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

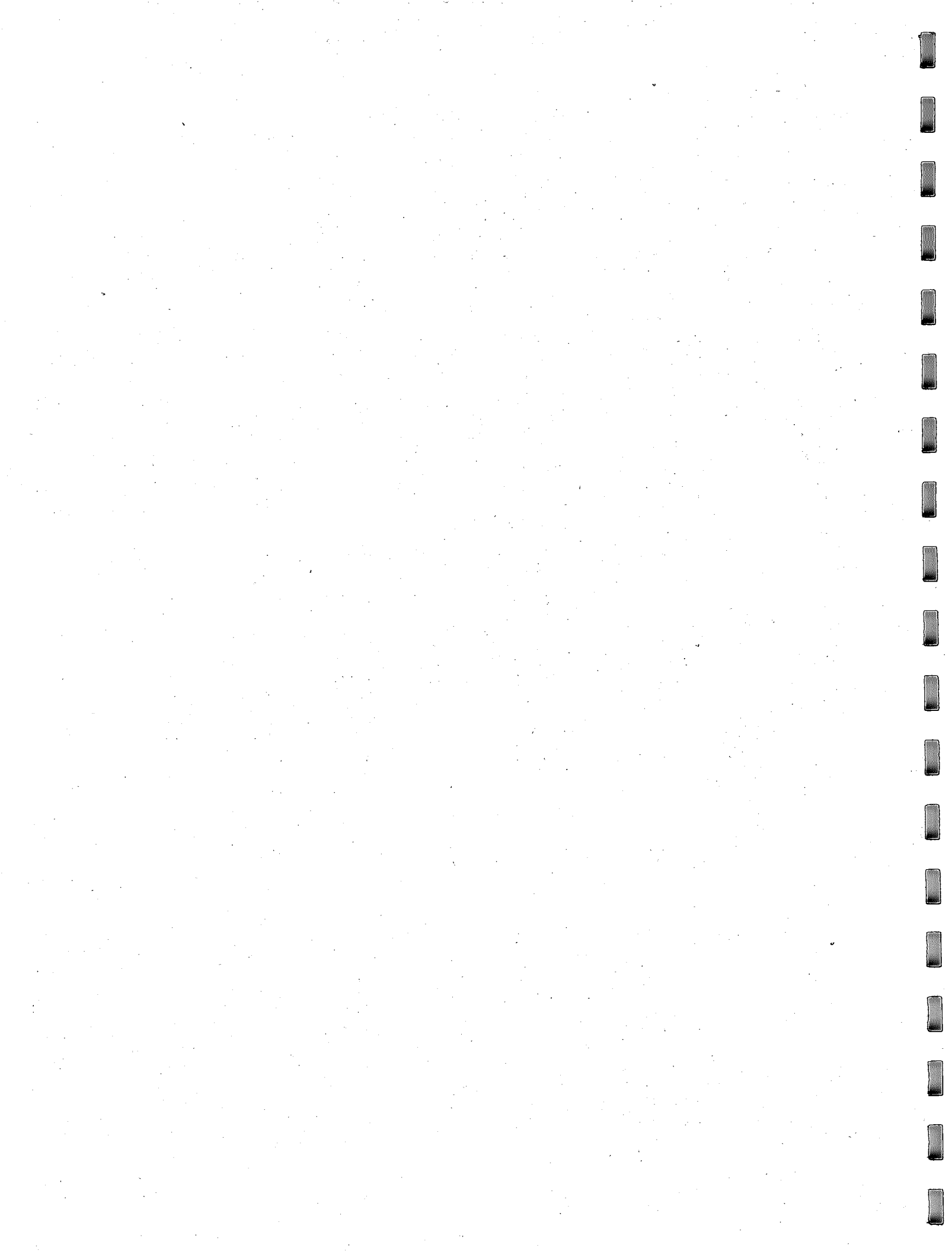
(Working Unit #9- Fulton)

PART 1



TRITON

Environmental Consultants Ltd.



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

(Working Unit #9 - Fulton)

Prepared for:

Pacific Inland Resources (FRBC)
PO Box 3130
Smithers, BC
VOJ 2N0

April 1998

Prepared by:



TRITON

Environmental Consultants Ltd.
120 -13511 Commerce Parkway
Richmond, B.C. V6V 2L1
(604) 279-2093 Fax: (604) 279-2047

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 the historical fisheries data collected by SKR Consultants Ltd and the field data collected by Triton survey crews in working unit 9. The historical records indicate the presence of the following species in this working area:

- cutthroat trout (*Oncorhynchus clarkii*)
- lake whitefish (*Prosopium coulteri*)
- lake trout (*Salvelinus namaycush*)
- peamouth chub (*Mylocheilus caurinus*)
- burbot (*Lota lota*)
- longnose suckers (*Catostomus catostomus*)

A total of 160 sites were sampled between July 25 and October 2 1996 and July 7 and September 20 1997. Eighteen sites were classified as "Not A Creek" due to the lack of a defined channel. Fish were captured by electrofishing at 43 sites and by minnow trapping at 1 site, the species sampled include Dolly Varden (*S. malma*), rainbow trout (*Oncorhynchus mykiss*), cutthroat trout, prickly sculpin (*Cottus asper*), mountain whitefish (*Prosopium williamsoni*), red sided shiner (*Richardsonius balteatus*), burbot and longnose dace (*Rhinichthys cataractae*). Thirty sites were classified as 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.

TABLE OF CONTENTS

1.0	INTRODUCTION	
1.1	Background	
1.2	Objectives	
2.0	STUDY AREA	
2.1	Location	
2.2	Access	
2.3	Resource Use	
3.0	METHODS	
3.1	Biological	
4.0	STREAM FLOW AND WATER QUALITY	
4.1	Stream Flow	
4.2	Water Quality	
5.0	RESULTS AND DISCUSSION	
5.1	Bristol Creek and Lake (460-6972-657) (93 M 007).....	Tab 1
5.2	Bristow Creek (480-6972-341) (93 L 087, 93 L 088)	Tab 2
5.3	Cronin Creek (480-6972-472) (93 L 096, 93 L 097).....	Tab 3
5.4	Debenture Creek (460-6972-875) (93 L 096, 93 L 097)	Tab 4
5.5	Fink Creek (480-6972-341-267) (93 L 087)	Tab 5
5.6	Fulton River and tributaries to the Fulton River and Chapman Lake (480-6972-000) (93 L 087, 93 L 088, 93 L 097, 93 M 006, 93 M 007)	Tab 6
5.7	Unnamed Tributary to the Fulton River (480-6972-669) (93 M 007).....	Tab 7
5.8	Hagarty Creek (480-6972-528) (93 L 097).....	Tab 8
5.9	Haystack Creek (480-6972-544-458) (93 L 096, 93 L 097).....	Tab 9
5.10	Little Joe Creek (480-6972-427-541) (93 L 086, 93 L 087).....	Tab 10
5.11	McKendrick Creek (480-6972-427) (93 L 087).....	Tab 11
5.12	Morin Creek and Morin Lake (480-6972-657) (93 L 097).....	Tab 12
5.13	Nata Creek (460-6972-544) (93 L 096, 93 L 097).....	Tab 13
5.14	Regan Creek (480-6972-341-267) (93 L 087)	Tab 14
5.15	Taka Creek (480-6972-870) (93 L 096, 93 L 097).....	Tab 15
5.16	Fish Age, Growth and Other Observations	
5.17	Rare and Endangered Species	
5.18	Wildlife Observations	
5.19	Recommendations for Future Sampling	
6.0	CONCLUSION AND RECOMMENDATIONS	
7.0	REFERENCES	

LIST OF FIGURES

- | | |
|-----------|---|
| Figure 1 | Overview Map of the Bulkley Forest District |
| Figure 2a | Length Frequency Histogram for Rainbow Trout |
| Figure 2b | Length Frequency Histogram for Dolly Varden |
| Figure 2c | Length Frequency Histogram for Burbot |
| Figure 2d | Length Frequency Histogram for Prickly Sculpin |
| Figure 2e | Length Frequency Histogram for Cutthroat Trout |
| Figure 2f | Length Frequency Histogram for Longnose Dace |
| Figure 2g | Length Frequency Histogram for Rocky Mountain Whitefish |
| Figure 2h | Length Frequency Histogram for Red Sided Shiner |
| Figure 2i | Length Frequency Histogram for Salmon (General) |

LIST OF TABLES

Table 1	Riparian Management Areas and Stream Classification
Table 2	Water Quality Data Collected in Working Unit 9 in 1996 and 1997
Table 3	Summary of Barriers Observed in Working Unit 9 in 1996 and 1997
Table 4	Summary of Site Data Collected in Working Unit 9 in 1996 and 1997
Table 5	Summary of Non Fish Bearing Classifications Established in Working Unit 9 1996 and 1997
Table 6	Summary of Sites in Working Unit 9 for Which Future Sampling is Recommended.
Table 7	Summary of Wildlife and Wildlife Signs Observed in Working Unit 9 in 1996 and 1996.
Table 8	Catch Data by Species and by Size Class (mm) in Working Unit 9

LIST OF APPENDICES

Appendix 1	Hydrological Data
Appendix 2	Fish Data
Appendix 3	Photodocumentation Summary

ACKNOWLEDGMENTS

Triton Environmental Consultants Ltd.'s project team for this inventory project included:

Mr. Adam Lewis, M.Sc., R.P. Bio.	Project Manager/Crew Leader
Ms. Julie Pavey, B.Sc., R.P. Bio.	Project Manager/Crew Leader
Dr. Guy Martel, Ph.D.	Crew Leader
Mr. Ryan Hill, MRM, R.P. Bio	Crew Leader
Mr. Arne Lorenz, B.Sc.	Crew Leader
Mr. Bruce Mattock, B.Sc., R.P. Bio	Crew Leader
Mr. Steve Jennings, B.Sc.	Crew Leader
Mr. James Pegg, M.Sc.	Crew Leader
Mr. Peter Frederiksen	Crew Leader
Ms. Jennifer Haslett	Crew Leader
Mr. Darrel Davis	Crew Leader
Mr. Terry Davies	Crew Leader
Ms. Karla Graf	Crew Leader
Mr Ficus Chan	Field Technician
Mr. Lucas Eades	Field Technician
Ms. Heidi Schmit	Field Technician
Ms. Kirsten Aichberger	Field Technician
Mr. Eamon Miyagi	Field Technician
Mr. Jean-Francois Patenaude	Field Technician
Mr. Hubert Karas	Field Technician
Mr. Jim Lang	Field Technician
Mr. Dave Warburton	GIS Coordinator
Ms. Shannon Shields, B.A.	GIS Technician
Mr. Derik Woo, B.A.	GIS Technician
Ms Michelle King, B.A.	GIS Assistant
Mr. Edward Lem	GIS Assistant
Ms. Robyn Shortt, B.Sc.	Database Coordinator

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 within 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. Stream classification is used to identify the required width of appropriate riparian management areas.

This report summarizes historical and field data collected in unit 9, which consists of the part of the upper Fulton watershed occurring in the Bulkley Forest District (see Figure 1). The historical records indicate that the following species are scattered throughout the study area :

- cutthroat trout
- lake whitefish
- lake trout
- peamouth chub
- burbot
- longnose suckers

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 B.C. and contains several major tributaries to the Bulkley and Babine Rivers. The TRIM sheets that cover unit 9 are :

93 L 077, 93 L 086, 93 L 087, 93 L 096, 93 L 097, 93 M 006, 93 M 007. The Fulton working unit covers an area that is roughly 480 km² and comprises 6.1% of the study area (Saimoto 1996). The streams surveyed in this working unit include:

- Bristol Creek (460-6972-657)
- Bristow Creek (480-6972-341)
- Cronin Creek (480-6972-472)
- Debenture Creek (460-6972-875)
- Fink Creek (480-6972-341-267)
- Fulton River (480-6972-000)
- Hagarty Creek (480-6972-528)
- Haystack Creek (480-6972-544-458)
- Higgins Creek (480-6972-472-441)
- Little Joe Creek (480-6972-427-541)
- McKendrick Creek (480-6972-427)
- Morin Creek (480-6972-657)
- Nata Creek (460-6972-544)
- Regan Creek (480-6972-341-267)
- Taka Creek (480-6972-870)

Several unnamed tributaries to Chapman Lake and Bristol Lake were also sampled.

2.2 Access

Road access is available for Chapman Lake, the lower and mid section tributaries on the west side of the Fulton River, the eastern tributaries of the Fulton river near Bristol Creek and for McKendrick Creek (Saimoto 1996). Helicopter access is required for the upper reaches and tributaries of the Fulton River. Most of the sites sampled in this unit were accessed by road. Approximately a third of the sites, many in the upper Fulton watershed, were accessed by helicopter.

2.3 Resource Use

Forestry and recreation are the main resource based activities in this watershed.

3.0 METHODS

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, notable 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. The photodocumentation summary 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.

3.1 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 m² 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 (*Salvelinus confluentus*) were distinguished from Dolly Varden (*S. malma*) 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 a Water Survey of Canada (WSC) station within Unit 9. This station was located on the Fulton River at the outlet of Chapman Lake (08EC009), data for this station is available for the period 1967 to 1970.

The Fulton River at the outlet of Chapman Lake has a drainage area of 332 km² and recorded a mean annual discharge (MAD) of 16.0 m³/s, however this value is based on a very short and incomplete period of record. The recorded minimum and maximum mean daily discharges were 1.39 m³/s and 49.3 m³/s, respectively.

Summary information and hydrograph are presented for this 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 μ S. 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 this project. Water temperatures during this period ranged between 3°C and 16°C and the average water temperature was 8.91°C. The pH values ranged from 5.6 to 8.22 with an average pH of 7.38. The conductivity ranged from 20 to 1670 (umhos/cm) with an average value of 127.44. The turbidity values are not discussed here as the values were defaulted on request of the QA/QC monitor to the depth of the deepest pool when turbidity was recorded as clear to the bottom. This value is not considered indicative of the stream turbidity by Triton and will not be discussed further..

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 160 sites were sampled and 18 sites were classified as "Not a creek" due to a lack of defined channel. Thirty sites were classified as S5 or S6 and the basis for the non fish bearing status is summarized. Fish were caught by electrofishing at 43 sites and by minnow trapping at 1 site. Falls and cascade barriers were identified in a number of streams in this working unit, these barriers are listed in **Table 3**. The summary information for all sites in working unit 9 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 the appropriate cards and photos appear in this report after each sub-basin description. A summary of non fish bearing classifications established in this working unit are listed in **Table 5** and a summary of the sites for which future sampling is recommended is provided in **Table 6**. A summary of wildlife and wildlife signs observed in working unit 9 is provided in **Table 7**. Individual fish data for this working unit has been summarized in Appendix 2. 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.

5.1 Bristol Creek and Lake (460-6972-657) (93 M 007)

5.1.1 Sensitive Habitats and Barriers

The Bristol Creek mainstem is 8.8 km in length and is fed by 5 tributaries. Reaches 1 and 3 have low gradient and are unconfined and reach 2 is Bristol Lake. Reach 3 has a wetland in direct contact with the channel which has been classified as a fisheries sensitive zone. Reach 4 consists of another lake (580 meters x 379 meters) bordered by a wetland that has also been identified as a fisheries sensitive zone. Reach 5 is unconfined and characterized by low gradient. Reach 6 has moderately steep gradient and is unconfined. The Bristol drainage was sampled at 6 locations, including reaches 3 and 7 of the mainstem.

5.1.2 Fish Summary Tables and Stream Classification

The historical records indicate cutthroat trout in Bristol Lake, which is connected to the Fulton River through Bristol Creek. Five sites were electrofished in 1996 and rainbow trout (*O. mykiss*) were caught at 2. The main creek was sampled twice in reach 3 and was classified as an S3, based on average channel widths of 1.9 meters and 2.5 meters and the presence of fish and/or fish habitat in the surveyed areas. Three of the tributaries sampled in this system were classified as "Not a Creek", due to the lack of a defined channel. One tributary to Bristol Lake was classified as an S3 based on an average channel width of 2.05 meters and the presence of rainbow trout in the sampling area. Another tributary was classified as an S6, based on the lack of suitable habitat and an average channel width of 1.75 meters. Reach 7 of the mainstem was classified as an S6 based on the absence of suitable fish habitat. A small muddy channel in an alder swale was observed by the survey crew at this site.

DFO/MoELP Stream Survey Form

Site Number: JULIE 129

Reach No.: 1

Trib. to Bristol L.



TRITON

Environmental Consultants Ltd.

Location: JULIE 129, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-7200-000-000-000-000-000-000-000-0

Map #: 93 M 007

Reach Length (km): 1.2 MA

Date: 21-Aug-96

Time: 12:49

Agency: TEC

Access: HL

Fish Card: N

Field Historical

U.T.M.: 9.6470.61013

Length surveyed (m): 200.0 AE

Survey Crew: JP\EM \ \ \ \ \ \

Photos: J-8-12,13

Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.0 MS
 Av. Wet. Width (m): 1.8 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 22 MS
 Gradient (%): 7.0 CL
 Pool: 40 Riffle: 30 Run: 25 Other: 5
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 90 GE

Specific Data

1.1	2.0	2.3	3.0	2.0	1.9
1.1	1.7	2.0	2.7	1.2	1.8
3	2	3			
16	15	24	35		

Obstructions

C	Height (m)	Type	Location
C8	1	C	0.4

Bed Material

	Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):		30	15
	Large (16-64mm):			15
	Sm. cobble (64-128mm):			20
Larges	Lge cobble (128-256mm):		50	20
	Bldr cobble (>256mm):			10
Bedrock			0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	RB	1	89	J	R			EL

Cover

Cover Total %: 75 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
0	35	25	5	20	15

Crown Closure %: 30 Aspect: N

D90 (cm): 26 Compaction: Medium

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

Banks

Height (m): 0.2

% Unstable: 0

Fines Gravels Larges Bedrock

Confinement: FC

Valley: Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 0.2

Bars (%): 5 pH: 7.2 Braided: N

Water Temp. (°C): 8.0 02 (ppm):

Turb. (cm): 35 Cond. (µmhos): 96

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, was 87 seconds over 15 meters. This stream was sampled at an old road crossing, with no culvert or bridge. The road runs through the creek.
- C5: Lat 55 02 13.8 Long 126 41 58.1
- C6: A clay silt substrate was found on the side bank. Siltation may result.
- C7: The water was clear to the bottom. The mean air temperature on this day was 10.9°C
- C8: This is a very productive site for fish. A larger than required RMA is recommended for this creek. Previously this area was logged right down to the stream banks. The channel is full of LOD.

Reach Symbol

(Fish)

RB

2 B 7.0 2350

(Width, Valley: Channel, Slope)

(Bed Material)



Photo #: J-8-13, 1996/08/21
Site #: J129, Looking downstream.



