. to Deep Cr.	E214, Unit 12	93 L 067	9 .6488 .60561	1	08/18/97	TEC	7.40	10.00	90.00
460-4961-000-000-000	Trib. to Farewell Lk.	Z156, Unit 12	93 L 057	9 .653183.6051337	16	08/19/97	TEC	7.10	15.00	190.00
051-5300-000-000-000	Trib. to Frederick L.	RYAN 82, Unit 12	93 L 075	9 . 6262 . 60711	6	09/21/96	TEC		5.00	
460-3254-265-000-000	Ganokwa Cr.	E273, Unit 12	93 L 086	9 .6364 .60810	4	09/08/97	TEC	7.61	9.00	40.00
460-3254-265-000-000	Ganokwa Cr.	RYAN 85, Unit 12	93 L 086	9 .6319 .60748	1	09/21/96	TEC	7.90	5.00	
078-7400-000-000-000	Trib. to Ganokwa Cr.	ARNE 19, Unit 12	93 L 086	9 .6343 .60757	1	09/21/96	TEC	7.70	4.50	
078-7500-000-000-000	Trib. to Ganokwa Cr.	RYAN 86, Unit 12	93 L 086	9 .6347 .60748	1	09/21/96	TEC		5.00	
050-3700-000-000-000	Trib. to Ganokwa Cr.	ARNE 18, Unit 12	93 L 086	9 .6312 .60751	1	09/21/96	TEC	7.13	9.00	180.00
050-4400-000-000-000	Trib. to Ganokwa Cr.	E270, Unit 12	93 L 086	9 .6362 .60780	2	09/08/97	TEC	7.93	7.50	60.00
078-7700-000-000-000	Trib. to Ganokwa Cr.	ARNE 24, Unit 12	93 L 076	9 .6349 .60741	1	09/22/96	TEC		6.20	

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
050-7800-000-000-000	Trib. to Ganokwa Cr.	E271, Unit 12	93 L 086	9 .6358 .60806	1	09/08/97	TEC	7.38	8.50	70.00
050-7200-000-000-000	Trib. to Ganokwa Cr.	E272, Unit 12	93 L 086	9 .6365 .60801	2	09/08/97	TEC	7.42	9.00	40.00
460-3254-265-000-000	Trib. to Ganokwa Cr.	RYAN 93, Unit 12	93 L 076	9 . 6355 . 60740	1	09/22/96	TEC		4.50	
460-4879-111-097-000	Gardner Cr.	Z14, Unit 12	93 L 066	9 .63977 .6056465	1	07/09/97	TEC	7.40	12.00	110.00
068-6900-000-000-000	Gardner Cr.	E12, Unit 12	93 L 067	9 .6422 .60580	2	07/11/97	TEC	7.50	10.00	100.00
460-4961-087-000-000	Gibson Cr.	JULIE 281, Unit 12	93 L 056	9 .6409 .60516	1	10/02/96	TEC	8.40	7.00	220.00
460-4961-087-000-000	Gibson Cr.	E298, Unit 12	93 L 057	9 .6426 .60504	3	09/13/97	TEC			
066-4300-000-000-000	Trib. to Gibson Cr.	E302, Unit 12	93 L 057	9 .6426 .60516	1	09/13/97	TEC			
067-1900-000-000-000	Trib. to Gibson Cr.	E299, Unit 12	93 L 057	9 .6426 .60502	1	09/13/97	TEC	8.32	9.00	350.00
460-4370-000-000-000	Trib to Helps Cr.	JULIE 242, Unit 12	93 L 065	9 .5962 .60732	1	09/27/96	TEC			
460-4370-000-000-000	Trib to Helps Cr.	JULIE 235, Unit 12	93 L 065	9 .6246 .60571	1	09/27/96	TEC	8.20	12.00	190.00
061-0400-000-000-000	Trib to Helps Cr.	JULIE 236, Unit 12	93 L 065	9 .6244 .60659	1	09/27/96	TEC			
060-9600-000-000-000	Trib to Helps Cr.	JULIE 244, Unit 12	93 L 065	9 .6286 .60581	1	09/28/96	TEC			
061-0700-000-000-000	Trib to Helps Cr.	JULIE 238, Unit 12	93 L 065	9 .6244 .60558	1	09/27/96	TEC	8.20	10.00	230.00
061-0800-000-000-000	Trib to Helps Cr.	JULIE 239, Unit 12	93 L 065	9 .6246 .60557	1	09/27/96	TEC	7.40	9.00	90.00
061-0000-000-000-000	Trib to Helps Cr.	JULIE 240, Unit 12	93 L 065	9 .6261 .60546	1	09/27/96	TEC		12.00	90.00
460-4370-000-000-000	Helps Cr.	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	7.99	6.50	120.00
460-4370-000-000-000	Helps Cr.	JULIE 241, Unit 12	93 L 065	9 .6266 .60543	5	09/27/96	TEC	7.40	8.00	110.00
460-4370-000-000-000	Helps Cr.	W22, Unit 12	93 L 065	9 .6280 .60596	2	07/11/97	TEC	7.60	15.00	170.00
061-0100-000-000-000	Trib to Helps Cr.	JULIE 243, Unit 12	93 L 065	9 .6265 .60543	1	09/27/96	TEC	7.40	8.00	140.00
062-8500-000-000-000	Trib to Helps Cr.	Z246, Unit 12	93 L 055	9 .626600.6051678	1	09/13/97	TEC	6.74	6.50	
460-4726-000-000-000	Lacroix Cr.	W217, Unit 12	93 L 076	9 .6331 .60649	4	08/22/97	TEC	7.20	12.00	180.00
460-4726-000-000-000	Lacroix Cr.	W18, Unit 12	93 L 066	9 .6331 .60627	3	07/10/97	TEC			
460-4726-000-000-000	Lacroix Cr.	Z6, Unit 12	93 L 066	9 .63376 .605954	1	07/09/97	TEC	7.80	14.00	330.00
068-8700-000-000-000	Trib to Lacroix Cr.	Y6, Unit 12	93 L 066	9 .635472.6057502	3	07/10/97	TEC	7.40	13.00	920.00
068-8700-000-000-000	Trib to Lacroix Cr.	JULIE 266, Unit 12	93 L 066	9 .6349 .60567	1	09/29/96	TEC			
068-9900-000-000-000	Trib to Lacroix Cr.	W206, Unit 12	93 L 066	9 .6327 . 60615	1	08/20/97	TEC	6.90	19.00	390.00
069-0200-000-000-000	Trib to Lacroix Cr.	W17, Unit 12	93 L 066	9 .6328 .60626	1	07/10/97	TEC	7.80	14.00	160.00
460-4879-111-000-000	Lemieux Cr.	Y9, Unit 12	93 L 066	9 .6383 .60579	5	07/10/97	TEC	8.20	12.00	90.00
460-4879-111-000-000	Lemieux Cr.	E216, Unit 12	93 L 067	9 .6437 .60614	6	08/19/97	TEC	7.60	8.50	190.00
460-4879-111-000-000	Lemieux Cr.	Y8, Unit 12	93 L 066	9 .6391 .60564	3	07/10/97	TEC	8.10	17.00	120.00
460-4879-111-000-000	Lemieux Cr.	E219, Unit 12	93 L 067	9 .6549 .60622	8	08/19/97	TEC	7.60	17.00	60.00
460-4879-111-000-000	Lemieux Cr.	Z11, Unit 12	93 L 066	9 .63852 . 605467	1	07/09/97	TEC	7.80	18.00	160.00
068-6300-000-000-000	Trib to Lemieux Cr.	W207, Unit 12	93 L 066	9 .6397 .60594	1	08/20/97	TEC	7.60	11.50	200.00
068-5700-000-000-000	Trib to Lemieux Cr.	W194, Unit 12	93 L 067	9 .6421 .60592	2	08/18/97	TEC	6.45	7.00	120.00
068-5700-000-000-000	Trib to Lemieux Cr.	W209, Unit 12	93 L 066	9 .6398 .60584	1	08/20/97	TEC			
068-5800-000-000-000	Trib to Lemieux Cr.	Z212, Unit 12	93 L 067	9 .642296.6058462	1	09/08/97	TEC			
070-5600-000-000-000	Trib. to Lemieux Cr.	E215, Unit 12	93 L 067	9 .6439 .60611	1	08/19/97	TEC	7.30	7.00	90.00
070-5300-000-000-000	Trib. to Lemieux Cr.	E217, Unit 12	93 L 067	9 .6434 .60619	1	08/19/97	TEC	7.70	8.00	190.00

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
068-6700-000-000-000	Trib. to Lemieux Cr.	E218, Unit 12	93 L 067	9 .6433 .62000	1	08/19/97	TEC	7.60	9.00	340.00
460-3254-265-159-000	Lyon Cr.	RYAN 83, Unit 12	93 L 086	9 .6294 . 60761	1	09/21/96	TEC	7.90	4.00	
460-3254-265-159-000	Lyon Cr.	E275, Unit 12	93 L 086	9 .6310 .60791	2	09/09/97	TEC	8.04	7.00	150.00
050-2800-000-000-000	Trib. to Lyon Cr.	ARNE 16, Unit 12	93 L 086	9 .6290 .60759	1	09/21/96	TEC			
050-2200-000-000-000	Trib. to Lyon Cr.	ARNE 17, Unit 12	93 L 086	9 .6299 .60760	1	09/21/96	TEC	8.09	9.00	200.00
051-4200-000-000-000	Trib. to Lyon Cr.	ARNE 15, Unit 12	93 L 086	9 .6286 .60759	1	09/21/96	TEC			
460-4353-000-000-000	Mc Dowell Cr.	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	7.20	10.00	400.00
460-4353-000-000-000	McDowell Cr.	W216, Unit 12	93 L 076	9 .6311 .60638	3	08/22/97	TEC	7.70	12.00	190.00
460-3602-245-000-000	McDowell Cr.	W16, Unit 12	93 L 066	9 .6313 .60628	2	07/10/97	TEC	8.30	16.00	100.00
460-4353-000-000-000	McDowell Cr.	W13, Unit 12	93 L 066	9 .6298 .60601	1	07/10/97	TEC	8.40	12.00	140.00
078-5700-000-000-000	Trib to McDowell Cr.	W219, Unit 12	93 L 076	9 .6306 .60675	5	08/22/97	TEC	7.30	12.00	160.00
460-7449-000-000-000	Trib to McQuarrie Cr.	Y181, Unit 12	93 L 057	9 .6474 .60517	2	08/19/97	TEC	7.10	14.00	70.00
067-8200-000-000-000	Trib. to McQuarrie L.	Z155, Unit 12	93 L 067	9 .6500 . 605290	1	08/19/97	TEC	7.60	10.50	80.00
067-9300-000-000-000	Trib to McQuarrie Lk	Y182, Unit 12	93 L 057	9 .6493 .60519	1	08/19/97	TEC	7.00	11.00	130.00
067-7300-000-000-000	Trib. to McQuarrie Lk	E222, Unit 12	93 L 057	9 .6503 .60491	1	08/19/97	TEC	7.60	8.00	120.00
460-7449-858-000-000	Trib to McQuarrie Lk.	Y177, Unit 12	93 L 057	9 .649182.6050290	1	08/19/97	TEC	7.70	9.50	130.00
067-9900-000-000-000	Trib to McQuarrie Lk.	Y180, Unit 12	93 L 057	9 .6473 .6051741	1	08/19/97	TEC	7.00	6.00	70.00
067-8800-000-000-000	Trib to McQuarrie Lk.	Y178, Unit 12	93 L 057	9 .649041.6050490	1	08/19/97	TEC	7.40	10.00	150.00
067-8100-000-000-000	Trib. to McQuarrie Lk.	Z161, Unit 12	93 L 057	9 .651335.6049920	1	08/19/97	TEC	7.60	14.00	60.00
460-4879-000-000-000	Robin Cr.	Y7, Unit 12	93 L 066	9 .6370 .60567	2	07/10/97	TEC	8.80	15.00	150.00
460-4879-000-000-000	Robin Cr.	Z10, Unit 12	93 L 066	9 .63848 . 605954	6	07/09/97	TEC	7.60	12.00	110.00
068-4300-000-000-000	Trib to Robin Cr.	Z211, Unit 12	93 L 066	9 .640725.6055074	2	09/08/97	TEC			
068-4500-000-000-000	Trib to Robin Cr.	E11, Unit 12	93 L 067	9 .6422 .60567	6	07/11/97	TEC			
068-3800-000-000-000	Trib to Robin Cr.	E10, Unit 12	93 L 067	9 .6422 .60555	4	07/11/97	TEC			
068-3800-000-000-000	Trib to Robin Cr.	E9, Unit 12	93 L 066	9 .6410 .60550	2	07/11/97	TEC			
068-4200-000-000-000	Trib. to Robin Cr.	Z12, Unit 12	93 L 066	9 .63988 . 605467	5	07/09/97	TEC			
068-3800-000-000-000	Trib. to Robin Cr.	Z13, Unit 12	93 L 066	9 .63892 . 605365	1	07/09/97	TEC	7.40	14.00	510.00
460-4879-000-000-000	Trib. to Robin Cr.	Z153, Unit 12	93 L 067	9 .642348.6062884	1	08/19/97	TEC	7.60	10.00	160.00
068-9100-000-000-000	Trib. to Round Lake.	Z7, Unit 12	93 L 066	9 .6350 .60595	1	07/09/97	TEC	7.40	15.00	430.00
068-9100-000-000-000	Trib to Round Lk.	Y10, Unit 12	93 L 066	9 .6362 .60628	2	07/10/97	TEC	7.50	12.00	190.00
067-4600-000-000-000	Thompson Cr.	Z160, Unit 12	93 L 057	9 .648727.6045572	5	09/19/97	TEC	7.90	10.00	170.00
460-5177-000-000-000	Thompson Cr.	E296, Unit 12	93 L 057	9 .6440 .60475	2	09/12/97	TEC	8.32	10.00	280.00
460-5177-000-000-000	Thompson Cr.	JULIE 282, Unit 12	93 L 056	9 . 6416 . 60494	1	10/02/96	TEC	7.70	6.00	180.00
067-3900-000-000-000	Trib. to Thompson Cr.	E14, Unit 12	93 L 057	9 .6449 .60459	1	07/11/97	TEC	7.00	10.00	140.00
067-5800-000-000-000	Trib. to Thompson Cr.	E221, Unit 12	93 L 057	9 .6475 .60472	2	08/19/97	TEC	7.30	7.00	140.00
006-7310-000-000-000	Trib. to Thompson Cr.	E297, Unit 12	93 L 057	9 .6443 .60476	1	09/12/97	TEC	7.77	10.00	210.00
460-5177-361-000-000	Trib. to Thompson Cr.	E220, Unit 12	93 L 057	9 .6471 .60475	3	08/19/97	TEC	7.50	12.50	80.00
006-7800-000-000-000	Trib. to Thompson Cr.	E300, Unit 12	93 L 057	9 .6438 .60482	1	09/13/97	TEC	8.11		440.00
460-4309-000-000-000	Tyhee Cr.	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	8.40	13.00	210.00

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	pH	Temp. (C)	Conductivity (umhos/cm)
460-4309-007-580-000	Trib. to Tyhee L.	ARNE 13, Unit 12	93 L 075	9 .6270 .60662	1	09/21/96	TEC	8.24	11.00	630.00
051-9400-000-000-000	Trib. to Tyhee L.	RYAN 80, Unit 12	93 L 075	9 .6256 .60664	1	09/21/96	TEC			
068-7100-000-000-000	Vanderven Cr.	Z8, Unit 12	93 L 066	9 .63694 . 605951	1	07/09/97	TEC	8.10	13.00	160.00
068-7100-000-000-000	Vanderven Cr.	W204, Unit 12	93 L 066	9 .6372 .60633	2	08/20/97	TEC	7.20	12.00	160.00
078-6500-000-000-000	Vanderven Cr.	Z256, Unit 12	93 L 076	9 .637162.6064754	5	09/16/97	TEC	7.27	9.00	170.00
068-7200-000-000-000	Trib to Vanderven Cr.	Z209, Unit 12	93 L 066	9 .636550.6059424	1	09/08/97	TEC			
068-7600-000-000-000	Trib to Vanderven Cr.	W205, Unit 12	93 L 066	9 .6372 .60627	1	08/20/97	TEC	7.30	10.00	220.00
460-4309-000-000-000	Victor Cr	RYAN 81, Unit 12	93 L 075	9 .6276 .60646	1	09/21/96	TEC	7.77	11.00	380.00
460-4309-559-000-000	Victor Cr.	W220, Unit 12	93 L 076	9 .6290 .60657	3	08/22/97	TEC			

Table 3. Summary of Barriers Observed in Working Unit 12 in 1996 and 1997

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Height (m)	Type	Distance from the Mouth (km)
068-2200-000-000-000-	Trib to Bulkley R	JULIE 260, Unit 12	93 L 066	9 .6307 .60557	1	09/29/96	TEC	0.20	CV	0.45
068-1700-000-000-000-	Trib to Bulkley R	JULIE 262, Unit 12	93 L 066	9 .6335 .60545	1	09/29/96	TEC	0.20	C	0.50
068-1800-000-000-000-	Trib to Bulkley R	JULIE 261, Unit 12	93 L 066	9 .6320 .60544	1	09/29/96	TEC	0.50	CV	0.90
068-2200-000-000-000-	Trib to Bulkley R	Z243, Unit 12	93 L 055	9 .628407.6050211	3	09/13/97	TEC	20.00	F	9.60
051-5400-000-000-000-	Trib. to Bulkley R	ARNE 14, Unit 12	93 L 075	9 .6243 . 60687	1	09/21/96	TEC	0.30	CV	0.66
051-5400-000-000-000-	Trib. to Bulkley R	ARNE 14, Unit 12	93 L 075	9 .6243 . 60687	1	09/21/96	TEC	0.30	CV	0.70
460-3254-000-000-000-	Canyon Cr	E269, Unit 12	93 L 086	9 .6386 .60772	9	09/08/97	TEC	8.00	F	37.83
460-3254-000-000-000-	Canyon Cr	E269, Unit 12	93 L 086	9 .6386 .60772	9	09/08/97	TEC	6.00	C	37.45
000-0000-000-000-000-	Trib to Canyon Cr	Y190, Unit 12	93 L 077	9 .6464 .607441	9	08/21/97	TEC	0.40	BD	0.00
077-9500-000-000-000-	Trib. to Canyon Cr	ARNE 21, Unit 12	93 L 076	9 .6368 .60716	1	09/22/96	TEC	0.40	CV	1.40
078-3900-000-000-000-	Trib. to Canyon Cr	ARNE 23, Unit 12	93 L 076	9 .6410 .60734	1	09/22/96	TEC	0.25	CV	0.40
051-8000-000-000-000-	Trib. to Canyon Cr	RYAN 74, Unit 12	93 L 075	9 .6225 .60740	1	09/20/96	TEC	8.00	F	0.30
051-8300-000-000-000-	Trib. to Canyon Cr	RYAN 75, Unit 12	93 L 075	9 .6240 . 60734	2	09/20/96	TEC	1.00	CV	0.10
051-8400-000-000-000-	Trib. to Canyon Cr	RYAN 76, Unit 12	93 L 075	9 .6239 . 60731	1	09/20/96	TEC	1.00	C	0.04
078-4100-000-000-000-	Trib. to Canyon Cr	RYAN 92, Unit 12	93 L 076	9 .6413 .60743	1	09/22/96	TEC	0.60	CV	0.30
100-3700-000-000-000-	Trib. to Canyon Cr	Y193, Unit 12	93 L 077	9 .646126.6071712	1	08/21/97	TEC	3.00	C	0.30
100-3600-000-000-000-	Trib. to Canyon Cr	Y194, Unit 12	93 L 077	9 .645173.6070883	1	08/21/97	TEC	3.00	C	0.20
460-4727-000-000-000-	Coffin Cr	Y150, Unit 12	93 L 056	9 .6342 .60485	3	08/13/97	TEC	10.00	F	3.10
460-4247-000-000-000-	Coffin Cr	Y153, Unit 12	93 L 056	9 .6342 .60471	5	08/13/97	TEC	10.00	F	9.80
460-4726-000-000-000-	Coffin Cr	Y184, Unit 12	93 L 056	9 .6335 .60461	6	08/20/97	TEC	10.00	F	3.10
066-9300-000-000-000-	Trib to Coffin Cr	Y187, Unit 12	93 L 056	9 .6339 .60458	1	08/20/97	TEC	10.00	F	3.10
069-5500-000-000-000-	Trib to Deep Cr	Z154, Unit 12	93 L 067	9 .647584.6060198	5	08/19/97	TEC	3.00	C	4.60
050-3700-000-000-000-	Trib. to Ganokwa Cr	ARNE 18, Unit 12	93 L 086	9 .6312 .60751	1	09/21/96	TEC	0.70	BD	1.20
050-3700-000-000-000-	Trib. to Ganokwa Cr	ARNE 18, Unit 12	93 L 086	9 .6312 .60751	1	09/21/96	TEC	0.50	BD	2.00
078-7700-000-000-000-	Trib. to Ganokwa Cr	ARNE 24, Unit 12	93 L 076	9 .6349 .60741	1	09/22/96	TEC	1.00	CV	0.50
050-4400-000-000-000-	Trib. to Ganokwa Cr	E270, Unit 12	93 L 086	9 .6362 .60780	2	09/08/97	TEC	10.00	F	0.60
050-4400-000-000-000-	Trib. to Ganokwa Cr	E270, Unit 12	93 L 086	9 .6362 .60780	2	09/08/97	TEC	6.00	C	0.90
460-4370-000-000-000-	Helps Cr	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	4.00	F	9.50
460-4370-000-000-000-	Helps Cr	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	8.00	F	8.10
460-4370-000-000-000-	Helps Cr	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	2.00	C	8.40
460-4370-000-000-000-	Helps Cr	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	2.00	C	8.50
061-0100-000-000-000-	Trib to Helps Cr	JULIE 243, Unit 12	93 L 065	9 .6265 .60543	1	09/27/96	TEC	0.60	C	8.10
460-4879-111-000-000-	Lemieux Cr	E219, Unit 12	93 L 067	9 .6549 .60622	8	08/19/97	TEC	20.00	C	9.00
460-3254-265-159-000-	Lyon Cr	E275, Unit 12	93 L 086	9 .6310 .60791	2	09/09/97	TEC	5.00	C	8.00
051-4200-000-000-000-	Trib. to Lyon Cr	ARNE 15, Unit 12	93 L 086	9 .6286 .60759	1	09/21/96	TEC	2.50	F	0.15
460-4353-000-000-000-	Mc Dowell Cr	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	0.40	CV	0.10
460-4353-000-000-000-	Mc Dowell Cr	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	0.90	C	0.50
460-4353-000-000-000-	McDowell Cr	W216, Unit 12	93 L 076	9 .6311 .60638	3	08/22/97	TEC	6.00	R	6.70
460-4309-000-000-000-	Tyhee Cr	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	0.50	BD	0.70

Table 4. Summary of Site Data Collected in Working Unit 12 in 1996 and 1997

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
050-2200-000-000-	Badley Cr.	ARNE 17, Unit 12	93 L 086	9 .6299 .60760	1	09/21/96	TEC	4.20	1.00	DV	S3	EL
068-2200-000-000-	Trib to Bulkley R.	JULIE 260, Unit 12	93 L 066	9 .6307 .60557	1	09/29/96	TEC	5.18	8.00	RB CT	S2	EL
068-1700-000-000-	Trib to Bulkley R.	JULIE 262, Unit 12	93 L 066	9 .6335 .60545	1	09/29/96	TEC	1.52	2.00	(RB)	S3	NA
068-2200-000-000-	Trib to Bulkley R.	JULIE 263, Unit 12	93 L 066	9 .6300 .60543	2	09/29/96	TEC	3.75	8.00	(RB) (CT)	S3	VO
061-0400-000-000-	Trib to Bulkley R.	JULIE 237, Unit 12	93 L 065	9 .6231 .60558	2	09/26/96	TEC	1.03	3.00	(CT)	S4	NA
051-4400-000-000-	Trib. to Bulkley R.	W183, Unit 12	93 L 075	9 .6194 .60732	1	08/14/97	TEC	15.33	0.00	(CO) (DV)	NC.	NA
066-2000-000-000-	Trib. to Bulkley R.	E303, Unit 12	93 L 056	9 . 6394 . 604752	1	09/13/97	TEC	8.83	2.00	(DV)	S2	EL
051-5300-000-000-	Trib. to Bulkley R.	RYAN 87, Unit 12	93 L 075	9 .6214 .60666	1	09/21/96	TEC	2.35	1.00	(DV)	S3	NA
068-1800-000-000-	Trib to Bulkley R.	JULIE 261, Unit 12	93 L 066	9 .6320 .60544	1	09/29/96	TEC	3.27	5.00	(RB)	S3	VO
066-3300-000-000-	Trib. to Bulkley R.	E224, Unit 12	93 L 056	9 .6362 .60500	3	08/20/97	TEC	1.17	4.00	(DV)	S4	NA
066-2800-000-000-	Trib to Bulkley R.	JULIE 285, Unit 12	93 L 056	9 .6372 .60497	1	10/02/96	TEC	1.65	0.50	(DV)	S4	VO
066-3300-000-000-	Trib to Bulkley R.	JULIE 284, Unit 12	93 L 056	9 .6371 .60499	1	10/02/96	TEC	0.78	1.00	(RB)	S4	NA
066-2800-000-000-	Trib to Bulkley R.	Y154, Unit 12	93 L 056	9 .6364 .60485	1	08/13/97	TEC	0.55	10.00	(DV)	S4	NA
066-2900-000-000-	Trib to Bulkley R.	Y155, Unit 12	93 L 056	9 .6376 .60488	1	08/13/97	TEC	0.63	4.00	(DV)	S4	NA
051-5300-000-000-	Trib. to Bulkley R.	Y275, Unit 12	93 L 075	9 .62268 .60655	2	09/16/97	TEC	3.65	2.00	NF	S5	EL
051-5400-000-000-	Trib. to Bulkley R.	ARNE 14, Unit 12	93 L 075	9 .6243 . 60687	1	09/21/96	TEC	1.90	10.00	NF	S6	NA
066-1700-000-000-	Trib. to Bulkley R.	E301, Unit 12	93 L 056	9 .6406 .60470	2	09/13/97	TEC	0.63	30.00	NF	S6	NA
068-2400-000-000-	Trib to Bulkley R.	JULIE 264, Unit 12	93 L 066	9 .6307 .60540	1	09/29/96	TEC	1.03	2.00	NF	S6	NA
066-1800-000-000-	Trib to Bulkley R.	JULIE 283, Unit 12	93 L 056	9 .6417 .60470	2	10/02/96	TEC	1.67	1.00	NF	S6	EL
068-2200-000-000-	Trib to Bulkley R.	Z243, Unit 12	93 L 055	9 .628407.6050211	3	09/13/97	TEC	2.43	7.00	NF	S6	EL
062-8900-000-000-	Trib to Bulkley R.	Z244, Unit 12	93 L 055	9 .6282 .60520	1	09/13/97	TEC	1.00	7.00	NF	S6	EL
068-2900-000-000-	Trib to Bulkley R.	W19, Unit 12	93 L 066	9 .6306 .60589	1	07/10/97	TEC	1.78	1.00	NF	S6	EL
068-2800-000-000-	Trib to Bulkley R.	W20, Unit 12	93 L 066	9 .6310 .60582	1	07/10/97	TEC	0.34	6.00	NF	S6	NA
460-3254-624-000-	Burbridge Cr.	E235, Unit 12	93 L 076	9 .6390 .60677	1	08/21/97	TEC	3.02	5.00	DV	S3	EL
460-3254-624-000-	Burbridge Cr.	E236, Unit 12	93 L 076	9 .6407 .60675	2	08/21/97	TEC	4.45	0.50	(DV)	S3	EL
460-3254-624-000-	Burbridge Cr.	Y11, Unit 12	93 L 077	9 .6437 .60660	4	07/11/97	TEC	1.33	6.00	(CT) (RB)	S4	EL
100-3400-000-000-	Trib to Burbridge Cr.	Y13, Unit 12	93 L 077	9 .6422 .60652	1	07/11/97	TEC	1.27	5.50	(CT) (RB)	S4	EL
100-3400-000-000-	Trib to Burbridge Cr.	Y12, Unit12	93 L 077	9 .6422 .60652	2	07/11/97	TEC	1.53	2.00	NF	S6	EL
460-3254-000-000-	Canyon Cr.	HASLETT 106, Unit 12	93 L 087	9 .6414 .60754	7	08/21/96	TEC	11.07	7.00	(DV)	S2	EL
460-3254-000-000-	Canyon Cr.	Y44, Unit 12	93 L 076	9 .6406 .60697	7	07/16/97	TEC	12.35	1.00	DV	S2	EL
460-3254-000-000-	Canyon Cr.	E269, Unit 12	93 L 086	9 .6386 .60772	9	09/08/97	TEC	3.52	6.00	NF	S5	EL
078-2000-000-000-	Trib. to Canyon Cr.	E233, Unit 12	93 L 076	9 .6355 .60673	1	08/21/97	TEC	10.08	1.00	(DV) (RB)	S2	EL
078-3100-000-000-	Trib to Canyon Cr.	W288, Unit 12	93 L 076	9 .6412 .60709	1	08/21/97	TEC	5.78	7.00	RB DV	S2	EL
078-3100-000-000-	Trib to Canyon Cr.	W212, Unit 12	93 L 077	9 .6438 .60711	4	08/21/97	TEC	5.08	4.00	(RB)	S2	EL
077-9500-000-000-	Trib. to Canyon Cr.	ARNE 21, Unit 12	93 L 076	9 .6368 .60716	1	09/22/96	TEC	2.67	7.00	(DV)	S3	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
078-3600-000-000-	Trib. to Canyon Cr.	ARNE 22, Unit 12	93 L 076	9 .6405 .60721	1	09/22/96	TEC	1.77	2.00	(DV)	S3	EL
078-2400-000-000-	Trib. to Canyon Cr.	E234. Unit 12	93 L 076	9 .6361 .60672	1	08/21/97	TEC	1.97	1.00	(DV)	S3	EL
077-8300-000-000-	Trib. to Canyon Cr.	E230, Unit 12	93 L 076	9 .6303 .60705	1	08/21/97	TEC	1.72	1.00	(DV) (RB)	S3	EL
100-3800-000-000-	Trib. to Canyon Cr.	Y192, Unit 12	93 L 077	9 .6463 .6072133	1	08/21/97	TEC	2.32	12.00	(RB) (CT)	S3	EL
100-3700-000-000-	Trib. to Canyon Cr.	Y193, Unit 12	93 L 077	9 .646126.6071712	1	08/21/97	TEC	2.42	13.50	(RB) (CT)	S3	EL
100-3600-000-000-	Trib. to Canyon Cr.	Y194, Unit 12	93 L 077	9 .645173.6070883	1	08/21/97	TEC	2.43	9.00	(RB) (CT)	S3	EL
460-3254-005-190-	Trib. to Canyon Cr.	RYAN 89, Unit 12	93 L 076	9 .6356 .60715	1	09/22/96	TEC	2.72	5.00	DV	S3	EL
078-3100-000-000-	Trib. to Canyon Cr.	Y191, Unit 12	93 L 077	9 .6462 .6072550	5	08/21/97	TEC	3.57	5.00	TR	S3	VO/EL
078-3000-000-000-	Trib to Canyon Cr.	W210, Unit 12	93 L 076	9 .6413 .60707	1	08/21/97	TEC	2.58	8.00	(DV) (RB)	S3	EL
000-0000-000-000-	Trib to Canyon Cr.	Y190, Unit 12	93 L 077	9 .6464 .607441	9	08/21/97	TEC	2.08	9.00	(RB)	S3	EL
078-3100-000-000-	Trib to Canyon Cr.	W211, Unit 12	93 L 076	9 .6413 .60710	1	08/21/97	TEC	2.55	8.00	RB DV	S3	EL
000-0000-000-000-	Trib to Canyon Cr.	Y189, Unit 12	93 L 077	9 .6465 .60742	1	08/21/97	TEC	2.45	13.00	(RB)	S3	EL
078-3900-000-000-	Trib. to Canyon Cr.	ARNE 23, Unit 12	93 L 076	9 .6410 .60734	1	09/22/96	TEC	1.40	2.00	(DV)	S4	NA
077-9200-000-000-	Trib. to Canyon Cr.	E268, Unit 12	93 L 086	9 .6377 .60747	1	09/08/97	TEC	0.98	9.00	(DV)	S4	EL
051-8800-000-000-	Trib. to Canyon Cr.	E307, Unit 12	93 L 075	9 .6269 .60721	4	09/15/97	TEC	1.25	2.00	(DV)	S4	EL
078-3700-000-000-	Trib. to Canyon Cr.	Y195, Unit 12	93 L 077	9 .6421 .60729	1	08/21/97	TEC	1.40	7.00	(RB) (CT)	S4	EL
051-8000-000-000-	Trib. to Canyon Cr.	RYAN 74, Unit 12	93 L 075	9 .6225 .60740	1	09/20/96	TEC	1.27	10.00	(RB) (DV)	S4	NA
480-6972-427-000-	Trib. to Canyon Cr.	HASLETT 107, Unit 12	93 L 076	9 .6411 .60743	1	08/21/96	TEC	1.40	6.00	DV	S4	EL
078-4100-000-000-	Trib. to Canyon Cr.	RYAN 92, Unit 12	93 L 076	9 .6413 .60743	1	09/22/96	TEC	1.12	3.00	DV	S4	EL
078-3200-000-000-	Trib to Canyon Cr.	Y43, Unit 12	93 L 077	9 .6416 .60716	1	07/16/97	TEC	1.18	12.00	(DV)	S4	EL
078-2800-000-000-	Trib to Canyon Cr.	Y45, Unit 12	93 L 076	9 .6406 .60701	1	07/15/97	TEC	1.13	9.00	(DV)	S4	EL
100-4100-000-000-	Trib to Canyon Cr.	W213, Unit 12	93 L 077	9 .6437 .60704	1	08/21/97	TEC	0.85	10.00	(RB) (DV)	S4	EL
078-3000-000-000-	Trib to Canyon Cr.	W214, Unit 12	93 L 077	9 .6442 .60700	2	08/21/97	TEC	1.00	7.50	(RB) (DV)	S4	EL
077-9300-000-000-	Trib. to Canyon Cr.	ARNE 20, Unit 12	93 L 076	9 .6349 .60716	1	09/22/96	TEC	0.92	4.00	NF	S6	EL
077-9000-000-000-	Trib. to Canyon Cr.	ARNE 25, Unit 12	93 L 076	9 .6335 .60693	2	09/22/96	TEC	0.60	10.00	NF	S6	NA
051-8300-000-000-	Trib. to Canyon Cr.	RYAN 75, Unit 12	93 L 075	9 .6240 . 60734	2	09/20/96	TEC	0.40	11.00	NF	S6	NA
051-8400-000-000-	Trib. to Canyon Cr.	RYAN 76, Unit 12	93 L 075	9 .6239 . 60731	1	09/20/96	TEC	1.10	11.00	NF	S6	NA
077-8400-000-000-	Trib. to Canyon Cr.	RYAN 88, Unit 12	93 L 076	9 .6319 .60702	2	09/22/96	TEC	0.60	3.00	NF	S6	EL
077-9200-000-000-	Trib. to Canyon Cr.	RYAN 90, Unit 12	93 L 076	9 .6388 .60715	2	09/22/96	TEC	0.67	2.00	NF	S6	EL
078-3800-000-000-	Trib to Canyon Cr.	W215, Unit 12	93 L 077	9 .644260.735	2	08/21/97	TEC	0.65	17.00	NF	S6	EL
460-4727-000-000-	Coffin Cr.	Y150, Unit 12	93 L 056	9 .6342 .60485	3	08/13/97	TEC	3.98	7.00	DV	S3	EL
460-4247-000-000-	Coffin Cr.	Y153, Unit 12	93 L 056	9 .6342 .60471	5	08/13/97	TEC	3.47	15.00	NF	S5	EL
460-4726-000-000-	Coffin Cr.	Y184, Unit 12	93 L 056	9 .6335 .60461	6	08/20/97	TEC	3.83	4.00	NF	S5	EL
066-7200-000-000-	Trib to Coffin Cr.	Y152, Unit 12	93 L 056	9 .6332 .60491	1	08/13/97	TEC	1.65	5.00	(DV)	S3	EL
066-7200-000-000-	Trib to Coffin Cr.	Y186, Unit 12	93 L 056	9 .6320 .604875	2	08/20/97	TEC	3.07	15.00	(RB) (CT)	S3	EL
066-8200-000-000-	Trib to Coffin Cr.	Y151, Unit 12	93 L 056	9 .6336 .60488	1	08/13/97	TEC	0.54	18.00	(DV)	S4	NA
066-9300-000-000-	Trib to Coffin Cr.	Y187, Unit 12	93 L 056	9 .6339 .60458	1	08/20/97	TEC	2.38	2.00	NF	S6	EL
066-8800-000-000-	Trib to Coffin Cr.	Y188, Unit 12	93 L 056	9 .6335 .60465	1	08/20/97	TEC	1.63	1.00	NF	S6	NA