Location: JULIE 130, Unit 9, sec C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-7300-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 2.0 MA Date: 21-Aug-96 Time: 13:35 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9. 6470 . 61016 Length surveyed (m): 200.0 AE Survey Crew: JP\EM \ \ \ \ \ \ Photos: J-8-14,15 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.8 GE
 Av. Wet. Width (m): 1.8 GE
 Av. Max Riffle Depth (cm): 0 GE
 Av. Max Pool Depth (cm): 6 GE
 Gradient (%): 4.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 20 GE
 % Stable: 80 AE

Specific Data

1.0	3.0	2.0	1.5	1.0	2.0
1.0	3.0	2.0	1.5	1.0	2.0
0	0	0	0	0	0
8	6	8	4	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 60 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 0 20 0 10 70 0
 Crown Closure %: 5 Aspect: N

D90 (cm): 0 Compaction: Low

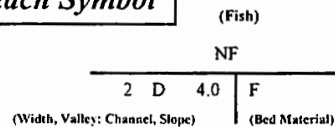
Discharge

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

Banks

Height (m): 0.1
 % Unstable: 20
 Fines Gravels Larges Bedrock

Reach Symbol



Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): 8 Cond. (µmhos):

Comments

- C1: S6
- C2: LS = 5%, RS = 5%
- C3: No fisheries sensitive zones noted.
- C4: No habitat was available for shocking.
- C5: Lat N 55 02 13.8, Long W 126 41 58
- C6: No additional bank texture information.
- C7: This site was a series of standing pools at the time of sampling. The water was clear to the bottom. The mean air temperature on this day was 10.9°C
- C8: Photos of the site were taken from the air. The crew found puddles on an old road on the ground. No fish habitat was observed. A small meadow was found upstream of the sampling area. The channel is undefined in some parts and moves underground. This is a borderline S6 / NC.



Photo #: J-8-14, 1996/08/21
Site #: J130, Aerial photo of site J130



Photo #: J-8-15, 1996/08/21
Site #: J130, Aerial photo of site J130

Location: JULIE 127, Unit 9, see C5.

Stream (Gaz.): Bristol Creek

Watershed Code: 480-6972-657-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 0.8 MA Date: 21-Aug-96 Time: 10:20 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 . 6470 . 61055 Length surveyed (m): 500.0 GE Survey Crew: JP\EM\ \ \ \ \ \ \ \ Photos: J-8-8,9 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.5 MS
 Av. Wet. Width (m): 2.5 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 200 MS
 Gradient (%): 0.5 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: >40 GE
 % Debris Area: 5-15 GE
 %Stable: 20 GE

Specific Data

1.6	2.2	2.4	3.2	2.8	2.7
1.6	2.2	2.4	3.2	2.8	2.7
0	0	0	0	0	0
200	200	200	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 80 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 65 5 0 20 10 0
 Crown Closure %: 5 Aspect: S

N D90 (cm): 0 Compaction: Low

Comments

- C1: S3
- C2: LS = 2%, RS = 2%
- C3: This reach connects 2 small lakes.
- C4: The electroshocking effort, using a Smithroot 12 B POW model was 568 seconds over 200 meters.
- C5: Lat 55 04 28.3 Long 126 41 46.7
- C6: No additional bank texture information.
- C7: This site contains marginal fish habitat. No spawning or overwintering habitat was noted. However, no barriers to fish passage were observed. The mean air temperature on this day was 10.9°C
- C8: Part of the channel moves through swamp and part moves through alder. Some deep water was noted.

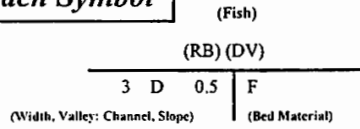
Discharge

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

Banks

Height (m): 0.0
 % Unstable: 0
 Fines Gravels Larges Bedrock

Reach Symbol



Confinement: UC
 Valley : Channel Ratio 10+
 Stage: Flood Flood Signs Ht(m): 0
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 11.0 02 (ppm):
 Turb. (cm): 20 Cond. (µmhos):



Photo #: J-8-8, 1996/08/21
Site #: J127, Looking upstream, grassy channel from lake.



Photo #: J-8-9, 1996/08/21
Site #: J127, Looking upstream.



Location: JULIE 128, Unit 9, see C5.

Stream (Gaz.): Bristol Creek

Watershed Code: 480-6972-657-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 3.8 MA Date: 21-Aug-96 Time: 11:40 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 .6464 .61040 Length surveyed (m): 100.0 HC Survey Crew: JP NEM \ \ \ \ \ \ Photos: J-8-10,11 Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 1.9 MS
 Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 29 MS
 Gradient (%): 3.0 CL
 Pool: 30 Riffle: 50 Run: 20 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 60 GE

2.0	2.2	2.6	1.3	1.6	1.8
1.2	1.3	1.3	1.2	0.5	1.4
4	2	4		7	
29	27	31			

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	40	15
	Blder cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 26 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
	RB	2	50	J	R			EL

Comments

- C1: S3
- C2: LS = 15%, RS = 15%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model was 138 seconds over 30 meters.
- C5: Lat N 55 03 38.8, Long W 126 42 28.7
- C6: No additional bank texture information.
- C7: The water was clear to the bottom. DO and pH were not measured at this site. The mean air temperature on this day was 10.9°C
- C8: An aerial reconnaissance of the swamp and d/s to the lake was carried out. The channel is almost totally overgrown by willow and alder; and contains large amounts of debris.

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnbk
0	40	20	10	20	10

Crown Closure %: 80 Aspect: W

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

Reach Symbol

(Fish)

RB

2 B 3.0 3340

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.2

% Unstable: 10

Fines Gravels Larges Bedrock

Confinement: FC

Valley: Channel Ratio 2-5

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 5 pH: 7.5 Braided: N

Water Temp. (°C): 9.0 O2 (ppm):

Turb. (cm): 31 Cond. (µmhos): 57



Photo #: J-8-10, 1996/08/21
Site #: J128, Looking cross-stream, large debris in channel.



Photo #: J-8-11, 1996/08/21
Site #: J128, Looking downstream, large debris in channel.

Location: TERRY 102, Unit 9, see C5.

Stream (Gaz.): Bristol Creek

Watershed Code: 480-6972-657-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 3.8 GE Date: 15-Aug-96 Time: 14:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6461 .61023 Length surveyed (m): 100.0 GE Survey Crew: HS VTD \ \ \ \ \ \ Photos: T-5-10, 25, T-6-1 Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 2.5 GE
 Av. Wet. Width (m): 2.5 GE
 N Av. Max Riffle Depth (cm): 0 GE
 Av. Max Pool Depth (cm): 100 GE
 Gradient (%): 1.0 MA
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0 GE
 % Stable: 0 GE

0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0	0	0	0	0	0
0	0	0	0	0	0

Obstructions

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
	Bllder cobble (>256mm):		0
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 80 GE

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

Crown Closure %: 20 N Aspect:

N D90 (cm): 0 Compaction: Low

Comments

- C1: S3*
- C2: The side slopes were not measured at this site.
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Honda Mark 10 model, was 289 seconds over 100 meters. The attached small lake at 9. 64682. 610548 should be minnow trapped.
- C5: Lat N 55 02' 47", Long W 126 42' 45"
- C6: No additional bank texture information.
- C7: Water quality was not evaluated at this site. The water was very dark in colour at the time of sampling. The mean air temperature on this day was 12.8°C
- C8: This site may be used by fish during high flows. Future sampling is recommended.

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
 Confinement: CO
 Valley : Channel Ratio 0-2
 Stage: L Flood Signs Ht(m): 0.1
 Bars (%): 0 pH: Braided: N
 N Water Temp. (°C): O2 (ppm):
 Turb. (cm): 100 Cond. (µmhos):

Reach Symbol

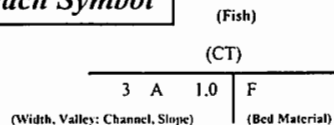




Photo #: T-5-25, 1996/08\15
Site #: T102, Channel.



Photo #: T-6-1, 1996/08/15
Site #: T102, Channel.

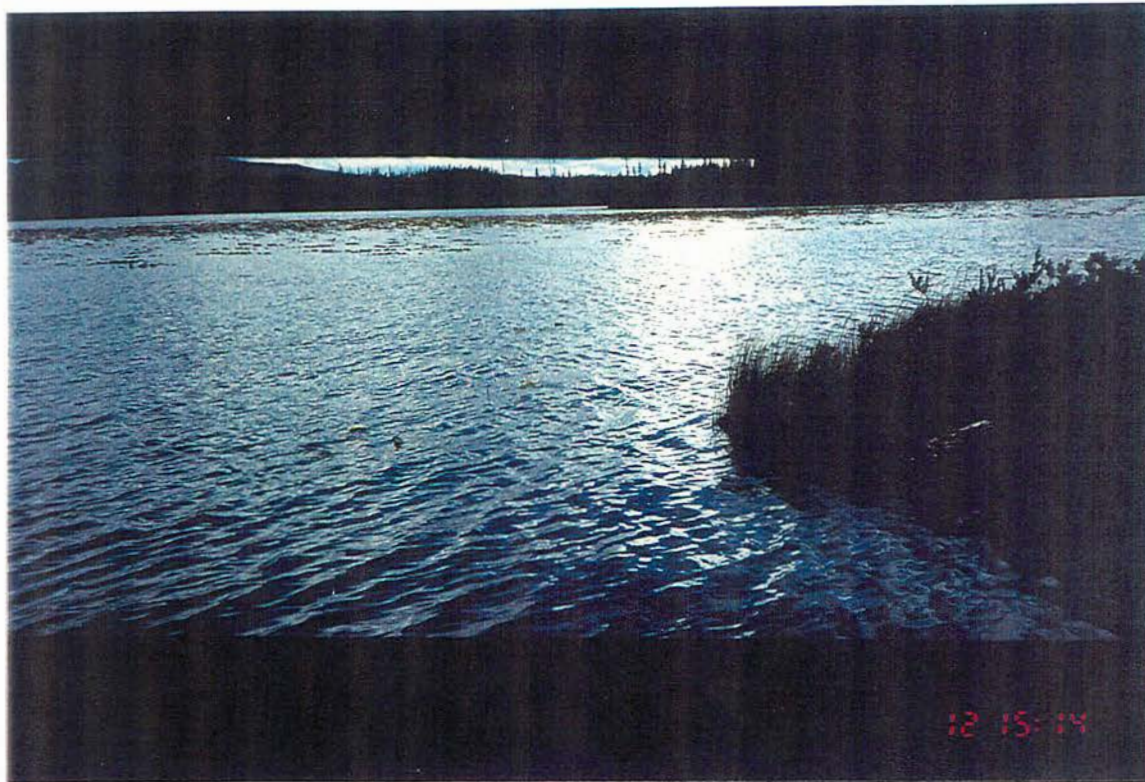


Photo #: T-5-10, 1996/08\12
Site #: T102, Bristol Lake downstream of Site #T102.



Location: JULIE 126, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-657-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 1.6 MA Date: 21-Aug-96 Time: 9:50 Agency: TEC Access: FT Fish Card: N Field Historical
 U.T.M.: 9_6482_61064 Length surveyed (m): 120.0 GE Survey Crew: JP VEW \ \ \ \ \ \ \ \ Photos: J-8-6,7 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.6 MS
 N Av. Wet. Width (m): 0.4 GE
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 2 MS
 Gradient (%): 1.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 60 GE

Specific Data

0.6	0.6	0.8	0.2	0.8	0.7
0.0	0.0	0.0	0.0	0.0	0.0
0	0	0	0	0	0
2	2	2	0	0	0

Obstructions

C	Height (m)	Type	Location

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
	Blder cobble (>256mm):		0
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 30 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 0 75 0 0 20 5
 Crown Closure %: 40 Aspect: W

N D90 (cm): 0 Compaction: Low

Comments

- C1: S6
- C2: LS = 2%, RS = 2 %
- C3: No fisheries sensitive zones noted.
- C4: This dry site was not electrofished.
- C5: Lat 55 04 25.1 Long 126 40 43.2
- C6: No additional bank texture information.
- C7: Water quality was not evaluated at this site. The mean air temperature on this day was 10.9°C
- C8: This is a small mud channel in an alder swale. 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: L Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 02 (ppm):
 Turb. (cm): 2 Cond. (µmhos):

Reach Symbol

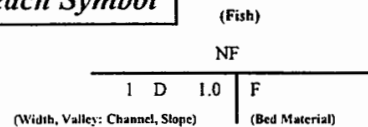




Photo #: J-8-6, 1996/08/21
Site #: J126, Looking upstream.



Photo #: J-8-7, 1996/08/21
Site #: J126, Looking downstream, small pool.

5.2 Bristow Creek (480-6972-341) (93 L 087, 93 L 088)

5.2.1 Sensitive Habitats and Barriers

The Bristow Creek mainstem is 15.7 km in length and is fed by 13 tributaries. Reach 1 of Bristow Creek has low gradient and is unconfined. Reach 2 is also unconfined, has low gradient and flows through a series of wetlands identified as fisheries sensitive zones. A 15 meter falls was noted at the top end of reach 3, which delineates the upper limit of fish distribution in this system. The Bristow watershed was sampled at 10 locations, including reaches 1, 2 and 4 of the mainstem.

5.2.2 Fish Summary Tables and Stream Classification

No historical information exists for this creek. Dolly Varden and cutthroat trout were caught by electrofishing in reach 1 and Dolly Varden were caught by electrofishing in reach 2. Cutthroat trout were also caught by electrofishing in a tributary to reach 1.

Bristow Creek was classified as an S2 in reach 1 based on an average channel width of 7.68 meters and the presence of fish in the sampling area, while reach 2 was classified as an S3 based on an average channel width of 4.88 meters and the presence of fish in the sampling area. Above the 15 meter falls in reach 4, the mainstem was classified as an S6, based on the absence of fish in the sampling area and an average channel width of 1.62 meters. All sampled reaches above this falls have been classified as non fish bearing S6. Three reaches associated with tributaries to reach 2 of the mainstem have also been classified as non fish bearing due to a lack of rearing, spawning and overwintering habitat in the sampling areas. One fish bearing tributary to Bristow was identified in this inventory and was classified as an S3 based on an average channel width of 1.5 meters and the presence of cutthroat trout at the sample site.

Location: JULIE 114, Unit 9, see C5.

Stream (Gaz.): Bristow Creek

Watershed Code: 480-6972-341-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 5.3 MA Date: 18-Aug-96 Time: 16:45 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6520 .60813 Length surveyed (m): 100.0 GE Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-7-5,6 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.9 MS
 Av. Wet. Width (m): 2.0 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 43 MS
 Gradient (%): 4.0 CL
 Pool: 60 Riffle: 20 Run: 20 Other: 0
 % Side Channel: GE
 % Debris Area: 20 GE
 % Stable: 50 GE

Specific Data

2.8	5.2	3.0	4.1	4.0	4.0
2.2	3.2	2.0	1.8	1.9	0.8
6	7	8	0	0	0
52	45	40	35	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):		30	15
	Large (16-64mm):			15
	Sm. cobble (64-128mm):			35
Larges	Lge cobble (128-256mm):		60	20
	Bllder cobble (>256mm):			5
Bedrock			0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	3	50-60	J	R			VO

Comments

- C1: S3
- C2: LS = 5%, RS = 5%
- C3: No fisheries sensitive zones noted on site.
- C4: An electroshocker was not available for sampling this day.
- C5: Lat N 54 51 20.5, Long W 126 37 51.9
- C6: Some deeply undercut banks, which provide excellent rearing cover, were observed at this site.
- C7: No pH, DO, conductivity measurements were made at this site. The mean air temperature on this day was 10.0°C
- C8: Excellent rearing habitat and potential spawning habitat were observed at this site. The fish that were noted on site were observed in association with undercut banks. An S2 classification is recommended to protect the fish habitat in this stream.

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	15	10	10	15	40

Crown Closure %: 20 Aspect: NE

Banks

Height (m): 0.6

% Unstable: 10

Fines Gravels Larges Bedrock

Confinement: OC

Valley : Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 0.3

Bars (%): 50 pH: 8.0 Braided: Y

Water Temp. (°C): 7.0 O2 (ppm):

Turb. (cm): 52 Cond. (µmhos): 140

Reach Symbol

(Fish)

DV

4	C	4.0	1360
---	---	-----	------

(Width, Valley: Channel, Slope)

(Bed Material)



Photo #: J-7-5, 1996/08/18
Site #: J114, Looking downstream.



Photo #: J-7-6, 1996/08/18
Site #: J114, Looking upstream, cutbank and over stream cover.

Location: JULIE 103, Unit 9, south east side of 302-4. See C5
Stream (Gaz.): Bristow Creek
Watershed Code: 480-6972-341-000-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 5.3 MA Date: 16-Aug-96 Time: 17:00 Agency: TEC Access: V4 Fish Card: N Field Historical
U.T.M.: 9.6508 .60794 Length surveyed (m): 300.0 GE Survey Crew: JP VHK \ \ \ \ \ \ Photos: J-6-6,7 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 4.9 MS
Av. Wet. Width (m): 2.1 MS
Av. Max Riffle Depth (cm): 5 MS
Av. Max Pool Depth (cm): 37 MS
Gradient (%): 3.0 CL
Pool: 30 Riffle: 45 Run: 20 Other: 5
% Side Channel: GE
% Debris Area: 30 GE
% Stable: 70 GE

Specific Data

5.2	4.7	5.0	4.0	5.6	4.8
1.5	1.7	1.2	1.2	3.6	3.2
6	4	4			
35	30	45			

Bed Material

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

D90 (cm): 10 Compaction: Medium

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
20	40	5	0	10	25

Crown Closure %: 0 Aspect: N

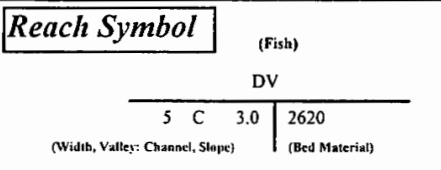
Discharge

Wetted Width (m): 1.1 MS
Mean Depth (m): 0.1 MS
Mean Velocity (m/s): 0.19 F
Discharge (m3/s): 0.02 F

Banks

Height (m): 0.7
% Unstable: 10
Fines Gravels Larges Bedrock

Confinement: OC
Valley: Channel Ratio 5-10
Stage: L Flood Signs Ht(m): 0.3
Bars (%): 40 pH: Braided: Y
Water Temp. (°C): 12.0 O2 (ppm):
Turb. (cm): 45 Cond. (µmhos):



Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
DV		3	105	J	R			EL

- Comments**
- C1: S3
 - C2: LS = 2%, RS = 2%
 - C3: No fisheries sensitive zones noted.
 - C4: The electroshocking effort, using a 12 B POW model was 287 seconds over 100m. In addition to the fish listed in the fish summary 14 juvenile Dolly Varden, ranging in size from 40 to 120 mm, were caught at this site.
 - C5: Lat N 54 50' 21.1", Long W 126 39' 04.4"
 - C6: No additional bank texture information.
 - C7: No pH, DO or conductivity measurements were made at the site. The mean air temperature on this day was 11.5°C
 - C8: Good spawning and rearing habitat present on site. The large amount of LOD in the channel creates a number of pools.



Photo #: J-6-6, 1996/08/16
Site #: J103, Looking upstream from bridge.



Photo #: J-6-7, 1996/08/16
Site #: J103, Looking downstream from bridge.

Location: Y223, Unit 9

Stream (Gaz.): Bristow Creek

Watershed Code: 480-6972-341-000-000-000-000-000-000-0

Map #: 93 L 088 Reach Length (km): 6.5 MW Date: 07-Sep-97 Time: 11:15 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.655477.6084508 Length surveyed (m): 100.0 GE Survey Crew: JP\FC \ \ \ \ \ \ \ \ Photos: 6-18,19,20,21,22,23,24,25 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 7.7 MS
 Av. Wet. Width (m): 3.8 MS
 Av. Max Riffle Depth (cm): 12 MS
 Av. Max Pool Depth (cm): 42 MS
 Gradient (%): 1.5 CL
 Pool: 20 Riffle: 30 Run: 45 Other: 5
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 5 GE

Specific Data

6.3	6.0	9.9	9.2	4.7	10.0
4.0	4.0	3.1	3.1	4.7	3.9
10	15	14	11		
28	55	43			

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	66	F				EL
	DV	2	100-177	J				EL
	CT	1	61	F				EL
	CT	11	50-146	J				EL

Comments

- C1: S2.
- C2: LS=20%, 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 200 seconds over 150 meters.
- 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: There is good cover here provided by cutbanks, large cobbles, overstream vegetation and some LOD. The channel is quite stable, with LOD creating pools and riffles.