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
066-9300-000-000-	Trib to Coffin Cr	Y185, Unit 12	93 L 056	9 .6335 .60461	1	08/20/97	TEC	1.95	2.00	NF	S6	NA
066-6100-000-000-	Trib. to Coffin Lk.	E226, Unit 12	93 L 056	9 .6314 .60535	1	08/20/97	TEC	2.33	4.00	(DV)	S3	NA
110-0100-000-000-	Trib. to Coffin Lk.	E229, Unit 12	93 L 056	9 .6315 .60516	1	08/20/97	TEC	2.25	1.00	(DV)	S3	EL
066-5900-000-000-	Trib. to Coffin Lk.	E227, Unit 12	93 L 056	9 .63123 . 60536	2	08/20/97	TEC	2.62	3.00	(DV) (CT)	S3	EL
066-8100-000-000-	Trib. to Coffin Lk.	E225, Unit 12	93 L 056	9 .6320 .60495	1	08/20/97	TEC	0.95	3.00	(DV)	S4	EL
066-5300-000-000-	Trib. to Coffin Lk.	E228, Unit 12	93 L 056	9 .6311 .60511	1	08/20/97	TEC	1.42	4.00	(DV)	S4	VO
068-7800-000-000-	De Jong Cr.	Z9, Unit 12	93 L 066	9 .6375 .60593	1	07/09/97	TEC	3.72	2.00	CT	S3	EL
460-4961-000-000-	Deep Cr.	JULIE 280, Unit 12	93 L 066	9 .6409 .60537	1	10/01/96	TEC	8.13	2.50	RB	S2	EL
460-4961-000-000-	Deep Cr.	Y176, Unit 12	93 L 067	9 .651711.6054032	8	08/18/97	TEC	9.63	1.00	C, RB	S2	EL
460-4961-000-000-	Deep Cr.	W195, Unit 12	93 L 067	9 .6421 .60539	2	08/18/97	TEC	5.33	4.00	RB	S2	EL
460-4961-000-000-	Deep Cr.	Z156, Unit 12	93 L 057	9 .653183.6051337	16	08/19/97	TEC	1.63	0.50	(RB)	S3	EL
460-4961-000-000-	Deep Cr.	Y172, Unit 12	93 L 067	9 .651105.6055047	6	08/18/97	TEC	3.27	2.00	RB	S3	EL
069-8900-000-000-	Trib. to Deep Cr.	E213, Unit 12	93 L 067	9 .6487 .60560	1	08/18/97	TEC	3.28	2.00	(CT)	S3	EL
069-9600-000-000-	Trib. to Deep Cr.	E214, Unit 12	93 L 067	9 .6488 .60561	1	08/18/97	TEC	2.20	2.00	(CT)	S3	EL
069-8500-000-000-	Trib. to Deep Cr.	E209, Unit 12	93 L 067	9 .6476 .60548	2	08/18/97	TEC	1.53	1.00	(DV) (CT)	S3	EL
069-8200-000-000-	Trib. to Deep Cr.	E211, Unit 12	93 L 067	9 .6486 .60542	2	08/18/97	TEC	1.82	2.00	(DV) (CT)	S3	EL
069-8200-000-000-	Trib. to Deep Cr.	E212, Unit 12	93 L 067	9 .6481 .60563	1	08/18/97	TEC	2.39	3.00	CT	S3	EL
069-6700-000-000-	Trib to Deep Cr.	W200, Unit 12	93 L 067	9 .6479 .60577	1	08/19/97	TEC	2.15	10.00	(CT) (DV)	S3	EL
069-8900-000-000-	Trib to Deep Cr.	W198, Unit 12	93 L 067	9 .6488 .60583	3	08/19/97	TEC	2.03	0.50	(CT) (RB)	S3	EL
070-0100-000-000-	Trib to Deep Cr.	Y174, Unit 12	93 L 067	9 .650253.605558	1	08/18/97	TEC	2.00	3.00	(RB) (CT)	S3	EL
070-2300-000-000-	Trib to Deep Cr.	Y175, Unit 12	93 L 067	9 .651711.60541	1	08/18/97	TEC	2.38	1.00	(RB) (CT)	S3	EL
069-5500-000-000-	Trib to Deep Cr.	W202, Unit 12	93 L 067	9 .6462 .61572	1	08/19/97	TEC	3.38	4.00	CT	S3	EL
068-3700-000-000-	Trib to Deep Cr.	W197, Unit 12	93 L 066	9 .6418 .60534	1	08/18/97	TEC	1.72	3.00	CT RB	S3	EL
069-3400-000-000-	Trib to Deep Cr.	W203, Unit 12	93 L 067	9 .6460 .60568	1	08/19/97	TEC	2.50	6.00	DV	S3	EL
068-3500-000-000-	Trib to Deep Cr.	W196, Unit 12	93 L 066	9 .6418 .60535	2	08/18/97	TEC	1.80	3.00	RB	S3	EL
070-1300-000-000-	Trib to Deep Cr.	Y171, Unit 12	93 L 067	9 .6515 .60549	1	08/18/97	TEC	3.47	2.00	RB	S3	EL
070-1300-000-000-	Trib to Deep Cr.	Y173, Unit 12	93 L 067	9 .6516 .60551	1	08/18/97	TEC	1.78	2.00	RB	S3	EL
069-1900-000-000-	Trib to Deep Cr.	Y183, Unit 12	93 L 067	9 .6443 .605529	1	08/20/97	TEC	2.30	14.00	(RB) (CT)	S3	NA
069-5500-000-000-	Trib to Deep Cr.	Z154, Unit 12	93 L 067	9 .647584.6060198	5	08/19/97	TEC	1.15	1.00	(CT)	S4	EL
033-7100-000-000-	Trib. to Deep Cr.	E208, Unit 12	93 L 067	9 .6481 .60536	4	08/18/97	TEC	0.78	3.00	CT	S4	EL
069-8100-000-000-	Trib. to Deep Cr.	E210, Unit 12	93 L 067	9 .6482 .60544	2	08/18/97	TEC	0.87	1.00	CT	S4	EL
069-8900-000-000-	Trib to Deep Cr.	W199, Unit 12	93 L 067	9 .6488 .60583	4	08/19/97	TEC	1.08	3.00	(CT) (RB)	S4	EL
069-5600-000-000-	Trib to Deep Cr.	W201, Unit 12	93 L 067	9 .6466 .60572	1	08/19/97	TEC	1.37	9.00	(DV) (CT)	S4	EL
069-2900-000-000-	Trib. to Deep Cr.	E223, Unit 12	93 L 067	9 .6454 .60553	1	08/20/97	TEC	2.55	42.00	NF	S6	EL
051-5300-000-000-	Trib. to Frederick L.	RYAN 82, Unit 12	93 L 075	9 . 6262 . 60711	6	09/21/96	TEC	1.02	0.50	(DV)	S4	EL
460-3254-265-000-	Ganokwa Cr.	RYAN 85, Unit 12	93 L 086	9 .6319 .60748	1	09/21/96	TEC	9.00	7.00	DV	S2	EL
460-3254-265-000-	Ganokwa Cr.	E273, Unit 12	93 L 086	9 .6364 .60810	4	09/08/97	TEC	3.52	1.00	NF	S5	EL
078-7400-000-000-	Trib. to Ganokwa Cr.	ARNE 19, Unit 12	93 L 086	9 .6343 .60757	1	09/21/96	TEC	1.70	3.00	(DV)	S3	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
078-7500-000-000-	Trib. to Ganokwa Cr.	RYAN 86, Unit 12	93 L 086	9 .6347 .60748	1	09/21/96	TEC	1.70	3.00	(DV)	S3	EL
050-3700-000-000-	Trib. to Ganokwa Cr.	ARNE 18, Unit 12	93 L 086	9 .6312 .60751	1	09/21/96	TEC	1.40	0.50	(DV)	S4	EL
460-3254-265-000-	Trib. to Ganokwa Cr.	RYAN 93, Unit 12	93 L 076	9 . 6355 . 60740	1	09/22/96	TEC	1.07	16.00	(DV)	S4	EL
050-4400-000-000-	Trib. to Ganokwa Cr.	E270, Unit 12	93 L 086	9 .6362 .60780	2	09/08/97	TEC	3.83	7.00	NF	S5	EL
050-7800-000-000-	Trib. to Ganokwa Cr.	E271, Unit 12	93 L 086	9 .6358 .60806	1	09/08/97	TEC	3.43	6.00	NF	S5	EL
078-7700-000-000-	Trib. to Ganokwa Cr.	ARNE 24, Unit 12	93 L 076	9 .6349 .60741	1	09/22/96	TEC	0.64	17.00	NF	S6	NA
050-7200-000-000-	Trib. to Ganokwa Cr.	E272, Unit 12	93 L 086	9 .6365 .60801	2	09/08/97	TEC	1.15	2.00	NF	S6	EL
460-4879-111-097-	Gardner Cr.	Z14, Unit 12	93 L 066	9 .63977 .6056465	1	07/09/97	TEC	2.67	2.00	(CT)	S3	EL
068-6900-000-000-	Gardner Cr.	E12, Unit 12	93 L 067	9 .6422 .60580	2	07/11/97	TEC	1.77	12.00	(DV)	S3	EL
460-4961-087-000-	Gibson Cr.	E298, Unit 12	93 L 057	9 .6426 .60504	3	09/13/97	TEC	1.97	7.00	(CT)	S3	NA
460-4961-087-000-	Gibson Cr.	JULIE 281, Unit 12	93 L 056	9 .6409 .60516	1	10/02/96	TEC	4.23	2.00	RB	S3	EL
066-4300-000-000-	Trib. to Gibbon Cr.	E302, Unit 12	93 L 057	9 .6426 .60516	1	09/13/97	TEC	0.71	4.00	(CT)	S4	NA
067-1900-000-000-	Trib. to Gibson Cr.	E299, Unit 12	93 L 057	9 .6426 .60502	1	09/13/97	TEC	1.13	2.00	CT	S4	EL
061-0400-000-000-	Trib to Helps Cr.	JULIE 236, Unit 12	93 L 065	9 .6244 .60659	1	09/27/96	TEC	2.70	3.00	(CT)	S3	NA
460-4370-000-000-	Helps Cr.	W22, Unit 12	93 L 065	9 .6280 .60596	2	07/11/97	TEC	4.98	2.00	RB, BB	S3	EL
460-4370-000-000-	Trib to Helps Cr.	JULIE 235, Unit 12	93 L 065	9 .6246 .60571	1	09/27/96	TEC	4.07	2.00	CT	S3	EL
460-4370-000-000-	Helps Cr.	JULIE 241, Unit 12	93 L 065	9 .6266 .60543	5	09/27/96	TEC	3.22	7.00	DV	S3	EL
061-0700-000-000-	Trib to Helps Cr.	JULIE 238, Unit 12	93 L 065	9 .6244 .60558	1	09/27/96	TEC	1.48	9.00	RB	S3	EL
061-0000-000-000-	Trib to Helps Cr.	JULIE 240, Unit 12	93 L 065	9 .6261 .60546	1	09/27/96	TEC	1.00	9.00	(CT)	S4	VO
060-9600-000-000-	Trib to Helps Cr.	JULIE 244, Unit 12	93 L 065	9 .6286 .60581	1	09/28/96	TEC	1.18	2.00	(CT)	S4	NA
061-0800-000-000-	Trib to Helps Cr.	JULIE 239, Unit 12	93 L 065	9 .6246 .60557	1	09/27/96	TEC	1.43	12.00	(RB) (CT)	S4	EL
460-4370-000-000-	Trib to Helps Cr.	JULIE 242, Unit 12	93 L 065	9 .5962 .60732	1	09/27/96	TEC	0.92	6.00	NF	S6	NA
460-4370-000-000-	Helps Cr.	Z245, Unit 12	93 L 055	9 .626600.6051678	8	09/13/97	TEC	2.00	11.00	NF	S6	EL
061-0100-000-000-	Trib to Helps Cr.	JULIE 243, Unit 12	93 L 065	9 .6265 .60543	1	09/27/96	TEC	1.35	11.00	(DV) (CT)	S4	VO
062-8500-000-000-	Trib to Helps Cr.	Z246, Unit 12	93 L 055	9 .626600.6051678	1	09/13/97	TEC	1.13	13.00	NF	S6	EL
460-4726-000-000-	Lacroix Cr.	W18, Unit 12	93 L 066	9 .6331 .60627	3	07/10/97	TEC	2.50	3.00	(NSC) (RB)	S3	NA
460-4726-000-000-	Lacroix Cr.	Z6, Unit 12	93 L 066	9 .63376 .605954	1	07/09/97	TEC	4.60	1.50	PCC	S3	VO
460-4726-000-000-	Lacroix Cr.	W217, Unit 12	93 L 076	9 .6331 .60649	4	08/22/97	TEC	0.83	10.00	(RB)	S4	EL
068-8700-000-000-	Trib to Lacroix Cr.	JULIE 266, Unit 12	93 L 066	9 .6349 .60567	1	09/29/96	TEC	2.98	0.00	(RB)	S3	NA
068-9900-000-000-	Trib to Lacroix Cr.	W206, Unit 12	93 L 066	9 .6327 . 60615	1	08/20/97	TEC	1.08	2.00	RB	S4	EL
069-0200-000-000-	Trib to Lacroix Cr.	W17, Unit 12	93 L 066	9 .6328 .60626	1	07/10/97	TEC	2.17	2.50	NF	S6	EL
068-8700-000-000-	Trib to Lacroix Cr.	Y6, Unit 12	93 L 066	9 .635472.6057502	3	07/10/97	TEC	0.87	0.50	NF	S6	NA
460-4879-111-000-	Lemieux Cr.	E216, Unit 12	93 L 067	9 .6437 .60614	6	08/19/97	TEC	1.78	10.00	(DV)	S3	EL
460-4879-111-000-	Lemieux Cr.	Z11, Unit 12	93 L 066	9 .63852 . 605467	1	07/09/97	TEC	3.97	2.00	LNC NSC	S3	EL
460-4879-111-000-	Lemieux Cr.	Y8, Unit 12	93 L 066	9 .6391 .60564	3	07/10/97	TEC	5.02	1.00	(CT) SU	S3	VO
460-4879-111-000-	Lemieux Cr.	Y9, Unit 12	93 L 066	9 .6383 .60579	5	07/10/97	TEC	3.15	2.00	CT	S3	EL
460-4879-111-000-	Lemieux Cr.	E219, Unit 12	93 L 067	9 .6549 .60622	8	08/19/97	TEC	3.07	1.00	NF	S5	EL
070-5600-000-000-	Trib. to Lemieux Cr.	E215, Unit 12	93 L 067	9 .6439 .60611	1	08/19/97	TEC	1.65	1.50	(DV)	S3	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
070-5300-000-000-	Trib. to Lemieux Cr.	E217, Unit 12	93 L 067	9 .6434 .60619	1	08/19/97	TEC	1.67	15.00	(DV)	S3	EL
068-6300-000-000-	Trib to Lemieux Cr.	W207, Unit 12	93 L 066	9 .6397 .60594	1	08/20/97	TEC	3.10	5.00	CT DV RB	S3	EL
068-6700-000-000-	Trib. to Lemieux Cr.	E218, Unit 12	93 L 067	9 .6433 .62000	1	08/19/97	TEC	0.35	13.00	(DV)	S4	VO
068-5700-000-000-	Trib to Lemieux Cr.	W209, Unit 12	93 L 066	9 .6398 .60584	1	08/20/97	TEC	0.78	3.00	(DV) (CT)	S4	NA
068-5700-000-000-	Trib to Lemieux Cr.	W194, Unit 12	93 L 067	9 .6421 .60592	2	08/18/97	TEC	1.30	11.00	(RB) (CT)	S4	NA
068-5800-000-000-	Trib to Lemieux Cr.	Z212, Unit 12	93 L 067	9 .642296.6058462	1	09/08/97	TEC	1.23	8.00	NF	S6	NA
460-3254-265-159-	Lyon Cr.	E275, Unit 12	93 L 086	9 .6310 .60791	2	09/09/97	TEC	5.46	12.00	DV	S2	EL
460-3254-265-159-	Lyon Cr.	RYAN 83, Unit 12	93 L 086	9 .6294 . 60761	1	09/21/96	TEC	3.45	7.00	DV	S3	EL
050-2800-000-000-	Trib. to Lyon Cr.	ARNE 16, Unit 12	93 L 086	9 .6290 .60759	1	09/21/96	TEC	1.95	1.00	(DV)	S3	VO
051-4200-000-000-	Trib. to Lyon Cr.	ARNE 15, Unit 12	93 L 086	9 .6286 .60759	1	09/21/96	TEC	1.04	8.00	NF	S6	NA
460-4353-000-000-	Mc Dowell Cr.	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	2.35	5.00	CO, RB	S3	EL
460-4353-000-000-	McDowell Cr.	W216, Unit 12	93 L 076	9 .6311 .60638	3	08/22/97	TEC	3.02	3.00	RB	S3	EL
460-3602-245-000-	McDowell Cr.	W16, Unit 12	93 L 066	9 .6313 .60628	2	07/10/97	TEC	4.80	3.00	RB	S3	EL
460-4353-000-000-	McDowell Cr.	W13, Unit 12	93 L 066	9 .6298 .60601	1	07/10/97	TEC	1.88	1.50	RB	S3	VO
078-5700-000-000-	McDowell Cr.	W219, Unit 12	93 L 076	9 .6306 .60675	5	08/22/97	TEC	0.78	3.00	(RB)	S4	EL
460-7449-000-000-	Trib. to McQuarrie Cr.	Y181, Unit 12	93 L 057	9 .6474 .60517	2	08/19/97	TEC	1.80	3.00	RB	S3	EL
067-8200-000-000-	Trib. to McQuarrie L.	Z155, Unit 12	93 L 067	9 .6500 . 605290	1	08/19/97	TEC	1.47	3.00	RB	S3	EL
067-9300-000-000-	Trib. to McQuarrie L.	Y182, Unit 12	93 L 057	9 .6493 .60519	1	08/19/97	TEC	1.73	5.00	RB	S3	EL
067-8800-000-000-	Trib. to McQuarrie L.	Y178, Unit 12	93 L 057	9 .649041.6050490	1	08/19/97	TEC	1.65	2.00	RB	S3	EL
067-7300-000-000-	Trib. to McQuarrie L.	E222, Unit 12	93 L 057	9 .6503 .60491	1	08/19/97	TEC	0.90	17.00	(DV)	S4	EL
460-7449-858-000-	Trib. to McQuarrie L.	Y177, Unit 12	93 L 057	9 .649182.6050290	1	08/19/97	TEC	2.17	6.00	RB	S3	EL
067-8100-000-000-	Trib. to McQuarrie L.	Z161, Unit 12	93 L 057	9 .651335.6049920	1	08/19/97	TEC	1.17	6.00	RB	S4	EL
067-9900-000-000-	Trib. to McQuarrie L.	Y180, Unit 12	93 L 057	9 .6473 .6051741	1	08/19/97	TEC	0.92	6.00	(RB)	S4	EL
078-0800-000-000-	Not a creek	E231, Unit 12	93 L 076	9 .6345 .60692	0	08/21/97	TEC	0.00	2.00	NF	NC	NA
078-2100-000-000-	Not a creek	E232, Unit 12	93 L 076	9 .6349 .60673	0	08/21/97	TEC	0.00	5.00	NF	NC	NA
067-3800-000-000-	Not a creek	E294, Unit 12	93 L 057	9 .6447 .60462	0	09/12/97	TEC	0.00	13.00	NF	NC	NA
067-3600-000-000-	Not a creek	E295, Unit 12	93 L 057	9 .6445 .60465	0	09/12/97	TEC	0.00	8.00	NF	NC	NA
068-2500-000-000-	Not a creek	JULIE 259, Unit 12	93 L 066	9 .6306 .60562	0	09/29/96	TEC	0.00	25.00	NF	NC	EL
068-8400-000-000-	Not a creek	JULIE 265, Unit 12	93 L 066	9 .6356 .60545	0	09/29/96	TEC	0.00	0.00	NF	NC	NA
000-0000-000-000-	Not a creek	RYAN 73, Unit 12	93 L 085	9 .6206 .60746	0	09/20/96	TEC	0.00	1.00	NF	NC	NA
078-3300-000-000-	Not a creek	RYAN 91, Unit 12	93 L 076	9 .6405 .60719	0	09/22/96	TEC	0.00	0.50	NF	NC	NA
077-9100-000-000-	Not a creek	RYAN 94, Unit 12	93 L 076	9 .6329 .60700	0	09/22/96	TEC	0.00	3.00	NF	NC	NA
068-2900-000-000-	Not a creek	W14, Unit 12	93 L 066	9 .6305 .60598	0	07/10/97	TEC	0.00	2.00	NF	NC	NA
069-0500-000-000-	Not a creek	W15, Unit 12	93 L 066	9 .6319 .60610	0	07/10/97	TEC	0.00	4.00	NF	NC	NA
051-7900-000-000-	Not a creek	W184, Unit 12	93 L 075	9 .6216 .60728	0	08/14/97	TEC	0.00	4.00	NF	NC	NA
068-6500-000-000-	Not a creek	W208, Unit 12	93 L 066	9 .6399 .60597	0	08/20/97	TEC	0.00	7.00	NF	NC	NA
460-4353-000-000-	Not a creek	W218, Unit 12	93 L 076	9 .6321 .60661	0	08/22/97	TEC	0.00	1.00	NF	NC	NA
068-8700-000-000-	Not a creek	Y14, Unit 12	93 L 076	9 .6383 .60637	0	07/11/97	TEC	0.00	8.00	NF	NC	NA

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
067-8600-000-000-	Not a creek	Y179, Unit 12	93 L 057	9 .649305.6050189	0	08/19/97	TEC	0.00	13.50	NF	NC	NA
068-5600-000-000-	Not a creek	Z15, Unit 12	93 L 066	9 .639777. 605539	0	07/09/97	TEC	0.00	4.00	NF	NC	NA
068-0900-000-000-	Not a creek	Z157, Unit 12	93 L 057	9 .652087.6052238	0	08/19/97	TEC	0.00	15.00	NF	NC	NA
068-1100-000-000-	Not a creek	Z158, Unit 12	93 L 057	9 .652285.6052155	0	08/19/97	TEC	0.00	0.50	NF	NC	NA
068-1200-000-000-	Not a creek	Z159, Unit 12	93 L 057	9 .652625.6051752	0	08/19/97	TEC	0.00	13.00	NF	NC	NA
068-9600-000-000-	Not a creek	Z208, Unit 12	93 L 066	9 .633119.6059152	0	09/08/97	TEC	0.00	8.00	NF	NC	NA
068-4300-000-000-	Not a creek	Z210, Unit 12	93 L 066	9 .640217.6054601	0	09/08/97	TEC	0.00	4.50	NF	NC	NA
069-0400-000-000-	Not a creek	Z213, Unit 12	93 L 066	9 .632107.6062257	0	09/08/97	TEC	0.00	7.00	NF	NC	NA
068-7100-000-000-	Not a creek	Z254, Unit 12	93 L 076	9 .6372 . 60656	0	09/16/97	TEC	0.00	4.00	NF	NC	NA
078-6500-000-000-	Not a creek	Z255, Unit 12	93 L 076	9 .637107.6065150	0	09/16/97	TEC	0.00	4.00	NF	NC	NA
460-3254-391-000-	Not a creek	Z257, Unit 12	93 L 076	9 .632713.6071158	0	09/16/97	TEC	0.00	5.00	NF	NC	NA
068-7600-000-000-	Not a creek	Y15, Unit 12	93 L 076	9 .6379 .60641	0	07/11/97	TEC	0.00	6.00	NF	NC.	NA
000-0000-000-000-	Not a creek	E13, Unit 12	93 L 057	9 .6449 .60454	0	07/11/97	TEC	0.00	2.00	NF	NC.	NA
460-4879-000-000-	Robin Cr.	Y7, Unit 12	93 L 066	9 .6370 .60567	2	07/10/97	TEC	5.47	1.50	(CT)	S2	EL
460-4879-000-000-	Robin Cr.	Z10, Unit 12	93 L 066	9 .63848 . 605954	6	07/09/97	TEC	3.57	5.00	(CT)	S3	EL
460-4879-000-000-	Trib. to Robin Cr.	Z153, Unit 12	93 L 067	9 .642348.6062884	1	08/19/97	TEC	1.00	8.00	(RB)	S4	EL
068-4200-000-000-	Trib. to Robin Cr.	Z12, Unit 12	93 L 066	9 .63988 . 605467	5	07/09/97	TEC	1.12	1.00	NF	S6	NA
068-3800-000-000-	Trib. to Robin Cr.	Z13, Unit 12	93 L 066	9 .63892 . 605365	1	07/09/97	TEC	1.45	1.00	NF	S6	EL
068-3800-000-000-	Trib to Robin Cr.	E9, Unit 12	93 L 066	9 .6410 .60550	2	07/11/97	TEC	1.08	7.00	(RB)	S6	NA
068-3800-000-000-	Trib to Robin Cr.	E10, Unit 12	93 L 067	9 .6422 .60555	4	07/11/97	TEC	0.70	13.00	NF	S6	NA
068-4500-000-000-	Trib to Robin Cr.	E11, Unit 12	93 L 067	9 .6422 .60567	6	07/11/97	TEC	1.13	14.00	NF	S6	NA
068-4300-000-000-	Trib to Robin Cr.	Z211, Unit 12	93 L 066	9 .640725.6055074	2	09/08/97	TEC	1.62	5.00	NF	S6	NA
068-9100-000-000-	Trib. to Round L	Z7, Unit 12	93 L 066	9 .6350 .60595	1	07/09/97	TEC	2.96	1.00	NF	S5	VO
068-9100-000-000-	Trib. to Round L	Y10, Unit 12	93 L 066	9 .6362 .60628	2	07/10/97	TEC	1.07	5.00	NF	S6	NA
050-1900-000-000-	Tamara Br.	RYAN 84, Unit 12	93 L 086	9 .6303 .60259	1	09/21/96	TEC	0.80	1.00	NF	S6	NA
460-5177-000-000-	Thompson Cr.	JULIE 282, Unit 12	93 L 056	9 . 6416 . 60494	1	10/02/96	TEC	3.12	2.50	(RB)	S3	EL
460-5177-000-000-	Thompson Cr.	E296, Unit 12	93 L 057	9 .6440 .60475	2	09/12/97	TEC	4.15	4.00	DV,CT	S3	EL
067-4600-000-000-	Trib to Thompson Cr	Z160, Unit 12	93 L 057	9 .648727.6045572	3	09/19/97	TEC	1.82	4.00	(RB)	S3	EL
006-7310-000-000-	Trib. to Thompson Cr.	E297, Unit 12	93 L 057	9 .6443 .60476	1	09/12/97	TEC	2.08	7.00	CT	S3	EL
067-3900-000-000-	Trib. to Thompson Cr.	E14, Unit 12	93 L 057	9 .6449 .60459	1	07/11/97	TEC	0.78	5.00	(DV)	S4	EL
006-7800-000-000-	Trib. to Thompson Cr.	E300, Unit 12	93 L 057	9 .6438 .60482	1	09/13/97	TEC	3.50	16.00	NF	S5	VO
460-5177-361-000-	Trib. to Thompson Cr.	E220, Unit 12	93 L 057	9 .6471 .60475	3	08/19/97	TEC	2.38	2.00	NF	S6	EL
067-5800-000-000-	Trib. to Thompson Cr.	E221, Unit 12	93 L 057	9 .6475 .60472	2	08/19/97	TEC	1.72	7.00	NF	S6	EL
460-4309-000-000-	Tyhee Cr.	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	4.50	1.00	CT	S3	EL
460-4309-007-580-	Trib. to Tyhee L.	ARNE 13, Unit 12	93 L 075	9 .6270 .60662	1	09/21/96	TEC	1.15	2.50	(DV) (RB)	S4	NA
051-9400-000-000-	Trib. to Tyhee L.	RYAN 80, Unit 12	93 L 075	9 .6256 .60664	1	09/21/96	TEC	0.80	5.00	NF	S6	VO
068-7100-000-000-	Vanderven Cr.	Z8, Unit 12	93 L 066	9 .63694 . 605951	1	07/09/97	TEC	4.08	4.00	CT	S3	EL
068-7100-000-000-	Vanderven Cr.	W204, Unit 12	93 L 066	9 .6372 .60633	2	08/20/97	TEC	2.20	4.00	RB	S3	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
078-6500-000-000-	Vanderven Cr.	Z256, Unit 12	93 L 076	9 .637162.6064754	5	09/16/97	TEC	1.08	1.50	(DV RB)	S4	EL
068-7600-000-000-	Trib to Vanderven Cr.	W205, Unit 12	93 L 066	9 .6372 .60627	1	08/20/97	TEC	1.22	5.00	RB	S4	EL
068-7200-000-000-	Trib to Vanderven Cr.	Z209, Unit 12	93 L 066	9 .636550.6059424	1	09/08/97	TEC	1.07	7.00	NF	S6	NA
460-4309-000-000-	Victor Cr	RYAN 81, Unit 12	93 L 075	9 .6276 .60646	1	09/21/96	TEC	1.82	1.50	(DV)	S3	NA
460-4309-559-000-	Victor Cr.	W220, Unit 12	93 L 076	9 .6290 .60657	3	08/22/97	TEC	0.80	19.00	NF	S6	NA