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		25
	Lge cobble (128-256mm):	50	20
	Blder cobble (>256mm):		5
Bedrock		0	0
D90 (cm):	18	Compaction: Medium	

Cover

Cover Total %: 20 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 25 5 15 0 15 40
 Crown Closure %: 10 Aspect: E

Discharge

Wetted Width (m): 2.1 MS
 Mean Depth (m): 0.3 MS
 Mean Velocity (m/s): 0.33 F
 Discharge (m3/s): 0.16 F

Banks

Height (m): 0.4
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 1.5
 Bars (%): 35 pH: 7.8 Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 140

Reach Symbol

(Fish)
 DV CT
 8 C 1.5 1450
 (Width, Valley: Channel, Slope) (Bed Material)



Photo #: Y-26-18, 07/09/97
Site #: Y223, Looking downstream at the channel



Photo #: Y-26-19, 07/09/97
Site #: Y223, Looking upstream at the channel



Photo #: Y-26-20, 07/09/97
Site #: Y223, Measuring Dolly Varden on the fishboard

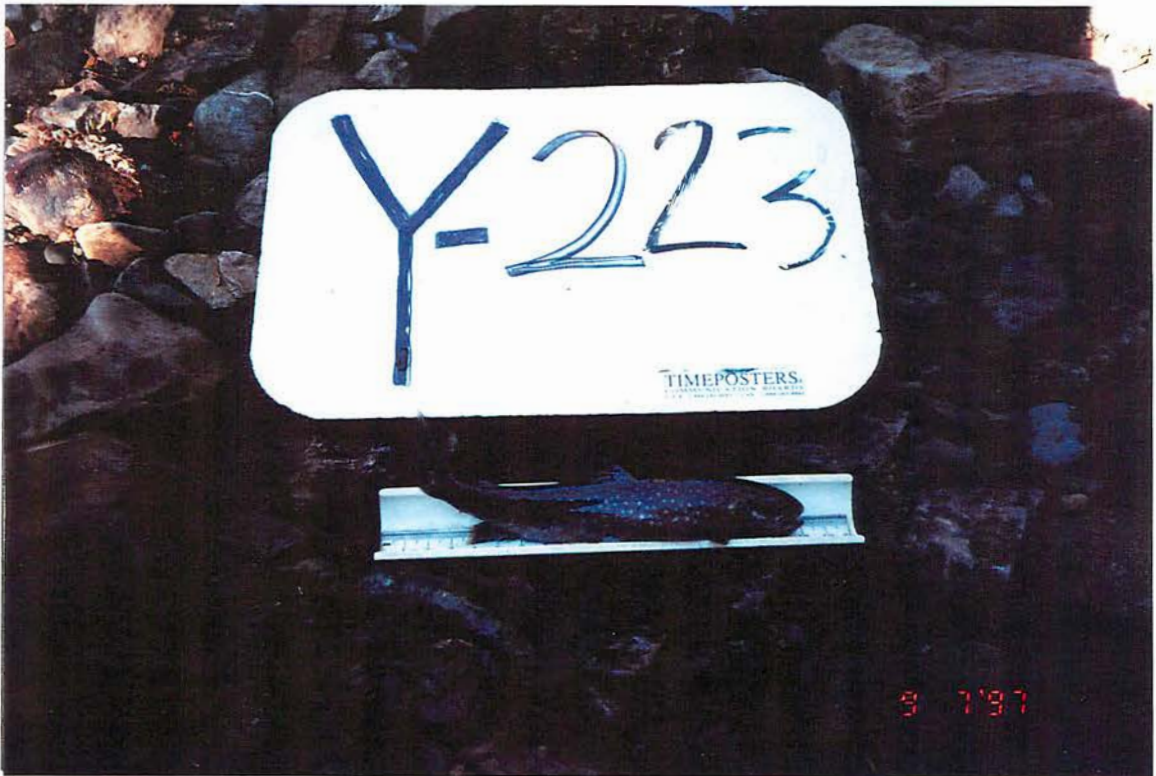


Photo #: Y-26-22, 07/09/97
Site #: Y223, Measuring Dolly Varden on the fishboard



Photo #: Y-26-23, 07/09/97
Site #: Y223, Measuring CT on the fishboard



Photo #: Y-26-25, 07/09/97
Site #: Y223, Measuring CT on the fishboard

DFO/MoELP Stream Survey Form

Site Number: Y231

Reach No.: 2

Bristow Cr.



TRITON
Environmental Consultants Ltd.

Location: Y231, Unit 9

Stream (Gaz.): Bristow Creek

Watershed Code: 480-6972-341-000-000-000-000-000-000-000-000

Map #: 93 L 087 Reach Length (km): 3.5 MW Date: 08-Sep-97 Time: 13:30 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9 648185.60773 Length surveyed (m): 250.0 GE Survey Crew: JP\FC\ \ \ \ \ \ \ \ \ \ Photos: Y-28-1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 25 MS
 Gradient (%): 8.0 CL
 Pool: 10 Riffle: 25 Run: 60 Other: 5
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 30 GE

Specific Data

2.4	1.8	0.9	2.2	1.4	1.0
1.8	1.7	0.8	2.1	0.9	0.7
5	4	7	6	5	
20	29	28	25	21	

Obstructions

C	Height (m)	Type	Location
	2	C	4.5

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	40	15
	Blder cobble (>256mm):		10
Bedrock		10	10

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=27%, RS=24%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 500V, was 139 seconds over 300 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: This stream has good habitat with some good pools, cutbanks and boulder cover. Suitable spawning gravel is limited. There is a small 2 m cascade at the upper end of the surveyed area.

Cover

Cover Total %: 15 GE

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

Crown Closure %: 5 Aspect: NE

Banks

Height (m): 0.2
 % Unstable: 10
 Fines Gravels Larges Bedrock

Discharge

Wetted Width (m): 0.6 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.34 F
 Discharge (m³/s): 0.02 F

Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m):
 Bars (%): 5 pH: 8.0 Braided: Y
 Water Temp. (°C): 10.0 O₂ (ppm):
 Turb. (cm): Cond. (µmhos): 100

Reach Symbol

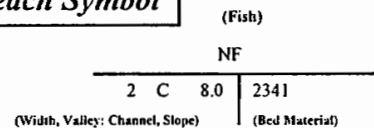




Photo #: Y-28-1, 08/09/97
Site #: Y231, Looking upstream at the channel



Photo #: Y-28-2, 08/09/97
Site #: Y231, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: JULIE 109

Reach No.: 2

Trib. to Bristow Cr



TRITON
Environmental Consultants Ltd.

Location: JULIE 109, Unit 9, SE of 302-4, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-000-000-000-000-000-000-000-000

Map #: 93 L 087 Reach Length (km): 0.7 MA Date: 18-Aug-96 Time: 13:20 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 .6513 .60797 Length surveyed (m): 100.0 HC Survey Crew: JP \HK \ \ \ \ \ \ \ \ Photos: J-6-20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 8 MS
 Gradient (%): 0.5 GE
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 10 GE

Specific Data

1.8	1.2	1.5	1.4	0.8	1.0
1.8	1.1	1.5	1.4	0.8	1.0
0	0	0	0	0	0
15	6	6	5	0	0

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 noted on site.
- C4: An electroshocker was not available for sampling this day.
- C5: Lat N 54 50' 28", Long W 126 38' 40"
- C6: No additional bank texture information.
- C7: DO, pH, conductivity measurements were not taken at this site. The mean air temperature on this day was 10.0°C
- C8: No fish habitat was observed at this site. However an estimated 2000 tadpoles were seen in the channel, illustrating the significance of this site for frogs.
- C9: This is not a true creek, it is simply water draining into a swamp from ditches that run along side the road.

Cover Cover Total % : 10 GE

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

Crown Closure % : 40 Aspect : NE

Bed Material

	Fines	Clay, silt, sand (<2mm):	100	100
Gravels	Small (2-16mm):		0	0
	Large (16-64mm):		0	0
	Sm. cobble (64-128mm):		0	0
Larges	Lge cobble (128-256mm):		0	0
	Blder cobble (>256mm):		0	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): 0.2
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 2
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 15 Cond. (µmhos):

Reach Symbol

(Fish)

NF

I D 0.5 F

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



Photo #: J-6-20, 1996/08/18
Site #: J109, Looking downstream, tadpoles in stream.



Photo #: J-6-21, 1996/08/18
Site #: J109, Looking upstream toward road.



Location: JULIE 113, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-000-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.7 MA Date: 18-Aug-96 Time: 16:15 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6522 .60812 Length surveyed (m): 120.0 GE Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-7-3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.5 MS
 Av. Wet. Width (m): 0.3 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 14 MS
 Gradient (%): 12.0 CL
 Pool: 95 Riffle: 5 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: 10 GE
 % Stable: 60 GE

Specific Data

0.4	0.5	0.8	0.6	0.4	0.5
0.3	0.3	0.4	0.3	0.3	0.4
2	1	2	0	0	0
15	18	10	0	0	0

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
	Lge cobble (128-256mm):	30	10
	Blder cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 13 Compaction: High

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 noted on site.
- C4: An electroshocker was not available for fish sampling.
- C5: Lat N 54 51 17.4, Long W 126 37 46.0
- C6: No additional bank texture information.
- C7: No pH, DO, conductivity measurements were taken at this site. The mean air temperature on this day was 10.0°C
- C8: No spawning or rearing habitat was found on site. The pools that were observed were found to be too shallow for juvenile rearing.
- C9: The stream channel is narrow and quite entrenched. The culvert at the road crossing does not pose a barrier to fish passage.

Cover

Cover Total %: 20 GE

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

Crown Closure %: 75 Aspect: N

Discharge

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

Reach Symbol

(Fish)

NF

I	D	12.0	5230
---	---	------	------

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

Banks

Height (m): 0.2

% Unstable: 10

Fines Gravels Larges Bedrock

Confinement: UC

Valley: Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.2

Bars (%): 10 pH: Braided: N

Water Temp. (°C): 9.0 O₂ (ppm):

Turb. (cm): 18 Cond. (µmhos):



Photo #: J-7-3, 1996/08/18
Site #: J113, Looking upstream, dense over vegetation.



Photo #: J-7-4, 1996/08/18
Site #: J113, Looking downstream, channel covered by alder.



Location: JULIE 115, Unit 9, at a small tributary draining a small lake, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-000-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 0.3 MA Date: 18-Aug-96 Time: 17:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6516 .60817 Length surveyed (m): 300.0 MA Survey Crew: JP\HK \ \ \ \ \ \ \ \ Photos: J-7-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.6 MS
 Av. Wet. Width (m): 0.1 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 5 MS
 Gradient (%): 6.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5 GE
 % Stable: 0 GE

Specific Data

0.8	0.6	0.2	0.1	0.9	0.7
0.2	0.0	0.0	0.0	0.1	0.1
0	0	0	0	0	0
6	4	4	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	0	5	85	5

 Crown Closure %: 10 Aspect: E

N D90 (cm): 0 Compaction: Medium

Comments

- C1: S6
- C2: LS = 2%, RS = 2%
- C3: No fisheries sensitive zones were noted on site.
- C4: An electroshocker was not available for sampling this day.
- C5: Lat N 54 51 34.3, Long W 126 38 16.8
- C6: Logging in this cutblock was carried out right down to the stream banks.
- C7: No pH, DO, conductivity measurements were taken at this site. The mean air temperature on this day was 10.0°C
- C8: No rearing or spawning habitat was observed in this area.
- C9: A small shallow lake, lacking both inlets and outlets, was found upstream of the sampling site. The small size and shallow depth of this lake would likely cause winterkill. The lake was 17 degrees celcius and had an anoxic smell.

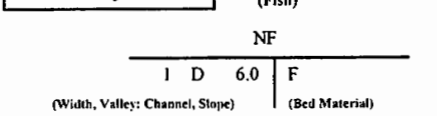
Discharge

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



Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: N
 N Water Temp. (°C): 02 (ppm):
 Turb. (cm): 6 Cond. (µmhos):



Photo #: J-7-7, 1996/08/18
Site #: J115, Looking downstream.



Photo #: J-7-8, 1996/08/18
Site #: J115, Looking upstream, meterstick across channel.



Location: Y233, Unit9

Stream (Gaz.): Unnamed

Watershed Code: 079-7300-000-000-000-000-000-000-000-

 Map #: Reach Length (km): Date: Time: Agency: Access: Fish Card: Field Historical
 U.T.M.: Length surveyed (m): Survey Crew: JP\FC\ \ \ \ \ \ \ Photos: Air Photos:
Channel Characteristics
 Av. Chan. Width (m):
 Av. Wet. Width (m):
 Av. Max Riffle Depth (cm):
 Av. Max Pool Depth (cm):
 Gradient (%):
 Pool: Riffle: Run: Other:
 % Side Channel:
 % Debris Area:
 % Stable:
Specific Data

1.1	1.9	1.2	0.8	1.3	0.8
1.1	1.9	1.0	0.8	0.2	0.2
5	3	4	3		
15	24	20			

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=15%
 C3: No fisheries sensitive zones noted.
 C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 600V, was 238 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 12.0 C.
 C7: Cutbanks and overstream vegetation provide most of the cover for fish at this site. Some spawning gravels were noted.
 C8: A 1.0 m debris jam was noted in the sampling area.

Bed Material

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

D90 (cm): Compaction: **Cover**Cover Total %:

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

Crown Closure %: Aspect: **Discharge**
 Wetted Width (m):
 Mean Depth (m):
 Mean Velocity (m/s):
 Discharge (m3/s):
Reach Symbol

(Fish)

NF

1	C	5.0	0550
---	---	-----	------

(Width, Valley: Channel, Slope)

(Bed Material)

BanksHeight (m): % Unstable: Fines Gravels Larges Bedrock Confinement: Valley: Channel Ratio Stage: Flood Signs III(m): Bars (%): pH: Braided: Water Temp. (°C): O2 (ppm): Turb. (cm): Cond. (µmhos):



Photo #: Y-28-5, 08/09/97
Site #: Y233, Looking upstream at the channel



Photo #: Y-28-6, 08/09/97
Site #: Y233, Looking downstream at the channel, note boulder cover



Photo #: Y-28-7, 08/09/97
Site #: Y232-3, Looking upstream at the channel



Photo #: Y-28-8, 08/09/97
Site #: Y232-3, Looking upstream at the channel



Location: Y232, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 079-7400-000-000-000-000-000-000-000-

Map #: 93 L 087 Reach Length (km): 0.4 MW Date: 08-Sep-97 Time: 14:22 Agency: TEC Access: II Fish Card: N Field Historical
 U.T.M.: 9.647993.60781 Length surveyed (m): 100.0 GE Survey Crew: JP\FC\ \ \ \ \ \ \ \ Photos: Y-28-3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.6 MS
 Av. Wet. Width (m): 0.5 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 20 MS
 Gradient (%): 10.0 CL
 Pool: 50 Riffle: 25 Run: 20 Other: 5
 % Side Channel: 0 GE
 % Debris Area: 0.5 GE
 % Stable: 90 GE

Specific Data

0.4	0.2	0.4	0.9	1.2	0.4
0.4	0.2	0.4	0.2	1.2	0.4
13	3	3	2		
16	20	20	22		

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 1, 7, 500V, was 202 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 18.0 C.
- C7: This slow moving stream provides good cover and pools for fish habitat. It has stable banks and debris with sediment settled over gravel and cobbles. Worms and insects are present.

Cover

Cover Total %: 30 GE

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

Crown Closure %: 20 Aspect: E

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
	Sm. cobble (64-128mm):		80
Larges	Lge cobble (128-256mm):	90	10
	Blder cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 11 Compaction: Medium

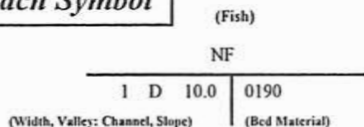
Discharge

Wetted Width (m): 0.1 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.01 F
 Discharge (m3/s): 0.00

Banks

Height (m): 0.1
 % Unstable: 5
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m):
 Bars (%): 0 pH: 7.0 Braided: N
 Water Temp. (°C): 12.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 90

Reach Symbol



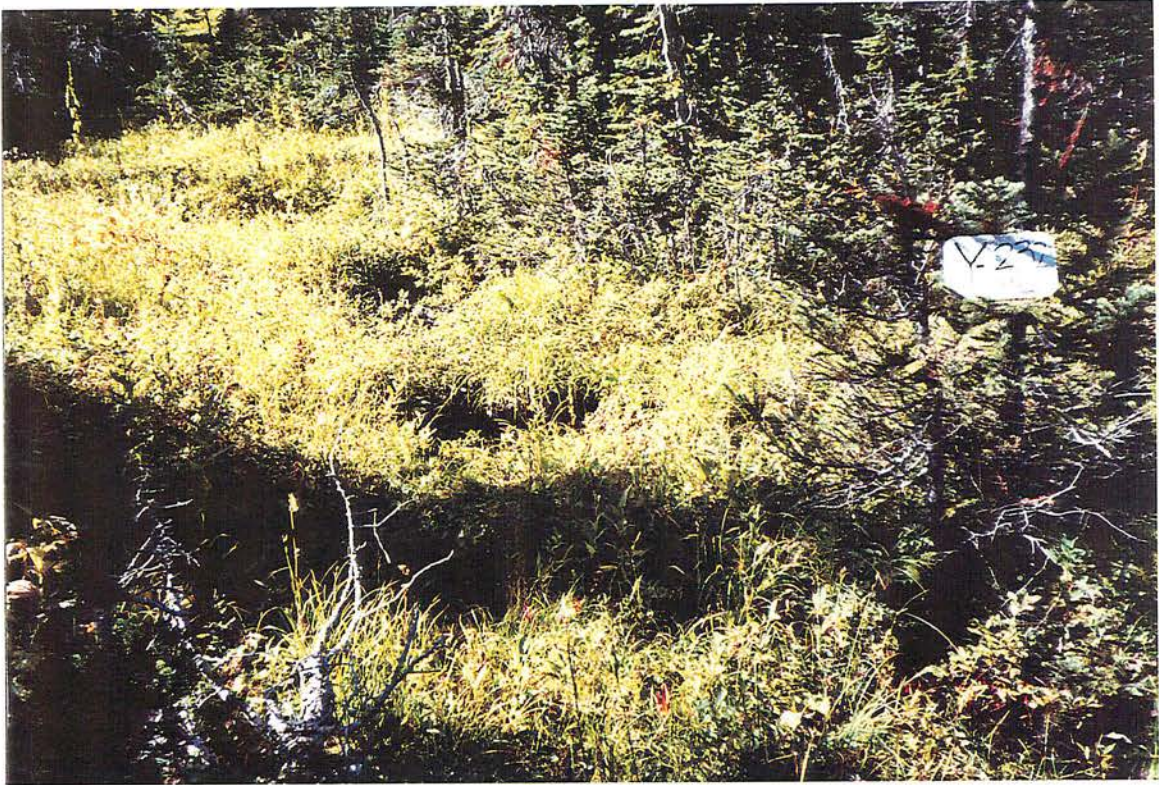


Photo #: Y-28-3, 08/09/97
Site #: Y232, Looking upstream at the channel



Photo #: Y-28-4, 08/09/97
Site #: Y232, Looking downstream at the channel



Location: Y224, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-2900-000-000-000-000-000-000-000-

Map #: 93 L 088 Reach Length (km): 3.3 MW Date: 07-Sep-97 Time: 13:37 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6548 .60844 Length surveyed (m): 100.0 GE Survey Crew: JP\FC \ \ \ \ \ \ \ Photos: Y-27-1,2,3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.5 MS
 Av. Wet. Width (m): 1.0 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 31 MS
 Gradient (%): 6.0 CL
 Pool: 15 Riffle: 5 Run: 75 Other: 5
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 30 GE

Specific Data

1.7	2.2	1.0	1.5	1.1	1.5
1.1	1.6	1.2	0.7	1.3	0.2
2	2	3	5	3	
31	32	28	31	31	

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	50	30
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		5
	Lge cobble (128-256mm):	10	5
	Blder cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 24 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
	CT	5	40-43	F				VO
	CT	10	60-100	J				EL

Comments

- C1: S3.
- C2: LS=47%, RS=32%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 206 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 at this site was 15.0 C.
- C7: This stream has good rearing habitat with lots of cutbank and LOD cover. Spawning gravels were noted, however they are covered in silt and debris. Fish were caught throughout the site, even above in the 0.7m chute. Cascades over LOD make up 5% of the flow.