Table 5. Summary of Non Fish Bearing Classifications Established in Working Unit 12 in 1996 and 1997

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Proposed Stream Class	Fishing Effort	Rationale
050-1900-000-000-000-000 000-000-000-000-000-000	Trib. to Badley Cr.	RYAN 84, Unit 12	93 L 086	9 .6303 .60259	1	09/21/96	TEC	S6	This dry site was not electrofished.	This tributary has been classified as non fish bearing because it lacks suitable fish habitat. Some sections of the sampling area contained no defined channel.
068-2400-000-000-000-000 000-000-000-000-000-000	Trib to Bulkley R.	JULIE 264, Unit 12	93 L 066	9 .6307 .60540	1	09/29/96	TEC	S6	This dry site was not electrofished.	This tributary has been classified as non fish bearing because it lacks suitable fish habitat and has barely defined banks. Livestock move freely through this creek in the sampling area.
066-1800-000-000-000-000 000-000-000-000-000-000	Trib to Bulkley R.	JULIE 283, Unit 12	93 L 056	9 .6417 .60470	2	10/02/96	TEC	S6	The electroshocking effort, using a Smithroot Mark 7 model was 212 seconds over 120 square meters.	This tributary has been classified as non fish bearing because it has an impassable 10 meter falls at the mouth and no spawning overwintering habitat above these falls. In addition a gradient of 44% was noted in the sampling area.
068-2900-000-000-000-000 000-000-000-000-000-	Trib to Bulkley R.	W19, Unit 12	93 L 066	9 .6306 .60589	1	07/10/97	TEC	S6	This site was not electrofished due to low water.	This reach has been classified as non fish bearing due to :subterranean flow, poor fish habitat and pollution, cause by the introduction of human garbage into the stream.
068-2800-000-000-000-000 000-000-000-000-000-	Trib to Bulkley R.	W20, Unit 12	93 L 066	9 .6310 .60582	1	07/10/97	TEC	S6	This site was not electrofished due to there being no water.	This reach was classified as non fish bearing because the channel is unconfined in some areas and suitable habitat is lacking.
068-2200-000-000-000-000 000-000-000-000-000-	Trib to Bulkley R.	Z243, Unit 12	93 L 055	9 .628407.605021 1	2	09/13/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 453 seconds over 100 meters.	This reach has been classified as non fish bearing because it is located above an impassable falls barriers and no fish were caught in the sampling area, despite the presence of suitable fish habitat.
062-8900-000-000-000-000 000-000-000-000-000-	Trib to Bulkley R.	Z244, Unit 12	93 L 055	9 .6282 .60520	2	09/13/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 290 seconds over 100 meters.	This reach has been classified as non fish bearing because no fish were caught in the sampling area, located above a suspected non fish bearing reach.
051-5400-000-000-000-000 000-000-000-000-000-000	Trib. to Bulkley R.	ARNE 14, Unit 12	93 L 075	9 .6243 . 60687	1	09/21/96	TEC	S6	This dry site was not electrofished.	This stream was classified as non fish bearing because it contained absolutely no suitable fish habitat. The survey crew noted that the stream had been dry for quite some time.
066-1700-000-000-000-000 000-000-000-000-000-	Trib. to Bulkley R.	E301, Unit 12	93 L 056	9 .6406 .60470	2	09/13/97	TEC	S6	This dry site was not electrofished.	This reach has been classified as non fish bearing because it has steep gradient, and somewhat inconsistent channel confinement.

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Proposed Stream Class	Fishing Effort	Rationale
051-5300-000-000-000-000 000-000-000-000-000-	Trib. to Bulkley R.	Y275, Unit 12	93 L 075	9 .62268 .60655	2	09/16/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-1100V, was 96 seconds over 50 meters. Sampling was cut short by fences on private property.	This reach has been classified as non fish bearing because it lacks suitable fish habitat.
100-3400-000-000-000-000 000-000-000-000-000-	Trib to Burbridge Cr.	Y12, Unit12	93 L 077	9 .6422 .60652	2	07/11/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model set at 60, 600V, was 242 seconds over 100 meters.	This reach has been classified as non fish bearing because it has very poor fish habitat, and subterranean flow.
460-3254-000-000-000-000 000-000-000-000-000-000	Canyon Cr.	E269, Unit 12	93 L 086	9 .6386 .60772	5	09/08/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 345 seconds over 175 meters.	This reach has been classified as non fish bearing because it is located above an impassable 8 meter falls and a 6 meter cascade, and no evidence of a resident population was found in the sampling area.
078-3800-000-000-000-000 000-000-000-000-000-	Trib to Canyon Cr.	W215, Unit 12	93 L 077	9 .644260.735	2	08/21/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 78 seconds over 155 meters.	This reach has been classified as non fish bearing because it lacks suitable fish habitat and has subterranean flow.
077-9300-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	ARNE 20, Unit 12	93 L 076	9 .6349 .60716	1	09/22/96	TEC	S6	This site was not electrofished as there was no habitat to shock.	This reach has been classified as non fish bearing because of the lack of suitable fish habitat observed in the sampling area. This stream has two road crossings.
077-9000-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	ARNE 25, Unit 12	93 L 076	9 .6335 .60693	1	09/22/96	TEC	S6	This dry site was not electrofished.	This small tributary has been classified as non fish bearing because it lacks suitable fish habitat. Very low banks were observed in the sampling area and steep gradient was noted in the vicinity of the road crossing.
051-8300-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	RYAN 75, Unit 12	93 L 075	9 .6240 . 60734	2	09/20/96	TEC	S6	This site was not electrofished as it was dry on the sampling day.	This tributary has been classified as non fish bearing because the presence of a 2m cascade and the disappearance of the channel at the confluence with Canyon Creek would prevent fish passage upstream.
051-8400-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	RYAN 76, Unit 12	93 L 075	9 .6239 . 60731	1	09/20/96	TEC	S6	This site was not electrofished as it was dry at the time of sampling.	This reach has been classified as non fish bearing because a 4 meter cascade located at the mouth of this tributary would prevent fish passage upstream, even during high flows.
077-8400-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	RYAN 88, Unit 12	93 L 076	9 .6319 .60702	2	09/22/96	TEC	S6	The electroshocking effort, using a 12 B POW model, was 100 seconds over 25 square meters. There was little available habitat to shock as the channel disappeared 50 m below the road.	This reach has been classified as non fish bearing because the channel disappears 50 meters below the road crossing.
077-9200-000-000-000-000 000-000-000-000-000-000	Trib. to Canyon Cr.	RYAN 90, Unit 12	93 L 076	9 .6388 .60715	1	09/22/96	TEC	S6	The electroshocking effort, using a 12 B POW model, was 400 seconds over 200 meters.	This reach has been classified as non fish bearing because the channel disappears 34 meters downstream of the road crossing.

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Proposed Stream Class	Fishing Effort	Rationale
460-4247-000-000-000-000 000-000-000-000-000-000	Coffin Cr.	Y153, Unit 12	93 L 056	9 .6342 .60471	1	08/13/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model set at 600V, was 832 seconds over 250 meters.	This reach has been classified as non fish bearing because it is located above an impassable 10m falls, and no evidence of a resident population was found.
460-4726-000-000-000-000 000-000-000-000-000-000	Coffin Cr.	Y184, Unit 12	93 L 056	9 .6335 .60461	6	08/20/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 372 seconds over 100 meters.	This reach has been classified as non fish bearing because it is located above an impassable 10m falls, and no evidence of a resident population was found.
066-9300-000-000-000-000 000-000-000-000-000-	Trib to Coffin Cr.	Y187, Unit 12	93 L 056	9 .6339 .60458	1	08/20/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, was 225 seconds over 100 meters.	This reach has been classified as non fish bearing because it is located above an impassable 10m falls, and no evidence of a resident population was found.
066-8800-000-000-000-000 000-000-000-000-000-	Trib to Coffin Cr.	Y188, Unit 12	93 L 056	9 .6335 .60465	1	08/20/97	TEC	S6	This site was not electrofished, as there was not enough water.	This reach has been classified as non fish bearing because it is located above an impassable 10m falls, and no evidence of a resident population was found.
066-9300-000-000-000-000 000-000-000-000-000-	Trib to Coffin Cr.	Y185, Unit 12	93 L 056	9 .6335 .60461	1	08/20/97	TEC	S6	This site was not electroshocked as the channel was dry.	This reach has been classified as non fish bearing because it is located above an impassable 10m falls, and no evidence of a resident population was found.
460-5177-361-000-000-000 000-000-000-000-000-000	Trib. to Coppermine Lk.	E220, Unit 12	93 L 057	9 .6471 .60475	3	08/19/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 215 seconds over 150 meters.	This reach has been classified as non fish bearing because it is located above a roughly 3km stretch of steep gradient and showed no evidence of a resident population in the sampling area.
069-2900-000-000-000-000 000-000-000-000-000-	Trib. to Deep Cr.	E223, Unit 12	93 L 067	9 .6454 .60553	1	08/20/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-300V, was 135 seconds over 100 meters.	This reach has been classified as non fish bearing due to steep gradient (42%) and the lack of suitable fish habitat in the sampling area.
062-7800-000-000-000-000 000-000-000-000-000-	Trib. to Four Cr.	Z190, Unit 12	93 L 055	9 .618935.604930 6	2	09/04/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 195 seconds over 100 meters.	This reach has been classified as non fish bearing due to steep gradient and the apparent absence of fish in the sampling area.
460-3254-265-000-000-000 000-000-000-000-000-000	Ganokwa Cr.	E273, Unit 12	93 L 086	9 .6364 .60810	1	09/08/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 440 seconds over 250 meters.	This reach has been classified as non fish bearing because no fish were caught in the sampling area, located above a section of steep gradient.
078-7700-000-000-000-000 000-000-000-000-000-000	Trib. to Ganokwa Cr.	ARNE 24, Unit 12	93 L 076	9 .6349 .60741	1	09/22/96	TEC	S6	This site was not electrofished as too little habitat was available to shock at the time of sampling.	This tributary has been classified as non fish bearing because of steep gradient occurring above and below the road crossing, the lack of fish habitat
050-4400-000-000-000-000 000-000-000-000-000-	Trib. to Ganokwa Cr.	E270, Unit 12	93 L 086	9 .6362 .60780	2	09/08/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 432 seconds over 175 meters.	This reach has been classified as non fish bearing because no fish were caught in the sampling area, located above a 10m falls and a 6m cascade.

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Proposed Stream Class	Fishing Effort	Rationale
050-7800-000-000-000-000 000-000-000-000-000-	Trib. to Ganokwa Cr.	E271, Unit 12	93 L 086	9 .6358 .60806	4	09/08/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 373 seconds over 150 meters.	This reach has been classified as non fish bearing because it is located above a section of steep gradient and no evidence of a resident population was found in the sampling area.
050-7200-000-000-000-000 000-000-000-000-000-	Trib. to Ganokwa Cr.	E272, Unit 12	93 L 086	9 .6365 .60801	2	09/08/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 488 seconds over 200 meters.	This reach has been classified as non fish bearing because it is located above a section of steep gradient and no evidence of a resident population was found in the sampling area.
460-4370-000-000-000-000 000-000-000-000-000-000	Trib. to Helps Cr.	JULIE 242, Unit 12	93 L 065	9 .5962 .60732	1	09/27/96	TEC	S6	This dry site was not electrofished.	This reach has been classified as non fish bearing because the channel is not continuously defined. It also lacks suitable fish habitat.
460-4370-000-000-000-000 000-000-000-000-000-000	Helps Cr.	Z245, Unit 12	93 L 055	9 .626600.605167 8	2	09/13/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, was 230 seconds over 100 meters on Helps Creek above the falls and then 100 seconds below the falls.	This reach has been classified as non fish bearing because no fish were caught in the sampling area, which is located above several falls barriers, including a 4m falls just downstream of the sample site.
062-8500-000-000-000-000 000-000-000-000-000-	Trib to Helps Cr.	Z246, Unit 12	93 L 055	9 .626600.605167 8	1	09/13/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, was 250 seconds over 100 meters.	This reach has been classified as non fish bearing because it is located above a series of impassable barriers on the mainstem.
069-0200-000-000-000-000 000-000-000-000-000-	Trib to Lacroix Cr.	W17, Unit 12	93 L 066	9 .6328 .60626	1	07/10/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, was 72 seconds over 100 meters.	This reach has been classified as non fish bearing because it lacks suitable fish habitat.
068-8700-000-000-000-000 000-000-000-000-000-	Trib to Lacroix Cr.	Y6, Unit 12	93 L 066	9 .635472.605750 2	3	07/10/97	TEC	S6	This site was not electrofished.	This reach has been classified as non fish bearing because it lacks suitable fish habitat.
460-4879-111-000-000-000 000-000-000-000-000-000	Lemieux Cr.	E219, Unit 12	93 L 067	9 .6549 .60622	4	08/19/97	TEC	S5	The electroshocking effort, using a Smithroot 12 B POW model, set at 285 seconds over 100 meters.	This reach has been classified as non fish bearing because it is located above a 20m cascade and no fish were caught in the sampling area.
068-5800-000-000-000-000 000-000-000-000-000-	Trib to Lemieux Cr.	Z212, Unit 12	93 L 067	9 .642296.605846 2	1	09/08/97	TEC	S6	This site was not electroshocked due to the creek being dry.	This reach has been classified as non fish bearing because it lacks suitable fish habitat, the channel is unconfined below the road.
051-4200-000-000-000-000 000-000-000-000-000-000	Trib. to Lyon Cr.	ARNE 15, Unit 12	93 L 086	9 .6286 .60759	1	09/21/96	TEC	S6	This dry site was not electrofished.	This reach has been classified as non fish bearing because the channel disappears 50 meters upstream of the road crossing and because the steep gradient of the culvert at the road crossing would prevent fish passage upstream.
068-3800-000-000-000-000 000-000-000-000-000-	Trib to Robin Cr.	E10, Unit 12	93 L 067	9 .6422 .60555	4	07/11/97	TEC	S6	This site was not electroshocked due to there being no water.	This reach has been classified as non fish bearing because it lacks any suitable fish habitat.

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Proposed Stream Class	Fishing Effort	Rationale
068-4500-000-000-000-000 000-000-000-000-000-	Trib to Robin Cr.	E11, Unit 12	93 L 067	9 .6422 .60567	1	07/11/97	TEC	S6	This site was not electroshocked, as there was not enough water.	This reach has been classified as non fish bearing because it lacks any suitable fish habitat.
068-4300-000-000-000-000 000-000-000-000-000-	Trib to Robin Cr.	Z211, Unit 12	93 L 066	9 .640725.605507 4	2	09/08/97	TEC	S6	This site was not electrofished due to there being no water in the creek.	This reach has been classified as non fish bearing because it has no suitable habitat and is seasonally dry.
068-4200-000-000-000-000 000-000-000-000-000-	Trib. to Robin Cr.	Z12, Unit 12	93 L 066	9 .63988 . 605467	5	07/09/97	TEC	S6	This dry site was not electrofished.	This reach was classified as non fish bearing because it lacks any suitable fish habitat.
068-3800-000-000-000-000 000-000-000-000-000-	Trib. to Robin Cr.	Z13, Unit 12	93 L 066	9 .63892 . 605365	1	07/09/97	TEC	S6	The electroshocking effort was not recorded at this site.	This reach was classified as non fish bearing because it lacks any suitable fish habitat.
068-9100-000-000-000-000 000-000-000-000-000-	Trib. to Round Lk	Z7, Unit 12	93 L 066	9 .6350 .60595	1	07/09/97	TEC	S5	This site was not electrofished as the flow was too low. At the time of sampling the flow consisted of a series of sloppy pools.	This reach was classified as non fish bearing because it lacks any suitable fish habitat.
068-9100-000-000-000-000 000-000-000-000-000-	Trib. to Round Lk	Y10, Unit 12	93 L 066	9 .6362 .60628	2	07/10/97	TEC	S6	There was too little flow at the time of sampling to electrofish.	This reach has been classified as non fish bearing because it has no suitable fish habitat. this is consistent downstream through reach 1.
067-5800-000-000-000-000 000-000-000-000-000-	Trib. to Thompson Cr.	E221, Unit 12	93 L 057	9 .6475 .60472	2	08/19/97	TEC	S6	The electroshocking effort, using a Smithroot 12 B POW model, set at I-5-400V, was 171 seconds over 200 meters.	This reach has been classified as non fish bearing because it is located above a roughly 3km stretch of steep gradient and showed no evidence of a resident population in the sampling area.
006-7800-000-000-000-000 000-000-000-000-000-	Trib. to Thompson Cr.	E300, Unit 12	93 L 057	9 .6438 .60482	1	09/13/97	TEC	S5	This site was not electrofished.	This reach has been classified as non fishbearing because it has unsuitable fish habitat and the channel is undefined in many areas.
051-9400-000-000-000-000 000-000-000-000-000-000	Trib. to Tyhee L.	RYAN 80, Unit 12	93 L 075	9 .6256 .60664	1	09/21/96	TEC	S6	This dry site was not electrofished.	This tributary has been classified as non fish bearing because it provides no suitable fish habitat. The channel is intermittent in some areas and the culvert at the road crossing was in poor condition at the time of sampling.
068-7200-000-000-000-000 000-000-000-000-000-	Trib to Vanderven Cr.	Z209, Unit 12	93 L 066	9 .636550.605942 4	1	09/08/97	TEC	S6	This dry site was not electrofished.	This reach has been classified as non fish bearing because it has no suitable fish habitat. The channel has been heavily impacted by agricultural activity.
460-4309-559-000-000-000 000-000-000-000-000-000	Victor Cr.	W220, Unit 12	93 L 076	9 .6290 .60657	3	08/22/97	TEC	S6	This dry site was not electroshocked	This reach has been classified as non fish bearing due to channel confinement problems below the road crossing and a 2.5 drop from one of the culverts. suitable fish habitat is lacking in the sampling area.

Table 6. Summary of Sites in Working Unit 12 for Which Future Sampling is Recommended

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
061-0400-000-000-000-000	Trib to Bulkley R.	JULIE 237, Unit 12	93 L 065	9 .6231 .60558	2	09/26/96	TEC	1.03	3.00	(CT)	S4	NA
068-1700-000-000-000-000	Trib to Bulkley R.	JULIE 262, Unit 12	93 L 066	9 .6335 .60545	1	09/29/96	TEC	1.52	2.00	(RB)	S3	NA
068-2200-000-000-000-000	Trib to Bulkley R.	JULIE 263, Unit 12	93 L 066	9 .6300 .60543	2	09/29/96	TEC	3.75	8.00	(RB) (CT)	S3	VO
051-4400-000-000-000-000	Trib. to Bulkley R.	W183, Unit 12	93 L 075	9 .6194 .60732	1	08/14/97	TEC	15.33	0.00	(CO) (DV)	NC.	NA
066-2000-000-000-000-000	Trib. to Bulkley R.	E303, Unit 12	93 L 056	9 . 6394 . 604752	1	09/13/97	TEC	8.83	2.00	(DV)	S2	EL
051-5300-000-000-000-000	Trib. to Bulkley R.	RYAN 87, Unit 12	93 L 075	9 .6214 .60666	1	09/21/96	TEC	2.35	1.00	(DV)	S3	NA
066-3300-000-000-000-000	Trib. to Bulkley R.	E224, Unit 12	93 L 056	9 .6362 .60500	3	08/20/97	TEC	1.17	4.00	(DV)	S4	NA
066-2800-000-000-000-000	Trib to Bulkley R.	JULIE 285, Unit 12	93 L 056	9 .6372 .60497	1	10/02/96	TEC	1.65	0.50	(DV)	S4	VO
066-2800-000-000-000-000	Trib to Bulkley R.	Y154, Unit 12	93 L 056	9 .6364 .60485	1	08/13/97	TEC	0.55	10.00	(DV)	S4	NA
066-2900-000-000-000-000	Trib to Bulkley R.	Y155, Unit 12	93 L 056	9 .6376 .60488	1	08/13/97	TEC	0.63	4.00	(DV)	S4	NA
068-1800-000-000-000-000	Trib to Bulkley R.	JULIE 261, Unit 12	93 L 066	9 .6320 .60544	1	09/29/96	TEC	3.27	5.00	(RB)	S3	VO
066-3300-000-000-000-000	Trib to Bulkley R.	JULIE 284, Unit 12	93 L 056	9 .6371 .60499	1	10/02/96	TEC	0.78	1.00	(RB)	S4	NA
460-3254-624-000-000-000	Burbridge Cr.	Y11, Unit 12	93 L 077	9 .6437 .60660	4	07/11/97	TEC	1.33	6.00	(CT) (RB)	S4	EL
460-3254-624-000-000-000	Burbridge Cr.	E236, Unit 12	93 L 076	9 .6407 .60675	2	08/21/97	TEC	4.45	0.50	(DV)	S3	EL
100-3400-000-000-000-000	Trib to Burbridge Cr.	Y13, Unit 12	93 L 077	9 .6422 .60652	1	07/11/97	TEC	1.27	5.50	(CT) (RB)	S4	EL
460-3254-000-000-000-000	Canyon Cr.	HASLETT 106, Unit 12	93 L 087	9 .6414 .60754	7	08/21/96	TEC	11.07	7.00	(DV)	S2	EL
077-9500-000-000-000-000	Trib. to Canyon Cr.	ARNE 21, Unit 12	93 L 076	9 .6368 .60716	1	09/22/96	TEC	2.67	7.00	(DV)	S3	EL
078-3600-000-000-000-000	Trib. to Canyon Cr.	ARNE 22, Unit 12	93 L 076	9 .6405 .60721	1	09/22/96	TEC	1.77	2.00	(DV)	S3	EL
078-2400-000-000-000-000	Trib. to Canyon Cr.	E234. Unit 12	93 L 076	9 .6361 .60672	1	08/21/97	TEC	1.97	1.00	(DV)	S3	EL
078-3900-000-000-000-000	Trib. to Canyon Cr.	ARNE 23, Unit 12	93 L 076	9 .6410 .60734	1	09/22/96	TEC	1.40	2.00	(DV)	S4	NA
077-9200-000-000-000-000	Trib. to Canyon Cr.	E268, Unit 12	93 L 086	9 .6377 .60747	1	09/08/97	TEC	0.98	9.00	(DV)	S4	EL
051-8800-000-000-000-000	Trib. to Canyon Cr.	E307, Unit 12	93 L 075	9 .6269 .60721	4	09/15/97	TEC	1.25	2.00	(DV)	S4	EL
078-3200-000-000-000-000	Trib to Canyon Cr.	Y43, Unit 12	93 L 077	9 .6416 .60716	1	07/16/97	TEC	1.18	12.00	(DV)	S4	EL
078-2800-000-000-000-000	Trib to Canyon Cr.	Y45, Unit 12	93 L 076	9 .6406 .60701	1	07/15/97	TEC	1.13	9.00	(DV)	S4	EL
078-3000-000-000-000-000	Trib to Canyon Cr.	W210, Unit 12	93 L 076	9 .6413 .60707	1	08/21/97	TEC	2.58	8.00	(DV) (RB)	S3	EL
078-2000-000-000-000-000	Trib. to Canyon Cr.	E233, Unit 12	93 L 076	9 .6355 .60673	1	08/21/97	TEC	10.08	1.00	(DV) (RB)	S2	EL
077-8300-000-000-000-000	Trib. to Canyon Cr.	E230, Unit 12	93 L 076	9 .6303 .60705	1	08/21/97	TEC	1.72	1.00	(DV) (RB)	S3	EL
000-0000-000-000-000-000	Trib to Canyon Cr.	Y190, Unit 12	93 L 077	9 .6464 .607441	9	08/21/97	TEC	2.08	9.00	(RB)	S3	EL
000-0000-000-000-000-000	Trib to Canyon Cr.	Y189, Unit 12	93 L 077	9 .6465 .60742	1	08/21/97	TEC	2.45	13.00	(RB)	S3	EL
078-3100-000-000-000-000	Trib to Canyon Cr.	W212, Unit 12	93 L 077	9 .6438 .60711	4	08/21/97	TEC	5.08	4.00	(RB)	S2	EL
100-4100-000-000-000-000	Trib to Canyon Cr.	W213, Unit 12	93 L 077	9 .6437 .60704	1	08/21/97	TEC	0.85	10.00	(RB) (DV)	S4	EL
078-3000-000-000-000-000	Trib to Canyon Cr.	W214, Unit 12	93 L 077	9 .6442 .60700	2	08/21/97	TEC	1.00	7.50	(RB) (DV)	S4	EL
100-3800-000-000-000-000	Trib. to Canyon Cr.	Y192, Unit 12	93 L 077	9 .6463 .6072133	1	08/21/97	TEC	2.32	12.00	(RB) (CT)	S3	EL
100-3700-000-000-000-000	Trib. to Canyon Cr.	Y193, Unit 12	93 L 077	9 .646126.6071712	1	08/21/97	TEC	2.42	13.50	(RB) (CT)	S3	EL
100-3600-000-000-000-000	Trib. to Canyon Cr.	Y194, Unit 12	93 L 077	9 .645173.6070883	1	08/21/97	TEC	2.43	9.00	(RB) (CT)	S3	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
078-3700-000-000-000-000	Trib. to Canyon Cr.	Y195, Unit 12	93 L 077	9 .6421 .60729	1	08/21/97	TEC	1.40	7.00	(RB) (CT)	S4	EL
051-8000-000-000-000-000	Trib. to Canyon Cr.	RYAN 74, Unit 12	93 L 075	9 .6225 .60740	1	09/20/96	TEC	1.27	10.00	(RB) (DV)	S4	NA
066-7200-000-000-000-000	Trib to Coffin Cr.	Y152, Unit 12	93 L 056	9 .6332 .60491	1	08/13/97	TEC	1.65	5.00	(DV)	S3	EL
066-8200-000-000-000-000	Trib to Coffin Cr.	Y151, Unit 12	93 L 056	9 .6336 .60488	1	08/13/97	TEC	0.54	18.00	(DV)	S4	NA
066-7200-000-000-000-000	Trib to Coffin Cr.	Y186, Unit 12	93 L 056	9 .6320 .604875	2	08/20/97	TEC	3.07	15.00	(RB) (CT)	S3	EL
066-6100-000-000-000-000	Trib. to Coffin Lk.	E226, Unit 12	93 L 056	9 .6314 .60535	1	08/20/97	TEC	2.33	4.00	(DV)	S3	NA
110-0100-000-000-000-000	Trib. to Coffin Lk.	E229, Unit 12	93 L 056	9 .6315 .60516	1	08/20/97	TEC	2.25	1.00	(DV)	S3	EL
066-8100-000-000-000-000	Trib. to Coffin Lk.	E225, Unit 12	93 L 056	9 .6320 .60495	1	08/20/97	TEC	0.95	3.00	(DV)	S4	EL
066-5300-000-000-000-000	Trib. to Coffin Lk.	E228, Unit 12	93 L 056	9 .6311 .60511	1	08/20/97	TEC	1.42	4.00	(DV)	S4	VO
066-5900-000-000-000-000	Trib. to Coffin Lk.	E227, Unit 12	93 L 056	9 .63123 . 60536	2	08/20/97	TEC	2.62	3.00	(DV) (CT) (RB)	S3	EL
460-4961-000-000-000-000	Deep Cr.	Z156, Unit 12	93 L 057	9 .653183.6051337	16	08/19/97	TEC	1.63	0.50	(RB)	S3	EL
069-8900-000-000-000-000	Trib. to Deep Cr.	E213, Unit 12	93 L 067	9 .6487 .60560	1	08/18/97	TEC	3.28	2.00	(CT)	S3	EL
069-9600-000-000-000-000	Trib. to Deep Cr.	E214, Unit 12	93 L 067	9 .6488 .60561	1	08/18/97	TEC	2.20	2.00	(CT)	S3	EL
069-5500-000-000-000-000	Trib to Deep Cr.	Z154, Unit 12	93 L 067	9 .647584.6060198	5	08/19/97	TEC	1.15	1.00	(CT)	S4	EL
069-6700-000-000-000-000	Trib to Deep Cr.	W200, Unit 12	93 L 067	9 .6479 .60577	1	08/19/97	TEC	2.15	10.00	(CT) (DV)	S3	EL
069-8900-000-000-000-000	Trib to Deep Cr.	W198, Unit 12	93 L 067	9 .6488 .60583	3	08/19/97	TEC	2.03	0.50	(CT) (RB)	S3	EL
069-8900-000-000-000-000	Trib to Deep Cr.	W199, Unit 12	93 L 067	9 .6488 .60583	4	08/19/97	TEC	1.08	3.00	(CT) (RB)	S4	EL
069-5600-000-000-000-000	Trib to Deep Cr.	W201, Unit 12	93 L 067	9 .6466 .60572	1	08/19/97	TEC	1.37	9.00	(DV) (CT)	S4	EL
069-8500-000-000-000-000	Trib. to Deep Cr.	E209, Unit 12	93 L 067	9 .6476 .60548	2	08/18/97	TEC	1.53	1.00	(DV) (CT)	S3	EL
069-8200-000-000-000-000	Trib. to Deep Cr.	E211, Unit 12	93 L 067	9 .6486 .60542	2	08/18/97	TEC	1.82	2.00	(DV) (CT)	S3	EL
070-0100-000-000-000-000	Trib to Deep Cr.	Y174, Unit 12	93 L 067	9 .650253.605558	1	08/18/97	TEC	2.00	3.00	(RB) (CT)	S3	EL
070-2300-000-000-000-000	Trib to Deep Cr.	Y175, Unit 12	93 L 067	9 .651711.60541	1	08/18/97	TEC	2.38	1.00	(RB) (CT)	S3	EL
069-1900-000-000-000-000	Trib to Deep Cr.	Y183, Unit 12	93 L 067	9 .6443 .605529	1	08/20/97	TEC	2.30	14.00	(RB) (CT)	S3	NA
051-5300-000-000-000-000	Trib. to Frederick L.	RYAN 82, Unit 12	93 L 075	9 . 6262 . 60711	6	09/21/96	TEC	1.02	0.50	(DV)	S4	EL
078-7400-000-000-000-000	Trib. to Ganokwa Cr.	ARNE 19, Unit 12	93 L 086	9 .6343 .60757	1	09/21/96	TEC	1.70	3.00	(DV)	S3	EL
078-7500-000-000-000-000	Trib. to Ganokwa Cr.	RYAN 86, Unit 12	93 L 086	9 .6347 .60748	1	09/21/96	TEC	1.70	3.00	(DV)	S3	EL
050-3700-000-000-000-000	Trib. to Ganokwa Cr.	ARNE 18, Unit 12	93 L 086	9 .6312 .60751	1	09/21/96	TEC	1.40	0.50	(DV)	S4	EL
460-3254-265-000-000-000	Trib. to Ganokwa Cr.	RYAN 93, Unit 12	93 L 076	9 . 6355 . 60740	1	09/22/96	TEC	1.07	16.00	(DV)	S4	EL
460-4879-111-097-000-000	Gardner Cr.	Z14, Unit 12	93 L 066	9 .63977 .6056465	1	07/09/97	TEC	2.67	2.00	(CT)	S3	EL
068-6900-000-000-000-000	Gardner Cr.	E12, Unit 12	93 L 067	9 .6422 .60580	2	07/11/97	TEC	1.77	12.00	(DV)	S3	EL
460-4961-087-000-000-000	Gibson Cr.	E298, Unit 12	93 L 057	9 .6426 .60504	3	09/13/97	TEC	1.97	7.00	(CT)	S3	NA
066-4300-000-000-000-000	Trib. to Gibbon Cr.	E302, Unit 12	93 L 057	9 .6426 .60516	1	09/13/97	TEC	0.71	4.00	(CT)	S4	NA
061-0400-000-000-000-000	Trib to Helps Cr.	JULIE 236, Unit 12	93 L 065	9 .6244 .60659	1	09/27/96	TEC	2.70	3.00	(CT)	S3	NA
061-0000-000-000-000-000	Trib to Helps Cr.	JULIE 240, Unit 12	93 L 065	9 .6261 .60546	1	09/27/96	TEC	1.00	9.00	(CT)	S4	VO
060-9600-000-000-000-000	Trib to Helps Cr.	JULIE 244, Unit 12	93 L 065	9 .6286 .60581	1	09/28/96	TEC	1.18	2.00	(CT)	S4	NA
061-0800-000-000-000-000	Trib to Helps Cr.	JULIE 239, Unit 12	93 L 065	9 .6246 .60557	1	09/27/96	TEC	1.43	12.00	(RB) (CT)	S4	EL
061-0100-000-000-000-000	Trib to Helps Cr.	JULIE 243, Unit 12	93 L 065	9 .6265 .60543	1	09/27/96	TEC	1.35	11.00	(DV) (CT)	S4	VO
460-4726-000-000-000-000	Lacroix Cr.	W18, Unit 12	93 L 066	9 .6331 .60627	3	07/10/97	TEC	2.50	3.00	(NSC) (RB)	S3	NA
460-4726-000-000-000-000	Lacroix Cr.	W217, Unit 12	93 L 076	9 .6331 .60649	4	08/22/97	TEC	0.83	10.00	(RB)	S4	EL