Cover

Cover Total %: 35 GE

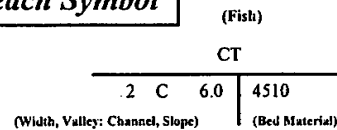
Pool	LOD	Bldr	In Veg	O Veg	Ctnk
20	25	0	5	10	40

Crown Closure %: 15 Aspect: N

Discharge

Wetted Width (m): 0.4 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.13 F
 Discharge (m3/s): 0.00 F

Reach Symbol



Banks

Height (m): 0.1
 % Unstable: 5

Fines Gravels Larges Bedrock

Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m):
 Bars (%): 0 pH: 7.6 Braided: N
 Water Temp. (°C): 9.5 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 120



Photo #: Y-27-1, 07/09/97
Site #: Y224, Looking upstream at the channel



Photo #: Y-27-2, 07/09/97
Site #: Y224, Measuring fish on fishboard

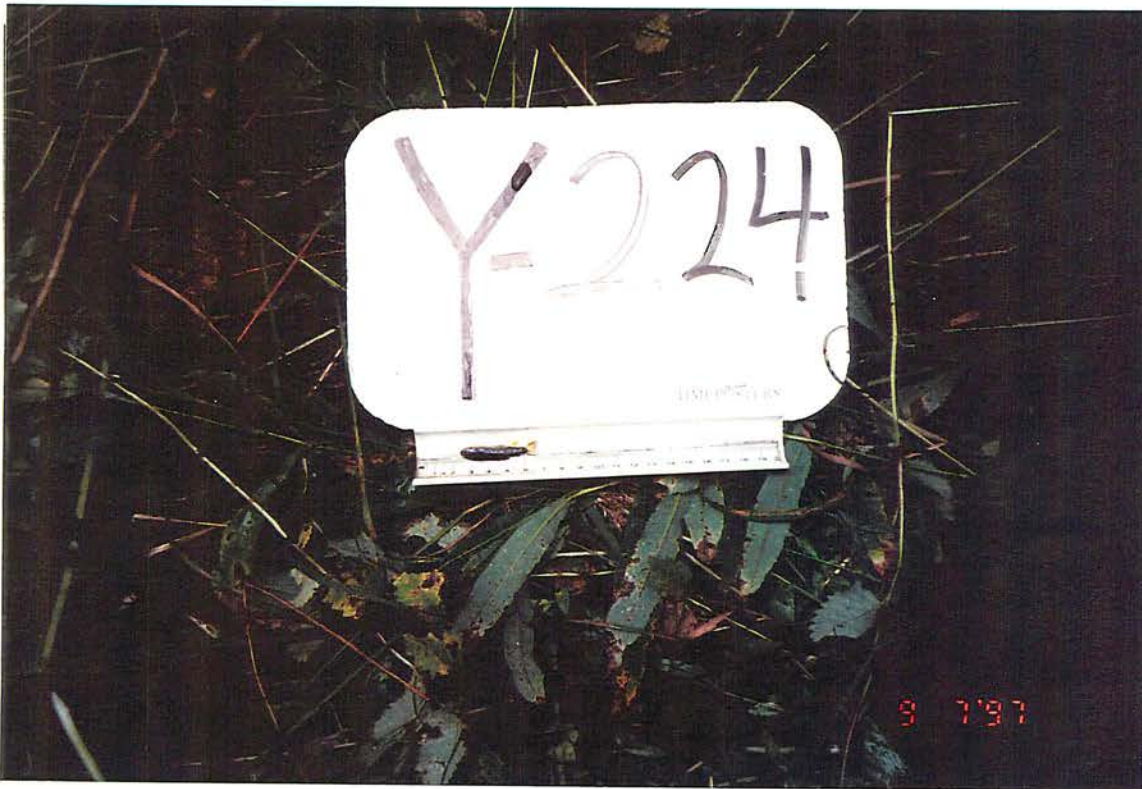


Photo #: Y-27-3, 07/09/97
Site #: Y224, Measuring fish on fishboard



Photo #: Y-27-4, 07/09/97
Site #: Y224, Looking downstream at the channel

5.3 Cronin Creek (480-6972-472) (93 L 096, 93 L 097)

5.3.1 Sensitive Habitats and Barriers

Cronin Creek is 14.7 km long and is fed by 46 tributaries, including Higgins Creek (480-6972-472-441). Reach 1 of Cronin Creek has low gradient and contains several long side channels which have been identified as fisheries sensitive zones. Reach 2 is quite confined and has moderate gradient, while reach 3 has extreme gradient. A set of high elevation lakes are at the headwaters of this system. No barriers to fish migration were noted on this system, however no fish were caught in the 4 sample sites located above reach 1, despite the presence of suitable fish habitat. Reach 2 of this stream was electrofished twice, in successive years, and no fish were caught. Higgins Creek, a large tributary to reach 2, was also electrofished and no fish were caught. No obvious barriers were noted on the TRIM sheet and a ground survey from the mouth up is recommended for this stream. Cronin Creek was sampled at 9 locations, including reaches 1 and 2 of the mainstem, and in Higgins Creek.

5.3.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of cutthroat trout in reach 1. Dolly Varden, cutthroat trout and mountain whitefish (*P. williamsoni*) were caught by electrofishing in reach 1, Dolly Varden were caught in a tributary to reach 1 and cutthroat trout were caught in another tributary to reach 1. Fish were not caught at any other sample sites in this system. Reaches 1 and 2 were classified as S2, based on average channel widths of 12.48 and 8.58 meters and the presence of fish in reach 1 and fish habitat in reach 2. Multiple cascades were noted at site J171, in reach 2. Higgins Creek, which flows into reach 2 of Cronin Creek, was classified as an S3 based on an average channel width of 4.67 meters and the presence of fish habitat in the sampling area. Avalanche impacts were noted in this reach. The fish bearing tributaries to reach 1 of Cronin Creek were classified as S3, an additional S3 and two S6 streams were also identified in reach 1.



Location: JULIE 171, Unit 9, sec C5. Stream (Gaz.): Cronin Creek Watershed Code: 480-6972-472-000-000-000-000-000-000-0

Map #: 93 L 096 Reach Length (km): 4.0 MA Date: 25-Aug-96 Time: 10:55 Agency: TEC Access: H Fish Card: N Field Historical

U.T.M.: 9 . 6414 . 60884 Length surveyed (m): 500.0 GE Survey Crew: JP \ EM \ \ \ \ \ \ \ \ Photos: J-11-24,25 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 8.6 HC
 Av. Wet. Width (m): 6.3 HC
 Av. Max Riffle Depth (cm): 21 MS
 Av. Max Pool Depth (cm): 63 MS
 Gradient (%): 2.0 CL
 Pool: 5 Riffle: 75 Run: 5 Other: 15
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 15 GE

Specific Data

8.8	6.2	7.4	6.4	11.9	10.8
5.4	6.2	7.4	6.4	7.6	5.0
22	24	18	20		
80	62	46			

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 = 40%, RS = 40%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 15 A model, was 807 seconds over 1000 square meters.
- C5: Lat N 54 55' 21.7", Long W 126 47' 38.6"
- C6: No additional bank texture information.
- C7: DO, pH and conductivity were not measured.
- C8: This site has some good rearing cover and potential spawning habitat. The lakes in the headwaters of this stream would freeze solid in winter.

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
20	20	20	0	20	20

Crown Closure %: 40 Aspect: E

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):		20	10
	Large (16-64mm):			10
Larges	Sm. cobble (64-128mm):			25
	Lge cobble (128-256mm):		70	25
Bedrock	Blder cobble (>256mm):			20
			0	0

D90 (cm): 70 Compaction: Medium

Discharge

Wetted Width (m): 5.8 MS
 Mean Depth (m): 0.4 MS
 Mean Velocity (m/s): 0.47 F
 Discharge (m3/s): 0.82 F

Banks

Height (m): 1.0
 % Unstable: 10

Fines Gravels Larges Bedrock

Confinement: FC
 Valley: Channel Ratio 2-5

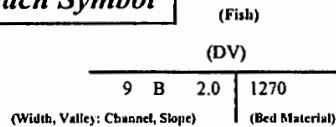
Stage: M Flood Signs Ht(m): 1

Bars (%): 20 pH: Braided: Y

Water Temp. (°C): 7.0 O2 (ppm):

Turb. (cm): 80 Cond. (µmhos):

Reach Symbol



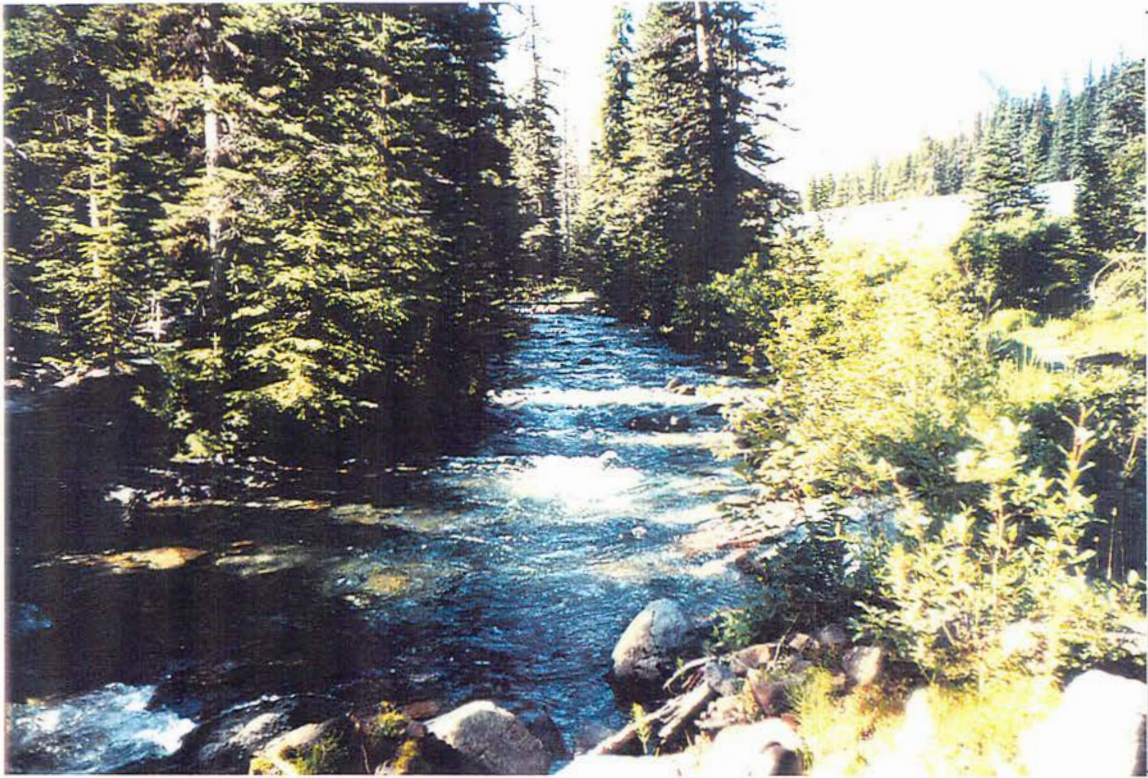


Photo #: J-11-24, 1996/08/25
Site #: J171, Looking upstream.

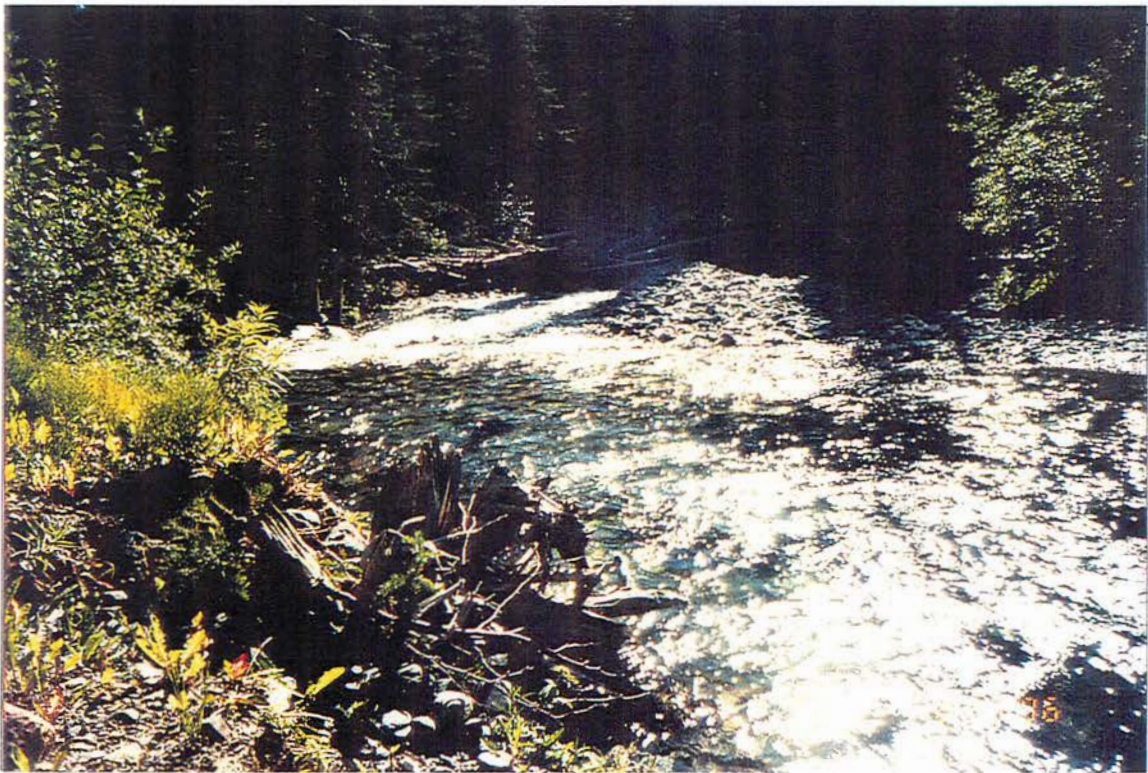


Photo #: J-11-25, 1996/08/25
Site #: J171, Looking downstream.

Location: TERRY 152, Unit 9, see C5

Stream (Gaz.): Cronin Cr.

Watershed Code: 480-6972-472-000-000-000-000-000-000-0

Map #: 93 L 097

Reach Length (km): 8.4 MA

Date: 23-Aug-96 Time: 13:10

Agency: TEC

Access: V4

Fish Card: N

Field Historical

U.T.M.: 9.6454 .60876

Length surveyed (m): 50.0 GE

Survey Crew: GM\HK \ \ \ \ \ \ \ \

Photos: T-8B-21,22

Air Photos:

Channel Characteristics

Av. Chan. Width (m): 14.5 GE
 Av. Wet. Width (m): 8.5 GE
 Av. Max Riffle Depth (cm): 42 GE
 Av. Max Pool Depth (cm): 1 GE
 Gradient (%): 8.0 CL
 Pool: 10 Riffle: 40 Run: 50 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 20 GE

Specific Data

14.0	15.0	
9.0	8.0	8.5
33	42	50

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: S2
- C2: RS - 20% LS - 45%
- C4: The electroshocking effort, using a Smithroot 15 A model was 31 seconds over 10 meters. The conditions were dangerous so shocking was limited at this site.
- C5: Lat N 54 55' 159 Long W 126 43' 502
- C6: No additional bank texture information.
- C7: No DO, conductivity tests, water clear to bottom The mean air temperature on this day was 13.2°C
- C8: Fish presence is highly likely at this site which has some great fish habitat. Fish were caught downstream at the confluence with Chapman Lake.

Cover

Cover Total %: 50 GE

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

Crown Closure %: 5 Aspect: E

Bed Material

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

D90 (cm): 60 Compaction: Medium

Discharge

Wetted Width (m): 8.0 GE
 Mean Depth (m): 0.4 MS
 Mean Velocity (m/s): 0.50 F
 Discharge (m3/s): 1.20 F

Banks

Height (m): 1.2
 % Unstable: 60

Fines Gravels Larges Bedrock

Confinement: OC

Valley: Channel Ratio 5-10

Stage: M Flood Signs Ht(m): 2.2

Bars (%): 10 pH: 7.2 Braided: N

Water Temp. (°C): 6.0 O2 (ppm):

Turb. (cm): 50 Cond. (µmhos):

Reach Symbol

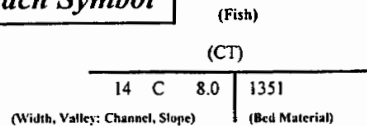




Photo #: T-8b-21, 1996/08/23
Site #: T152, Upstream view.

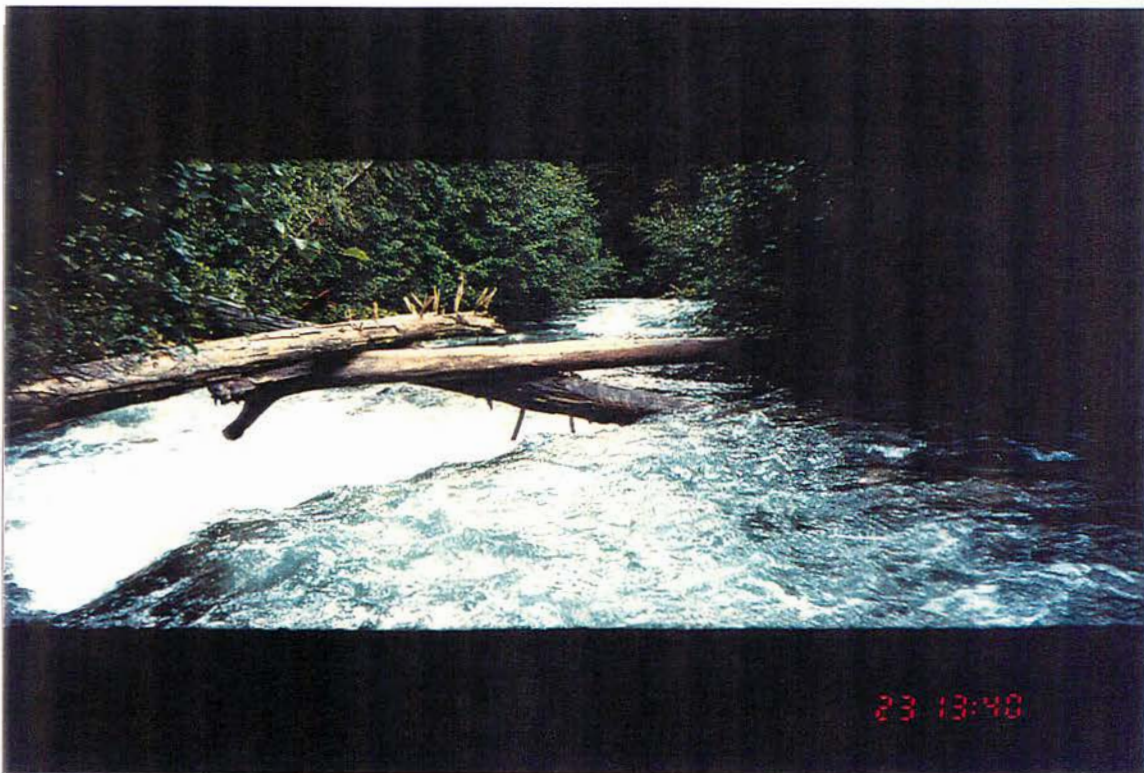


Photo #: T-8b-22, 1996/08/23
Site #: T152, Downstream view, cascade.



Location: E279, Unit 9, West of Chapman Lk.

Stream (Gaz.): Cronin Creek

Watershed Code: 480-6972-472-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 8.4 MA: Date: 09-Sep-97 Time: 14:19 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9 .6413 .60880 Length surveyed (m): 100.0 GE Survey Crew: SJ \ V \ \ \ \ \ \ \ Photos: E-26-1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 10.2 MS
 Av. Wet. Width (m): 7.9 MS
 Av. Max Riffle Depth (cm): 6 MS
 Av. Max Pool Depth (cm): 52 MS
 Gradient (%): 8.0 CL
 Pool: 10 Riffle: 40 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 %Stable: 10 GE

Specific Data

6.5	14.0	5.5	15.2	12.4	7.8
3.4	8.0	5.0	12.8	11.8	6.2
8	9	6	4	5	
50	65	38	55		

Bed Material

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

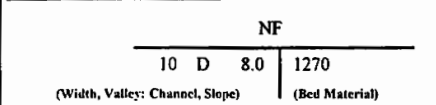
Cover

Cover Total %: 15 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 20 15 40 0 10 15
 Crown Closure %: 15 Aspect: E

Discharge

Wetted Width (m): 3.9 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.82 F
 Discharge (m3/s): 0.24 F

Reach Symbol



Banks

Height (m): 0.1
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: 7.8 Braided: Y
 Water Temp. (°C): 9.0 O2 (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: 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 I-5-400V, was 374 seconds.
- 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 17.C.
- C7: This reach has some good rearing habitat, with plunge pools, LOD, cutbanks and boulders. Spawning gravels were also noted.
- C8: This reach was sampled in three separate locations over two years and no fish were caught. Contour lines on the TRIM sheet indicate a potential falls barrier downstream in reach 1.

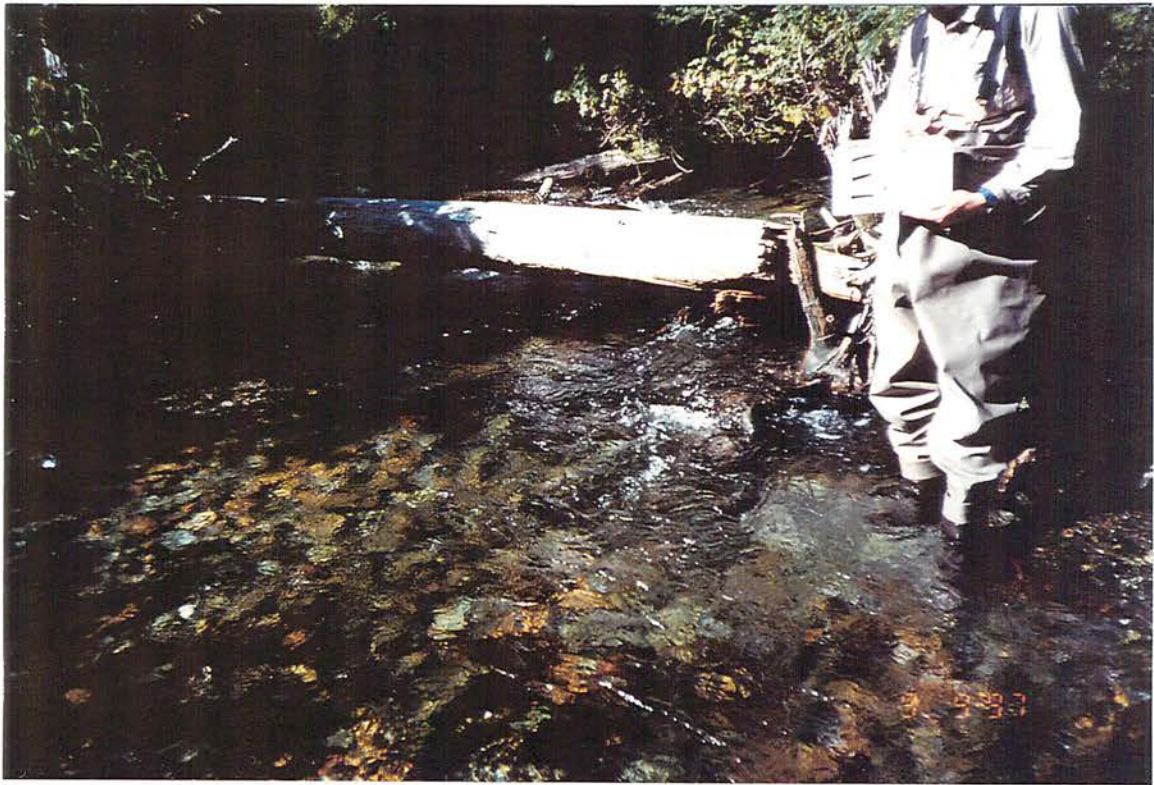


Photo #: E-27-1, 09-Sep-97
Site #: E279, Looking upstream at the channel



Photo #: E-27-2, 09-Sep-97
Site #: E279, Looking downstream at the channel, note the woody debris



Photo #: T-8b-16, 1996/08/23
Site #: T151, Upstream view.



Photo #: T-8b-17, 1996/08/23
Site #: T151, Upstream view, steep banks.

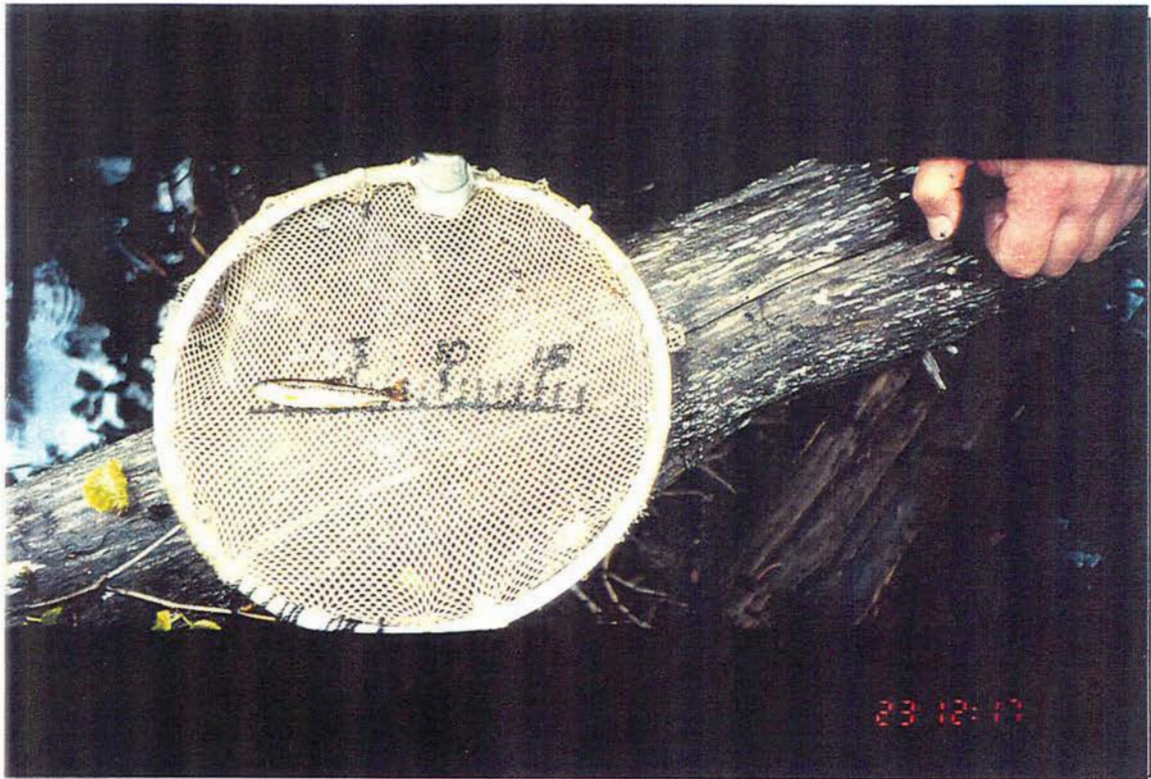


Photo #: T-8b-20, 1996/08/23

Site #: T151, Cutthroat trout caught by electrofishing.

DFO/MoELP Stream Survey Form

Site Number: TERRY 154

Reach No.: 1

Trib. to Cronin Cr.



TRITON

Environmental Consultants Ltd.

Location: TERRY 154, Unit 9, see C5, 250, NNW of fork

Stream (Gaz.): Unnamed

Watershed Code: 080-9200-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.8 MA Date: 23-Aug-96 Time: 15:00 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6460 .60883 Length surveyed (m): 50.0 HC Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: T-8B-24,25 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.9 MS
 Av. Wet. Width (m): 0.6 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 12 MS
 Gradient (%): 2.0 CL
 Pool: 90 Riffle: 0 Run: 10 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 30 GE
 % Stable: 90 GE

Specific Data

2.1	2.2	1.6	2.5	1.5	1.4
0.9	0.3	1.0	0.5	0.8	0.5
10	15				

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
	Bllder 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

Cover

Cover Total %: 80 GE

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

Crown Closure %: 80 Aspect: NE

Comments

- C1: S3
- C2: LS - 12% RS - 12%
- C3: This site was not electrofished.
- C4: Lat N 126 42' 23.0" Lat W 54 55' 34.2"
- C5: Water quality was not evaluated at this site. The water was clear to the bottom. The mean air temperature on this day was 13.2°C
- C6: The water at this site was stagnant or flowing very little at the time of sampling. Some good cover exists at this site if fish can access it. The flow increases near the road crossing.
- C7: No fisheries sensitive zones were noted at this site.

Discharge

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

Banks

Height (m): 0.4
 % Unstable: 15
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.4
 Bars (%): 5 pH: Braided: N
 Water Temp. (°C): 02 (ppm):
 Turb. (cm): 15 Cond. (µmhos):

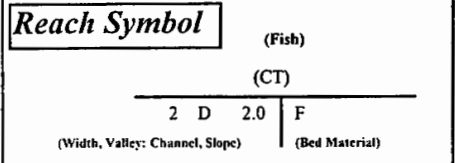




Photo #: T-8b-24, 1996/08/23
Site #: T154, Downstream view.



Photo #: T-8b-25, 1996/08/23
Site #: T154, Upstream view.

DFO/MoELP Stream Survey Form

Site Number: TERRY 155

Reach No.: 2

Trib. to Cronin Cr.



TRITON
Environmental Consultants Ltd.

Location: TERRY 155, Unit 9, sec C5, 330 m NNE of T154

Stream (Gaz.): Unnamed

Watershed Code: 080-9400-000-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.2 MA Date: 23-Aug-96 Time: 16:00 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 64565 .608907 Length surveyed (m): 150.0 HC Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: T-9 - 1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.7 MS
 Av. Wet. Width (m): 0.4 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 16 MS
 Gradient (%): 4.0 CL
 Pool: 20 Riffle: 15 Run: 65 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 20 GE

Specific Data

0.5	0.9	0.7	0.6	0.7	0.8
0.3	0.4	0.4	0.3	0.4	0.6
4	3	3			
20	12				

Obstructions

C	Height (m)	Type	Location
C8	2	CV	1.2

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
Bedrock	Blder cobble (>256mm):			0
			0	0

N D90 (cm): 0 Compaction: Low

Fish Summary

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

Cover

Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	20	0	5	55	20

Crown Closure %: 80 Aspect: E

Comments

- C9: No fisheries sensitive zones were noted at this site.
- C1: S4
- C2: LS - 10% RS - 35%
- C4: This site was not electrofished.
- C5: Lat. N 54 55' 38.5" Long. W 126 43' 36.9"
- 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 13.2°C
- C8: This site may provide rearing habitat at higher flow. The culvert is currently impassable.

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.08 F
 Discharge (m3/s): 0.00 F

Banks

Height (m): 0.2
 % Unstable: 40
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.15
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 7.0 02 (ppm):
 Turb. (cm): 20 Cond. (µmhos):

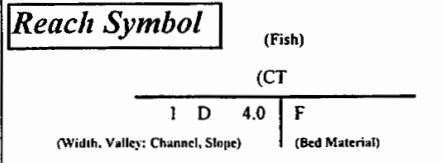




Photo #: T-9-1, 1996/08/23
Site #: T155, Upstream view.



Photo #: T-9-2, 1996/08/23
Site #: T155, Downstream view.

DFO/MoELP Stream Survey Form

Site Number: TERRY 156

Reach No.: 1

Trib. to Cronin Cr.



TRITON
Environmental Consultants Ltd.

Location: TERRY 156, Unit 9 , see C5 , 210m NNE of T155

Stream (Gaz.): Unnamed

Watershed Code: 080-9500-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.4 MA Date: 23-Aug-96 Time: 16:50 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6456 .60887 Length surveyed (m): 75.0 HC Survey Crew: GM\HK \ \ \ \ \ \ Photos: T-9-3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.8 MS
 Av. Wet. Width (m): 0.3 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 6 MS
 Gradient (%): 2.0 CL
 Pool: 20 Riffle: 40 Run: 40 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 90 GE

Specific Data

0.8	0.7	1.0	0.7	0.8	0.7
0.3	0.2	0.3	0.4	0.3	0.3
2	1				
5	6				

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
	Bllder cobble (>256mm):		0
Bedrock		0	0

N D90 (cm): 0 Compaction: Low

Cover

Cover Total %: 90 GE

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

Crown Closure %: 75 Aspect: E

Discharge

Wetted Width (m): 0.1 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.11 F
 Discharge (m3/s): 0.00 F

Reach Symbol

(Fish) NF

I	D	2.0	F
---	---	-----	---

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

Banks

Height (m): 0.1
 % Unstable: 40
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.1
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 10.0 O2 (ppm):
 Turb. (cm): 6 Cond. (µmhos):

Obstructions

C	Height (m)	Type	Location
	2	BD	1.3

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 -10% RS -10%
 C3: This site was not electrofished.
 C4: Lat. N 54 55' 42.41" Long. 126 43' 39.8"
 C5: 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 13.2°C
 C6: This site does not contain suitable habitat. It is unlikely that fish would even access this area because of the beaver dam, culvert and generally poor drainage.
 C7: No fisheries sensitive zones were noted at this site.



Photo #: T-9-3, 1996/08/23
Site #: T156, Downstream view.



Photo #: T-9-4, 1996/08/23
Site #: T156, Upstream view from road.



Location: W273, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-9600-000-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.5 MA Date: 13-Sep-97 Time: 16:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6469 .60875 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ Photos: W-Q-20,21,22,23 Air Photos:

Channel Characteristics

C1 Av. Chan. Width (m): 20.0 GE
 Av. Wet. Width (m): 20.0 GE
 Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 150 MS
 Gradient (%): 1.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: >15 GE
 %Stable: 0 GE

Specific Data

[Empty box for Specific Data]

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	50	F	R			EL

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
	Blder cobble (>256mm):			0
Bedrock			0	0

Comments

- C1 S2/FSZ. This is really no longer a creek but a flooded area heavily impacted by beaver activity. However, fish were caught in this former stream so it has been given a stream class.
- C2 LS = 1%, RS = 6%
- C3 This area is described as a fisheries sensitive zone.
- C4 The electroshocking effort, using a 12 B POW model, set at J-4 - 400V, was 272 seconds over 80 meters.
- C5 Bank texture not given.
- C6 DO was not measured, the water was clear to the bottom. The air temperature at this site was 9.C.
- C7 This reach is actually a series of beaver dam pools, supporting fish. The area was described as important for both fish and wildlife.

Cover

Cover Total %: 80 GE

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

 Crown Closure %: 20 Aspect: 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: 0
 N Fines Gravels Larges Bedrock
 Confinement: N/A
 Valley : Channel Ratio N/A
 Stage: Flood Flood Signs Ht(m): 0.5
 Bars (%): 0 pH: 7.1 Braided: N
 Water Temp. (°C): 8.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 120

Reach Symbol

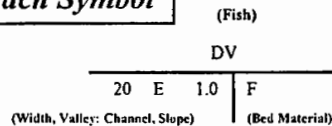




Photo #: W-Q-20, 13-Sep-97
Site #: W273, Looking at a beaver pond



Photo #: W-Q-21, 13-Sep-97
Site #: W273, Looking across stream at the channel



Photo #: W-Q-22, 13-Sep-97
Site #: W273, Measuring fish with the meterstick

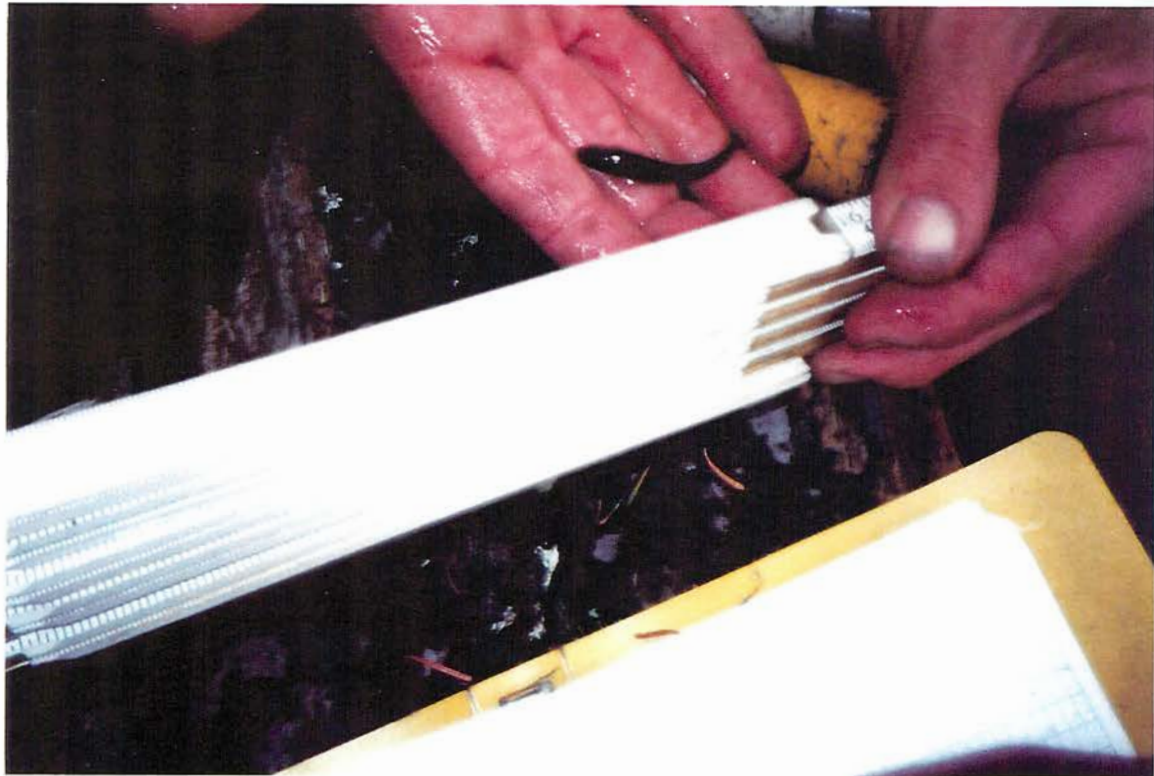


Photo #: W-Q-23, 13-Sep-97
Site #: W273, Measuring fish with the meterstick

Location: TERRY 153, Unit 9, see CS, 400m NNW of T - 152

Stream (Gaz.): Unnamed

Watershed Code: 080-9900-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.7 MA Date: 23-Aug-96 Time: 14:00 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6455 .60879 Length surveyed (m): 100.0 HC Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: T-8B-23 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.7 MS
 Av. Wet. Width (m): 0.3 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 8 MS
 Gradient (%): 2.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0-5 GE
 % Stable: 100 GE

Specific Data

0.7	0.4	0.6	1.0
0.3	0.3	0.4	0.4
7	5	10	12

Bed Material

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

D90 (cm): 3 Compaction: Low

Cover

Cover Total %: 90 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	5	0	0	55	40

Crown Closure %: 90 Aspect: SE

Discharge

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

Reach Symbol

(Fish) NF
 1 D 2.0 9100
 (Width, Valley: Channel, Slope) (Bed Material)

Banks

Height (m): 0.3
 % Unstable: 50
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs H(m): 0.3
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 02 (ppm):
 Turb. (cm): 12 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

C8: This is a small rivulet covered by grass. Wet patches and unconnected pools make up the flow in the sampling area. This site has no significant rearing potential, cover is lacking.