Watershed Code	Stream "Local"	Location	Map #	UTM	Reach Number	Survey Date	Agency	Average Channel Width (m)	Gradient (%)	Fish Species	Proposed Stream Class	Fishing Method
068-8700-000-000-000-000	Trib to Lacroix Cr.	JULIE 266, Unit 12	93 L 066	9 .6349 .60567	1	09/29/96	TEC	2.98	0.00	(RB)	S3	NA
460-4879-111-000-000-000	Lemieux Cr.	Y8, Unit 12	93 L 066	9 .6391 .60564	3	07/10/97	TEC	5.02	1.00	(CT) SU	S3	VO
460-4879-111-000-000-000	Lemieux Cr.	E216, Unit 12	93 L 067	9 .6437 .60614	6	08/19/97	TEC	1.78	10.00	(DV)	S3	EL
070-5600-000-000-000-000	Trib. to Lemieux Cr.	E215, Unit 12	93 L 067	9 .6439 .60611	1	08/19/97	TEC	1.65	1.50	(DV)	S3	EL
070-5300-000-000-000-000	Trib. to Lemieux Cr.	E217, Unit 12	93 L 067	9 .6434 .60619	1	08/19/97	TEC	1.67	15.00	(DV)	S3	EL
068-6700-000-000-000-000	Trib. to Lemieux Cr.	E218, Unit 12	93 L 067	9 .6433 .62000	1	08/19/97	TEC	0.35	13.00	(DV)	S4	VO
068-5700-000-000-000-000	Trib to Lemieux Cr.	W209, Unit 12	93 L 066	9 .6398 .60584	1	08/20/97	TEC	0.78	3.00	(DV) (CT)	S4	NA
068-5700-000-000-000-000	Trib to Lemieux Cr.	W194, Unit 12	93 L 067	9 .6421 .60592	2	08/18/97	TEC	1.30	11.00	(RB) (CT)	S4	NA
050-2800-000-000-000-000	Trib. to Lyon Cr.	ARNE 16, Unit 12	93 L 086	9 .6290 .60759	1	09/21/96	TEC	1.95	1.00	(DV)	S3	VO
078-5700-000-000-000-000	Trib to McDowell Cr.	W219, Unit 12	93 L 076	9 .6306 .60675	5	08/22/97	TEC	0.78	3.00	(RB)	S4	EL
067-7300-000-000-000-000	Trib. to McQuarrie L.	E222, Unit 12	93 L 057	9 .6503 .60491	1	08/19/97	TEC	0.90	17.00	(DV)	S4	EL
067-9900-000-000-000-000	Trib. to McQuarrie L.	Y180, Unit 12	93 L 057	9 .6473 .6051741	1	08/19/97	TEC	0.92	6.00	(RB)	S4	EL
460-4879-000-000-000-000	Robin Cr.	Y7, Unit 12	93 L 066	9 .6370 .60567	2	07/10/97	TEC	5.47	1.50	(CT)	S2	EL
460-4879-000-000-000-000	Robin Cr.	Z10, Unit 12	93 L 066	9 .63848 . 605954	6	07/09/97	TEC	3.57	5.00	(CT)	S3	EL
460-4879-000-000-000-000	Trib. to Robin Cr.	Z153, Unit 12	93 L 067	9 .642348.6062884	1	08/19/97	TEC	1.00	8.00	(RB)	S4	EL
068-3800-000-000-000-000	Trib to Robin Cr.	E9, Unit 12	93 L 066	9 .6410 .60550	2	07/11/97	TEC	1.08	7.00	(RB)	S6	NA
053-9300-000-000-000-000	Trib to Telkwa R.	Y136, Unit 13; 3.4km east	93 L 052	9 .5874 .60453	1	08/10/97	TEC	5.05	1.00	(DV) (RB)	S2	NA
460-5177-000-000-000-000	Thompson Cr.	JULIE 282, Unit 12	93 L 056	9 . 6416 . 60494	1	10/02/96	TEC	3.12	2.50	(RB)	S3	EL
067-3900-000-000-000-000	Trib. to Thompson Cr.	E14, Unit 12	93 L 057	9 .6449 .60459	1	07/11/97	TEC	0.78	5.00	(DV)	S4	EL
067-4600-000-000-000-000	Trib to Thompson Cr	Z160, Unit 12	93 L 057	9 .648727.6045572	3	09/19/97	TEC	1.82	4.00	(RB)	S3	EL
460-4309-000-000-000-000	Tyhee Cr.	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	4.50	1.00	CT	S3	EL
460-4309-007-580-000-000	Trib. to Tyhee L.	ARNE 13, Unit 12	93 L 075	9 .6270 .60662	1	09/21/96	TEC	1.15	2.50	(DV) (RB)	S4	NA
068-7100-000-000-000-000	Vanderven Cr.	Z8, Unit 12	93 L 066	9 .63694 . 605951	1	07/09/97	TEC	4.08	4.00	CT	S3	EL
078-6500-000-000-000-000	Vanderven Cr.	Z256, Unit 12	93 L 076	9 .637162.6064754	5	09/16/97	TEC	1.08	1.50	(DV RB)	S4	EL
460-4309-000-000-000-000	Victor Cr	RYAN 81, Unit 12	93 L 075	9 .6276 .60646	1	09/21/96	TEC	1.82	1.50	(DV)	S3	NA

Table 7. Summary of Wildlife and Wildlife Signs Observed in Working Unit 12 in 1996 and 1997

Watershed Code	Map #	Location	UTM	Reach Number	Survey Date	Agency	Comment
050-3700-000-000-000-000-000-000-000-000-000-000	93 L 086	ARNE 18, Unit 12	9 .6312 .60751	1	09/21/96	TEC	The beaver dams at this site are well established barriers.
077-8300-000-000-000-000-000-000-000-000-000-	93 L 076	E230, Unit 12	9 .6303 .60705	1	08/21/97	TEC	A moose was observed at this site.
078-2000-000-000-000-000-000-000-000-000-000-	93 L 076	E233, Unit 12	9 .6355 .60673	1	08/21/97	TEC	This reach consists of a series of beaver ponds, with slow, turbid water.
460-3254-624-000-000-000-000-000-000-000-000-000	93 L 076	E236, Unit 12	9 .6407 .60675	2	08/21/97	TEC	This creek flows through a large meadow as a series of beaver dams and ponds.
460-3254-265-000-000-000-000-000-000-000-000-000	93 L 086	E273, Unit 12	9 .6364 .60810	1	09/08/97	TEC	A beaver dam creates a pool complex that could provide overwintering habitat.
051-8800-000-000-000-000-000-000-000-000-000-	93 L 075	E307, Unit 12	9 .6269 .60721	4	09/15/97	TEC	This reach flows from one beaver pond to another and contains limited rearing cover in the form of debris, pools and cutbanks.
460-4370-000-000-000-000-000-000-000-000-000-000	93 L 065	JULIE 235, Unit 12	9 .6246 .60571	1	09/27/96	TEC	This site could be used by coho, however the presence of beaver dams is suspected downstream.
460-4961-087-000-000-000-000-000-000-000-000-000	93 L 056	JULIE 281, Unit 12	9 .6409 .60516	1	10/02/96	TEC	Evidence of a great deal of beaver activity was noted upstream of the road.
051-5300-000-000-000-000-000-000-000-000-000-000	93 L 075	RYAN 82, Unit 12	9 . 6262 . 60711	3	09/21/96	TEC	. Evidence of beaver activity was noted at this site.
069-8900-000-000-000-000-000-000-000-000-000-	93 L 067	W199, Unit 12	9 .6488 .60583	2	08/19/97	TEC	Moose trails were observed around the lake and adjacent to the stream.
068-9900-000-000-000-000-000-000-000-000-000-	93 L 066	W206, Unit 12	9 .6327 . 60615	1	08/20/97	TEC	A large number of frogs were observed.

Watershed Code	Map #	Location	UTM	Reach Number	Survey Date	Agency	Comment
078-3000-000-000-000-000-000-000-000-000-000-	93 L 076	W210, Unit 12	9 .6413 .60707	1	08/21/97	TEC	Moose sign was also noted.
460-3254-624-000-000-000-000-000-000-000-000-000	93 L 077	Y11, Unit 12	9 .6437 .60660	2	07/11/97	TEC	There is a 0.5m beaver dam and associated pond at this site.
460-4961-000-000-000-000-000-000-000-000-000-000	93 L 067	Y176, Unit 12	9 .651711.6054032	5	08/18/97	TEC	This whole reach is impacted by beavers with several dams up to 50 cm in height.
460-7449-000-000-000-000-000-000-000-000-000-000	93 L 057	Y181, Unit 12	9 .6474 .60517	1	08/19/97	TEC	This stream flows through an old beaver pond/swampy area and gradually changes from a fines to a cobble substrate.
460-4879-111-000-000-000-000-000-000-000-000-000	93 L 066	Y8, Unit12	9 .6391 .60564	3	07/10/97	TEC	This site consists of a series of old blown out beaver dams.

APPENDIX 1

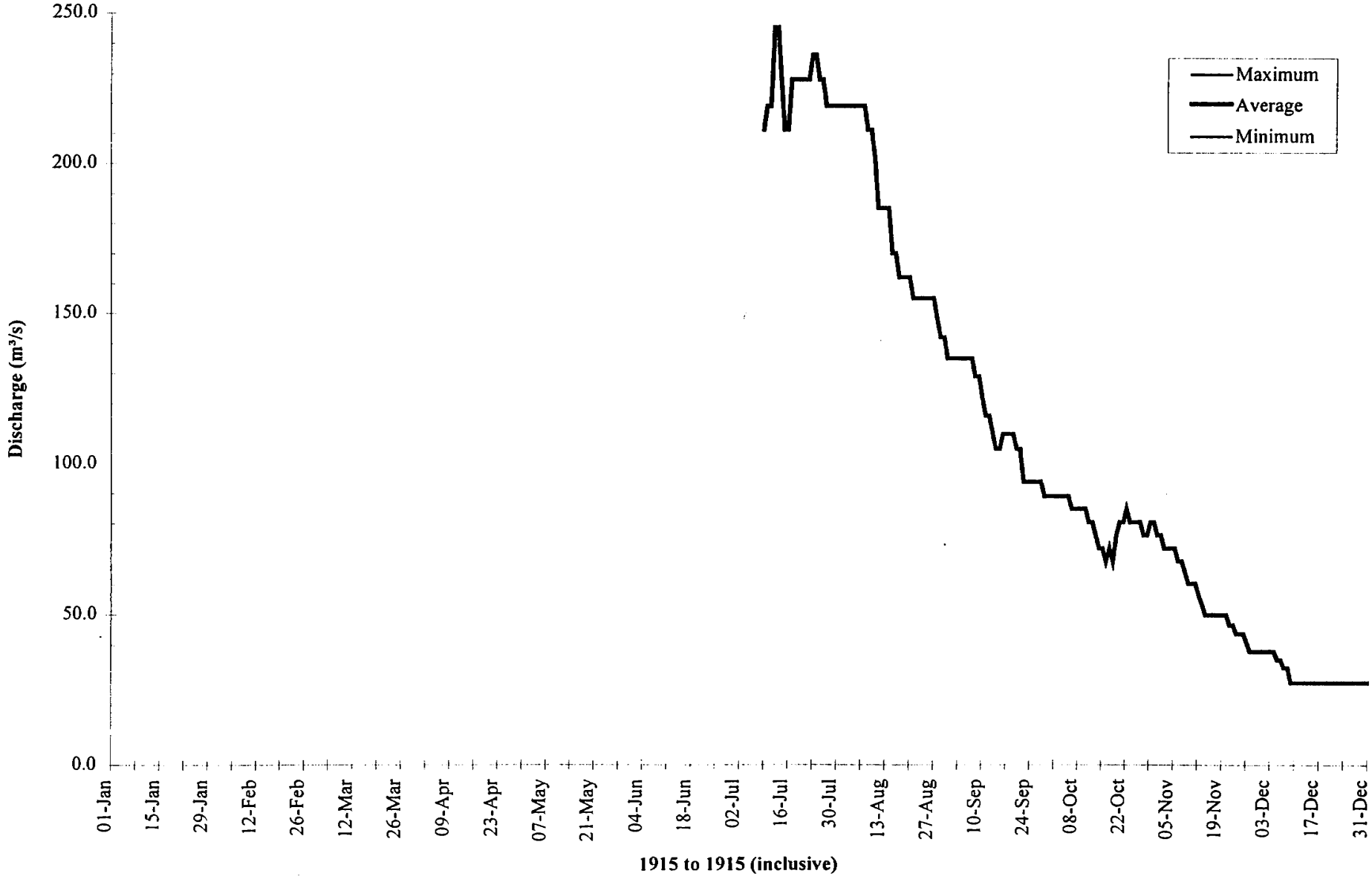
Hydrological Data

Station Number: 08EE002
Latitude: 54:38:55N
Longitude: 126:58:25W
Drainage Area (km²): 7490
Station Name: BULKLEY RIVER NEAR HUBERT

MAD: 109
Min Mean Daily (All Records): 27.8
Max Mean Daily (All Records): 245

	Max. Instantaneous Discharge	Max. Daily Discharge	Min. Daily Discharge

Mean Daily Discharges - BULKLEY RIVER NEAR HUBERT, 1915 to 1915 (inclusive)



Station Number: 08EE004
Latitude: 54:37:05N
Longitude: 126:53:55W
Drainage Area (km²): 7360
Station Name: BULKLEY RIVER AT QUICK

MAD: 142
Min Mean Daily (All Records): 10.5
Max Mean Daily (All Records): 957

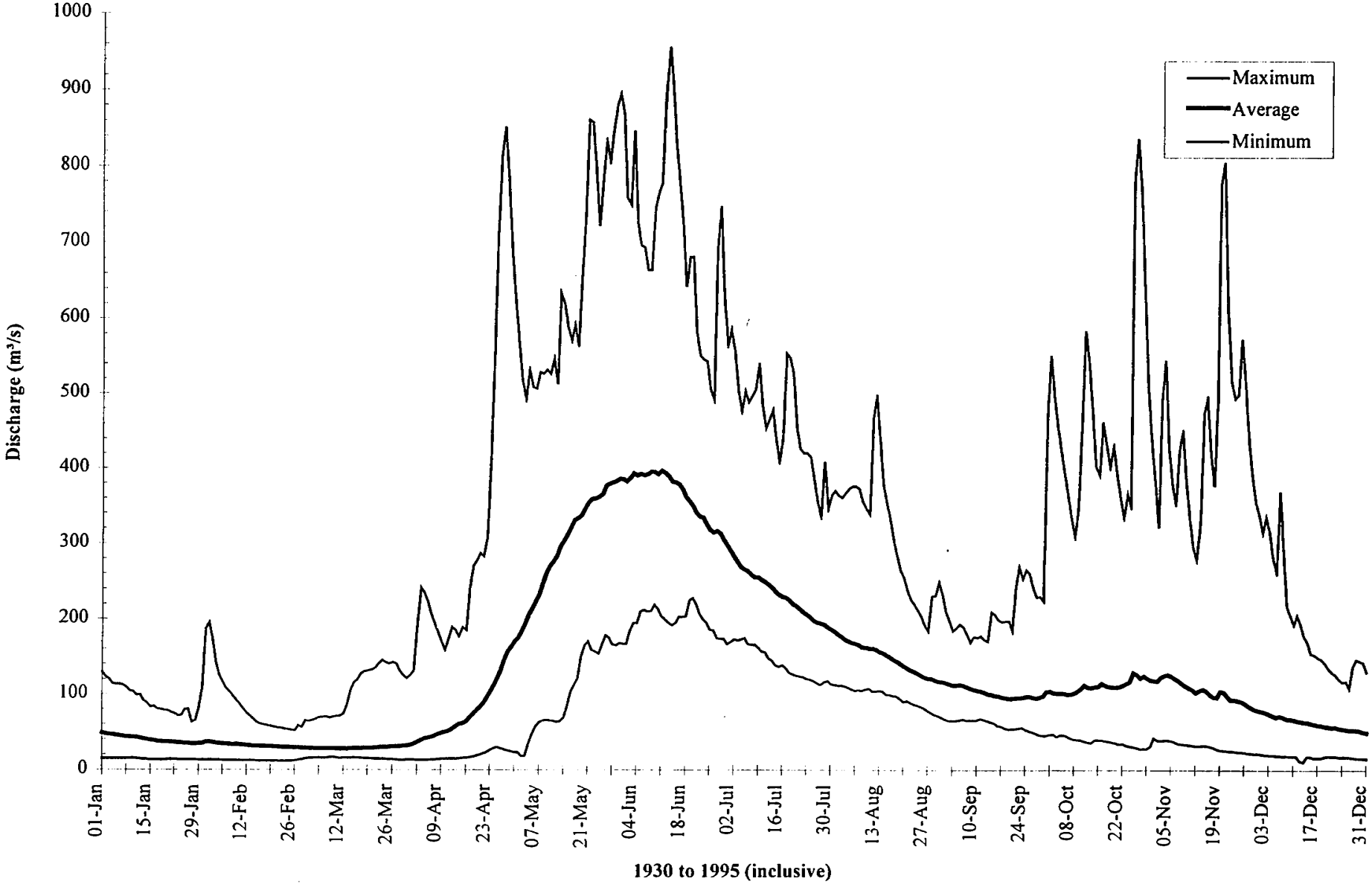
	Max. Instantaneous Discharge		Max. Daily Discharge		Min. Daily Discharge	
1931			405	20-Jun	10.5	13-Dec
1932			368	13-Jun		
1933			575	25-Nov		
1934			852	27-Apr		
1935			838	26-Oct		
1936			807	20-Nov		
1937			572	19-Jun		
1938			589	27-May		
1939			572	16-May		
1940			510	23-May		
1941			408	08-Jun		
1942			691	27-May		
1943			343	08-Jun		
1944			292	29-May		
1945			561	29-May		
1946			549	09-Jun	21.0	20-Feb
1947			538	31-May	17.0	03-Mar
1948			895	30-May	22.7	03-Mar
1949			510	28-May	13.8	28-Feb
1950			564	20-Jun	17.0	30-Jan
1951			634	13-May	21.2	03-Mar
1952			612	12-Jun	17.0	28-Feb
1953			671	09-Jun	14.9	07-Apr
1954			640	11-Jun	17.8	02-May
1955			374	25-Jun	19.8	23-Mar
1956			464	20-May		
1957			705	20-May	17.6	08-Mar
1958			640	31-May	25.2	21-Mar
1959			671	28-Jun	29.4	19-Feb
1960			450	28-Jun	23.1	05-Mar
1961			569	24-May	30.6	04-Feb
1962			748	28-Jun	27.8	19-Mar
1963			541	23-May	30.0	01-Apr
1964			847	03-Jun	20.4	26-Mar
1965			498	03-Jun	28.0	08-Jan
1966			532	09-May	40.8	02-Mar
1967			651	07-Jun	21.5	14-Mar
1968			861	21-May	38.2	18-Mar
1969			609	13-Jun	12.7	02-Apr
1970			459	04-Jun	17.6	30-Dec
1971			640	08-Jun	16.9	12-Jan
1972			957	13-Jun	19.5	10-Mar

Station Number: 08EE004
Latitude: 54:37:05N
Longitude: 126:53:55W
Drainage Area (km²): 7360
Station Name: BULKLEY RIVER AT QUICK

MAD: 142
Min Mean Daily (All Records): 10.5
Max Mean Daily (All Records): 957

	Max. Instantaneous Discharge		Max. Daily Discharge		Min. Daily Discharge	
1973	592	17-May	22.1	24-Mar		
1974	479	17-Jun	12.5	17-Jan		
1975	413	12-May	14.2	09-Apr		
1976	682	19-Jun	24.3	19-Mar		
1977	566	27-Apr	28.6	20-Mar		
1978	547	03-Nov	18.1	06-Mar		
1979	532	04-May	17.1	04-Mar		
1980	408	13-May	11.3	25-Feb		
1981	677	26-May	31.1	31-Dec		
1982	658	03-Jun	17.8	06-Apr		
1983	406	03-Jun	17.0	18-Mar		
1984	354	15-Jun	19.8	20-Jan		
1985	642	26-May	14.6	31-Dec		
1986	721	16-Jun	12.7	23-Feb		
1987	438	10-Jun	23.0	14-Mar		
1988	523	14-May	22.8	18-Mar		
1989	529	07-May	19.8	27-Mar		
1990	530	29-May	28.7	24-Mar		
1991	425	20-May	26.9	25-Mar		
1992	553	01-Oct	30.0	31-Dec		
1993	597	21-May	25.0	16-Jan		
1994	453	22-May	22.8	23-Feb		
1995	589	15-May	17.1	06-Mar		

Mean Daily Discharges - BULKLEY RIVER AT QUICK, 1930 to 1995 (inclusive)



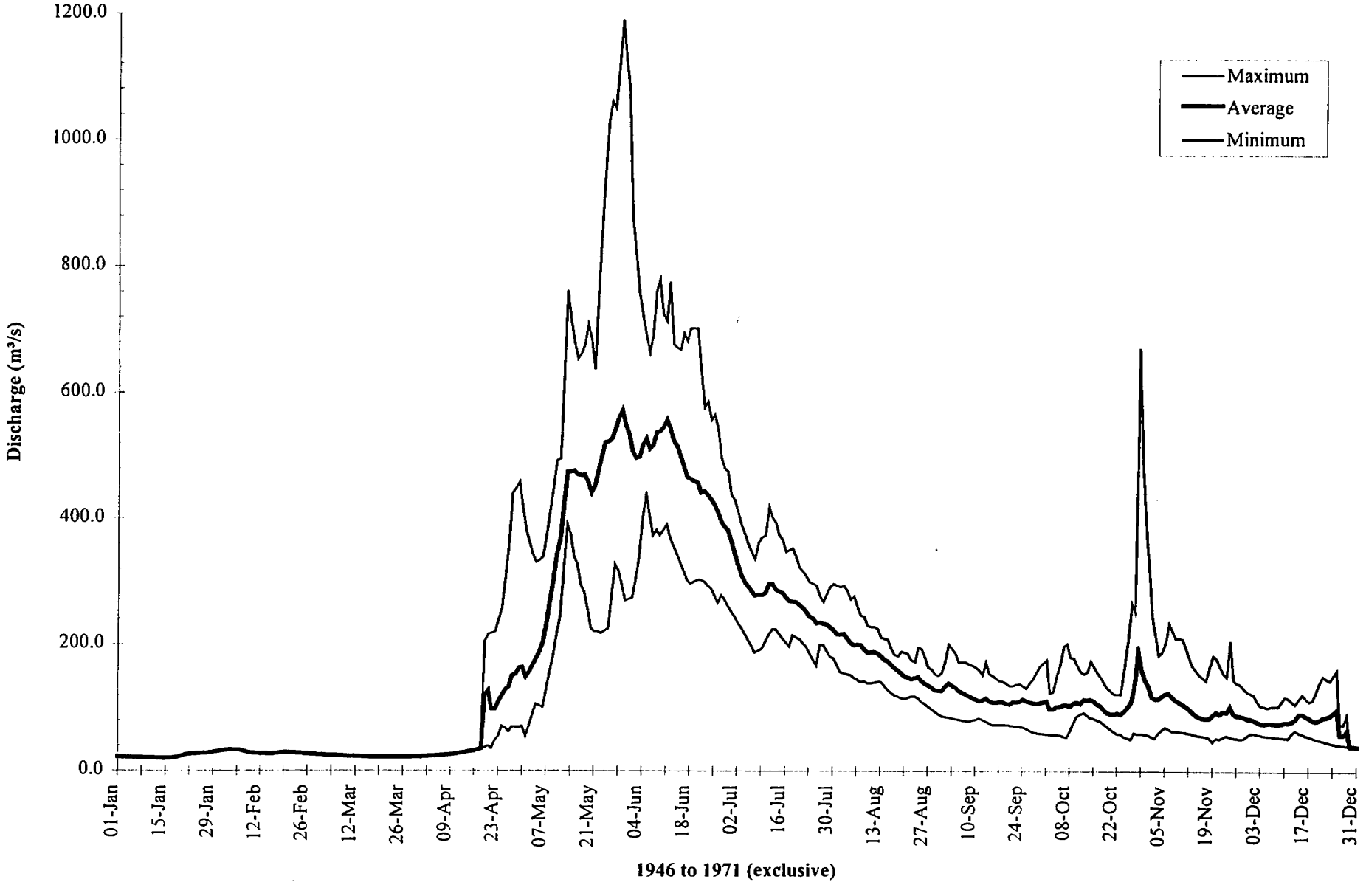
Station Number: 08EE005
Latitude: 54:46:58N
Longitude: 127:07:59W
Drainage Area (km²): 8940
Station Name: BULKLEY RIVER NEAR SMITHERS

MAD: 210
Min Mean Daily (All Records): 19.8
Max Mean Daily (All Records): 1190

	Max. Instantaneous Discharge	Max. Daily Discharge		Min. Daily Discharge	
1947		714	31-May		
1948		1190	29-May		
1949		580	24-May		
1950		702	18-Jun		
1951		762	13-May		
1952		776	12-Jun		
1971		779	09-Jun	19.8	13-Jan

08JE005.XLS

Mean Daily Discharges - BULKLEY RIVER NEAR SMITHERS, 1946 to 1971 (exclusive)

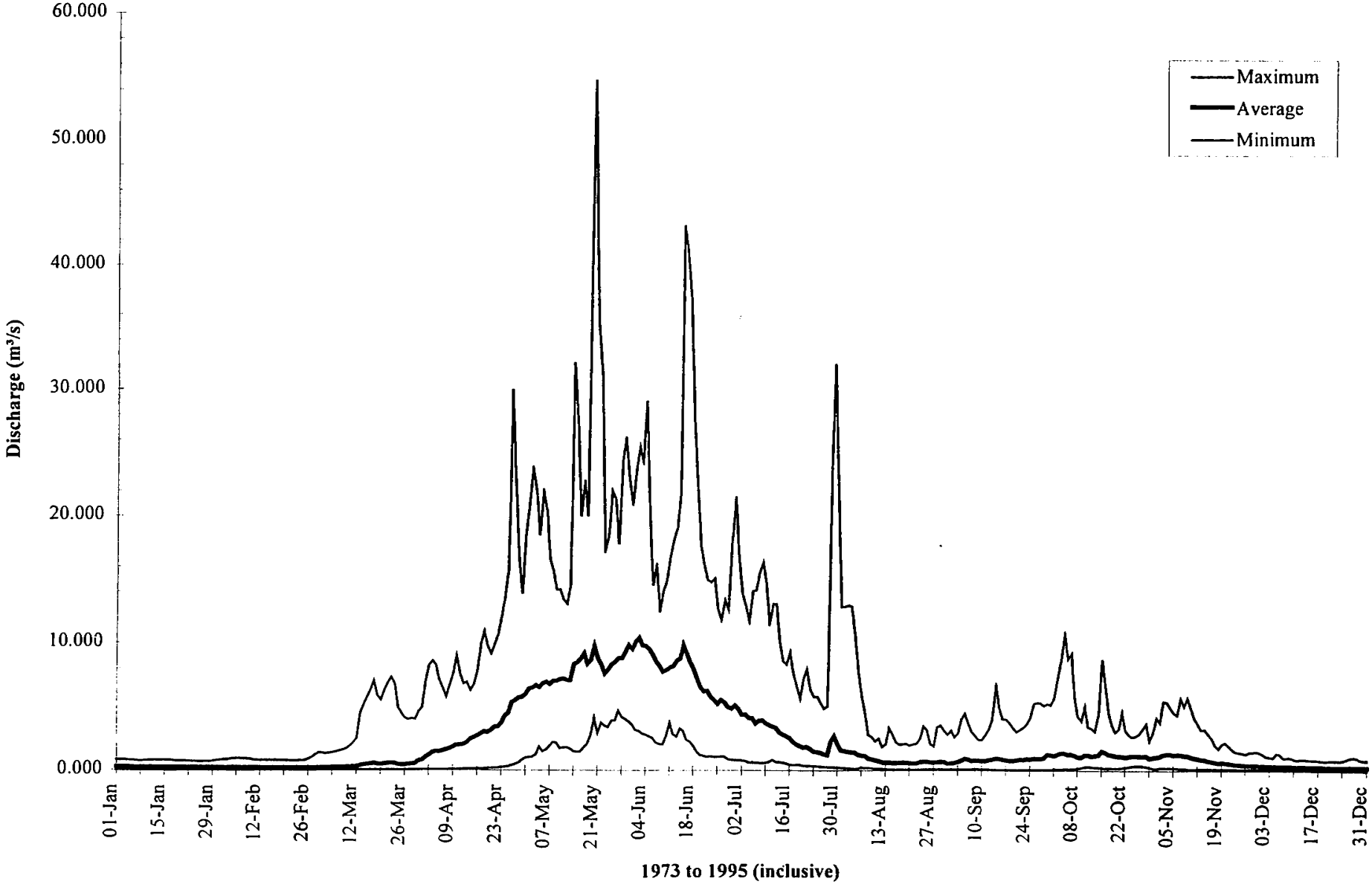


Station Number: 08EE014
Latitude: 54:47:54N
Longitude: 127:06:41W
Drainage Area (km²): 256
Station Name: CANYON CREEK NEAR SMITHERS