C1: S6

C2: LS - 22% RS - 22%

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

C4: This site was not electrofished.

C5: Lat N 54 55' 11.1" Long. W 126 43' 47.7"

C6: No additional bank texture information.

C7: Water quality was not evaluated at this site. The water was clear to the bottom. The mean air temperature on this day was 13.2°C



Photo #: T-8b-23, 1996/08/23

Site #: T153, Upstream view, small channel through grass.



Location: BRUCE 94, Unit 9, see C5

Stream (Gaz.): Higgins Creek

Watershed Code: 480-6972-472-411-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.6 MA Date: 25-Aug-96 Time: 9:40 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 .6420 .60861 Length surveyed (m): 100.0 GE Survey Crew: BM\DD\ \ \ \ \ \ \ \ \ \ \ Photos: B-6-16,17,18 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 4.7 TA
 Av. Wet. Width (m): 3.7 TA
 Av. Max Riffle Depth (cm): 24 MS
 Av. Max Pool Depth (cm): 42 MS
 Gradient (%): 4.0 CL
 Pool: Riffle: Run: Other:
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 40 GE

Specific Data

4.7	4.6	3.4	5.0	5.1	5.2
3.5	4.0	3.1	3.3	3.6	4.5
15	30	26		21	26
36	29	30	60	60	40

Obstructions

C	Height (m)	Type	Location
	1	D	2.7

Bed Material

	Clay, silt, sand (<2mm):	10	10
Fines			
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		25
	Lge cobble (128-256mm):	60	25
	Blder cobble (>256mm):		10
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
5	25	30	0	20	20

 Crown Closure %: 15 Aspect: N

Banks

Height (m): 0.5
 % Unstable: 75
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 1.2
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 4.0 O2 (ppm):
 Turb. (cm): 60 Cond. (µmhos):

Discharge

Wetted Width (m): 3.5 TA
 Mean Depth (m): 0.3 MS
 Mean Velocity (m/s): 0.80 F
 Discharge (m3/s): 0.70 F

Reach Symbol

(Fish)
 (DV, RB, BT)

5	D	4.0	1360
---	---	-----	------

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

Comments

- C1: S3
- C2: LS = 10%, RS = 13%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a 15 a Smithroot model, was 539 seconds over 100 meters. Future sampling is recommended to confirm the presence of a resident fish population.
- C5: Lat N 54 54 07, Long W 126 47 07
- C6: No additional bank texture information.
- C7: DO, pH and conductivity measurements were not taken at this site. The mean air temperature on this day was 14.5°C
- C8: No additional fish habitat information.
- C9: This creek runs through an avalanche zone and contains woody debris derived from an avalanche.



Photo #: B-6-16, 1996/08/25
Site #: B94, 100m cascade downstream of site B94.

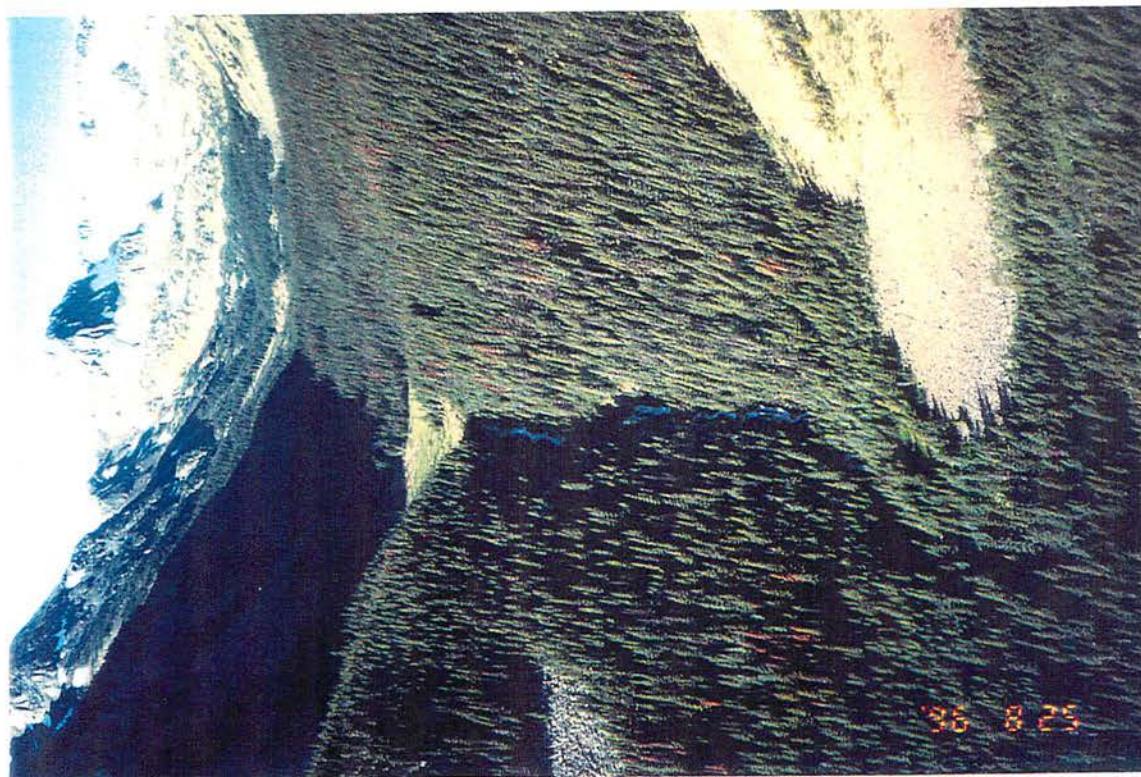


Photo #: B-6-17, 1996/08/25
Site #: B94, 100m cascade downstream of site B94.

5.4 Debenture Creek (460-6972-875) (93 L 096, 93 L 097)

5.4.1 Sensitive Habitats and Barriers

The Debenture mainstem is 10.3 km long and is fed by 19 tributaries. Reach 1 has low gradually increasing gradient and confinement and is separated from reach 2 by a 3 meter and 5 meter cascade. Reach 2 also has gradually increasing gradient and confinement, which peaks in a 40 meter falls at the reach 2 and 3 break. Reach 3 has steep, impassable gradient. Potential Dolly Varden spawning habitat was identified in reach 2. Debenture Creek was sampled once, in reach 2, above the 3 and 5 meter cascades.

5.4.2 Fish Summary Tables and Stream Classification

No historical records exist for Debenture Creek. The mainstem was sampled once in reach 2 and was classified as an S2, based on an average channel width of 6.87 meters and the presence of rearing and spawning habitat in the sampling area. No fish were caught in the electrofishing trial in this reach. With one exception, the tributaries associated with this stream can be classified as non fish bearing because of steep gradient. These streams typically occur in the headwaters, where the gradient reaches 36% in some areas.



Location: BRUCE 96, Unit 9, see C5.

Stream (Gaz.): Debenture Creek

Watershed Code: 480-6972-875-000-000-000-000-000-000-0

Map #: 93 L 096 Reach Length (km): 2.4 MA Date: 28-Apr-97 Time: 13:37 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9. 6357. 60951 Length surveyed (m): 100.0 GE Survey Crew: BM \ DD \ \ \ \ \ \ Photos: B-6-22,23 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 6.9 T
 Av. Wet. Width (m): 3.9 T
 Av. Max Riffle Depth (cm): 14 MS
 Av. Max Pool Depth (cm): 42 MS
 Gradient (%): 5.0 CL
 Pool: 20 Riffle: 80 Run: 0 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 40 GE

Specific Data

7.8	7.9	4.9	6.7	6.8	7.1
4.5	4.0	3.8	5.7	2.8	2.8
8	10	14	21	14	15
22	34	36	23	94	43

Obstructions

C	Height (m)	Type	Location
	1	D	5.6
	2	D	5.6

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 = 30%, RS = 50%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 15 A model was 605 seconds over 100 meters. Future sampling is recommended.
- C5: Lat N 54 59' 04", Long W 126 52' 42"
- C6: No additional bank texture information.
- C7: DO was not measured at this site.
- C8: Some good spawning gravels and deep rearing pools were noted at this site.

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	30	0	5	25

 Crown Closure %: 40 Aspect: E
 D90 (cm): 30 Compaction: Medium

Bed Material

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

Banks

Height (m): 1.0
 % Unstable: 75
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley: Channel Ratio | 5-10 |
 Stage: L Flood Signs IH(m): 1.5
 Bars (%): 20 pH: 5.9 Braided: Y
 Water Temp. (°C): 7.0 O2 (ppm):
 Turb. (cm): 94 Cond. (µmhos): 176

Discharge

Wetted Width (m): 2.6 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.19 F
 Discharge (m3/s): 0.07 F

Reach Symbol

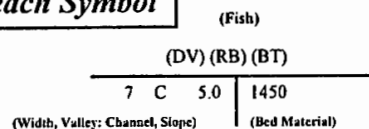




Photo #: B-6-22, 1996/08/25
Site #: B96, Looking upstream, Deventure C.



Photo #: B-6-23, 1996/08/25
Site #: B96, Looking downstream.

5.5 Fink Creek (480-6972-341-267) (93 L 087)

5.5.1 Sensitive Habitats and Barriers

The mainstem of Fink Creek is 11.4 km in length and is fed by 12 tributaries. Reach 1 has low gradient and is largely unconfined. Reach 2 has low gradient and is unconfined, with the exception of a small confined section occurring at the reach 2 and 3 break. Reach 3 has quite steep gradient and is moderately confined. A 3 meter cascade and a 2 meter cascade were identified at the reach 2 and 3 break. No fish were caught by electrofishing at the 2 sample sites located above these barriers, which delineate the upper limit of fish distribution in this creek. The Fink Creek system was sampled at 14 locations, including reaches 1 through 4 of the mainstem and in 3 tributaries.

5.5.2 Fish Summary Tables and Stream Classification

There are no historical records for Fink Creek. Ten sites were electrofished, 1 site was minnow trapped, and fish were caught at 5. Dolly Varden and cutthroat were caught in reach 1 and Dolly Varden were caught in reach 2 and in 3 tributaries to reach 2. Reach 1 of the mainstem was classified as an S3 based on the presence of fish and fish habitat in the sampling area and an average channel width of 4.08 meters. This sample site appears to have been located in a locally confined area as reach 2 of this stream was classified as an S2, based on an average channel width of 7.20 meters and the presence of fish in the sampling area. Reaches 3 and 4 have been classified as non fish bearing S5 due to a lack of evidence of a resident fish population above the 3.0 and 2.0 meter cascades. The tributaries to reach 2 sampled in this inventory were typically classified as S3, with the upper most reaches classified as non fishbearing due to steep gradient.



Location: Y212, Unit 9; above a bridge between block 302-2 and 312-3

Stream (Gaz.): Fink Creek

Watershed Code: 480-4672-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 2.4 MW Date: 05-Sep-97 Time: 11:34 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 6484 60806 Length surveyed (m): 200.0 GE Survey Crew: JP\FC \ \ \ \ \ \ \ Photos: Y-25-3,4,5,6 Air Photos:

Channel Characteristics

C1 Av. Chan. Width (m): 5.4 MS
 C1 Av. Wet. Width (m): 2.7 MS
 Av. Max Riffle Depth (cm): 10 MS
 Av. Max Pool Depth (cm): 47 MS
 Gradient (%): 11.0 GE
 Pool: 15 Riffle: 10 Run: 55 Other: 20
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 %Stable: 25 GE

Specific Data

4.9	3.9	4.1	4.5	5.2	5.2
2.0	2.5	2.5	1.6	4.8	3.0
10	11	10	7	12	
52	39	73	26	47	

Obstructions

C	Height (m)	Type	Location
	2	C	5.9
	3	C	6.0

Bed Material

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

Fish Summary

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

Comments

- C1: S5. Two additional measurements were taken for channel and wetted widths; 6.0 and 3.6, and 9.4 and 1.9.
- C2: LS=33%, RS=38%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 6, 400V, was 350 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 10.5 C.
- C7: This stream has several small cascades over I.O.D and boulders. A canyon like section below the road has several 1-3 m cascades over bedrock that may be barriers.

Cover

Cover Total % : 25 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnbk
20	15	55	0	5	5

Crown Closure % : 15 Aspect : NE

D90 (cm): Compaction: High

Discharge

Wetted Width (m): 1.4 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.33 F
 Discharge (m3/s): 0.03 F

Banks

Height (m): 0.4
 % Unstable: 5
 Fines Gravels Larges Bedrock

Confinement: FC
 Valley : Channel Ratio 2-5
 Stage: M Flood Signs H(m): 1.2
 Bars (%): 10 pH: 8.1 Braided: N
 Water Temp. (°C): 8.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 150

Reach Symbol

(Fish)
 NF
 5 B 11.0 | 0271
 (Width, Valley: Channel, Slope) (Bed Material)



Photo #: Y-25-3, 05/09/97

Site #: Y212, Looking upstream at the channel, note sm. cascade and pool

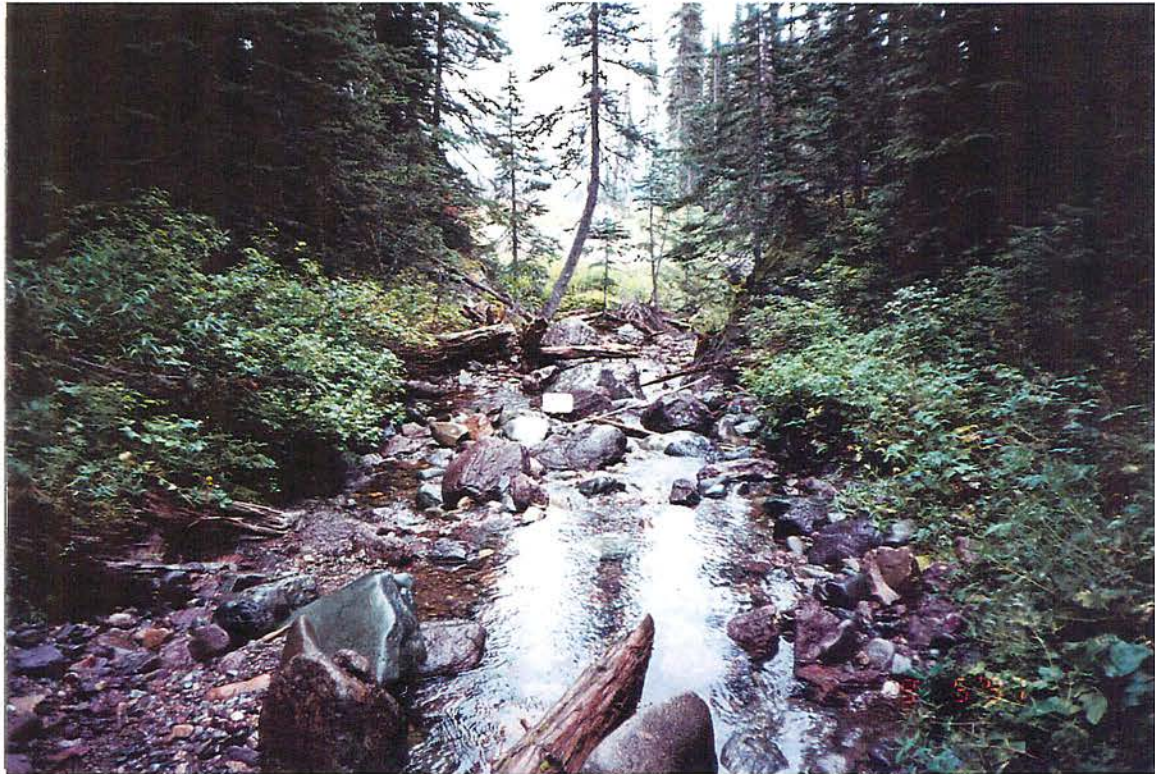


Photo #: Y-25-4, 05/09/97

Site #: Y212, Looking downstream at the channel



Photo #: Y-25-5, 05/09/97

Site #: Y212, Looking upstream at the channel, note 2m cascade



Photo #: Y-25-6, 05/09/97

Site #: Y212, Looking downstream at the channel



Location: JULIE 100, Unit 9, south boundary of 302-3 block. See C5

Stream (Gaz.): Fink Creek

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 3.5 MA Date: 16-Aug-96 Time: 14:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6490 .60810 Length surveyed (m): 600.0 HC Survey Crew: JP\HK \ \ \ \ \ \ \ \ Photos: J-5-21, 6-1 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 7.2 MS
 Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 17 MS
 Gradient (%): 9.0 CL
 Pool: 5 Riffle: 90 Run: 0 Other: 5
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 %Stable: 40 GE

Specific Data

7.2	4.4	4.5	6.4	12.1	8.6
0.9	0.7	1.1	1.1	1.4	1.2
2	6	6			
12	15	25			

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	80	30
	Bllder cobble (>256mm):		30
Bedrock		0	0

D90 (cm): 40 Compaction: Low

Cover

Cover Total %: 60 GE

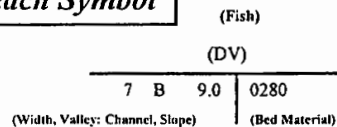
Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	25	50	0	0	25

Crown Closure %: 10 Aspect: N

Discharge

Wetted Width (m): 1.1 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.13 F
 Discharge (m3/s): 0.01 F

Reach Symbol



Banks

Height (m): 0.7
 % Unstable: 60

Fines Gravels Larges Bedrock

Confinement: FC

Valley : Channel Ratio 2-5

Stage: L Flood Signs H1(m): 0.71

Bars (%): 50 pH: Braided: Y

Water Temp. (°C): 10.0 02 (ppm):

Turb. (cm): 25 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: S2
- C2: LS = 10%, RS = 25%
- C3: Side channel were noted.
- C4: The electroshocking effort using a 12 B POW model, was 58 seconds over 40 meters.
- C5: Lat N 54 51' 17.4", Long W 126 40' 42"
- C6: Slumping banks associated with the effects of logging are present on site. The erosion potential of this area is moderate to high.
- C7: No pH, DO or conductivity measurements were made on site. The mean air temperature on this day was 11.5°C
- C8: No spawning, rearing or overwintering habitat is present on site.
- C9: The channel has been severely impacted by logging. Slumping banks, log jams, debris flooding and loose substrate are present in this area. Approximately 40 meters below the road the creek disappears underground. There is no downstream surface flow and no channel. The water disappears underground in the section of the creek with a channel. Otherwise it runs as a trickle through the rocks.