MAD: 2.22
Min Mean Daily (All Records): 0.008
Max Mean Daily (All Records): 54.8

	Max. Instantaneous Discharge	Max. Daily Discharge		Min. Daily Discharge	
1974		15.9	17-Jun	0.008	15-Jan
1975		16.4	02-Jun	0.093	18-Mar
1976		23.8	02-May	0.110	11-Mar
1977		30.0	26-Apr	0.224	31-Dec
1978		14.3	03-Jun	0.088	03-Mar
1979		13.5	03-Jun	0.065	28-Feb
1980		14.6	13-May	0.071	23-Mar
1981		22.0	25-May	0.164	31-Dec
1982		25.5	02-Jun	0.084	28-Mar
1983		13.3	30-May	0.093	12-Feb
1984		18.1	12-Jun	0.102	22-Jan
1985		20.1	25-May	0.100	17-Feb
1986		43.2	15-Jun	0.012	23-Feb
1987		15.6	05-Jun	0.138	02-Mar
1988		13.3	13-May	0.160	11-Feb
1989		13.6	07-May	0.041	27-Feb
1990		29.1	04-Jun	0.080	16-Sep
1991		9.93	20-May	0.064	13-Jan
1992		17.7	30-May	0.110	14-Aug
1993		54.8	20-May	0.148	22-Jan
1994		14.3	14-Jun	0.114	31-Dec
1995		15.0	14-May	0.090	23-Jan

Mean Daily Discharges - CANYON CREEK NEAR SMITHERS, 1973 to 1995 (inclusive)

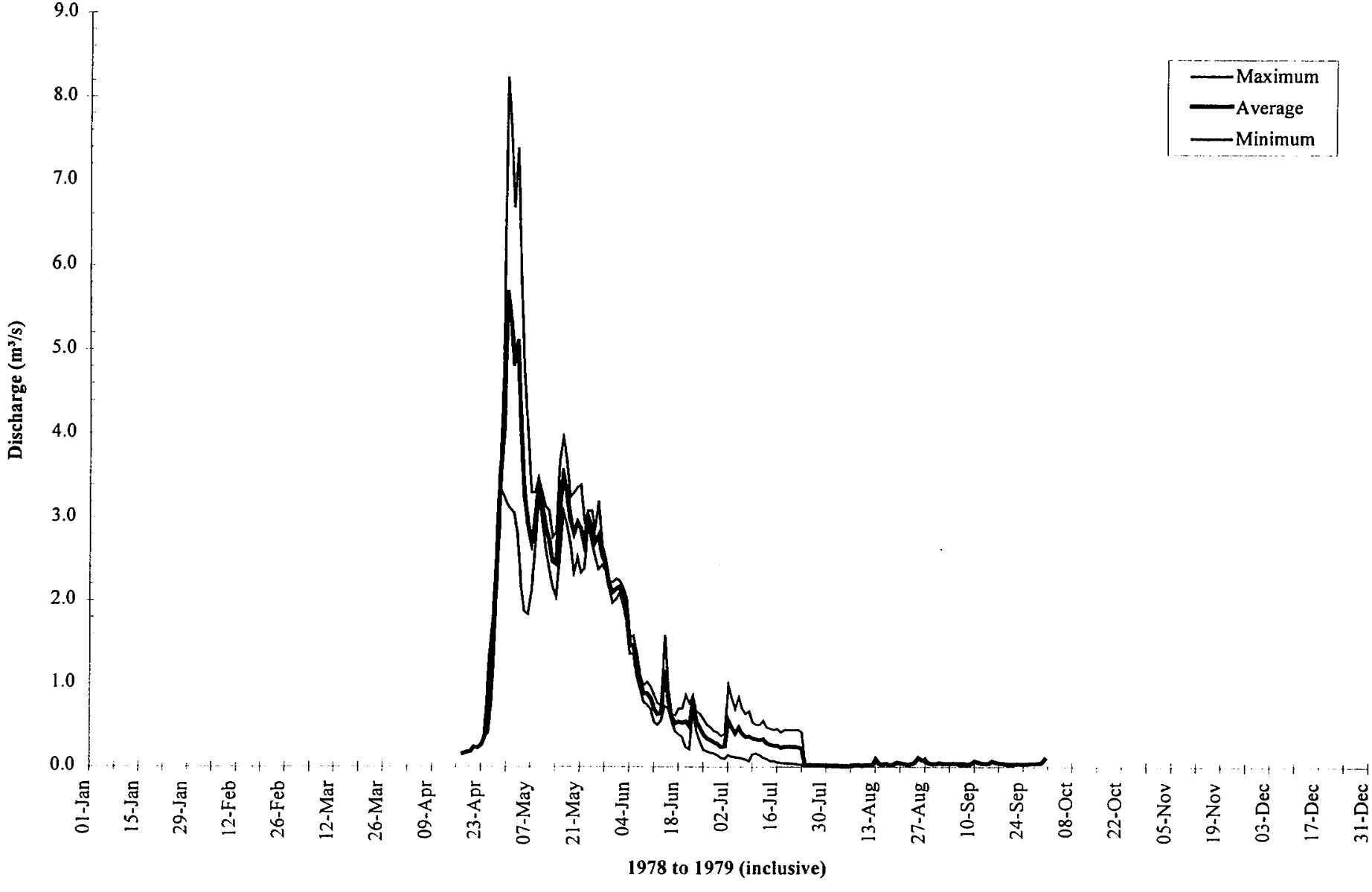


Station Number: 08EE022
Latitude: 54:35:32N
Longitude: 126:50:03W
Drainage Area (km²): 89.9
Station Name: DEEP CREEK BELOW GIBSON CREEK

MAD: 1.25
Min Mean Daily (All Records): 0.011
Max Mean Daily (All Records): 8.24

	Max. Instantaneous Discharge	Max. Daily Discharge		Min. Daily Discharge	
1978		3.96	16-May	0.011	04-Aug
1979		8.24	30-Apr		

Mean Daily Discharges - DEEP CREEK BELOW GIBSON CREEK, 1978 to 1979 (inclusive)

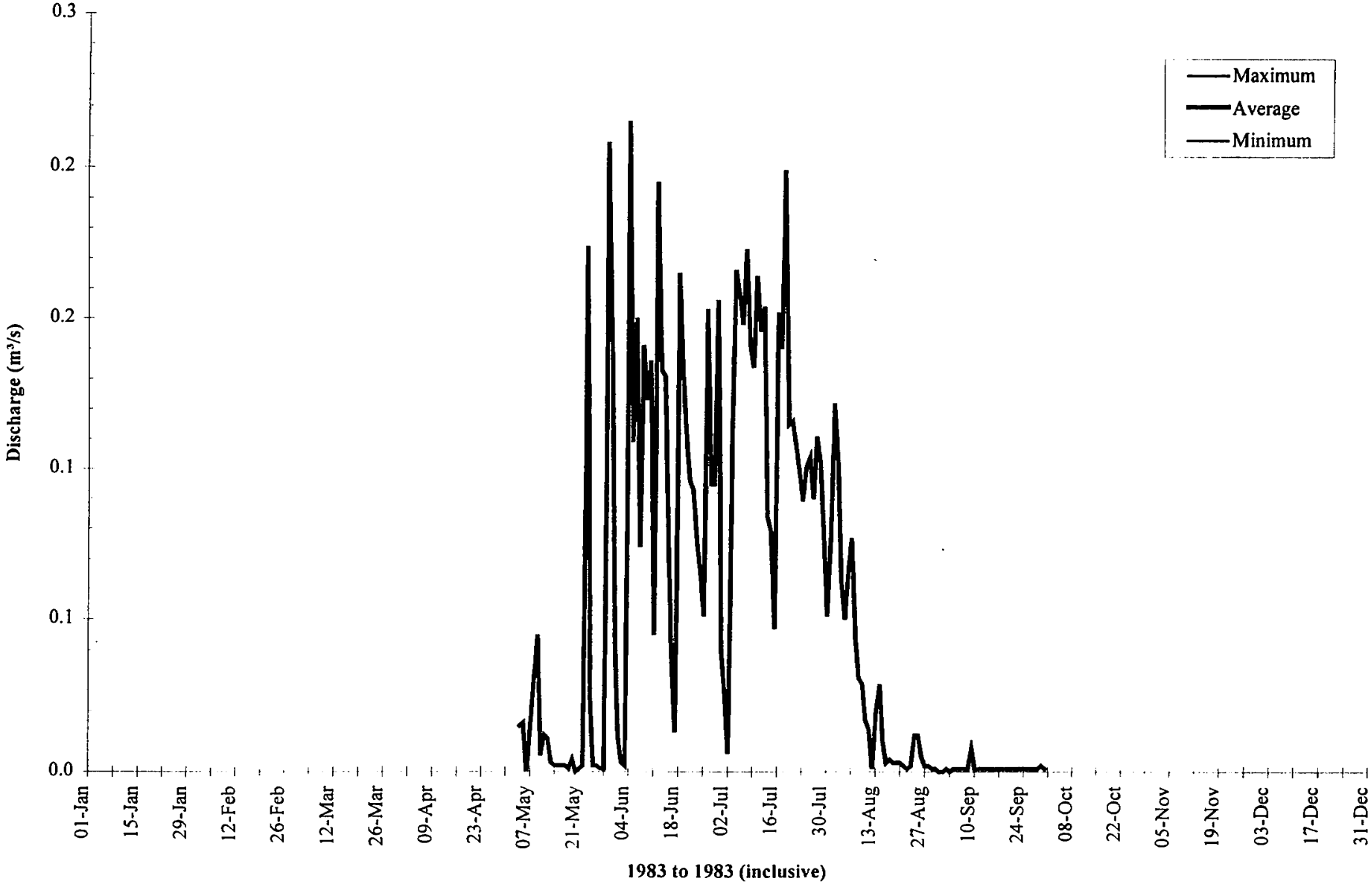


Station Number: 08EE027
Latitude: 54:41:05N
Longitude: 127:01:25W
Drainage Area (km²):
Station Name: TYHEE CREEK AT OUTLET OF TYHEE LAKE

MAD: 0.053
Min Mean Daily (All Records): 0.000
Max Mean Daily (All Records): 0.215

	Max. Instantaneous Discharge	Max. Daily Discharge		Min. Daily Discharge	
1983		0.215	04-Jun	0.000	06-May

Mean Daily Discharges - TYHEE CREEK AT OUTLET OF TYHEE LAKE, 1983 to 1983 (inclusive)



APPENDIX 2

Fish Data

Appendix 2. Summary of Fish Data Collected in Working Unit 12 in 1996 and 1997

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Species	Number	Size Range	Life Phase	Fishing Method
068-2200-000-000-000-000-	Trib to Bulkley R.	JULIE 260, Unit 12	93 L 066	9 .6307 .60557	1	09/29/96	TEC	RB	2.00	96-97	J	EL
068-2200-000-000-000-000-	Trib to Bulkley R.	JULIE 260, Unit 12	93 L 066	9 .6307 .60557	1	09/29/96	TEC	CT	1.00	84	J	EL
460-3254-624-000-000-000-	Burbridge Cr.	E235, Unit 12	93 L 076	9 .6390 .60677	1	08/21/97	TEC	DV	1.00	135	J	EL
460-3254-000-000-000-000-	Canyon Cr.	Y44, Unit 12	93 L 076	9 .6406 .60697	7	07/16/97	TEC	DV	18.00	30-180	NA	EL
480-6972-427-000-000-000-	Trib. to Canyon Cr.	HASLETT 107, Unit 12	93 L 076	9 .6411 .60743	1	08/21/96	TEC	DV	1.00	128	J	EL
460-3254-005-190-000-000-	Trib. to Canyon Cr.	RYAN 89, Unit 12	93 L 076	9 .6356 .60715	1	09/22/96	TEC	DV	1.00	60	J	EL
078-4100-000-000-000-000-	Trib. to Canyon Cr.	RYAN 92, Unit 12	93 L 076	9 .6413 .60743	1	09/22/96	TEC	DV	1.00	170	A	EL
078-3100-000-000-000-000-	Trib. to Canyon Cr.	Y191, Unit 12	93 L 077	9 .6462 .6072550	5	08/21/97	TEC	TR	2.00	25	F	VO
078-3100-000-000-000-000-	Trib to Canyon Cr.	W211, Unit 12	93 L 076	9 .6413 .60710	1	08/21/97	TEC	RB	2.00	105-142	J	EL
078-3100-000-000-000-000-	Trib to Canyon Cr.	W211, Unit 12	93 L 076	9 .6413 .60710	1	08/21/97	TEC	DV	1.00	65	J	EL
078-3100-000-000-000-000-	Trib to Canyon Cr.	W288, Unit 12	93 L 076	9 .6412 .60709	1	08/21/97	TEC	RB	2.00	105-142	J	EL
078-3100-000-000-000-000-	Trib to Canyon Cr.	W288, Unit 12	93 L 076	9 .6412 .60709	1	08/21/97	TEC	DV	1.00	65	J	EL
460-4727-000-000-000-000-	Coffin Cr.	Y150, Unit 12	93 L 056	9 .6342 .60485	3	08/13/97	TEC	DV	6.00	137-170	A	EL
068-7800-000-000-000-000-	De Jong Cr.	Z9, Unit 12	93 L 066	9 .6375 .60593	1	07/09/97	TEC	CT	3.00		J	EL
460-4961-000-000-000-000-	Deep Cr.	JULIE 280, Unit 12	93 L 066	9 .6409 .60537	1	10/01/96	TEC	RB	8.00	47-125	J	EL
460-4961-000-000-000-000-	Deep Cr.	Y172, Unit 12	93 L 067	9 .651105.6055047	6	08/18/97	TEC	RB	35.00	30-120	J	EL
460-4961-000-000-000-000-	Deep Cr.	Y176, Unit 12	93 L 067	9 .651711.6054032	8	08/18/97	TEC	RB	1.00	300	NA	VO
460-4961-000-000-000-000-	Deep Cr.	Y176, Unit 12	93 L 067	9 .651711.6054032	8	08/18/97	TEC	SA	2.00	86-100	NA	EL
460-4961-000-000-000-000-	Deep Cr.	W195, Unit 12	93 L 067	9 .6421 .60539	2	08/18/97	TEC	RB	77.00	30-180	J	EL
070-1300-000-000-000-000-	Trib to Deep Cr.	Y171, Unit 12	93 L 067	9 .6515 .60549	1	08/18/97	TEC	RB	132.00	5-40	F	VO
070-1300-000-000-000-000-	Trib to Deep Cr.	Y173, Unit 12	93 L 067	9 .6516 .60551	1	08/18/97	TEC	RB	30.00	20-50	F	VO
068-3500-000-000-000-000-	Trib to Deep Cr.	W196, Unit 12	93 L 066	9 .6418 .60535	2	08/18/97	TEC	RB	21.00	40	F	EL
068-3700-000-000-000-000-	Trib to Deep Cr.	W197, Unit 12	93 L 066	9 .6418 .60534	1	08/18/97	TEC	CT	4.00	85	J	EL
068-3700-000-000-000-000-	Trib to Deep Cr.	W197, Unit 12	93 L 066	9 .6418 .60534	1	08/18/97	TEC	SA	10.00	35-45	F	VO
069-5500-000-000-000-000-	Trib to Deep Cr.	W202, Unit 12	93 L 067	9 .6462 .61572	1	08/19/97	TEC	CT	13.00	50-150	J	EL
069-3400-000-000-000-000-	Trib to Deep Cr.	W203, Unit 12	93 L 067	9 .6460 .60568	1	08/19/97	TEC	DV	2.00	65-115	J	EL
033-7100-000-000-000-000-	Trib. to Deep Cr.	E208, Unit 12	93 L 067	9 .6481 .60536	4	08/18/97	TEC	CT	3.00	60-80	J	EL
069-8100-000-000-000-000-	Trib. to Deep Cr.	E210, Unit 12	93 L 067	9 .6482 .60544	2	08/18/97	TEC	CT	5.00	60-100	J	EL
069-8200-000-000-000-000-	Trib. to Deep Cr.	E212, Unit 12	93 L 067	9 .6481 .60563	1	08/18/97	TEC	CT	3.00	70-90	J	EL
460-3254-265-000-000-000-	Ganokwa Cr.	RYAN 85, Unit 12	93 L 086	9 .6319 .60748	1	09/21/96	TEC	DV	7.00	40-120	J	EL
460-4961-087-000-000-000-	Gibson Cr.	JULIE 281, Unit 12	93 L 056	9 .6409 .60516	1	10/02/96	TEC	RB	1.00	82	J	EL
067-1900-000-000-000-000-	Trib. to Gibson Cr.	E299, Unit 12	93 L 057	9 .6426 .60502	1	09/13/97	TEC	CT	1.00	120	A	EL
460-4370-000-000-000-000-	Trib to Helps Cr.	JULIE 235, Unit 12	93 L 065	9 .6246 .60571	1	09/27/96	TEC	CT	4.00	66-100	J	EL
061-0700-000-000-000-000-	Trib to Helps Cr.	JULIE 238, Unit 12	93 L 065	9 .6244 .60558	1	09/27/96	TEC	RB	3.00	40-52	J	EL
460-4370-000-000-000-000-	Helps Cr.	JULIE 241, Unit 12	93 L 065	9 .6266 .60543	5	09/27/96	TEC	DV	1.00	142	A	EL
460-4370-000-000-000-000-	Helps Cr.	W22, Unit 12	93 L 065	9 .6280 .60596	2	07/11/97	TEC	BB	1.00	90	J	EL

Watershed Code	Stream "Local"	Location	TRIM Number	UTM	Reach Number	Survey Date	Agency	Species	Number	Size Range	Life Phase	Fishing Method
460-4370-000-000-000-000-	Helps Cr.	W22, Unit 12	93 L 065	9 .6280 .60596	2	07/11/97	TEC	RB	4.00	60-100	J	EL
460-4726-000-000-000-000-	Lacroix Cr.	Z6, Unit 12	93 L 066	9 .63376 .605954	1	07/09/97	TEC	PCC	50.00	240-230	A	VO
068-9900-000-000-000-000-	Trib to Lacroix Cr.	W206, Unit 12	93 L 066	9 .6327 . 60615	1	08/20/97	TEC	RB	2.00	30	F	EL
460-4879-111-000-000-000-	Lemieux Cr.	Z11, Unit 12	93 L 066	9 .63852 . 605467	1	07/09/97	TEC	NSC	5.00	50-80	J	EL
460-4879-111-000-000-000-	Lemieux Cr.	Z11, Unit 12	93 L 066	9 .63852 . 605467	1	07/09/97	TEC	LNC	1.00	60	J	EL
460-4879-111-000-000-000-	Lemieux Cr.	Y8, Unit 12	93 L 066	9 .6391 .60564	3	07/10/97	TEC	SU	15.00	50-150	J	VO
460-4879-111-000-000-000-	Lemieux Cr.	Y9, Unit 12	93 L 066	9 .6383 .60579	5	07/10/97	TEC	CT	1.00	28	F	EL
068-6300-000-000-000-000-	Trib to Lemieux Cr.	W207, Unit 12	93 L 066	9 .6397 .60594	1	08/20/97	TEC	CT	6.00	120-155	J	EL
068-6300-000-000-000-000-	Trib to Lemieux Cr.	W207, Unit 12	93 L 066	9 .6397 .60594	1	08/20/97	TEC	RB	1.00	51	J	EL
068-6300-000-000-000-000-	Trib to Lemieux Cr.	W207, Unit 12	93 L 066	9 .6397 .60594	1	08/20/97	TEC	DV	1.00	155	J	EL
460-3254-265-159-000-000-	Lyon Cr.	RYAN 83, Unit 12	93 L 086	9 .6294 . 60761	1	09/21/96	TEC	DV	3.00	100-170	J	EL
460-3254-265-159-000-000-	Lyon Cr.	E275, Unit 12	93 L 086	9 .6310 .60791	2	09/09/97	TEC	DV	7.00	50-145	J	EL
050-2200-000-000-000-000-	Trib. to Lyon Cr.	ARNE 17, Unit 12	93 L 086	9 .6299 ,60760	1	09/21/96	TEC	DV	21.00	35-165	J	EL
460-4353-000-000-000-000-	Mc Dowell Cr.	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	RB	2.00	42-30	J	EL
460-4353-000-000-000-000-	Mc Dowell Cr.	JULIE 233, Unit 12	93 L 065	9 .6276 .60604	1	09/27/96	TEC	CO	1.00	73	J	EL
460-4353-000-000-000-000-	McDowell Cr.	W13, Unit 12	93 L 066	9 .6298 .60601	1	07/10/97	TEC	RB	2.00	100-150	A	VO
460-3602-245-000-000-000-	McDowell Cr.	W16, Unit 12	93 L 066	9 .6313 .60628	2	07/10/97	TEC	RB	11.00	160-175	A	EL
460-4353-000-000-000-000-	McDowell Cr.	W216, Unit 12	93 L 076	9 .6311 .60638	3	08/22/97	TEC	RB	1.00	185-200	A	EL
460-7449-000-000-000-000-	Trib to McQuarrie Cr.	Y181, Unit 12	93 L 057	9 .6474 .60517	2	08/19/97	TEC	RB	1.00	200	A	EL
460-7449-000-000-000-000-	Trib to McQuarrie Cr.	Y181, Unit 12	93 L 057	9 .6474 .60517	2	08/19/97	TEC	RB	1.00	56	J	EL
067-8200-000-000-000-000-	Trib. to McQuarrie L.	Z155, Unit 12	93 L 067	9 .6500 . 605290	1	08/19/97	TEC	TR	10.00	30	F	VO
067-8200-000-000-000-000-	Trib. to McQuarrie L.	Z155, Unit 12	93 L 067	9 .6500 . 605290	1	08/19/97	TEC	RB	13.00	30-100	J	EL
067-9300-000-000-000-000-	Trib. to McQuarrie L.	Y182, Unit 12	93 L 057	9 .6493 .60519	1	08/19/97	TEC	RB	1.00	63	J	EL
067-9300-000-000-000-000-	Trib. to McQuarrie L.	Y182, Unit 12	93 L 057	9 .6493 .60519	1	08/19/97	TEC	TR	40.00	20-35	F	VO
067-8800-000-000-000-000-	Trib. to McQuarrie L.	Y178, Unit 12	93 L 057	9 .649041.6050490	1	08/19/97	TEC	TR	20.00	30-40	F	VO
067-8800-000-000-000-000-	Trib. to McQuarrie L.	Y178, Unit 12	93 L 057	9 .649041.6050490	1	08/19/97	TEC	RB	2.00	54-57	J	EL
067-8100-000-000-000-000-	Trib. to McQuarrie L.	Z161, Unit 12	93 L 057	9 .651335.6049920	1	08/19/97	TEC	RB	2.00	43	J	EL
460-7449-858-000-000-000-	Trib. to McQuarrie L.	Y177, Unit 12	93 L 057	9 .649182.6050290	1	08/19/97	TEC	TR	20.00	30-40	F	VO
460-7449-858-000-000-000-	Trib. to McQuarrie L.	Y177, Unit 12	93 L 057	9 .649182.6050290	1	08/19/97	TEC	RB	3.00	64-100	J	EL
460-5177-000-000-000-000-	Thompson Cr.	E296, Unit 12	93 L 057	9 .6440 .60475	2	09/12/97	TEC	DV	5.00	60-85	J	EL
460-5177-000-000-000-000-	Thompson Cr.	E296, Unit 12	93 L 057	9 .6440 .60475	2	09/12/97	TEC	CT	11.00	25-194	J	EL
006-7310-000-000-000-000-	Trib. to Thompson Cr.	E297, Unit 12	93 L 057	9 .6443 .60476	1	09/12/97	TEC	CT	1.00	91	J	EL
460-4309-000-000-000-000-	Tyhee Cr.	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	CT	2.00	20-30	J	EL
460-4309-000-000-000-000-	Tyhee Cr.	W21, Unit 12	93 L 065	9 .6275 .60617	1	07/11/97	TEC	SA	100.00	20-30	J	VO
068-7100-000-000-000-000-	Vanderven Cr.	Z8, Unit 12	93 L 066	9 .63694 . 605951	1	07/09/97	TEC	CT	4.00	110-140	J	EL
068-7100-000-000-000-000-	Vanderven Cr.	W204, Unit 12	93 L 066	9 .6372 .60633	2	08/20/97	TEC	RB	11.00	55	J	EL
068-7600-000-000-000-000-	Trib to Vanderven Cr.	W205, Unit 12	93 L 066	9 .6372 .60627	1	08/20/97	TEC	RB	1.00	42	F	EL

APPENDIX 3

Photodocumentation Summary

Appendix 3. Photodocumentation Summary for Working Unit 12

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
A	2	5	46043090075800000000	AKL HK	A13	Unit 12	TEC	21/09/96	Trib. to Tyhee L.	93 L 075	9	6270000	606620	GPS	1	W	Dn	Ch		Looking downstream.
A	2	6	46043090075800000000	AKL HK	A13	Unit 12	TEC	21/09/96	Trib. to Tyhee L.	93 L 075	9	6270000	606620	GPS	1	W	Dn	Ch		Looking downstream towards road.
A	2	4	46043090075800000000	AKL HK	A13	Unit 12	TEC	21/09/96	Trib. to Tyhee L.	93 L 075	9	6270000	606620	GPS	1	W	Up	Ch		Looking upstream.
A	2	7	05154000000000000000	AKL HK	A14	Unit 12	TEC	21/09/96	Trib. to Bulkley R.	93 L 075	9	6243000	606870	GPS	1	W	Dn	Ch		Looking downstream, channel through pasture.
A	2	8	05154000000000000000	AKL HK	A14	Unit 12	TEC	21/09/96	Trib. to Bulkley R.	93 L 075	9	6243000	606870	GPS	1	W	Up	Ch		Looking upstream in dry channel.
A	2	9	05154000000000000000	AKL HK	A14	Unit 12	TEC	21/09/96	Trib. to Bulkley R.	93 L 075	9	6243000	606870	GPS	1	W		O		Dry pool upstream of road crossing.
A	2	10	05142000000000000000	AKL HK	A15	Unit 12	TEC	21/09/96	Trib. to Lyon Cr.	93 L 086	9	6286000	607590	GPS	1	S	Up	Ch		Looking upstream.
A	2	11	05142000000000000000	AKL HK	A15	Unit 12	TEC	21/09/96	Trib. to Lyon Cr.	93 L 086	9	6286000	607590	GPS	1	S	Dn	Ch	notebook	Looking downstream in dry channel.
A	2	12	05142000000000000000	AKL HK	A15	Unit 12	TEC	21/09/96	Trib. to Lyon Cr.	93 L 086	9	6286000	607590	GPS	1	S	Dn	Ch		Looking downstream, overview of new channel.
A	2	14	05028000000000000000	AKL HK	A16	Unit 12	TEC	21/09/96	Trib. to Lyon Cr.	93 L 086	9	6290000	607590	GPS	1	SW	Dn	Ch		Looking downstream in dry channel.
A	2	13	05028000000000000000	AKL HK	A16	Unit 12	TEC	21/09/96	Trib. to Lyon Cr.	93 L 086	9	6290000	607590	GPS	1	SW	Up	Ch		Looking upstream, moss-covered LOD.
A	2	15	05022000000000000000	AKL HK	A17	Unit 12	TEC	21/09/96	Badley Cr.	93 L 086	9	6299000	607600	GPS	1	S	Dn	Ch		Looking downstream.
A	2	16	05022000000000000000	AKL HK	A17	Unit 12	TEC	21/09/96	Badley Cr.	93 L 086	9	6299000	607600	GPS	1	S	Up	Ch	Arne	Looking upstream.
A	2	17	05037000000000000000	AKL HK	A18	Unit 12	TEC	21/09/96	Trib. to Ganokwa Cr.	93 L 086	9	6312000	607510	GPS	1	SW	Up	Ch		Looking upstream towards beaver pond.
A	2	18	05037000000000000000	AKL HK	A18	Unit 12	TEC	21/09/96	Trib. to Ganokwa Cr.	93 L 086	9	6312000	607510	GPS	1	SW	Dn	O		Looking downstream towards beaver dam.
A	2	20	07874000000000000000	AKL HK	A19	Unit 12	TEC	21/09/96	Trib. to Ganokwa Cr.	93 L 086	9	6343000	607570	GPS	1	W	Dn	Ch		Looking downstream.
A	2	24	46032540051900000000	RH JL	R89	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6356000	607150	GPS	1	S	Dn	Ch		Looking downstream past gravel bar.
A	2	27	07792000000000000000	RH JL	R90	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6388000	607150	GPS	2	S	Up	Ve		Looking upstream.
A	2	32	07841000000000000000	RH JL	R92	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6413000	607430	GPS	1	SW		Fi		Dolly Varden caught by electrofishing.
A	2	33	07841000000000000000	RH JL	R92	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6413000	607430	GPS	1	SW	Dn	Ch		Looking downstream.
A	2	23	07793000000000000000	AKL HK	A20	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6349000	607160	GPS	1	S	Up	Ch	notebook	Looking upstream.
A	2	21	07793000000000000000	AKL HK	A20	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6349000	607160	GPS	1	S	Up	Ch		Looking upstream.
A	2	22	07793000000000000000	AKL HK	A20	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6349000	607160	GPS	1	S	Dn	Ch		Looking downstream.
A	2	25	07795000000000000000	AKL HK	A21	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6368000	607160	GPS	1	W	Up	Ch		Looking upstream.
A	2	26	07795000000000000000	AKL HK	A21	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6368000	607160	GPS	1	W	Dn	Ch	meterstick	Looking downstream.
A	2	28	07836000000000000000	AKL HK	A22	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6405000	607210	GPS	1	E	Up	Ch		Looking upstream.
A	2	29	07836000000000000000	AKL HK	A22	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6405000	607210	GPS	1	E	Dn	Ch		Looking downstream.
A	2	31	07839000000000000000	AKL HK	A23	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6410000	607340	GPS	1	SE	Dn	Ch		Looking downstream, moss covered boulders.
A	2	30	07839000000000000000	AKL HK	A23	Unit 12	TEC	22/09/96	Trib. to Canyon Cr.	93 L 076	9	6410000	607340	GPS	1	SE	Up	Ch	meterstick	Looking upstream.
A	2	34	07877000000000000000	AKL HK	A24	Unit 12	TEC	22/09/96	Trib. to Ganokwa Cr.	93 L 076	9	6349000	607410	GPS	1	SW		Ch	notebook	Notebook on bank of shaded stream.

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
E	21	25	0663300000000000000	SJ EM	E224	Unit 12	TEC	8/20/97	Trib. to Bulkley R.	93 L 056	9	6362000	605000	GPS	3	W	Up	Ve	photoboard	Looking upstream at the channel covered by red osier dogwood
E	22	1	0668100000000000000	SJ EM	E225	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6320000	604950	GPS	1	NE	Up	Ve	photoboard, crew member	Looking upstream at the channel, covered by vegetation
E	22	2	0668100000000000000	SJ EM	E225	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6320000	604950	GPS	1	SW	Dn	Ve	photoboard, crew member	Looking downstream at the channel
E	22	3	0666100000000000000	SJ EM	E226	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6314000	605350	GPS	1	SW	Up	Ve	backpack	Looking upstream at the channel, covered by dense riparian vegetation
E	22	4	0666100000000000000	SJ EM	E226	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6314000	605350	GPS	1	NE	Dn	Ve	backpack	Looking downstream at the channel
E	22	7	0665300000000000000	SJ EM	E228	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6311000	605110	GPS	1	SW	Up	Ch	vest	Looking upstream at the channel
E	22	8	0665300000000000000	SJ EM	E228	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6311000	605110	GPS	1	NE	Dn	Ve	electroshocker wand	Looking downstream at the channel, overgrown with fern, cow parsnip, fireweed and alder
E	22	9	1100100000000000000	SJ EM	E229	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6315000	605160	GPS	1	W	Up	Ch	meterstick	Looking upstream at the channel
E	22	10	1100100000000000000	SJ EM	E229	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6315000	605160	GPS	1	E	Dn	Ch	meterstick	Looking downstream at the channel
E	22	11	1100100000000000000	SJ EM	E229	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6315000	605160	GPS	1		X	Ch	crew member	Looking across stream at the channel, note the cattle tracks in the mud
E	22	12	0778300000000000000	SJ EM	E230	Unit 12	TEC	8/20/97	Trib. to Canyon Cr.	93 L 076	9	6303000	607050	GPS	1	W	Up	Ch	helicopter tail rotor	Looking upstream at the channel flowing through a meadow
E	22	13	0778300000000000000	SJ EM	E230	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 076	9	6303000	607050	GPS	1	E	Dn	Ch	helicopter tail rotor	Looking downstream at the channel
E	22	17	0782000000000000000	SJ EM	E233	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 076	9	6355000	606730	GPS	1	SE	Up	Ch	crew member	Looking upstream at the channel and a crew member collecting a water sample
E	22	16	0782000000000000000	SJ EM	E233	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 076	9	6355000	606730	GPS	1	NW	Dn	Ch	NA	Looking downstream at the channel and a crew member electrofishing
E	22	22	4603254624000000000	SJ EM	E235	Unit 12	TEC	8/21/97	Burbridge Cr.	93 L 076	9	6390000	606770	GPS	1	NA	NA	Fi	fieldbook	Measuring fish on the fish board
E	22	20	4603254624000000000	SJ EM	E235	Unit 12	TEC	8/21/97	Burbridge Cr.	93 L 076	9	6390000	606770	GPS	1	E	Up	Ch	crew member	Looking upstream at the channel and a crew member electrofishing
E	22	21	4603254624000000000	SJ EM	E235	Unit 12	TEC	8/21/97	Burbridge Cr.	93 L 076	9	6390000	606770	GPS	1	W	Dn	Ch	crew member	Looking downstream at the channel, note the willow cover
E	22	14	0780800000000000000	SJ EM	E231	Unit 12	TEC	8/21/97	Not a creek	93 L 076	9	6345000	606920	GPS	0	NA	NA	Ve	crew member	Looking at an NC
E	22	15	0782100000000000000	SJ EM	E232	Unit 12	TEC	8/21/97	Not a creek	93 L 076	9	6349000	606730	GPS	0	NA	NA	Ve	crew member	Looking at an alder swale
E	22	24	4603254624000000000	SJ EM	E236	Unit 12	TEC	8/21/97	Burbridge Cr.	93 L 076	9	6407000	606750	GPS	2	S	Up	Ch	vest	Looking upstream at the channel and a beaver dam
E	22	23	4603254624000000000	SJ EM	E236	Unit 12	TEC	8/21/97	Burbridge Cr.	93 L 076	9	6407000	606750	GPS	2	N	Dn	Ch	vest	Looking downstream at the channel and a beaver dam
E	25	12	0779200000000000000	SJ JL	E268	Unit 12	TEC	9/8/97	Trib. to Canyon Cr.	93 L 086	9	6377000	607470	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel, note the moss on the substrate

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
E	25	13	0779200000000000000	SJ JL	E268	Unit 12	TEC	9/8/97	Trib. to Canyon Cr.	93 L 086	9	6377000	607470	GPS	1		X	Ch	NA	Looking across stream at the channel, note the corduroy road
E	25	11	0779200000000000000	SJ JL	E268	Unit 12	TEC	9/8/97	Trib. to Canyon Cr.	93 L 086	9	6377000	607470	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
E	25	14	0779200000000000000	SJ JL	E268	Unit 12	TEC	9/8/97	Trib. to Canyon Cr.	93 L 086	9	6377000	607470	GPS	1		X	Ch	crew member	Looking across stream at the channel
E	25	18	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	NW	Up	Ch	NA	Looking upstream at a series of barriers
E	25	17	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	NW	Up	Ch	NA	Looking upstream at a barrier
E	25	16A	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	SE	Dn	Ch	photoboard	Looking downstream at the channel
E	25	16	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	NW	Up	Ch	photoboard	Looking upstream at the channel with boulder cover
E	25	15	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	NW	Up	Ch	photoboard	Looking upstream at the channel with boulder cover
E	25	19	4603254000000000000	SJ JL	E269	Unit 12	TEC	9/8/97	Canyon Cr.	93 L 086	9	6386000	607720	GPS	9	NW	Up	Ch	NA	Looking upstream at a series of barriers
E	25	24	0504400000000000000	SJ JL	E270	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6362000	607800	GPS	2	NE	Up	Ch	NA	Looking upstream at a series of barriers on Ganokwa Creek
E	25	20	0504400000000000000	SJ JL	E270	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6362000	607800	GPS	2	NE	Up	Ch	photoboard	Looking upstream at the channel
E	25	22	0504400000000000000	SJ JL	E270	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6362000	607800	GPS	2	NA	NA	NA	NA	NA
E	25	23	0504400000000000000	SJ JL	E270	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6362000	607800	GPS	2	NE	Up	Ch	NA	Looking upstream at a series of barriers on a tributary to Ganokwa Creek
E	25	21	0504400000000000000	SJ JL	E270	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6362000	607800	GPS	2	SW	Dn	Ch	photoboard	Looking downstream at the channel
E	26	2	0507800000000000000	SJ JL	E271	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6358000	608060	GPS	1	N	Up	Ch	NA	Looking upstream at a series of barriers on Ganokwa Creek
E	26	3	0507800000000000000	SJ JL	E271	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6358000	608060	GPS	1	N	Up	Ch	photoboard, pilot	Looking upstream at the channel, with boulder cover
E	26	4	0507800000000000000	SJ JL	E271	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6358000	608060	GPS	1	S	Dn	Ch	photoboard, pilot	Looking downstream at the channel
E	26	1	0507800000000000000	SJ JL	E271	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6358000	608060	GPS	1	N	Up	Ch	NA	Looking upstream at a series of barriers on Ganokwa Creek
E	26	5	0507200000000000000	SJ JL	E272	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6365000	608010	GPS	2	N	Up	Ch	photoboard	Looking upstream at the channel
E	26	6	0507200000000000000	SJ JL	E272	Unit 12	TEC	9/8/97	Trib. to Ganokwa Cr.	93 L 086	9	6365000	608010	GPS	2	S	Dn	Ch	photoboard	Looking downstream at the channel. note steep sidewalls
E	26	7	4603254265000000000	SJ JL	E273	Unit 12	TEC	9/8/97	Ganokwa Cr.	93 L 086	9	6364000	608100	GPS	4	NE	Up	Ch	photoboard	Looking upstream at the channel
E	26	8	4603254265000000000	SJ JL	E273	Unit 12	TEC	9/8/97	Ganokwa Cr.	93 L 086	9	6364000	608100	GPS	4	SW	Dn	Ch	photoboard	Looking downstream at the channel
E	26	14	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring Dolly Varden with a meterstick
E	26	11	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	NE	Up	Ch	photoboard	Looking upstream at the channel
E	26	12	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	SW	Dn	Ch	photoboard	Looking downstream at the channel

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
E	26	13	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring Dolly Varden with a meterstick
E	26	15	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	NA	NA	Fi	photoboard. fishboard	Measuring Dolly Varden with a meterstick
E	26	16	4603254265159000000	SJ JL	E275	Unit 12	TEC	9/10/97	Lyon Cr.	93 L 086	9	6310000	607910	GPS	2	NE	Up	Ch	NA	Looking upstream at a series of barriers on Lyon Creek
E	28	9	0673800000000000000	SJ LE	E294	Unit 12	TEC	9/12/97	Not a creek	93 L 057	9	6447000	604620	GPS	0	NA	NA	NA	photoboard	Looking at an "NC"
E	28	11	0673600000000000000	SJ LE	E295	Unit 12	TEC	9/12/97	Not a creek	93 L 057	9	6445000	604650	GPS	0	NA	NA	NA	photoboard, crew member	Looking at an "NC"
E	28	10	0673600000000000000	SJ LE	E295	Unit 12	TEC	9/12/97	Not a creek	93 L 057	9	6445000	604650	GPS	0	NA	NA	NA	photoboard	Looking at an "NC"
E	28	13	4605177000000000000	SJ LE	E296	Unit 12	TEC	9/12/97	Thompson Cr.	93 L 057	9	6440000	604750	GPS	2	N	Dn	Ch	photoboard	Looking downstream at the channel
E	28	14	4605177000000000000	SJ LE	E296	Unit 12	TEC	9/12/97	Thompson Cr.	93 L 057	9	6440000	604750	GPS	2		X	Ch	photoboard, crew member	Looking across stream at the channel, note the planks in the right center
E	28	15	4605177000000000000	SJ LE	E296	Unit 12	TEC	9/12/97	Thompson Cr.	93 L 057	9	6440000	604750	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fish board
E	28	16	4605177000000000000	SJ LE	E296	Unit 12	TEC	9/12/97	Thompson Cr.	93 L 057	9	6440000	604750	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring cutthroat trout on the fish board
E	28	12	4605177000000000000	SJ LE	E296	Unit 12	TEC	9/12/97	Thompson Cr.	93 L 057	9	6440000	604750	GPS	2	S	Up	Ch	photoboard	Looking upstream at the channel, note mosses on the substrate
E	28	18	0067310000000000000	SJ LE	E297	Unit 12	TEC	9/12/97	Trib. to Thompson Cr.	93 L 057	9	6443000	604760	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel
E	28	17	0067310000000000000	SJ LE	E297	Unit 12	TEC	9/12/97	Trib. to Thompson Cr.	93 L 057	9	6443000	604760	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring cutthroat trout on the fish board
E	28	19	0067310000000000000	SJ LE	E297	Unit 12	TEC	9/12/97	Trib. to Thompson Cr.	93 L 057	9	6443000	604760	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
E	28	21	4604961087000000000	SJ LE	E298	Unit 12	TEC	9/13/97	Gibson Cr.	93 L 057	9	6426000	605040	GPS	3	E	Up	Ch	photoboard, crew member	Looking downstream at a dry channel
E	28	20	4604961087000000000	SJ LE	E298	Unit 12	TEC	9/12/97	Gibson Cr.	93 L 057	9	6426000	605040	GPS	3	W	Dn	Ve	photoboard, crew member	Looking upstream at the channel
E	28	22	0671900000000000000	SJ LE	E299	Unit 12	TEC	9/13/97	Trib. to Gibson Cr.	93 L 057	9	6426000	605020	GPS	1	W	Dn	Ve	photoboard	Looking downstream at the channel, which is overgrown with vegetation
E	28	23	0671900000000000000	SJ LE	E299	Unit 12	TEC	9/13/97	Trib. to Gibson Cr.	93 L 057	9	6426000	605020	GPS	1	E	Up	Ve	photoboard	Looking upstream at the channel
E	28	24	0671900000000000000	SJ LE	E299	Unit 12	TEC	9/13/97	Trib. to Gibson Cr.	93 L 057	9	6426000	605020	GPS	1		X	Ch	crew member	Looking downstream at the channel, note the trampled banks
E	28	27	0067800000000000000	SJ LE	E300	Unit 12	TEC	9/13/97	Trib. to Thompson Cr.	93 L 057	9	6438000	604820	GPS	1	NA	NA	O	NA	Cattle tracks at the sample site
E	28	26	0067800000000000000	SJ LE	E300	Unit 12	TEC	9/13/97	Trib. to Thompson Cr.	93 L 057	9	6438000	604820	GPS	1	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel
E	28	25	0067800000000000000	SJ LE	E300	Unit 12	TEC	9/13/97	Trib. to Thompson Cr.	93 L 057	9	6438000	604820	GPS	1	NE	Up	Ch	photoboard. crew member	Looking upstream at the channel
E	29	2	0661700000000000000	SJ LE	E301	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6406000	604700	GPS	2	E	Up	Ve	photoboard. crew member	Looking upstream at the channel

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
E	29	1	0661700000000000000	SJ LE	E301	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6406000	604700	GPS	2	W	Dn	Ve	photoboard, crew member	Looking downstream at the channel, heavily overgrown with vegetation
E	29	3	0661700000000000000	SJ LE	E301	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6406000	604700	GPS	2	W	Dn	Ve	NA	Looking downstream at young aspen
E	29	4	0661700000000000000	SJ LE	E301	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6406000	604700	GPS	2	E	Up	Ve	NA	Looking upstream at young and old aspen
E	29	6	0664300000000000000	SJ LE	E302	Unit 12	TEC	9/13/97	Trib. to Gibson Cr.	93 L 057	9	6426000	605160	GPS	1	S	Dn	Ch	photoboard, crew member	Looking downstream at the channel
E	29	5	0664300000000000000	SJ LE	E302	Unit 12	TEC	9/13/97	Trib. to Gibson Cr.	93 L 057	9	6426000	605160	GPS	1	N	Up	Ch	photoboard, crew member	Looking upstream at the channel
E	29	8	0662000000000000000	SJ LE	E303	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6394000	604752	GPS	1	NW	Dn	Ch	photoboard. crew member	Looking downstream at the channel
E	29	7	0662000000000000000	SJ LE	E303	Unit 12	TEC	9/13/97	Trib. to Bulkley R.	93 L 056	9	6394000	604752	GPS	1	SE	Up	Ch	photoboard, crew member	Looking upstream at a fanned channel
E	29	17	0518800000000000000	SJ LE	E307	Unit 12	TEC	9/15/97	Trib. to Canyon Cr.	93 L 075	9	6269000	607210	GPS	4	SE	Up	Ve	photoboard, crew member	Looking upstream at the channel
E	29	18	0518800000000000000	SJ LE	E307	Unit 12	TEC	9/15/97	Trib. to Canyon Cr.	93 L 075	9	6269000	607210	GPS	4	NW	Dn	Ve	photoboard, crew member	Looking downstream at the channel
E	20	19	0698200000000000000	SJ EM	E211	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6486000	605420	GPS	2	S	Up	Ch	field book	Looking upstream at the channel
E	20	20	0698200000000000000	SJ EM	E211	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6486000	605420	GPS	2	N	Dn	Ch	field book	Looking downstream at the channel
E	22	5	0665900000000000000	SJ EM	E227	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6312300	605360	GPS	2	SW	Up	Ch	crew member	Looking upstream at the channel
E	22	6	0665900000000000000	SJ EM	E227	Unit 12	TEC	8/20/97	Trib. to Coffin Lk.	93 L 056	9	6312300	605360	GPS	2	NE	Dn	Ch	backpack	Looking downstream at the channel
E	1	23	0000000000000000000	JL EM	E13	Unit 12	TEC	7/11/97	Not a creek	93 L 057	9	6449000	604540	GPS	0	E	Up	Ch	photoboard, crew member	Looking upstream, with vegetation.
E	1	22	0000000000000000000	JL EM	E13	Unit 12	TEC	7/11/97	Not a creek	93 L 057	9	6449000	604540	GPS	0	W	Dn	Ch	photoboard, crew member	Looking downstream, with vegetation.
H	7	17	4603254000000000000	JHHK	H106	Unit 12	TEC	8/21/96	Canyon Cr.	93 L 087	9	6414000	607540	GPS	7	E	Up	Ch		Looking upstream, LOD in channel.
H	7	16	4603254000000000000	JHHK	H106	Unit 12	TEC	8/21/96	Canyon Cr.	93 L 087	9	6414000	607540	GPS	7	E	Dn	Ch	2 children	Looking downstream toward bridge.
H	7	19	4806972427000000000	JH HK	H107	Unit 12	TEC	8/21/96	Trib. to Canyon Cr.	93 L 076	9	6411000	607430	GPS	1	E	Dn	Ch		Looking downstream, rust-coloured substrate.
H	7	20	4806972427000000000	JH HK	H107	Unit 12	TEC	8/21/96	Trib. to Canyon Cr.	93 L 076	9	6411000	607430	GPS	1	E	Up	Ch		Looking upstream, banks covered in horsetail.
J	18	7	4604370000000000000	JP DD	J235	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6246000	605710	GPS	1	N	Up	Ch	Julie	Looking upstream beside pasture.
J	18	8	4604370000000000000	JP DD	J235	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6246000	605710	GPS	1	N	Dn	Ch		Looking downstream toward culvert.
J	18	9	0610400000000000000	JP DD	J237	Unit 12	TEC	9/27/96	Trib to Bulkley R.	93 L 065	9	6231000	605580	GPS	2	N	Dn	Ch		Looking downstream.
J	18	10	0610400000000000000	JP DD	J237	Unit 12	TEC	9/27/96	Trib to Bulkley R.	93 L 065	9	6231000	605580	GPS	2	N	Up	Ch		Looking upstream toward culvert.
J	18	11	0610700000000000000	JP DD	J238	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6244000	605580	GPS	1	N	Up	Ch	meterstick	Looking upstream, meterstick across channel.
J	18	13	0610700000000000000	JP DD	J238	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6244000	605580	GPS	1	N		Fi		Fish caught by electrofishing.
J	18	15	0610800000000000000	JP DD	J239	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6246000	605570	GPS	1	N	Dn	Ch		Looking downstream.
J	18	14	0610800000000000000	JP DD	J239	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6246000	605570	GPS	1	N	Up	Ch	meterstick	Looking upstream,.

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
J	18	17	0610000000000000000	JP DD	J240	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6261000	605460	GPS	1	N	Dn	Ch	Julie	Looking downstream.
J	18	18	4604370000000000000	JP DD	J241	Unit 12	TEC	9/27/96	Helps Cr.	93 L 065	9	6266000	605430	GPS	5	N	Up	Ch	meterstick	Looking upstream, Helps C.
J	18	20	4604370000000000000	JP DD	J241	Unit 12	TEC	9/27/96	Helps Cr.	93 L 065	9	6266000	605430	GPS	5	N		Fi		Dolly Varden char caught by electrofishing.
J	18	21	4604370000000000000	JP DD	J242	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	5962000	607320	GPS	1	N	Up	Ch	Julie	Looking upstream.
J	18	22	0610100000000000000	JP DD	J243	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6265000	605430	GPS	1	NW	Up	Ch	hat	Looking upstream, LOD in channel.
J	18	23	0610100000000000000	JP DD	J243	Unit 12	TEC	9/27/96	Trib to Helps Cr.	93 L 065	9	6265000	605430	GPS	1	NW	Dn	Ch	hat	Looking downstream.
J	18	4	4604353000000000000	JP DD	J233	Unit 12	TEC	9/27/96	Mc Dowell Cr.	93 L 065	9	6276000	606040	GPS	1	N	Up	Ch		Looking upstream from culvert at Hwy. 16.
J	18	3	4604353000000000000	JP DD	J233	Unit 12	TEC	9/27/96	Mc Dowell Cr.	93 L 065	9	6276000	606040	GPS	1	N	Up	Ch	meterstick	Looking upstream toward culvert at Hwy.16.
J	18	2	4604353000000000000	JP DD	J233	Unit 12	TEC	9/27/96	Mc Dowell Cr.	93 L 065	9	6276000	606040	GPS	1	N	Dn	Ch		Looking downstream.
J	18	1	4604353000000000000	JP DD	J233	Unit 12	TEC	9/27/96	Mc Dowell Cr.	93 L 065	9	6276000	606040	GPS	1	N	Up	Ch	hat	Looking upstream, channel through alder.
J	18	26	0609600000000000000	JP DD	J244	Unit 12	TEC	9/28/96	Trib to Helps Cr.	93 L 065	9	6286000	605810	GPS	1	N	Up	Ch		Looking upstream, channel through alder.
J	17	24	0609600000000000000	JP DD	J244	Unit 12	TEC	9/28/96	Trib to Helps Cr.	93 L 065	9	6286000	605810	GPS	1	N	Dn	Ch		Looking downstream.
J	17	23	0609600000000000000	JP DD	J244	Unit 12	TEC	9/28/96	Trib to Helps Cr.	93 L 065	9	6286000	605810	GPS	1	N	Up	Ch		Looking upstream, muddy cow pasture.
J	18	25	0609600000000000000	JP DD	J244	Unit 12	TEC	9/28/96	Trib to Helps Cr.	93 L 065	9	6286000	605810	GPS	1	N	Dn	Ch		Looking downstream.
J	20	1	0682200000000000000	JP DD	J260	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6307000	605570	GPS	1	NE	Up	Ch		Looking upstream toward culvert.
J	20	2	0682200000000000000	JP DD	J260	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6307000	605570	GPS	1	NE	Dn	Ch		Looking downstream.
J	20	3	0682200000000000000	JP DD	J260	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6307000	605570	GPS	1	NE		Fi		Rainbow trout caught by electrofishing.
J	20	4	0681800000000000000	JP DD	J261	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6320000	605440	GPS	1	N	Dn	Ch		Looking downstream from culvert, dry channel.
J	20	5	0681800000000000000	JP DD	J261	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6320000	605440	GPS	1	N	Up	Ch	camera case	Looking upstream toward culvert.
J	20	7	0681700000000000000	JP DD	J262	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6335000	605450	GPS	1	NE	Dn	Ch	Darrel	Looking downstream.
J	20	6	0681700000000000000	JP DD	J262	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6335000	605450	GPS	1	NE	Up	Ch		Looking upstream toward culvert.
J	20	10	0682400000000000000	JP DD	J264	Unit 12	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6307000	605400	GPS	1	N	Up	Ch	hat	Looking upstream, dry channel.
J	20	12	0688700000000000000	JP DD	J266	Unit 12	TEC	9/29/96	Trib to Lacroix Cr.	93 L 066	9	6349000	605670	GPS	1	W	Up	Ch		Looking upstream in dry channel.
J	20	13	0688700000000000000	JP DD	J266	Unit 12	TEC	9/29/96	Trib to Lacroix Cr.	93 L 066	9	6349000	605670	GPS	1	W	Dn	Ch	hat	Looking downstream.
J	22	1	4604961087000000000	JP DD	J281	Unit 12	TEC	10/2/96	Gibson Cr.	93 L 056	9	6409000	605160	GPS	1	N	Up	Ch	flagging	Looking upstream toward culvert.
J	22	2	4604961087000000000	JP DD	J281	Unit 12	TEC	10/2/96	Gibson Cr.	93 L 056	9	6409000	605160	GPS	1	N	Dn	Ch		Looking downstream, alder swale.
J	22	3	4605177000000000000	JP DD	J282	Unit 12	TEC	10/2/96	Thompson Cr.	93 L 056	9	6416000	604940	GPS	1	NW	Up	Ch		Looking upstream beside pasture.
J	22	4	4605177000000000000	JP DD	J282	Unit 12	TEC	10/2/96	Thompson Cr.	93 L 056	9	6416000	604940	GPS	1	NW	Dn	Ch		Looking downstream, boulder cover.
J	22	5	0661800000000000000	JP DD	J283	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6417000	604700	GPS	2	NW	Up	Ch	Darrel	Looking upstream.
J	22	6	0661800000000000000	JP DD	J283	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6417000	604700	GPS	2	NW	Dn	Ch		Looking downstream, debris in channel.
J	22	7	0663300000000000000	JP DD	J284	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6371000	604990	GPS	1	SE	Up	Ch	Julie	Looking upstream in dry channel.

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J	22	8	0663300000000000000	JP DD	J284	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6371000	604990	GPS	1	SE	Dn	Ch		Looking downstream, muddy pool at culvert.
J	1	10	0662800000000000000	JP DD	J285	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6372000	604970	GPS	1	NE	Dn	Ch		Looking downstream, standing pool.
J	22	9	0662800000000000000	JP DD	J285	Unit 12	TEC	10/2/96	Trib to Bulkley R.	93 L 056	9	6372000	604970	GPS	1	NE	Up	Ch		Looking upstream, standing pool.
J	21	24	4604961000000000000	JP DD	J280	Unit 12	TEC	10/2/96	Deep Cr.	93 L 066	9	6409000	605370	GPS	1	S	Dn	Ch		Looking downstream on Deep C.
J	22	25	4604961000000000000	JP DD	J280	Unit 12	TEC	10/2/96	Deep Cr.	93 L 066	9	6409000	605370	GPS	1	S		Fi		Rainbow trout caught by electrofishing.
J	21	23	4604961000000000000	JP DD	J280	Unit 12	TEC	10/2/96	Deep Cr.	93 L 066	9	6409000	605370	GPS	1	S	Up	Fi	Darrel	Rainbow trout caught by electrofishing.
J	20	25	0682500000000000000	JP DD	J259	Unit 12	TEC	9/29/96	Not a creek	93 L 066	9	6306000	605620	GPS	0	N		O	hat	Not a creek, this is a gully.
J	20	11	0688400000000000000	JP DD	J265	Unit 12	TEC	9/29/96	Not a creek	93 L 066	9	6356000	605450	GPS	0	NW	Up	Ch		Looking upstream, grassy swale.
J	20	9	0682200000000000000	JP DD	J263	Unit 13	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6300000	605430	2	N	Dn	Ch	Darrel		Looking downstream, debris in channel.
J	20	8	0682200000000000000	JP DD	J263	Unit 13	TEC	9/29/96	Trib to Bulkley R.	93 L 066	9	6300000	605430	2	N	Up	Ch			Looking upstream, boulder and cobble.
R	5	1	0518400000000000000	RH JL	R76	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6239000	607310	GPS	1	S	Up	Ch	Ryan	Looking upstream through grassy area.
R	5	2	0518400000000000000	RH JL	R76	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6239000	607310	GPS	1	S	Dn	Ch	Ryan	Looking downstream.
R	5	3	0518400000000000000	RH JL	R76	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6239000	607310	GPS	1	S		Ch		Cascade when there is water.
R	5	10	0519400000000000000	RH JL	R80	Unit 12	TEC	9/21/96	Trib. to Tyhee L.	93 L 075	9	6256000	606640	GPS	1	SE	Up	Ch	Ryan	Looking upstream.
R	5	11	4604309000000000000	RH JL	R81	Unit 12	TEC	9/21/96	Trib. to Tyhee L.	93 L 075	9	6276000	606460	GPS	1	W	Up	Ch	hat	Looking upstream.
R	5	12	4604309000000000000	RH JL	R81	Unit 12	TEC	9/21/96	Trib. to Tyhee L.	93 L 075	9	6276000	606460	GPS	1	W	Dn	Ch	Ryan	Looking downstream.
R	5	13	0515300000000000000	RH JL	R82	Unit 12	TEC	9/21/96	Trib. to Frederick L.	93 L 075	9	6262000	607110	GPS	6	NW	Dn	Ch	Ryan	Looking downstream.
R	5	14	0515300000000000000	RH JL	R82	Unit 12	TEC	9/21/96	Trib. to Frederick L.	93 L 075	9	6262000	607110	GPS	6	NW	Up	Ch	hat	Looking upstream.
R	5	16	4603254265159000000	RH JL	R83	Unit 12	TEC	9/21/96	Lyon Cr.	93 L 086	9	6294000	607610	GPS	1	SW	Up	Ch		Looking upstream, channel through alder.
R	5	17	4603254265159000000	RH JL	R83	Unit 12	TEC	9/21/96	Lyon Cr.	93 L 086	9	6294000	607610	GPS	1	SW		Fi		Dolly Varden char caught by electrofishing.
R	5	15	4603254265159000000	RH JL	R83	Unit 12	TEC	9/21/96	Lyon Cr.	93 L 086	9	6294000	607610	GPS	1	SW	Dn	Ch	hat	Looking upstream toward culverts.
R	5	19	0501900000000000000	RH JL	R84	Unit 12	TEC	9/21/96	Trib. to Badley Cr.	93 L 086	9	6303000	602590	GPS	1	SW	Up	Ch	Ryan	Looking upstream.
R	5	18	0501900000000000000	RH JL	R84	Unit 12	TEC	9/21/96	Trib. to Badley Cr.	93 L 086	9	6303000	602590	GPS	1	SW	Dn	Ch	hat	Looking downstream through aspen and grass.
R	5	20	4603254265000000000	RH JL	R85	Unit 12	TEC	9/21/96	Ganokwa Cr.	93 L 086	9	6319000	607480	GPS	1	SW	Up	Ch	Ryan	Looking upstream under bridge.
R	5	21	4603254265000000000	RH JL	R85	Unit 12	TEC	9/21/96	Ganokwa Cr.	93 L 086	9	6319000	607480	GPS	1	SW	Dn	Ch		Looking downstream.
R	5	23	0787500000000000000	RH JL	R86	Unit 12	TEC	9/21/96	Trib. to Ganokwa Cr.	93 L 086	9	6347000	607480	GPS	1	SE	Dn	Ch		Looking downstream past culvert.
R	5	22	0787500000000000000	RH JL	R86	Unit 12	TEC	9/21/96	Trib. to Ganokwa Cr.	93 L 086	9	6347000	607480	GPS	1	SE	Up	Ch	hat	Looking upstream through alder.
R	6	24	0515300000000000000	RH JL	R87	Unit 12	TEC	9/21/96	Trib. to Bulkley R.	93 L 075	9	6214000	606660	GPS	1	W	Dn	Ch		Looking downstream from culvert.
W	2	12	4604353000000000000	KA JP	W13	Unit 12	TEC	7/10/97	McDowell Cr.	93 L 066	9	6298000	606010	GPS	1	SW	Up	Ch	photoboard	Looking upstream at the channel
W	2	13	4604353000000000000	KA JP	W13	Unit 12	TEC	7/10/97	McDowell Cr.	93 L 066	9	6298000	606010	GPS	1	NE	Dn	Ch	photoboard	Looking downstream at the channel

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W	2	14	0682900000000000000	KA JP	W14	Unit 12	TEC	7/10/97	Not a creek	93 L 066	9	6305000	605980	GPS	0	NA	NA	NA	photoboard, crew member	Looking at an "NC"(Photoboard should read site#W14)
W	2	15	0690500000000000000	KA JP	W15	Unit 12	TEC	7/10/97	Not a creek	93 L 066	9	6319000	606100	GPS	0	NA	NA	NA	photoboard, crew member	Looking at an "NC"
W	2	16	0690500000000000000	KA JP	W15	Unit 12	TEC	7/10/97	Not a creek	93 L 066	9	6319000	606100	GPS	0	NA	NA	NA	photoboard, crew member	Looking at an "NC"
W	2	17	4603602245000000000	KA JP	W16	Unit 12	TEC	7/10/97	McDowell Cr.	93 L 066	9	6313000	606280	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
W	2	18	4603602245000000000	KA JP	W16	Unit 12	TEC	7/10/97	McDowell Cr.	93 L 066	9	6313000	606280	GPS	2	NNW	Up	Ch	photoboard, crew member	Looking upstream at the channel
W	2	19	4603602245000000000	KA JP	W16	Unit 12	TEC	7/10/97	McDowell Cr.	93 L 066	9	6313000	606280	GPS	2	SSE	Dn	Ch	photoboard, crew member	Looking downstream at the channel, note the slumping left bank
W	2	21	0690200000000000000	KA JP	W17	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6328000	606260	GPS	1	N	Up	Ch	photoboard	Looking upstream at the channel
W	2	22	0690200000000000000	KA JP	W17	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6328000	606260	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel
W	2	20	0690200000000000000	KA JP	W17	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6328000	606260	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel, note the garbage in the creek
W	3	1	4604726000000000000	KA JP	W18	Unit 12	TEC	7/10/97	Lacroix Cr.	93 L 066	9	6331000	606270	GPS	5	N	Up	Ch	photoboard, crew member	Looking upstream at the channel
W	3	2	4604726000000000000	KA JP	W18	Unit 12	TEC	7/10/97	Lacroix Cr.	93 L 066	9	6331000	606270	GPS	5	N	Up	Ch	photoboard, crew member	Looking upstream at the channel
W	3	3	4604726000000000000	KA JP	W18	Unit 12	TEC	7/10/97	Lacroix Cr.	93 L 066	9	6331000	606270	GPS	5	S	Dn	Ch	photoboard, crew member	Looking downstream at the channel
W	3	4	0682900000000000000	KA JP	W19	Unit 12	TEC	7/10/97	Trib to Bulkley R.	93 L 066	9	6306000	605890	GPS	1	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel
W	3	5	0682900000000000000	KA JP	W19	Unit 12	TEC	7/10/97	Trib to Bulkley R.	93 L 066	9	6306000	605890	GPS	1	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel, note the heavy vegetation cover
W	3	6	0682800000000000000	KA JP	W20	Unit 12	TEC	7/10/97	Trib to Bulkley R.	93 L 066	9	6310000	605820	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
W	3	7	0682800000000000000	KA JP	W20	Unit 12	TEC	7/10/97	Trib to Bulkley R.	93 L 066	9	6310000	605820	GPS	1	W	Dn	Ch	photoboard	Looking downstream at a dry channel
W	3	8	0682800000000000000	KA JP	W20	Unit 12	TEC	7/10/97	Trib to Bulkley R.	93 L 066	9	6310000	605820	GPS	1		X	Ch	photoboard	Looking at a watering hole for horses
W	3	11	4604309000000000000	KA JP	W21	Unit 12	TEC	7/11/97	Tyhee Cr.	93 L 065	9	6275000	606170	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel
W	3	9	4604309000000000000	KA JP	W21	Unit 12	TEC	7/11/97	Tyhee Cr.	93 L 065	9	6275000	606170	GPS	1	NA	NA	O	photoboard	Looking at a beaver dam
W	3	10	4604309000000000000	KA JP	W21	Unit 12	TEC	7/11/97	Tyhee Cr.	93 L 065	9	6275000	606170	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
W	3	13	4604370000000000000	KA JP	W22	Unit 12	TEC	7/11/97	Helps Cr.	93 L 065	9	6280000	605960	GPS	2	NE	Dn	Ch	photoboard, crew member	Looking downstream at the channel, note the abundant instream vegetation
W	3	14	4604370000000000000	KA JP	W22	Unit 12	TEC	7/11/97	Helps Cr.	93 L 065	9	6280000	605960	GPS	2	SW	Up	Ch	photoboard	Looking upstream at the channel
W	3	15	4604370000000000000	KA JP	W22	Unit 12	TEC	7/11/97	Helps Cr.	93 L 065	9	6280000	605960	GPS	2	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
W	3	12	4604370000000000000	KA JP	W22	Unit 12	TEC	7/11/97	Helps Cr.	93 L 065	9	6280000	605960	GPS	2	SW	Up	Ch	photoboard	Looking upstream at the channel