Photo #: J-5-21, 1996/08/16
Site #: J100, Looking upstream, Fink C.



Photo #: J-6-1, 1996/08/16
Site #: J100, Fink C. above road crossing.



Location: HASLETT 108, Unit 9, see C5.

Stream (Gaz.): Fink Creek

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 2.6 MA Date: 21-Aug-96 Time: 14:20 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 6509 60833 Length surveyed (m): 300.0 GE Survey Crew: JH\HK\ \ \ \ \ \ \ \ Photos: H-7-21,22 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 4.1 TA
 Av. Wet. Width (m): 1.5 MS
 Av. Max Riffle Depth (cm): 14 MS
 Av. Max Pool Depth (cm): 60 MS
 Gradient (%): 3.0 CL
 Pool: 40 Riffle: 40 Run: 20 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 80 GE

Specific Data

5.0	3.8	4.2	4.0	3.5	4.0
1.3	1.2	1.5	2.0	1.3	1.5
14	15	13	0	0	0
60	70	50	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	35	15	
	Large (16-64mm):		20	
Larges	Sm. cobble (64-128mm):		20	
	Lge cobble (128-256mm):	35	10	
	Blder cobble (>256mm):		5	
Bedrock			0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	126	J	R			EL
	CT	2	95	J	R			EL

Comments

- C1: S3
- C2: LS / RS not measured
- C3: No fisheries sensitive zones were noted at this site.
- C4: The electroshocking effort, using a Smithroot 12 B POW model was 296 seconds over 100 meters.
- C5: Lat 54 52 31.6 Long 126 38 51.6
- 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 10.9°C
- C8: Some good fish habitat occurs at this site. Some flooding near the road, resulting from beaver activity was observed at this site. The bridge is not entirely stable and could pose problems for the future.

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
30	40	0	5	5	20

Crown Closure %: 75 Aspect: E

Discharge

Wetted Width (m): 2.5 MS
 Mean Depth (m): 0.6 MS
 Mean Velocity (m/s): 0.12 F
 Discharge (m3/s): 0.14 F

Banks

Height (m): 0.2
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: N/A
 Valley : Channel Ratio N/A
 Stage: M Flood Signs Ht(m): 0.7
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 10.0 02 (ppm):
 Turb. (cm): 42 Cond. (µmhos):

Reach Symbol

(Fish)

DV, CT

4 E 3.0 3430

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



Photo #: H-7-21, 1996/08/21
Site #: H108, Channel through willow.



Photo #: H-7-22, 1996/08/21
Site #: H108, Looking upstream toward beaver dam and road.



Location: Y211, Unit 9; about 50m SE of cutblock 312-1

Stream (Gaz.): Fink Creek

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 2.9 MW Date: 05-Sep-97 Time: 10:10 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 646872.6079170 Length surveyed (m): 200.0 GE Survey Crew: JL UP \ \ \ \ \ \ \ \ Photos: Y-25-1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.8 MS
 Av. Wet. Width (m): 1.6 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 21 MS
 Gradient (%): 8.0 GE
 Pool: 20 Riffle: 20 Run: 50 Other: 10
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 50 GE

Specific Data

4.3	3.2	3.5	4.2	4.0	3.5
1.2	2.5	1.3	1.4	1.8	1.5
7	8	6	7	5	
19	22	28	17	20	

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=33%, RS=58%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 500V, was 513 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 8.0 C.
- C7: Boulder, LOD and pool rearing cover was observed, some spawning gravels were noted. The gradient gradually increases upstream resulting in increased cascades accompanied by deeper pools. There are several cascades over LOD, boulders and some bedrock, but none are substantial barriers.
- C8: A 70 cm cascade was noted in the sampling area.

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctlnk
10	30	45	5	5	5

 Crown Closure %: 15 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		15
Larges	1ge cobble (128-256mm):	60	15
	Blder cobble (>256mm):		30
Bedrock		10	10

D90 (cm): Compaction: Medium

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

Banks

Height (m): 0.1
 % Unstable: 5
 Fines Gravels Larges Bedrock
 Confinement: FC
 Valley: Channel Ratio 2-5
 Stage: M Flood Signs Ht(m): 0.5
 Bars (%): 20 pH: 7.8 Braided: N
 Water Temp. (°C): 6.5 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 100

Reach Symbol

(Fish) NF

4	B	8.0	0361
---	---	-----	------

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



Photo #: Y-25-1, 05/09/97

Site #: Y211, Looking upstream at the channel, note boulder cover



Photo #: Y-25-2, 05/09/97

Site #: Y211, Looking downstream at the channel



Location: JULIE 104, Unit 9, north side of 302-4 block, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 0.4 MA Date: 18-Aug-96 Time: 8:45 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6497 .60801 Length surveyed (m): 150.0 GE Survey Crew: JP \HK \ \ \ \ \ \ Photos: J-6-8,9 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.8 MS
 Av. Wet. Width (m): 0.7 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 14 MS
 Gradient (%): 17.0 CL
 Pool: 25 Riffle: 30 Run: 45 Other: 0
 % Side Channel: GE
 % Debris Area: 25 GE
 % Stable: 50 GE

Specific Data

3.5	2.2	1.8	1.5	4.5	3.1
0.9	0.4	0.6	0.5	1.0	0.9
4	3	5	0	0	0
18	9	12	15	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 50 GE

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

Crown Closure %: 50 Aspect: NE

D90 (cm): 14 Compaction: Medium

Discharge

Wetted Width (m): 0.5 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.09 F
 Discharge (m3/s): 0.00 F

Banks

Height (m): 0.3
 % Unstable: 15

Fines Gravels Larges Bedrock

Confinement: UC

Valley: Channel Ratio 10+

Stage: L Flood Signs H(m): 0.3

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 9.0 O2 (ppm):

Turb. (cm): 18 Cond. (µmhos):

Reach Symbol

(Fish)

NF

3 D 17.0 | 1450

(Width, Valley: Channel, Slope)

(Bed Material)

Comments

- C1: S6
- C2: LS = 12, RS = 8
- C3: No fisheries sensitive zones noted on site.
- C4: No electrofishing was carried out. The steep gradient above the road precludes the presence of fish.
- C5: Lat N 54 50 37.9, Long W 126 40 37.9
- C6: No additional bank texture information.
- C7: DO, pH, conductivity measurements were not made on site. The mean air temperature on this day was 10.0°C
- C8: No rearing, spawning or overwintering habitat was observed in the surveyed area.
- C9: The creek follows the road in a ditch for approximately 150m, then heads out toward the swamp.



Photo #: J-6-8, 1996/08/18
Site #: J104, Upstream view.



Photo #: J-6-9, 1996/08/18
Site #: J104, Downstream view.

DFO/MoELP Stream Survey Form

Site Number: JULIE 96

Reach No.: 1

Trib. to Fink Cr.



TRITON
Environmental Consultants Ltd.

Location: JULIE 96, Unit 9, North of 302-3 and downstream of 302-2. See C5

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.2 MA Date: 16-Aug-96 Time: 10:40 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6485 60824 Length surveyed (m): 300.0 GE Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-5-13,14 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.5 MS
 Av. Wet. Width (m): 1.9 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 32 MS
 Gradient (%): 3.0 CL
 Pool: 30 Riffle: 40 Run: 30 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 %Stable: 70 GE

Specific Data

2.1	2.8	1.6	2.8	2.6	3.0
1.9	2.6	1.5	1.2	2.2	1.8
6	7	7	0	0	0
30	35	32			

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	120	J	R			EL

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		15
	Lge cobble (128-256mm):	30	15
	Blder cobble (>256mm):		0
Bedrock	.	0	0

Comments

- C1 S3
- C2 LS = 30%, RS = 30%.
- C3 No fisheries sensitive zones were noted on site.
- C4 The electroshocking effort using a 12 B POW model, was 296 seconds over 100m.
- C5 Lat N 54 51' 59", Long W 126 41' 08.3"
- C6 No additional bank texture information.
- C7 No pH, DO and conductivity measurements were taken at this site. The mean air temperature on this day was 11.5°C
- C8 This creek is heavily overgrown with willow and provides some good rearing habitat.
- C9 This creek drains three small tributaries.
- 1 Only 1 large Dolly Varden was caught in 100 m of the surveyed area. No visual observations were made.

Cover Cover Total %: 90 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
0	5	10	10	55	20

 Crown Closure %: 40 Aspect: E
 D90 (cm): 14 Compaction: Medium

Discharge
 Wetted Width (m): 1.4 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: 0
 Fines Gravels Larges Bedrock

Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.3
 Bars (%): 5 pH: Braided: N
 Water Temp. (°C): 8.5 02 (ppm):
 Turb. (cm): 35 Cond. (µmhos):

Reach Symbol (Fish)
 DV

2	C	3.0	3430
---	---	-----	------

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



Photo #: J-5-13, 1996/08/16
Site #: J96, Looking upstream, shrub lined channel.



Photo #: J-5-14, 1996/08/16
Site #: J96, Looking downstream, alder shaded pools.



Location: JULIE 97, Unit 9, Left branch above J 96, North of 302-3.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-000-0

Map #: 93 M 087 Reach Length (km): 0.5 MA: Date: 16-Aug-96 Time: 11:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6485 60824 Length surveyed (m): 80.0 HC: Survey Crew: JP\HK\ \ \ \ \ \ Photos: J-5-15,16 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 8 MS
 Av. Max Pool Depth (cm): 20 MS
 Gradient (%): 4.0 CL
 Pool: 45 Riffle: 10 Run: 40 Other: 5
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 40 GE

Specific Data

1.4	1.5	1.4	1.3	1.2	1.0
0.8	0.7	0.9	0.8	0.7	0.7
7	9	0	0	0	0
25	15	0	0	0	0

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	210	A	I			EL

Comments

- C1: S4
- C2: LS = 40%, RS = 40%
- C3: No fisheries sensitive zones noted on site.
- C4: Electroshocking effort using a 12 B POW electroshocker was over 80 metres.
- C5: Lat N 54 51' 59.7", Long W 126 41' 08.7"
- C6: No apparent erosion problems.
- C7: No pH, DO or conductivity measurements were made on site. The mean air temperature on this day was 11.5°C
- C8: This site has some potential rearing habitat, however it provides no spawning or overwintering habitat. No barriers to fish passage are were noted.
- C9: The creek is heavily overgrown by ferns and devils club.

Cover

Cover Total %: 80 GE

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

 Crown Closure %: 40 Aspect: N

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	50	30
	Blder cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 16 Compaction: Medium

Discharge

Wetted Width (m): 0.6 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.10 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: M Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): 25 Cond. (µmhos):

Reach Symbol

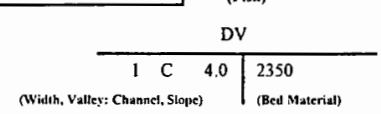




Photo #: J-5-15, 1996/08/16
Site #: J97, Looking upstream.



Photo #: J-5-16, 1996/08/16
Site #: J97, Looking downstream, channel shaded by ferns.



Location: JULIE 98, Unit 9, right branch of the system, upstream of J96. See C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 0.9 MW Date: 16-Aug-96 Time: 11:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6485 .60824 Length surveyed (m): 80.0 HC Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-5-17,18 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.1 MS
 Av. Wet. Width (m): 1.0 MS
 Av. Max Riffle Depth (cm): 10 MS
 Av. Max Pool Depth (cm): 27 MS
 Gradient (%): 6.0 CL
 Pool: 20 Riffle: 20 Run: 50 Other: 10
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 60 GE

Specific Data

2.3	2.0	2.5	1.7	2.0	2.0
1.2	1.1	0.9	1.1	1.2	0.6
8	12	10			
40	22	15	32		

Obstructions

C	Height (m)	Type	Location

Bed Material

Material	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
	Sm. cobble (64-128mm):		15
	Lge cobble (128-256mm):	80	60
Bedrock	Blder cobble (>256mm):		5
		0	0

D90 (cm): 28 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	210	A				EL

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	40	20	0	10	30

 Crown Closure %: 40 Aspect: E

Comments

- C1: S3
- C2: LS = 30%, RS = 20%
- C3: No fisheries sensitive zones noted on site.
- C4: The electroshocking effort, using a 12 B POW electroshocker was 294 seconds over 100 meters.
- C5: Lat N 54 51' 59.7", Long W 126 41' 08.7"
- C6: No apparent erosion problems at this site.
- C7: No pH, DO or conductivity measurements were taken at this site. The mean air temperature on this day was 11.5°C
- C8: Potential rearing habitat exists at this site, however no overwintering or spawning habitat was observed. No barriers to fish passage are apparent in this area.
- C9: This branch is larger than J97 but has a similar amount of riparian cover.

Discharge

Wetted Width (m): 0.6 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.15 F
 Discharge (m3/s): 0.01 F

Banks

Height (m): 0.4
 % Unstable: 0
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.4
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 8.5 O2 (ppm):
 Turb. (cm): 40 Cond. (µmhos):

Reach Symbol

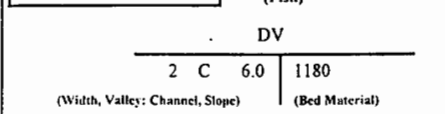




Photo #: J-5-17, 1996/08/16
Site #: J98, Looking upstream, moss-covered cobble.



Photo #: J-5-18, 1996/08/16
Site #: J98, Looking downstream, LOD in channel.

DFO/MoELP Stream Survey Form

Site Number: JULIE 99

Reach No.: 1

Trib. to Fink Cr.



TRITON
Environmental Consultants Ltd.

Location: JULIE 99, Unit 9, south side of 302-3. See C5

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 0.9 MA Date: 16-Aug-96 Time: 13:50 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6489 .60814 Length surveyed (m): 300.0 GE Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-5-19,20 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 30 MS
 Gradient (%): 3.0 CL
 Pool: 30 Riffle: 30 Run: 40 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 70 GE

Specific Data

1.4	1.6	2.1	1.4	1.1	2.1
1.3	1.5	1.6	0.9	1.2	1.3
8	6	6			
24	22	44			

Obstructions

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	70	50
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	10	0
Bedrock	Blder cobble (>256mm):		0
		0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	40	J	R			EL

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	0	0	40	50

Crown Closure %: 0 Aspect: N

D90 (cm): 6 Compaction: Medium

Discharge

Wetted Width (m): 0.7 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.31 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: M Flood Signs Ht(m): 0.1

Bars (%): 10 pH: Braided: N

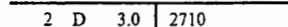
Water Temp. (°C): 12.0 02 (ppm):

Turb. (cm): 44 Cond. (µmhos):

Reach Symbol

(Fish)

DV



(Width, Valley: Channel, Slope)

(Bed Material)

Comments

- C1: S3
- C2: LS = 4%, RS = 4%
- C3: No fisheries sensitive zones noted at this site.
- C4: The electroshocking effort, using a 12 B POW model, was 505 seconds over 150 meters.
- C5: Lat N 54 51' 26.3", Long W 126 40' 46.7"
- C6: No additional bank texture information.
- C7: No pH, DO or conductivity measurements were made at this site. The mean air temperature on this day was 11.5°C
- C8: Potential rearing habitat exists at this site. The channel is filled with spawning sized gravels, however, the slow flow and shallow water result in marginal spawning habitat.
- C9: This creek flows through a cutblock. No buffer zone was left to protect the creek. Currently burned logs are present in the channel.
- I: A small tributary, class S4, was seen upstream of the road. A small bridge over the stream does not encroach on the creek.



Photo #: J-5-19, 1996/08/16
Site #: J99, Looking upstream, LOD and pools.



Photo #: J-5-20, 1996/08/16
Site #: J99, Looking downstream.



Location: JULIE 101, Unit 9, North side of 302-4 block. See C5

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.2 MA Date: 16-Aug-96 Time: 15:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6492 60805 Length surveyed (m): 220.0 HC Survey Crew: JPHK \ \ \ \ \ \ \ \ Photos: J-6-2,3 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.2 MS
 Av. Wet. Width (m): 0.7 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 13 MS
 Gradient (%): 5.0 CL
 Pool: 5 Riffle: 90 Run: 5 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 20 GE

Specific Data

1.3	0.9	1.4	0.7	0.8	1.8
0.6	0.7	0.9	0.7	0.8	0.7
6	4	4	0	0	0
17	8	15	0	0	0

Obstructions

C	Height (m)	Type	Location

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
0	10	25	0	35	30

Crown Closure %: 10 Aspect: E

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	50	25
	Large (16-64mm):		25
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	40	10
	Blder cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 27 Compaction: Medium

Fish Summary

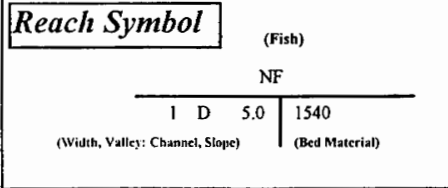
C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	NF			NA				EL

Discharge

Wetted Width (m): 0.8 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: 20
 Fines Gravels Larges Bedrock



Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.2
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 17 Cond. (µmhos):

Comments

C1: S6
 C2: LS = 10%, RS = 3%
 C3: No fisheries sensitive zones noted on site.
 C4: The electroshocking effort, using a 12 B POW model, was 68 seconds over 220 meters.
 C5: Lat N. 54 50' 59.5", Long W 126 40' 29.4"
 C6: No additional bank texture information.
 C7: No pH, DO, conductivity measurements were made on site. The mean air temperature on this day was 11.5°C
 C8: The creek disappears underground 150 meters downstream of the road. The culvert at this location is not a barrier. A small pond, .2m deep and 20m squared, is located upstream of the road.



Photo #: J-6-2, 1996/08/16
Site #: J101, Looking upstream, grass in channel.



Photo #: J-6-3, 1996/08/16
Site #: J101, Looking downstream toward road.