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
W	H	11	0514400000000000000	KA DD	W183	Unit 12	TEC	8/14/97	Trib. to Bulkley R.	93 L 075	9	6194000	607320	GPS	1	NW	Dn	Ch	NA	Looking at a large pond
W	H	10	0514400000000000000	KA DD	W183	Unit 12	TEC	8/14/97	Trib. to Bulkley R.	93 L 075	9	6194000	607320	GPS	1	SE	Up	Ch	NA	Looking at a large pond
W	H	12	0517900000000000000	KA DD	W184	Unit 12	TEC	8/14/97	Not a creek	93 L 075	9	6216000	607280	GPS	0	NA	NA	O	NA	Looking at an "NC"
W	I	17	0685700000000000000	DD JP CF	W194	Unit 12	TEC	8/18/97	Trib to Lemieux Cr.	93 L 067	9	6421000	605920	GPS	2	NE	Up	Ch	crew member	Looking upstream at the channel
W	I	18	0685700000000000000	DD JP CF	W194	Unit 12	TEC	8/18/97	Trib to Lemieux Cr.	93 L 067	9	6421000	605920	GPS	2	SW	Dn	Ch	crew member	Looking downstream at the channel
W	I	21	4604961000000000000	DD JP CF	W195	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6421000	605390	GPS	2	NA	NA	Fi	meterstick (blurry photo)	Measuring fish with the meterstick
W	I	22	4604961000000000000	DD JP CF	W195	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6421000	605390	GPS	2	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	I	20	4604961000000000000	DD JP CF	W195	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6421000	605390	GPS	2	W	Dn	Ch	crew member	Looking downstream at the channel, note the boulder and large cobble cover
W	I	19	4604961000000000000	DD JP CF	W195	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6421000	605390	GPS	2	E	Up	Ch	hat	Looking upstream at the channel
W	I	23	4604961000000000000	DD JP CF	W195	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6421000	605390	GPS	2	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	I	25	0683500000000000000	KA JP	W196	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605350	GPS	2	SW	Dn	Ch	NA	Looking downstream at the channel, note the low banks
W	I	24	0683500000000000000	KA JP	W196	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605350	GPS	2	NE	Up	Ch	crew member	Looking upstream at the channel, note the low flow stage
W	J	1	0683500000000000000	DD JP CF	W196	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605350	GPS	2	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	J	2	0683500000000000000	DD JP CF	W196	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605350	GPS	2	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	J	3	0683700000000000000	DD JP CF	W197	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605340	GPS	1	E	Up	Ch	hat	Looking upstream at a dry channel
W	J	4	0683700000000000000	DD JP CF	W197	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605340	GPS	1	W	Dn	Ch	NA	Looking downstream at a small trickle over cobble
W	J	5	0683700000000000000	DD JP CF	W197	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 066	9	6418000	605340	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	J	6	0698900000000000000	DD JP	W198	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6488000	605830	GPS	3	NE	Up	Ch	map pocket. GPS	Looking upstream at the channel
W	J	7	0698900000000000000	DD JP	W198	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6488000	605830	GPS	3	SW	Dn	Ch	NA	Looking downstream at the channel
W	J	9	0698900000000000000	DD JP	W199	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6488000	605830	GPS	4	SW	Dn	Ch	NA	Looking downstream at the channel, note moss covered substrate
W	J	8	0698900000000000000	DD JP	W199	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6488000	605830	GPS	4	NE	Up	Ch	crew member	Looking upstream at the channel
W	J	10	0696700000000000000	DD JP	W200	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6479000	605770	GPS	1	N	Up	Ch	hat	Looking upstream at the channel, note the cobble cover
W	J	11	0696700000000000000	DD JP	W200	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6479000	605770	GPS	1	S	Dn	Ch	hat	Looking downstream at the channel
W	J	12	0695600000000000000	DD JP	W201	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6466000	605720	GPS	1	N	Up	Ch	hat	Looking upstream at the channel
W	J	13	0695600000000000000	DD JP	W201	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6466000	605720	GPS	1	S	Dn	Ch	hat	Looking downstream at the channel, note the ill defined banks
W	J	14	0695600000000000000	DD JP	W201	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6466000	605720	GPS	1	N	Up	Ch	hat	Looking downstream at the channel
W	J	18	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	NW	Up	Ch	NA	Looking upstream at the channel
W	J	21	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	NE	Up	Ch	crew member	Looking upstream at the channel
W	J	19	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick

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W	J	17	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	SE	Dn	Ch	crew member	Looking downstream at the channel, note the low flow and high left bank
W	J	16	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	SE	Dn	Ch	truck	Looking downstream at the channel
W	J	15	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	NW	Up	Ch	crew member	Looking upstream at the channel
W	J	20	0695500000000000000	DD JP	W202	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6462000	615720	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	J	22	0693400000000000000	DD JP	W203	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6460000	605680	GPS	1	NA	X	Ch	cow	Looking across stream at the channel with LOD and a dead cow
W	J	23	0693400000000000000	DD JP	W203	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6460000	605680	GPS	1	N	Up	Ch	NA	Looking upstream at the channel
W	J	24	0693400000000000000	DD JP	W203	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6460000	605680	GPS	1	S	Dn	Ch	NA	Looking downstream at the channel
W	J	25	0693400000000000000	DD JP	W203	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6460000	605680	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	4	0687100000000000000	DD JP	W204	Unit 12	TEC	8/20/97	Vanderven Cr.	93 L 066	9	6372000	606330	GPS	2	NA	NA	Fi	meterstick	Indicating the size range of fish captured at this site
W	K	1	0687100000000000000	DD JP	W204	Unit 12	TEC	8/20/97	Vanderven Cr.	93 L 066	9	6372000	606330	GPS	2	NE	Up	Ch	hat	Looking upstream at the channel
W	K	2	0687100000000000000	DD JP	W204	Unit 12	TEC	8/20/97	Vanderven Cr.	93 L 066	9	6372000	606330	GPS	2	SW	Dn	Ch	hat	Looking downstream at the channel
W	K	3	0687100000000000000	DD JP	W204	Unit 12	TEC	8/20/97	Vanderven Cr.	93 L 066	9	6372000	606330	GPS	2	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	7	0687600000000000000	DD JP	W205	Unit 12	TEC	8/20/97	Trib to Vanderven Cr.	93 L 066	9	6372000	606270	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	6	0687600000000000000	DD JP	W205	Unit 12	TEC	8/20/97	Trib to Vanderven Cr.	93 L 066	9	6372000	606270	GPS	1	SW	Dn	Ch	fieldbook	Looking downstream at the channel
W	K	5	0687600000000000000	DD JP	W205	Unit 12	TEC	8/20/97	Trib to Vanderven Cr.	93 L 066	9	6372000	606270	GPS	1	NE	Up	Ch	NA	Looking upstream at the channel
W	K	10	0689900000000000000	DD JP	W206	Unit 12	TEC	8/20/97	Trib to Lacroix Cr.	93 L 066	9	6327000	606150	GPS	1	NA	NA	Fi	hand	Indicating the size range of fish captured at the site
W	K	8	0689900000000000000	DD JP	W206	Unit 12	TEC	8/20/97	Trib to Lacroix Cr.	93 L 066	9	6327000	606150	GPS	1	NA	Dn	Ch	meterstick	Looking downstream at the channel
W	K	9	0689900000000000000	DD JP	W206	Unit 12	TEC	8/20/97	Trib to Lacroix Cr.	93 L 066	9	6327000	606150	GPS	1	NE	Up	Ch	meterstick	Looking upstream at the channel
W	K	11	0686300000000000000	DD JP	W207	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6397000	605940	GPS	1	N	Up	Ch	hat, fieldbook	Looking upstream at the channel, note the cobble cover
W	K	12	0686300000000000000	DD JP	W207	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6397000	605940	GPS	1	S	Dn	Ch	fieldbook, hat	Looking downstream at the channel
W	K	13	0686300000000000000	DD JP	W207	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6397000	605940	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	14	0686300000000000000	DD JP	W207	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6397000	605940	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	15	0686300000000000000	DD JP	W207	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6397000	605940	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	16	0686500000000000000	DD JP	W208	Unit 12	TEC	8/20/97	Not a creek	93 L 066	9	6399000	605970	GPS	0	NA	NA	O	NA	Looking at an "NC", a muddy gully at the road crossing
W	K	17	0685700000000000000	DD JP	W209	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6398000	605840	GPS	1	E	Up	Ch	crew member	Looking upstream at a dry channel
W	K	18	0685700000000000000	DD JP	W209	Unit 12	TEC	8/20/97	Trib to Lemieux Cr.	93 L 066	9	6398000	605840	GPS	1	W	Dn	Ch	NA	Looking downstream at a dry channel
W	K	19	0783000000000000000	DD JP	W210	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607070	GPS	1	NE	Up	Ch	GPS	Looking upstream at the channel, note the abundant LOD
W	K	20	0783000000000000000	DD JP	W210	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607070	GPS	1	SW	Dn	Ch	fieldbook	Looking downstream at the channel
W	K	22	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	W	Dn	Ch	hat	Looking downstream at the channel
W	L	1	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	W	Dn	Ch	crew member	Looking downstream at the channel
W	L	2	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	W	Dn	Ch	crew member	Looking downstream at the channel

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W	K	25	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	E	Up	Ch	NA	Looking upstream at the confluence, note the cobble cover
W	K	21	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	E	Up	Ch	flagging	Looking upstream at the channel
W	K	24	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	K	23	0783100000000000000	DD JP	W211	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 076	9	6413000	607100	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	L	3	0783100000000000000	DD JP	W212	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6438000	607110	GPS	4	NE	Up	Ch	NA	Looking upstream at a 5m falls barrier and a number of cascades
W	L	4	0783100000000000000	DD JP	W212	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6438000	607110	GPS	4	NE	Up	Ch	crew member	Looking upstream at the channel
W	L	5	0783100000000000000	DD JP	W212	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6438000	607110	GPS	4	SW	Dn	Ch	NA	Looking downstream at the channel and a debris jam
W	L	6	0783000000000000000	DD JP	W214	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6442000	607000	GPS	2	NE	Up	Ch	hat	Looking upstream at the channel
W	L	7	0783000000000000000	DD JP	W214	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6442000	607000	GPS	2	SW	Dn	Ch	hat	Looking downstream at the channel
W	L	8	0783800000000000000	DD JP	W215	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6442000	607350	GPS	2	N	Up	Ch	hat	Looking upstream at the channel
W	L	9	0783800000000000000	DD JP	W215	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6442000	607350	GPS	2	S	Dn	Ch	hat	Looking downstream at the channel
W	L	11	4604353000000000000	DD JP	W216	Unit 12	TEC	8/22/97	McDowell Cr.	93 L 076	9	6311000	606380	GPS	3	W	Dn	Ch	crew member	Looking downstream at the channel, note the cobble cover
W	L	14	4604353000000000000	DD JP	W216	Unit 12	TEC	8/22/97	McDowell Cr.	93 L 076	9	6311000	606380	GPS	3	NE	Up	Ch	crew member	Looking upstream at a cascade barrier
W	L	12	4604353000000000000	DD JP	W216	Unit 12	TEC	8/22/97	McDowell Cr.	93 L 076	9	6311000	606380	GPS	3	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	L	10	4604353000000000000	DD JP	W216	Unit 12	TEC	8/22/97	McDowell Cr.	93 L 076	9	6311000	606380	GPS	3	E	Up	Ch	crew member	Looking upstream at the channel
W	L	13	4604353000000000000	DD JP	W216	Unit 12	TEC	8/22/97	McDowell Cr.	93 L 076	9	6311000	606380	GPS	3	NA	NA	Fi	meterstick	Measuring fish with the meterstick
W	L	15	4604726000000000000	DD JP	W217	Unit 12	TEC	8/22/97	Lacroix Cr.	93 L 076	9	6331000	606490	GPS	6	W	Up	Ch	hat	Looking upstream at the channel
W	L	16	4604726000000000000	DD JP	W217	Unit 12	TEC	8/22/97	Lacroix Cr.	93 L 076	9	6331000	606490	GPS	6	E	Dn	Ch	hat	Looking downstream at the channel
W	L	17	4604353000000000000	DD JP	W218	Unit 12	TEC	8/22/97	Not a creek	93 L 076	9	6321000	606610	GPS	0	NA	NA	NA	hat	Looking at an "NC"
W	L	18	0785700000000000000	DD JP	W219	Unit 12	TEC	8/22/97	Trib to McDowell Cr.	93 L 076	9	6306000	606750	GPS	5	SE	Dn	Ch	hat	Looking downstream at the channel
W	L	19	0785700000000000000	DD JP	W219	Unit 12	TEC	8/22/97	Trib to McDowell Cr.	93 L 076	9	6306000	606750	GPS	5	NW	Up	Ch	hat	Looking upstream at the channel
W	L	20	4604309559000000000	JP DD	W220	Unit 12	TEC	8/22/97	Victor Cr.	93 L 076	9	6290000	606570	GPS	3	N	Up	Ch	crew member	Looking upstream at the channel, culvert barriers and garbage
W	L	21	4604309559000000000	JP DD	W220	Unit 12	TEC	8/22/97	Victor Cr.	93 L 076	9	6290000	606570	GPS	3	S	Dn	Ch	crew member	Looking downstream at the channel
Y	2	10	1003400000000000000	DD SJ	Y13	Unit 12	TEC	7/11/97	Trib to Burbridge Cr.	93 L 077	9	6422000	606520	GPS	1	NW	Dn	Ch. Ve	green hat	Looking downstream at channel.
Y	2	9	1003400000000000000	DD SJ	Y13	Unit 12	TEC	7/11/97	Trib to Burbridge Cr.	93 L 077	9	6422000	606520	GPS	1	SE	Up	Ch	green hat	Looking upstream at channel.
Y	1	17	0688700000000000000	DD SJ	Y6	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6354720	605750	GPS	3	SW	Dn	Ve	NA	Looking upstream, from road crossing, grassy swale through pasture.
Y	1	16	0688700000000000000	DD SJ	Y6	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6354720	605750	GPS	3	NE	Up	Ch, Ve	photoboard	Looking upstream, with vegetation
Y	1	15	0688700000000000000	DD SJ	Y6	Unit 12	TEC	7/10/97	Trib to Lacroix Cr.	93 L 066	9	6354720	605750	GPS	3	SW	Dn	Ch, Ve	photoboard	Looking downstream
Y	1	18	4604879000000000000	DD SJ	Y7	Unit 12	TEC	7/10/97	Robin Cr.	93 L 066	9	6370000	605670	GPS	2	N	Up	Ch	photoboard, crew member	Looking upstream, with Steve electrofishing.
Y	1	19	4604879000000000000	DD SJ	Y7	Unit 12	TEC	7/10/97	Robin Cr.	93 L 066	9	6370000	605670	GPS	2	S	Dn	Ch	photoboard	Looking downstream, toward the culvert

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Y	1	25	4604879111000000000	DD SJ	Y9	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6383000	605790	GPS	5	NA	NA	Fi	photo board, fish board	Measuring fish on the fish board
Y	1	23	4604879111000000000	DD SJ	Y9	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6383000	605790	GPS	5	SE	Dn	Ch	photoboard	Looking downstream, toward culvert
Y	1	24	4604879111000000000	DD SJ	Y9	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6383000	605790	GPS	5	NW	Up	Ch	photoboard	Looking upstream
Y	2	1	0689100000000000000	DD SJ	Y10	Unit 12	TEC	7/11/97	Trib to Round Lk.	93 L 066	9	6362000	606280	GPS	2	W	Up	Ch	photoboard, crew member	Looking upstream, at the road crossing.
Y	2	2	0689100000000000000	DD SJ	Y10	Unit 12	TEC	7/11/97	Trib to Round Lk.	93 L 066	9	6362000	606280	GPS	2	E	Dn	Ch	photoboard, crew member	Looking downstream , with cattle impacts
Y	2	3	0689100000000000000	DD SJ	Y10	Unit 12	TEC	7/11/97	Trib to Round Lk.	93 L 066	9	6362000	606280	GPS	2	W	Up	Ch	photoboard, crew member	Looking upstream, below the cattle impacted area.
Y	2	4	4603254624000000000	DD SJ	Y11	Unit 12	TEC	7/11/97	Burbridge Cr.	93 L 077	9	6437000	606600	GPS	4	E	Up	Ch	photoboard	Looking upstream, from the culvert
Y	2	6	4603254624000000000	DD SJ	Y11	Unit 12	TEC	7/11/97	Burbridge Cr.	93 L 077	9	6437000	606600	GPS	4	SW	Dn	Ch	photoboard	Looking downstream at a pool and some LOD
Y	2	5	4603254624000000000	DD SJ	Y11	Unit 12	TEC	7/11/97	Burbridge Cr.	93 L 077	9	6437000	606600	GPS	4	NE	Up	Ch	photoboard	Looking upstream at a 1m cascade
Y	2	7	1003400000000000000	DD SJ	Y12	Unit 12	TEC	7/11/97	Trib to Burbridge Cr.	93 L 077	9	6422000	606520	GPS	2	W	Up	Ch	photoboard	Looking upstream, with horsetail
Y	2	8	1003400000000000000	DD SJ	Y12	Unit 12	TEC	7/11/97	Trib to Burbridge Cr.	93 L 077	9	6422000	606520	GPS	2	NW	Dn	Ch	photoboard	Looking downstream, at the lower end of the reach.
Y	2	11	0688700000000000000	DD SJ	Y14	Unit 12	TEC	7/11/97	Not a creek	93 L 076	9	6383000	606370	GPS	0	W	NA	O	photoboard, crew member	Looking at a sinkhole, no defined channel.
Y	2	12	0688700000000000000	DD SJ	Y14	Unit 12	TEC	7/11/97	Not a creek	93 L 076	9	6383000	606370	GPS	0	W	NA	O	photoboard, crew member	Looking at a sinkhole, no defined channel.
Y	2	13	0687600000000000000	DD SJ	Y15	Unit 12	TEC	7/11/97	Not a creek	93 L 076	9	6379000	606410	GPS	0	SW	NA	Ve	NA	Boggy depression with water, no defined channel.
Y	6	12	0783200000000000000	DD JL SJ	Y43	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 077	9	6416000	607160	GPS	1	NE	Up	Ch	photoboard	Looking upstream, at the road crossing.
Y	6	13	0783200000000000000	DD JL SJ	Y43	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 077	9	6416000	607160	GPS	1	NW	X	Ch	rental truck	Looking across the channel, at the road crossing.
Y	6	14	0783200000000000000	DD JL SJ	Y43	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 077	9	6416000	607160	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel.
Y	6	15	0783200000000000000	DD JL SJ	Y43	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 077	9	6416000	607160	GPS	1	W	X	Ch	road	Looking across the channel, at the road crossing.
Y	6	21A	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	NA	NA	Fi	photoboard, fish board	Measuring Dolly Varden on the fishboard
Y	6	16	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel.
Y	6	17	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	SW	Dn	Ch	photoboard	Looking downstream at the channel and the bridge crossing.
Y	6	18	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	SW	Dn	Ch	photoboard	Looking downstream at the channel and the bridge crossing.
Y	6	19	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	SW	Dn	Ch	photoboard	Looking downstream at the channel and the bridge crossing.

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Y	6	20	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	NA	NA	Fi	photoboard, fish board	Measuring Dolly Varden on the fishboard
Y	6	21	4603254000000000000	DD SJ JL	Y44	Unit 12	TEC	7/16/97	Canyon Cr.	93 L 076	9	6406000	606970	GPS	7	NA	NA	Fi	photoboard, fish board	Measuring Dolly Varden on the fishboard
Y	6	23	0782800000000000000	DD JL	Y45	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 076	9	6406000	607010	GPS	1	E	Dn	Ch	photoboard	Looking downstream at the channel through dense understory.
Y	6	22	0782800000000000000	DD JL	Y45	Unit 12	TEC	7/16/97	Trib to Canyon Cr.	93 L 076	9	6406000	607010	GPS	1	W	Up	Ch	photoboard	Looking upstream at the channel and the culvert, situated .8m above the current flow.
Y	17	7	4604727000000000000	JL JP	Y150	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604850	GPS	3	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fish board
Y	17	6B	4604727000000000000	JL JP	Y150	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604850	GPS	3	S	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	17	6	4604727000000000000	JL JP	Y150	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604850	GPS	3	S	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	17	5	4604727000000000000	JL JP	Y150	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604850	GPS	3	N	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	17	9	0668200000000000000	JL JP	Y151	Unit 12	TEC	8/13/97	Trib to Coffin Cr.	93 L 056	9	6336000	604880	GPS	1	NE	Dn	Ch	photoboard	Looking downstream at the channel, note thick vegetation
Y	17	8	0668200000000000000	JL JP	Y151	Unit 12	TEC	8/13/97	Trib to Coffin Cr.	93 L 056	9	6336000	604880	GPS	1	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	17	11	0667200000000000000	JL JP	Y152	Unit 12	TEC	8/13/97	Trib to Coffin Cr.	93 L 056	9	6332000	604910	GPS	1	NE	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	17	10	0667200000000000000	JL JP	Y152	Unit 12	TEC	8/13/97	Trib to Coffin Cr.	93 L 056	9	6332000	604910	GPS	1	SW	Up	Ch	photoboard, crew member	Looking upstream at the channel, note fine substrate
Y	17	13	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	SW	Up	Ch	photoboard	Looking upstream, note washed out culvert
Y	17	14	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	17	12	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	17	15	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/13/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	NE	Dn	Ch	NA	Looking downstream at the channel
Y	21	16	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/20/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	SW	Up	Ch	NA	Looking upstream at waterfall
Y	21	17	4604247000000000000	JL JP	Y153	Unit 12	TEC	8/20/97	Coffin Cr.	93 L 056	9	6342000	604710	GPS	5	SW	Up	Ch	NA	Looking upstream at waterfall
Y	17	17	0662800000000000000	JL JP	Y154	Unit 12	TEC	8/13/97	Trib to Bulkley R.	93 L 056	9	6364000	604850	GPS	1	N	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	17	16	0662800000000000000	JL JP	Y154	Unit 12	TEC	8/13/97	Trib to Bulkley R.	93 L 056	9	6364000	604850	GPS	1	S	Up	Ch	photoboard	Looking upstream at the channel, note thick alder cover
Y	17	19	0662900000000000000	JLJP	Y155	Unit 12	TEC	8/13/97	Trib to Bulkley R.	93 L 056	9	6376000	604880	GPS	1	NE	Dn	Ch	photoboard	Looking downstream at the channel
Y	17	18	0662900000000000000	JLJP	Y155	Unit 12	TEC	8/13/97	Trib to Bulkley R.	93 L 056	9	6376000	604880	GPS	1	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	19	21	0701300000000000000	JL JP	Y171	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6515000	605490	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fish board

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Y	19	22	0701300000000000000	JL JP	Y171	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6515000	605490	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fish board
Y	19	19	0701300000000000000	JL JP	Y171	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6515000	605490	GPS	1	N	Up	Ch	photoboard	Looking upstream at the channel
Y	19	20	0701300000000000000	JL JP	Y171	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6515000	605490	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel, note gravel bars
Y	19	16	4604961000000000000	JL JP	Y172	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6511050	605504	GPS	6	SE	Up	Ch	photoboard	Looking upstream at the channel
Y	19	17	4604961000000000000	JL JP	Y172	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6511050	605504	GPS	6	NW	Dn	Ch	photoboard	Looking downstream at the channel, note LOD and inveg cover
Y	19	18	4604961000000000000	JL JP	Y172	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6511050	605504	GPS	6	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fish board
Y	19	23	0701300000000000000	JL JP	Y173	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6516000	605510	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
Y	19	24	0701300000000000000	JL JP	Y173	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6516000	605510	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel, note cutbank habitat
Y	20	1	0700100000000000000	JL JP	Y174	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6502530	605558	GPS	1	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	20	2	0700100000000000000	JL JP	Y174	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6502530	605558	GPS	1	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	20	3	0700100000000000000	JL JP	Y174	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6502530	605558	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
Y	20	4	0700100000000000000	JL JP	Y174	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6502530	605558	GPS	1	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	20	5	0700100000000000000	JL JP	Y174	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6502530	605558	GPS	1		X	Ch	NA	Looking cross-stream at the channel
Y	20	6	0702300000000000000	JLJP	Y175	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6517110	605410	GPS	1	W	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	20	7	0702300000000000000	JLJP	Y175	Unit 12	TEC	8/18/97	Trib to Deep Cr.	93 L 067	9	6517110	605410	GPS	1	E	Dn	Ch	photoboard, crew member	Looking downstream at the channel, note instream veg
Y	20	9	4604961000000000000	JL JP	Y176	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6517110	605403	GPS	8	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	20	10	4604961000000000000	JL JP	Y176	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6517110	605403	GPS	8	NE	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	20	10B	4604961000000000000	JL JP	Y176	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6517110	605403	GPS	8	NA	NA	Fi	fishboard	Measuring fish on the fish board
Y	20	8	4604961000000000000	JL JP	Y176	Unit 12	TEC	8/18/97	Deep Cr.	93 L 067	9	6517110	605403	GPS	8	SW	Up	Ch	NA	Looking upstream at the channel
Y	20	10C	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	SW	NA	Ch	NA	NA
Y	20	14	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	NA	NA	Fi	fishboard	Measuring fish on the fish board
Y	21	9B	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/20/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	SW	Up	Ch	NA	Looking upstream at the channel
Y	20	13	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	NA	NA	Fi	fishboard	Measuring fish on the fish board
Y	20	11	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	SW	Up	Ch	photoboard	Looking upstream at the channel
Y	20	12	4607449858000000000	JL JP	Y177	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6491820	605029	GPS	1	NE	Dn	Ch	photoboard	Looking downstream at the channel
Y	20	15	0678800000000000000	JL JP	Y178	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6490410	605049	GPS	1	W	Up	Ch	photoboard	Looking upstream at the channel, note cutbanks
Y	20	16	0678800000000000000	JL JP	Y178	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6490410	605049	GPS	1	E	Dn	Ch	photoboard	Looking downstream at the channel
Y	20	17	0678800000000000000	JL JP	Y178	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6490410	605049	GPS	1	NA	NA	Fi	fishboard	Measuring fish on the fish board

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Y	20	18	06786000000000000000	JL JP	Y179	Unit 12	TEC	8/19/97	Not a creek	93 L 057	9	6493050	605018	GPS	0	E	NA	O	photoboard	Photoboard in alder covered depression , NC
Y	20	22	06799000000000000000	JL JP	Y180	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6473000	605174	GPS	1	N	Dn	Ch	photoboard	Looking downstream at the channel
Y	20	19	06799000000000000000	JL JP	Y180	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6473000	605174	GPS	1	S	Up	Ch	photoboard	Looking upstream at the channel
Y	20	20	06799000000000000000	JL JP	Y180	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6473000	605174	GPS	1	N	Dn	Ch	photoboard	Looking downstream at the channel
Y	20	21	06799000000000000000	JL JP	Y180	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk.	93 L 057	9	6473000	605174	GPS	1	S	Up	Ch	photoboard	Looking upstream at the channel
Y	20	23	46074490000000000000	JL JP	Y181	Unit 12	TEC	8/19/97	Trib to McQuarrie Cr.	93 L 057	9	6474000	605170	GPS	2	NA	NA	Fi	photoboard, fish, meterstick	NA
Y	21	1	46074490000000000000	JL JP	Y181	Unit 12	TEC	8/19/97	Trib to McQuarrie Cr.	93 L 057	9	6474000	605170	GPS	2	NA	NA	Fi	photoboard, fish, meterstick	RB, meterstick and photoboard
Y	21	2	46074490000000000000	JL JP	Y181	Unit 12	TEC	8/19/97	Trib to McQuarrie Cr.	93 L 057	9	6474000	605170	GPS	2	NA	NA	Fi	photoboard, fishboard	RB on fishboard
Y	21	3	46074490000000000000	JL JP	Y181	Unit 12	TEC	8/19/97	Trib to McQuarrie Cr.	93 L 057	9	6474000	605170	GPS	2	NW	Up	Ch	photoboard	Looking upstream at the channel
Y	21	4	46074490000000000000	JL JP	Y181	Unit 12	TEC	8/19/97	Trib to McQuarrie Cr.	93 L 057	9	6474000	605170	GPS	2	SE	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	21	7	06793000000000000000	JL JP	Y182	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6493000	605190	GPS	1	NA	NA	Fi	photoboard, fishboard	RB on fishboard and photoboard
Y	21	5	06793000000000000000	JL JP	Y182	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6493000	605190	GPS	1	N	Up	Ch	photoboard	Looking upstream at the channel
Y	21	6	06793000000000000000	JL JP	Y182	Unit 12	TEC	8/19/97	Trib to McQuarrie Lk	93 L 057	9	6493000	605190	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel
Y	21	8	06919000000000000000	JP JL	Y183	Unit 12	TEC	8/20/97	Trib to Deep Cr.	93 L 067	9	6443000	605529	GPS	1	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	21	9	06919000000000000000	JP JL	Y183	Unit 12	TEC	8/20/97	Trib to Deep Cr.	93 L 067	9	6443000	605529	GPS	1	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel, note dry channel
Y	21	10	46047260000000000000	JL JP	Y184	Unit 12	TEC	8/20/97	Coffin Cr.	93 L 056	9	6335000	604610	GPS	6	NW	Up	Ch	photoboard	Looking upstream at the channel
Y	21	11	46047260000000000000	JL JP	Y184	Unit 12	TEC	8/20/97	Coffin Cr.	93 L 056	9	6335000	604610	GPS	6	SE	Dn	Ch	photoboard	Looking downstream at the channel
Y	21	13	06693000000000000000	JL JP	Y185	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6335000	604610	GPS	1	NE	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	21	12	06693000000000000000	JL JP	Y185	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6335000	604610	GPS	1	SW	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	21	15	06672000000000000000	JL JP	Y186	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6320000	604875	GPS	2	NE	Dn	Ch	photoboard	Looking downstream at the channel
Y	21	14	06672000000000000000	JL JP	Y186	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6320000	604875	GPS	2	SW	Up	Ch	photoboard	Looking upstream, note debris in channel
Y	21	19	06693000000000000000	JL JP	Y187	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6339000	604580	GPS	1	N	Dn	Ch	photoboard	Looking downstream at the channel, note thick over-veg
Y	21	18	06693000000000000000	JL JP	Y187	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6339000	604580	GPS	1	S	Up	Ch	photoboard	Looking upstream at the channel
Y	21	20	06688000000000000000	JL JP	Y188	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6335000	604650	GPS	1	NW	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	21	21	06688000000000000000	JL JP	Y188	Unit 12	TEC	8/20/97	Trib to Coffin Cr.	93 L 056	9	6335000	604650	GPS	1	SE	Dn	Ch	photoboard	Looking downstream at the channel

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Y	21	22	0000000000000000000	JL JP	Y189	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6465000	607420	GPS	1	N	Up	Ch	photoboard	Looking upstream at the channel, note boulder cover
Y	21	23	0000000000000000000	JL JP	Y189	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6465000	607420	GPS	1	S	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	22	1	0000000000000000000	JL JP	Y190	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6464000	607441	GPS	9	N	Up	Ch	photoboard	Looking upstream at the channel, note LOD
Y	22	2	0000000000000000000	JL JP	Y190	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6464000	607441	GPS	9	S	Dn	Ch	photoboard, notebook, meterstick	Looking downstream at the channel
Y	21	24	0000000000000000000	JL JP	Y190	Unit 12	TEC	8/21/97	Trib to Canyon Cr.	93 L 077	9	6464000	607441	GPS	9	N	Up	Ch	photoboard	Looking upstream at the channel
Y	22	4	0783100000000000000	JP JL	Y191	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6462000	607255	GPS	5	S	Dn	Ch	photoboard	Looking downstream at the channel
Y	22	5	0783100000000000000	JP JL	Y191	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6462000	607255	GPS	5	N	Up	Ch	crew member	Looking upstream at the channel, small falls with pool
Y	22	8	0783100000000000000	JP JL	Y191	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6462000	607255	GPS	5	N	Up	Ch	photoboard, meterstick	Looking upstream at the channel
Y	22	9	0783100000000000000	JP JL	Y191	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6462000	607255	GPS	5	N	Up	Ch	meterstick, photoboard	Looking upstream at the channel
Y	22	3	0783100000000000000	JP JL	Y191	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6462000	607255	GPS	5	N	Up	Ch	photoboard, crew member	Looking upstream at the channel, note boulder cover
Y	22	6	1003800000000000000	JP JL	Y192	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6463000	607213	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
Y	22	7	1003800000000000000	JP JL	Y192	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6463000	607213	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
Y	22	11	1003700000000000000	JP JL	Y193	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6461260	607171	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
Y	22	12	1003700000000000000	JP JL	Y193	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6461260	607171	GPS	1	E	Up	Ch	photoboard, crew member	Looking upstream at the channel
Y	22	10	1003700000000000000	JP JL	Y193	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6461260	607171	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
Y	22	15	1003600000000000000	JL JP	Y194	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6451730	607088	GPS	1	SE	Up	Ch	photoboard	Looking upstream at the channel
Y	22	14	1003600000000000000	JL JP	Y194	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6451730	607088	GPS	1	NW	Dn	Ch	photoboard	Looking downstream at the channel
Y	22	13	1003600000000000000	JL JP	Y194	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6451730	607088	GPS	1	SE	Up	Ch	meterstick, photoboard, notebook	Looking upstream at the channel
Y	22	17	0783700000000000000	JL JP	Y195	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6421000	607290	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
Y	22	16	0783700000000000000	JL JP	Y195	Unit 12	TEC	8/21/97	Trib. to Canyon Cr.	93 L 077	9	6421000	607290	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
Y	33	16	0515300000000000000	JP JL	Y275	Unit 12	TEC	9/16/97	Trib. to Bulkley R.	93 L 075	9	6226800	606550	GPS	2	SE	Up	Ch	photoboard	Looking upstream at the channel
Y	33	17	0515300000000000000	JP JL	Y275	Unit 12	TEC	9/16/97	Trib. to Bulkley R.	93 L 075	9	6226800	606550	GPS	2	NA	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Y	1	20	46048791110000000000	DD SJ	Y8	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6391000	605640	GPS	3	E	Dn	Ch	photoboard	Looking downstream
Y	1	21	46048791110000000000	DD SJ	Y8	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6391000	605640	GPS	3	W	Up	Ch	photoboard	Looking upstream
Y	1	22	46048791110000000000	DD SJ	Y8	Unit 12	TEC	7/10/97	Lemieux Cr.	93 L 066	9	6391000	605640	GPS	3	W	Up	Ch	NA	Looking upstream, in a beaver dam area
Z	1	21	46047260000000000000	JP KG DD	Z6	Unit 12	TEC	7/9/97	Lacroix Cr.	93 L 066	9	6337600	605954	GPS	3	NA	NA	Fi	meterstick	Measuring fish with the meterstick

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Z	1	20	4604726000000000000	JP KG DD	Z6	Unit 12	TEC	7/9/97	Lacroix Cr.	93 L 066	9	6337600	605954	GPS	3	S	Up	Ch	crew members	Looking upstream at the channel
Z	1	19	4604726000000000000	JP KG DD	Z6	Unit 12	TEC	7/9/97	Lacroix Cr.	93 L 066	9	6337600	605954	GPS	3	N	Dn	Ch	crew member	Looking downstream at the channel
Z	1	22	0689100000000000000	JP DD KG	Z7	Unit 12	TEC	7/9/97	Trib. to Round Lake.	93 L 066	9	6350000	605950	GPS	1	E	X	Ch	crew members	Looking across stream at the channel, note the livestock impacts
Z	1	24	0689100000000000000	JP DD KG	Z7	Unit 12	TEC	7/9/97	Trib. to Round Lake.	93 L 066	9	6350000	605950	GPS	1	N	Up	Ch	crew member	Looking upstream at the channel
Z	1	25	0689100000000000000	JP DD KG	Z7	Unit 12	TEC	7/9/97	Trib. to Round Lake.	93 L 066	9	6350000	605950	GPS	1	W	X	Ch	crew member	Looking across stream at the channel
Z	1	23	0689100000000000000	JP DD KG	Z7	Unit 12	TEC	7/9/97	Trib. to Round Lake.	93 L 066	9	6350000	605950	GPS	1	S	Dn	Ch	crew member	Looking downstream at the channel
Z	2	4	0687100000000000000	JP DD KG	Z8	Unit 12	TEC	7/9/97	Vanderven Cr.	93 L 066	9	6369400	605951	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
Z	2	2	0687100000000000000	JP DD KG	Z8	Unit 12	TEC	7/9/97	Vanderven Cr.	93 L 066	9	6369400	605951	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
Z	2	3	0687100000000000000	JP DD KG	Z8	Unit 12	TEC	7/9/97	Vanderven Cr.	93 L 066	9	6369400	605951	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel
Z	2	1	0687100000000000000	JP DD KG	Z8	Unit 12	TEC	7/9/97	Vanderven Cr.	93 L 066	9	6369400	605951	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
Z	2	5	0687100000000000000	JP DD KG	Z8	Unit 12	TEC	7/9/97	Vanderven Cr.	93 L 066	9	6369400	605951	GPS	1		NA	Ch	NA	Looking across stream at the channel
Z	2	8	0687800000000000000	JP DD KG	Z9	Unit 12	TEC	7/9/97	De Jong Cr.	93 L 066	9	6375000	605930	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
Z	2	7	0687800000000000000	JP DD KG	Z9	Unit 12	TEC	7/9/97	De Jong Cr.	93 L 066	9	6375000	605930	GPS	1	N	Up	Ch	flagging	Looking upstream at the channel, note the cobble riffle
Z	2	6	0687800000000000000	JP DD KG	Z9	Unit 12	TEC	7/9/97	De Jong Cr.	93 L 066	9	6375000	605930	GPS	1	S	Dn	Ch	fieldbook	Looking downstream at the channel
Z	2	10	0687800000000000000	JP DD KG	Z9	Unit 12	TEC	7/9/97	De Jong Cr.	93 L 066	9	6375000	605930	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
Z	2	9	0687800000000000000	JP DD KG	Z9	Unit 12	TEC	7/9/97	De Jong Cr.	93 L 066	9	6375000	605930	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring fish on the fishboard
Z	2	11	4604879000000000000	JP DD KG	Z10	Unit 12	TEC	7/9/97	Robin Cr.	93 L 066	9	6384800	605954	GPS	6	E	Up	Ch	NA	Looking upstream at the channel
Z	2	12	4604879000000000000	JP DD KG	Z10	Unit 12	TEC	7/9/97	Robin Cr.	93 L 066	9	6384800	605954	GPS	6	W	Dn	Ch	crew member	Looking downstream at the channel, note heavy brush cover
Z	2	14	0684200000000000000	JP DD KG	Z12	Unit 12	TEC	7/9/97	Trib. to Robin Cr.	93 L 066	9	6398800	605467	GPS	5	NA	NA	Fi	meterstick	Measuring fish with the meterstick
Z	2	15	0684200000000000000	JP DD KG	Z12	Unit 12	TEC	7/9/97	Trib. to Robin Cr.	93 L 066	9	6398800	605467	GPS	5	NA	NA	Fi	crew member	Measuring fish with the meterstick
Z	2	16	0684200000000000000	JP DD KG	Z12	Unit 12	TEC	7/9/97	Trib. to Robin Cr.	93 L 066	9	6398800	605467	GPS	5	NA	NA	Fi	meterstick	Measuring fish with the meterstick
Z	2	18	0683800000000000000	JP DD KG	Z13	Unit 12	TEC	7/9/97	Trib. to Robin Cr.	93 L 066	9	6389200	605365	GPS	1	E	Up	Ch	crew member	Looking upstream at the channel
Z	2	17	0683800000000000000	JP DD KG	Z13	Unit 12	TEC	7/9/97	Trib. to Robin Cr.	93 L 066	9	6389200	605365	GPS	1	W	Dn	Ch	crew member	Looking downstream at the channel
Z	2	20	4604879111097000000	JP DD KG	Z14	Unit 12	TEC	7/9/97	Gardner Cr.	93 L 066	9	6397700	605646	GPS	1	NW	Dn	Ch	NA	Looking downstream at the channel
Z	2	19	4604879111097000000	JP DD KG	Z14	Unit 12	TEC	7/9/97	Gardner Cr.	93 L 066	9	6397700	605646	GPS	1	SE	Up	Ch	crew member	Looking upstream at the channel
Z	2	23	0685600000000000000	JP DD KG	Z15	Unit 12	TEC	7/9/97	Not a creek	93 L 066	9	6397770	605539	GPS	0	W	Dn	Ch	culvert	Looking downstream at the channel
Z	2	21	0685600000000000000	JP DD KG	Z15	Unit 12	TEC	7/9/97	Not a creek	93 L 066	9	6397770	605539	GPS	0	W	Dn	Ch	NA	Looking downstream at the channel
Z	2	22	0685600000000000000	JP DD KG	Z15	Unit 12	TEC	7/9/97	Not a creek	93 L 066	9	6397770	605539	GPS	0	W	Dn	Ch	NA	Looking downstream at the channel
Z	7	3	4603738000000000000	JL KG	Z50	Unit 12	TEC	7/18/97	Seymour Cr.	93 L 075	9	6199260	607068	GPS	1	W	Up	Ve	crew member	Looking upstream at the channel
Z	7	4	4603738000000000000	JL KG	Z50	Unit 12	TEC	7/18/97	Seymour Cr.	93 L 075	9	6199260	607068	GPS	1	E	Dn	Ch	NA	Looking downstream at the channel
Z	20	9	4604879000000000000	CF KG	Z153	Unit 12	TEC	8/19/97	Trib. to Robin Cr.	93 L 067	9	6423480	606288	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel, note the dense understory

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Z	20	10	4604879000000000000	CF KG	Z153	Unit 12	TEC	8/19/97	Trib. to Robin Cr.	93 L 067	9	6423480	606288	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel
Z	20	14	0695500000000000000	CF KG	Z154	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6475840	606019	GPS	5	E	Up	Ch	photoboard	Looking upstream at the channel
Z	20	13	0695500000000000000	CF KG	Z154	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6475840	606019	GPS	5	E	Up	Ch	meterstick	Looking upstream at a cascade
Z	20	11	0695500000000000000	CF KG	Z154	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6475840	606019	GPS	5	E	Up	Ch	photoboard	Looking upstream at the channel
Z	20	12	0695500000000000000	CF KG	Z154	Unit 12	TEC	8/19/97	Trib to Deep Cr.	93 L 067	9	6475840	606019	GPS	5	W	Dn	Ch	NA	Looking downstream at the channel
Z	20	15	0678200000000000000	KG CF	Z155	Unit 12	TEC	8/19/97	Trib. to McQuarrie L.	93 L 067	9	6500000	605290	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel
Z	20	16	0678200000000000000	KG CF	Z155	Unit 12	TEC	8/19/97	Trib. to McQuarrie L.	93 L 067	9	6500000	605290	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
Z	20	18	4604961000000000000	KG CF	Z156	Unit 12	TEC	8/19/97	Deep Cr.	93 L 057	9	6531830	605133	GPS	15	W	Dn	Ch	photoboard, crew member	Looking downstream at the channel, flowing through a sedge meadow
Z	20	17	4604961000000000000	KG CF	Z156	Unit 12	TEC	8/19/97	Deep Cr.	93 L 057	9	6531830	605133	GPS	15	E	Up	Ch	photoboard, crew member	Looking upstream at the channel
Z	20	19	0680900000000000000	KG CF	Z157	Unit 12	TEC	8/19/97	Not a creek	93 L 057	9	6520870	605223	GPS	0	E	NA	NA	photoboard, crew member	Looking at an "NC"
Z	20	20	0681100000000000000	KG CF	Z158	Unit 12	TEC	8/19/97	Not a creek	93 L 057	9	6522850	605215	GPS	0	E	NA	NA	photoboard	Looking at an "NC"
Z	20	21	0681200000000000000	KG CF	Z159	Unit 12	TEC	8/19/97	Not a creek	93 L 057	9	6526250	605175	GPS	0	E	NA	NA	photoboard	Looking at an "NC"
Z	20	23	0674600000000000000	KG CF	Z160	Unit 12	TEC	8/19/97	Thompson Cr.	93 L 057	9	6487270	604557	GPS	5	S	Dn	Ch	photoboard	Looking downstream at the channel
Z	20	22	0674600000000000000	KG CF	Z160	Unit 12	TEC	8/19/97	Thompson Cr.	93 L 057	9	6487270	604557	GPS	5	N	Up	Ch	photoboard	Looking upstream at the channel
Z	21	1	0678100000000000000	KG CF	Z161	Unit 12	TEC	8/19/97	Trib. to McQuarrie Lk.	93 L 057	9	6513350	604992	GPS	1	NA	NA	Fi	meterstick	Measuring fish with the meterstick
Z	20	24	0678100000000000000	KG CF	Z161	Unit 12	TEC	8/19/97	Trib. to McQuarrie Lk.	93 L 057	9	6513350	604992	GPS	1	NW	Dn	Ch	NA	Looking downstream at the channel, note the heavy fern cover
Z	20	24	0678100000000000000	KG CF	Z161	Unit 12	TEC	8/19/97	Trib. to McQuarrie Lk.	93 L 057	9	6513350	604992	GPS	1	SE	Up	Ch	photoboard	Looking upstream at the channel
Z	26	19	0689600000000000000	KG LE	Z208	Unit 12	TEC	9/8/97	Not a creek	93 L 066	9	6331190	605915	GPS	0	SE	NA	NA	photoboard, crew member	Looking at an "NC"
Z	26	20	0687200000000000000	KG LE	Z209	Unit 12	TEC	9/8/97	Trib to Vanderven Cr.	93 L 066	9	6365500	605942	GPS	1	NW	Up	Ch	photoboard	Looking upstream at the channel
Z	26	21	0687200000000000000	KG LE	Z209	Unit 12	TEC	9/8/97	Trib to Vanderven Cr.	93 L 066	9	6365500	605942	GPS	1	SE	Dn	Dn	photoboard	Looking downstream at the channel
Z	26	23	0684300000000000000	KG LE	Z210	Unit 12	TEC	9/8/97	Not a creek	93 L 066	9	6402170	605460	GPS	0	SW	NA	NA	photoboard	Looking at an "NC"
Z	26	22	0684300000000000000	KG LE	Z210	Unit 12	TEC	9/8/97	Not a creek	93 L 066	9	6402170	605460	GPS	0	NE	NA	NA	photoboard	Looking at an "NC"
Z	27	1	0684300000000000000	KG LE	Z211	Unit 12	TEC	9/8/97	Trib to Robin Cr.	93 L 066	9	6407250	605507	GPS	2	N	Up	Ch	photoboard	Looking upstream at the channel, heavily overgrown with vegetation
Z	26	24	0684300000000000000	KG LE	Z211	Unit 12	TEC	9/8/97	Trib to Robin Cr.	93 L 066	9	6407250	605507	GPS	2	S	Dn	Ch	photoboard, crew member	Looking downstream at the channel
Z	27	2	0685800000000000000	KG LE	Z212	Unit 12	TEC	9/8/97	Trib to Lemieux Cr.	93 L 067	9	6422960	605846	GPS	1	SW	Dn	Ch	photoboard	Looking downstream at the channel
Z	27	3	0685800000000000000	KG LE	Z212	Unit 12	TEC	9/8/97	Trib to Lemieux Cr.	93 L 067	9	6422960	605846	GPS	1	NE	Up	Ch	photoboard	Looking upstream at the channel
Z	27	4	0690400000000000000	KG LE	Z213	Unit 12	TEC	9/8/97	Not a creek	93 L 066	9	6321070	606225	GPS	0	NW	Up	Ch	photoboard	Looking upstream at the channel
Z	27	5	0690400000000000000	KG LE	Z213	Unit 12	TEC	9/8/97	Not a creek	93 L 066	9	6321070	606225	GPS	0	SE	Dn	Ch	photoboard	Looking downstream at the channel
Z	30	24	0682200000000000000	KG JL	Z243	Unit 12	TEC	9/13/97	Trib to Bulkley R.	93 L 055	9	6284070	605021	GPS	3	S	Up	Ch	NA	Looking upstream at a falls barrier on Z243
Z	30	21	0682200000000000000	KG JL	Z243	Unit 12	TEC	9/13/97	Trib to Bulkley R.	93 L 055	9	6284070	605021	GPS	3	S	Up	Ch	photoboard	Looking upstream at the channel
Z	30	20	0682200000000000000	KG JL	Z243	Unit 12	TEC	9/13/97	Trib to Bulkley R.	93 L 055	9	6284070	605021	GPS	3	N	Dn	Ch	photoboard	Looking downstream at the channel
Z	30	23	0628900000000000000	KG JL	Z244	Unit 12	TEC	9/13/97	Trib to Bulkley R.	93 L 055	9	6282000	605200	GPS	1	SE	Up	Ch	photoboard	Looking upstream at the channel

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Z	30	22	0628900000000000000	KG JL	Z244	Unit 12	TEC	9/13/97	Trib to Bulkley R.	93 L 055	9	6282000	605200	GPS	1	NW	Dn	Ch	photoboard	Looking downstream at the channel
Z	31	2	4604370000000000000	KG JL	Z245	Unit 12	TEC	9/13/97	Helps Cr.	93 L 055	9	6266000	605167	GPS	8	SE	Up	Ch	meterstick	Looking upstream at a cascade
Z	31	1	4604370000000000000	KG JL	Z245	Unit 12	TEC	9/13/97	Helps Cr.	93 L 055	9	6266000	605167	GPS	8	NW	Dn	Ch	NA	Looking downstream at the channel
Z	30	25	4604370000000000000	KG JL	Z245	Unit 12	TEC	9/13/97	Helps Cr.	93 L 055	9	6266000	605167	GPS	8	SE	Up	Ch	photoboard	Looking upstream at the channel
Z	31	5	4604370000000000000	KG JL	Z245	Unit 12	TEC	9/13/97	Helps Cr.	93 L 055	9	6266000	605167	GPS	8	SE	Up	Ch	NA	Looking upstream at barriers on Helps Creek
Z	31	6	4604370000000000000	KG JL	Z245	Unit 12	TEC	9/13/97	Helps Cr.	93 L 055	9	6266000	605167	GPS	8	SE	Up	Ch	NA	Looking upstream at barriers on Helps Creek
Z	31	21	0687100000000000000	DD KG	Z254	Unit 12	TEC	9/16/97	Not a creek	93 L 076	9	6372000	606560	GPS	0	E	NA	O	photoboard	Looking at an "NC"
Z	31	22	0786500000000000000	KG DD	Z255	Unit 12	TEC	9/16/97	Not a creek	93 L 076	9	6371070	606515	GPS	0	SW	NA	O	photoboard	Looking at an "NC"
Z	31	24	0786500000000000000	KG DD	Z256	Unit 12	TEC	9/16/97	Vanderven Cr.	93 L 076	9	6371620	606475	GPS	5	S	Dn	Ch	photoboard	Looking downstream at the channel
Z	31	23	0786500000000000000	KG DD	Z256	Unit 12	TEC	9/16/97	Vanderven Cr.	93 L 076	9	6371620	606475	GPS	5	N	Up	Ch	photoboard	Looking upstream at the channel, note the slow flow
Z	31	25	4603254391000000000	DD KG	Z257	Unit 12	TEC	9/16/97	Not a creek	93 L 076	9	6327130	607115	GPS	0	S	NA	O	photoboard, crew member	Looking at an "NC"

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A	3	2	0779000000000000000	AKL HK	A25	Unit 12	TEC	9/22/96	Trib. to Canyon Cr.	93 L 076	9	6335000	606930	GPS	2	NE	Dn	Ch		Looking downstream.
A	3	1	0779000000000000000	AKL HK	A25	Unit 12	TEC	9/22/96	Trib. to Canyon Cr.	93 L 076	9	6335000	606930	GPS	2	NE	Up	Ch	notebook	Looking upstream in dry channel.
A	3	3	0779100000000000000	RH JL	R94	Unit 12	TEC	9/22/96	Not a creek	93 L 076	9	6329000	607000	GPS	0	E		O		Not a creek.
B	7	23	0518000000000000000	RH JL	R74	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6225000	607400	GPS	1	SW	Up	Ch	Ryan	Waterfall between reach 1 and reach 2.
B	7	21	0518000000000000000	RH JL	R74	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6225000	607400	GPS	1	SW	Up	Ch		Looking upstream.
B	7	22	0518000000000000000	RH JL	R74	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6225000	607400	GPS	1	SW	Dn	Ch	Ryan	Looking downstream.
B	7	24	0518300000000000000	RH JL	R75	Unit 12	TEC	9/20/96	Trib. to Canyon Cr.	93 L 075	9	6240000	607340	GPS	2	SW	Up	Ch	Ryan	Looking upstream through grass swale.
B	7	19	0000000000000000000	RH JL	R73	Unit 12	TEC	9/20/96	Not a creek	93 L 085	9	6206000	607460	GPS	0	NW	Dn	Ch		Looking downstream.
B	7	20	0000000000000000000	RH JL	R73	Unit 12	TEC	9/20/96	Not a creek	93 L 085	9	6206000	607460	GPS	0	NW	Up	Ch	Ryan	Looking upstream.
E	1	13	0683800000000000000	JL EM	E9	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 066	9	6410000	605500	GPS	2	SW	Dn	Ch	photoboard	Looking downstream at the channel.
E	1	14	0683800000000000000	JL EM	E9	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 066	9	6410000	605500	GPS	2	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel.
E	1	15	0683800000000000000	JL EM	E10	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 067	9	6422000	605550	GPS	4	E	Up	Ch	photoboard, crew member	Looking upstream at the channel.
E	1	16	0683800000000000000	JL EM	E10	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 067	9	6422000	605550	GPS	4	E	Up	Ch	photoboard, crew member	Looking upstream at the channel.
E	1	17	0683800000000000000	JL EM	E10	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 067	9	6422000	605550	GPS	4	W	Dn	Ch	photoboard, crew member	Looking downstream at the channel.
E	1	18	0684500000000000000	JL EM	E11	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 067	9	6422000	605670	GPS	6	E	Up	Ch	photoboard, crew member	Looking upstream, with LOD and riparian cover
E	1	19	0684500000000000000	JL EM	E11	Unit 12	TEC	7/11/97	Trib to Robin Cr.	93 L 067	9	6422000	605670	GPS	6	W	Dn	Ch	photoboard, crew member	Looking downstream, with LOD, riparian cover
E	1	21	0686900000000000000	JL EM	E12	Unit 12	TEC	7/11/97	Gardner Cr.	93 L 067	9	6422000	605800	GPS	2	E	Up	Ch	photoboard, crew member	Looking upstream at the channel.
E	1	20	0686900000000000000	JL EM	E12	Unit 12	TEC	7/11/97	Gardner Cr.	93 L 067	9	6422000	605800	GPS	2	W	Dn	Ch	photoboard	Looking downstream at the channel.
E	2	1	0673900000000000000	JL EM	E14	Unit 12	TEC	7/11/97	Trib. to Thompson Cr.	93 L 057	9	6449000	604590	GPS	1	S	Up	Ch	photoboard, crew member	Looking upstream at the channel
E	1	24	0673900000000000000	JL EM	E14	Unit 12	TEC	7/11/97	Trib. to Thompson Cr.	93 L 057	9	6449000	604590	GPS	1	N	Dn	Ch	photoboard	Looking downstream at the channel.
E	20	12	0337100000000000000	SJ EM	E208	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605360	GPS	4	S	Up	Ch	crew member	Looking upstream at the channel
E	20	13	0337100000000000000	SJ EM	E208	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605360	GPS	4	N	Dn	Ch	crew member	Looking downstream at the channel
E	20	11	0337100000000000000	SJ EM	E208	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605360	GPS	4	NA	NA	Fi	fishboard	Measuring trout on the fishboard
E	20	14	0698500000000000000	SJ EM	E209	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6476000	605480	GPS	2	W	Up	Ve	vest	Looking upstream at the channel, covered by alder and spruce
E	20	15	0698500000000000000	SJ EM	E209	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6476000	605480	GPS	2	E	Dn	Ve	vest	Looking downstream at the channel
E	20	16	0698100000000000000	SJ EM	E210	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6482000	605440	GPS	2	S	Up	Ch	crew member	Looking upstream at the channel and a crew member electrofishing
E	20	17	0698100000000000000	SJ EM	E210	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6482000	605440	GPS	2	N	Dn	Ch	crew member	Looking downstream at the channel and a crew member electrofishing

Group	Roll	Frame	Watershed Code	Survey Crew	Site Number	Unit Number	Agency	Survey Date	Stream "Local"	Map #	UTM Zone	UTM Northing	UTM Easting	Method	Reach Number	Aspect	Photo Direction	Photo Type	Scale Item	Comments
E	20	18	0698100000000000000	SJ EM	E210	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6482000	605440	GPS	2	NA	NA	Fi	fishboard	Measuring fish on the fish board
E	20	22	0698200000000000000	SJ EM	E212	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605630	GPS	1	NW	Dn	Ch	crew member	Looking downstream at the channel
E	20	23	0698200000000000000	SJ EM	E212	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605630	GPS	1	SE	Up	Ch	NA	Looking upstream at the channel
E	20	21	0698200000000000000	SJ EM	E212	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6481000	605630	GPS	1	NA	NA	Fi	photoboard, fishboard	Measuring trout on the fishboard
E	20	24	0698900000000000000	SJ EM	E213	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6487000	605600	GPS	1	NW	Dn	Ch	crew member	Looking downstream at the channel
E	20	25	0698900000000000000	SJ EM	E213	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6487000	605600	GPS	1	SE	Up	Ve	NA	Looking upstream at the channel
E	21	1	0699600000000000000	SJ EM	E214	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6488000	605610	GPS	1	N	Up	Ch	photoboard	Looking upstream at the channel
E	21	2	0699600000000000000	SJ EM	E214	Unit 12	TEC	8/18/97	Trib. to Deep Cr.	93 L 067	9	6488000	605610	GPS	1	S	Dn	Ch	photoboard	Looking downstream at the channel
E	21	5	0705600000000000000	SJ EM	E215	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6439000	606110	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
E	21	4	0705600000000000000	SJ EM	E215	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6439000	606110	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
E	21	6	4604879111000000000	SJ EM	E216	Unit 12	TEC	8/19/97	Lemieux Cr.	93 L 067	9	6437000	606140	GPS	6	E	Up	Ch	photoboard	Looking upstream at the channel, note the mosses on the substrate
E	21	7	4604879111000000000	SJ EM	E216	Unit 12	TEC	8/19/97	Lemieux Cr.	93 L 067	9	6437000	606140	GPS	6	W	Dn	Ch	photoboard	Looking downstream at the channel
E	21	8	0705300000000000000	SJ EM	E217	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6434000	606190	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
E	21	9	0705300000000000000	SJ EM	E217	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6434000	606190	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
E	21	10	0686700000000000000	SJ EM	E218	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6433000	620000	GPS	1	E	Up	Ch	photoboard	Looking upstream at the channel
E	21	11	0686700000000000000	SJ EM	E218	Unit 12	TEC	8/19/97	Trib. to Lemieux Cr.	93 L 067	9	6433000	620000	GPS	1	W	Dn	Ch	photoboard	Looking downstream at the channel
E	21	12	4604879111000000000	SJ EM	E219	Unit 12	TEC	8/19/97	Lemieux Cr.	93 L 067	9	6549000	606220	GPS	8	NW	Dn	Ch	photoboard, crew member	Looking downstream at the channel
E	21	13	4604879111000000000	SJ EM	E219	Unit 12	TEC	8/19/97	Lemieux Cr.	93 L 067	9	6549000	606220	GPS	8	SE	Up	Ch	photoboard, crew member	Looking upstream at the channel flowing through a meadow
E	21	14	4604879111000000000	SJ EM	E219	Unit 12	TEC	8/19/97	Lemieux Cr.	93 L 067	9	6549000	606220	GPS	8	SE	Up	Ch	NA	Looking upstream at a cascade barrier
E	21	15	4605177361000000000	SJ EM	E220	Unit 12	TEC	8/19/97	Trib. to Thompson Cr.	93 L 057	9	6471000	604750	GPS	3	SW	Dn	Ch	photoboard, crew member	Looking downstream at the channel
E	21	16	4605177361000000000	SJ EM	E220	Unit 12	TEC	8/19/97	Trib. to Thompson Cr.	93 L 057	9	6471000	604750	GPS	3	NE	Up	Ch	photoboard, crew member	Looking upstream at the channel and willow cover
E	21	17	0675800000000000000	SJ EM	E221	Unit 12	TEC	8/19/97	Trib. to Thompson Cr.	93 L 057	9	6475000	604720	GPS	2	N	Up	Ve	crew member	Looking upstream at the channel
E	21	18	0675800000000000000	SJ EM	E221	Unit 12	TEC	8/19/97	Trib. to Thompson Cr.	93 L 057	9	6475000	604720	GPS	2	S	Dn	Ch	crew member	Looking downstream at the channel
E	21	21	0677300000000000000	SJ EM	E222	Unit 12	TEC	8/20/97	Trib. to McQuarrie Lk	93 L 057	9	6503000	604910	GPS	1	W	Up	Ch	photoboard	Looking upstream at the channel
E	21	20	0677300000000000000	SJ EM	E222	Unit 12	TEC	8/20/97	Trib. to McQuarrie Lk	93 L 057	9	6503000	604910	GPS	1	E	Dn	Ch	electroshocker	Looking downstream at the channel
E	21	19	0677300000000000000	SJ EM	E222	Unit 12	TEC	8/19/97	Trib. to McQuarrie Lk	93 L 057	9	6503000	604910	GPS	1	W	Up	Ch	crew member	Looking upstream at the channel and moss lined banks
E	21	22	0692900000000000000	SJ EM	E223	Unit 12	TEC	8/20/97	Trib. to Deep Cr.	93 L 067	9	6454000	605530	GPS	1	NW	Dn	Ve	photoboard	Looking downstream at the channel
E	21	23	0692900000000000000	SJ EM	E223	Unit 12	TEC	8/20/97	Trib. to Deep Cr.	93 L 067	9	6454000	605530	GPS	1	SE	Up	Ve	photoboard, crew member	Looking upstream at a small channel covered by vegetation
E	21	24	0663300000000000000	SJ EM	E224	Unit 12	TEC	8/20/97	Trib. to Bulkley R.	93 L 056	9	6362000	605000	GPS	3	E	Dn	Ve	photoboard, crew member	Looking downstream at the channel