Location: JULIE 102, Unit 9, NW end of 302-4 block. See C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.2 MA Date: 16-Aug-96 Time: 16:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6495 60802 Length surveyed (m): 120.0 HC Survey Crew: JP\HK \ \ \ \ \ \ \ \ \ \ Photos: J-6-4,5 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.9 MS
 Av. Wet. Width (m): 0.7 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 8 MS
 Gradient (%): 7.0 CL
 Pool: 30 Riffle: 10 Run: 60 Other: 0
 % Side Channel: GE
 % Debris Area: 5 GE
 % Stable: 80 GE

Specific Data

2.2	1.8	1.6	2.0	2.1	1.9
0.8	0.6	0.5	0.8	0.7	0.9
1	1	1	0	0	0
17	3	4			

Obstructions

C	Height (m)	Type	Location

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
	Lge cobble (128-256mm):	15	0
Bedrock	Blder cobble (>256mm):		0
		0	0

Fish Summary

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

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	15	0	0	65	15

 Crown Closure %: 10 Aspect: NE

D90 (cm): 8 Compaction: Medium

Comments

- C1: S6
- C2: LS = 5%, RS = 5%
- C3: No fisheries sensitive zones were noted at this site.
- C4: The electroshocking effort, using a 12 B POW electroshocker, was 287 seconds over 250 meters.
- C5: Lat, N 54 50' 48", Long W 126 40' 17.1".
- C6: No additional bank texture information.
- C7: No pH, DO or conductivity measurements were made at this site. The mean air temperature on this day was 11.5°C
- C8: No rearing, spawning or overwintering habitat was seen on site.
- C9: The creek was partially dry on the sampling day. The creek disappears 200 m downstream of the road. The area surveyed was one of two small and very similar creeks. The southern creek was electrofished.

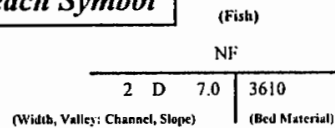
Discharge

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

Banks

Height (m): 0.4
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.4
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 15.0 02 (ppm):
 Turb. (cm): 17 Cond. (µmhos):

Reach Symbol



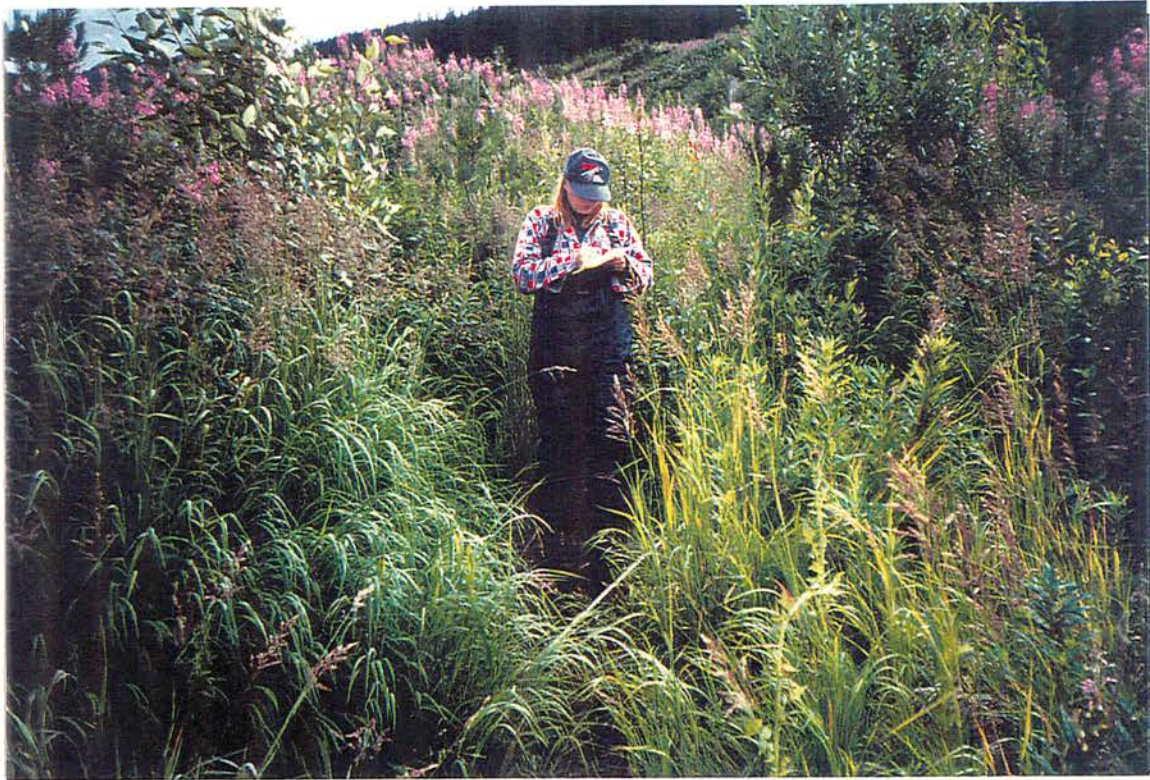


Photo #: J-6-4, 1996/08/16
Site #: J102, Looking upstream, grassy channel.



Photo #: J-6-5, 1996/08/16
Site #: J102, Looking downstream, grassy channel.



Location: JULIE 116, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.0 MA Date: 19-Aug-96 Time: 8:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6505 .60795 Length surveyed (m): 110.0 HC Survey Crew: JP\HK \ \ \ \ \ \ Photos: J-7-9,10 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.9 MS
 Av. Wet. Width (m): 0.9 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 43 MS
 Gradient (%): 2.0 CL
 Pool: 40 Riffle: 20 Run: 40 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 40 GE

Specific Data

4.4	4.1	3.6	2.1	1.8	1.6
1.0	0.9	1.2	1.1	0.6	0.7
9	4	8	0	5	
45	38	42	47		

Obstructions

C	Height (m)	Type	Location

Bed Material

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

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=2%, RS=2%
- C4 An electroshocker was not available for sampling.
- C5 Lat N 54 50 24.7, Long W 126 39 20.2
- C6 No additional bank texture information.
- C7 Water quality was not evaluated at this site. The mean air temperature on this day was 11.6°C
- C8 An RMA was not left behind in the cutblock this creek moves through. The creek runs like a ditch beside the road for 100 m in the sampling area. Marginal fish habitat occurs at this site with no spawning or overwintering areas. This area was improperly mapped.

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
10	15	0	10	55	10

Crown Closure %: 0 Aspect: N

Discharge

Wetted Width (m): 0.9 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.32 F
 Discharge (m3/s): 0.02 F

Banks

Height (m): 0.1
 % Unstable: 20

Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: H Flood Signs Ht(m): 0.2
 Bars (%): 10 pH: Braided: Y
 Water Temp. (°C): 10.0 02 (ppm):
 Turb. (cm): 47 Cond. (µmhos):

Reach Symbol

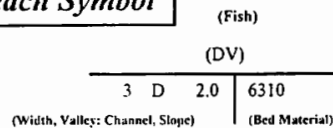




Photo #: J-7-9, 1996/08/19
Site #: J116, Looking downstream, LOD in channel.



Photo #: J-7-10, 1996/08/19
Site #: J116, Looking upstream, channel through grass and alder.



Location: JULIE 117, Unit 9, E 302-4, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 5.0 MA Date: 19-Aug-96 Time: 10:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 . 6507 . 60794 Length surveyed (m): 155.0 GE Survey Crew: JP\HK \ \ \ \ \ \ \ \ Photos: J-7-11,12 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.2 MS
 Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 25 MS
 Gradient (%): 2.0 CL
 Pool: 25 Riffle: 25 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 0 GE

Specific Data

2.2	2.4	2.8	2.1	2.0	1.9
1.1	1.6	1.1	1.4	0.8	0.8
	6	7		8	
22	24	30			

Obstructions

C	Height (m)	Type	Location

Bed Material

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

D90 (cm): 2 Compaction: Medium

Fish Summary

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

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
5	40	0	10	15	30

 Crown Closure %: 0 Aspect: N

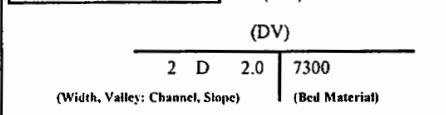
Banks

Height (m): 0.4
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: H Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 8.5 02 (ppm):
 Turb. (cm): 30 Cond. (µmhos):

Discharge

Wetted Width (m): 1.2 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.24 F
 Discharge (m3/s): 0.02 F

Reach Symbol



Comments

- C1: S3
- C2: LS=2%, RS=2%
- C4: An electroshocker was not available for sampling. This creek drains into a swamp which was minnow trapped. No fish were caught.
- C5: Lat N 54 50 18.6, Long W 126 39 10.9
- 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 11.6°C
- C8: This site contains marginal rearing habitat. No spawning or overwintering habitat was observed in the sampling area. In general this creek has been severely impacted by logging, which was carried down right down to the stream banks. The creek runs along side the road like a ditch in the sampling area.



Photo #: J-7-11, 1996/08/19
Site #: J117, Looking downstream, LOD in channel.



Photo #: J-7-12, 1996/08/19
Site #: J117, Looking upstream, logging debris in channel.

DFO/MoELP Stream Survey Form

Site Number: JULIE 105

Reach No.: 1

Trib. to Fink Cr



Location: JULIE 105, Unit 9, north side of block 302-4, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-341-267-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 0.5 MA Date: 18-Aug-96 Time: 10:00 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 6496 60801 Length surveyed (m): 200.0 GE Survey Crew: JP\HK \ \ \ \ \ \ \ Photos: J-6-10,11 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.8 MS
 Av. Wet. Width (m): 0.6 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 12 MS
 Gradient (%): 4.0 CL
 Pool: 30 Riffle: 10 Run: 55 Other: 5
 % Side Channel: GE
 % Debris Area: 5-15 GE
 % Stable: 70 GE

Specific Data

1.1	0.7	0.7	0.5	1.0	0.6
1.0	0.6	0.6	0.5	0.7	0.4
4	3	3	0	0	0
17	9	7	15	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 40 GE

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

 Crown Closure %: 5 Aspect: NE

D90 (cm): 10 Compaction: Low

Comments

- C1: S4
- C2: LS = 3, RS = 3
- C3: No fisheries sensitive zones noted on site.
- C4: No electroshocking was carried out at this site. Minnow traps were set at 10:00 am, but no fish were caught.
- C5: Lat N 54 50 44.1, Long W 126 40 11.4
- C6: Logging has occurred down to the banks of this stream.
- C7: No pH, DO or conductivity measurements were taken at this site. The water in some of the pools and flooded areas at this site is rust coloured. The mean air temperature on this day was 10.0°C
- C8: There is potential rearing habitat for Dolly Varden and rainbow trout in the surveyed area. No barriers to fish passage were observed between the swamp and the logging road.
- C9: The creek runs along the road then travels through a culvert, the cutblock and the swamp.

Discharge

Wetted Width (m): 0.5 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.25 F
 Discharge (m3/s): 0.00 F

Banks

Height (m): 0.1
 % Unstable: 0
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs H(m): 0.1
 Bars (%): 5 pH: 7.0 Braided: N
 Water Temp. (°C): 9.0 02 (ppm):
 Turb. (cm): 17 Cond. (µmhos): 110

Reach Symbol

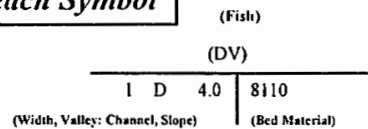




Photo #: J-6-10, 1996/08/18
Site #: J105, Upstream view.



Photo #: J-6-11, 1996/08/18
Site #: J105, Downstream view.

5.6 Fulton River and Unnamed Tributaries to the Fulton River and Chapman Lake **(480-6972-000) (93 L 087, 93 L 088, 93 L 097, 93 M 006, 93 M 007)**

5.6.1 Sensitive Habitats and Barriers

Roughly 61.8 km of the Fulton River occur in unit 9. Fifty six tributaries to both the Fulton and to Chapman Lake were noted in this unit. The Fulton headwaters consist of a small lake running from an area of steep gradient. All other reaches of this river are characterized by low gradient. Below Chapman Lake, the river meanders and is bordered by small wetlands and oxbow lakes, identified as fisheries sensitive zones. Chapman Lake itself is 7.4 km long and 1.5 km wide. A very large wetland, roughly 1.19 km across is located at the north end of the lake and is an important fisheries sensitive zone. With the exception of a logjam at the mouth of stream (480-6972-669), no barriers have been noted for this river. The Fulton system was sampled at 49 locations in this inventory, including reaches 3,4 and 6 of the mainstem.

5.6.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of cutthroat trout in the mainstem and several large tributaries. Lake trout, cutthroat, lake whitefish, longnose sucker, burbot and peamouth chub have been recorded in Chapman Lake. Fish were caught and/or visually observed at 21 sites. Rainbow trout, burbot, prickly sculpin (*Cottus asper*), longnose dace and Dolly Varden were caught by electrofishing in reach 4 and the survey crew was informed of the presence of cutthroat trout in reach 3 by a local resident. Cutthroat trout, Dolly Varden, red sided shiner (*Richardsonius balteatus*) and mountain whitefish were caught in tributaries to Fulton River and Chapman Lake.

The Fulton mainstem was classified from just below the headwaters as an S3, based on an average channel width of 1.50 meters and the presence of fish habitat in the sampling area. It was classified as an S1 in reach 3 based on an average channel width of 22.8 meters and the presence of fish in the sampling area. The wading conditions were dangerous in this reach and the crew discussed fish presence with a local resident. It was classified as an S2 in reach 4 based on an average channel width of 14.95 meters and the presence of rainbow trout, Dolly Varden and burbot in the sampling area. Excellent habitat was observed at all of the Fulton mainstem sites. The tributaries to Chapman Lake and the Fulton River sampled in this inventory have typically been classified as S3, with occasional S2 classifications and rare non fishbearing classifications.



Location: TERRY 125, Unit 9, see C5. Stream (Gaz.): Unnamed Watershed Code: 080-3100-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 1.3 MA Date: 18-Aug-96 Time: 16:30 Agency: TEC Access: V2 Fish Card: N Field Historical

U.T.M.: 9 6495 60866 Length surveyed (m): 200.0 GE Survey Crew: TD \HS\ \ \ \ \ \ \ Photos: T-7-14,15 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.0 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 17 MS
 Av. Max Pool Depth (cm): 3 MS
 Gradient (%): 7.5 CL
 Pool: 25 Riffle: 35 Run: 40 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 80 GE

Specific Data

2.5	1.6	1.3	2.1	2.6	2.0
0.8	1.0	0.7	1.9	1.6	1.8
57	34	12	0	0	0
2	8	6	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	50	25
	Large (16-64mm):		25
Larges	Sm. cobble (64-128mm):		20
	Lge cobble (128-256mm):	40	10
Bedrock	Blder cobble (>256mm):		10
		0	0

D90 (cm): 40 Compaction: High

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	11	60-140	J	R			EL

Cover

Cover Total %: 20 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 0 5 75 0 0 20
 Crown Closure %: 80 Aspect: NE

Comments

- C1 S3
- C2 LS = 10%, RS = 8%
- C3 No fisheries sensitive zones noted.
- C4 The electroshocking effort, using a Smithroot 15 A model gas shocker, was 205 seconds over 175 meters.
- C5 Lat N 54 54 16, Long 126 40 05
- C6 No additional bank texture information.
- C7 No DO or conductivity measurements were taken. The mean air temperature on this day was 10.0°C
- C8 Boulders provide almost all of the cover for fish at this site.

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.25 F
 Discharge (m3/s): 0.01 F

Banks

Height (m): 0.3
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.6
 Bars (%): 35 pH: 7.9 Braided: Y
 Water Temp. (°C): 10.5 02 (ppm):
 Turb. (cm): 8 Cond. (µmhos):

Reach Symbol

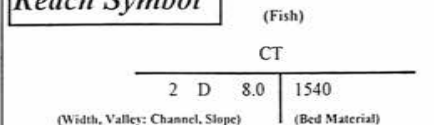




Photo #: T-7-14, 1996/08/18
Site #: T125, Channel.



Photo #: T-7-15, 1996/08/18
Site #: T125, Channel.



Location: TERRY 124, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-3200-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 2.5 MA Date: 18-Aug-96 Time: 16:00 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6490 .60876 Length surveyed (m): 200.0 GE Survey Crew: TD \HS \ \ \ \ \ \ \ \ Photos: T-7-12,13 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.8 MS
 Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 12 MS
 Gradient (%): 15.0 CL
 Pool: 20 Riffle: 30 Run: 45 Other: 5
 % Side Channel: 10-40 GE
 % Debris Area: >15 GE
 %Stable: 20 GE

Specific Data

1.4	1.5	1.8	1.4	3.1	1.5
0.7	0.6	1.2	0.8	1.8	1.5
6	2	2			
8	10	16	15		

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):		45	20
	Large (16-64mm):			25
Larges	Sm. cobble (64-128mm):			30
	Lge cobble (128-256mm):		50	15
	Blder cobble (>256mm):			5
Bedrock			0	0

D90 (cm): 27 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	5	50-70	J	R			EL

Comments

- C1: S3
 C2: LS = 50%, RS = 30%
 C3: No fisheries sensitive zones noted on site.
 C4: Electroshocking effort, using a Smithroot 15 A model gas shocker, was 204 seconds over 200 meters.
 C5: Lat N 54 54 48, Long W 126 40 33
 C6: No additional bank texture information.
 C7: No DO or conductivity measurements were taken on site. A brown, or tannin coloured hue was observed on the rocks at this site. The mean air temperature on this day was 10.0°C
 C8: Cutbanks and LOD provide most of the rearing habitat on site.
 C9: The creek disappears under organic debris and travels underground in the sampling area.

Cover

Cover Total %: 75 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	40	20	0	10	20

Crown Closure %: 95 Aspect: E

Discharge

Wetted Width (m): 0.5 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.09 F
 Discharge (m³/s): 0.01 F

Reach Symbol

(Fish)

CT

2 C 15.0 | 1450

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.1
 % Unstable: 10

Fines Gravels Larges Bedrock

Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: L Flood Signs Ht(m): 0.26
 Bars (%): 25 pH: 7.6 Braided: Y
 Water Temp. (°C): 9.0 02 (ppm):
 Turb. (cm): 16 Cond. (µmhos):



Photo #: T-7-12, 1996/08/18
Site #: T124, Upstream view.



Photo #: T-7-13, 1996/08/18
Site #: T124, Downstream view.



Location: TERRY 120, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-4000-000-000-000-000-000-000-000-0

 Map #: 93 L 097 Reach Length (km): 2.4 MA Date: 18-Aug-96 Time: 13:10 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 .6475 .60913 Length surveyed (m): 100.0 GE Survey Crew: TD \HS \ \ \ \ \ \ \ \ \ \ Photos: T-7-6,7 Air Photos:
Channel Characteristics
 Av. Chan. Width (m): 2.8 MS
 Av. Wet. Width (m): 1.7 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 18 MS
 Gradient (%): 4.0 CL
 Pool: 20 Riffle: 30 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 30 GE
Specific Data

3.2	2.3	3.9	2.7	2.7	1.9
2.0	2.0	1.0	2.0	1.2	2.0
3	4	4	0	0	0
35	60	14	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):	30	10	
	Large (16-64mm):		20	
Larges	Sm. cobble (64-128mm):		40	
	Lge cobble (128-256mm):	65	20	
	Blder cobble (>256mm):		5	
Bedrock			0	0

D90 (cm): 30 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	8	60-110	J	R			EL

Comments

- C1: S3
 C2: LS = 6%, RS = 10%
 C3: No fisheries sensitive zones noted on site.
 C4: The electroshocking effort, using a Smithroot 15 A model gas shocker, was 105 seconds over 30 meters.
 C5: Lat N 54 56 49, Long W 126 41 52
 C6: No additional bank texture information.
 C7: No DO or conductivity measurements were made on site. The mean air temperature on this day was 10.0°C
 C8: LOD, cutbank and overstream vegetation cover are abundant at this site.
 C9: The culvert drop is quite substantial at the road crossing.

Cover

Cover Total %: 60 GE

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

Crown Closure %: 70 Aspect: E

Discharge
 Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.29 F
 Discharge (m³/s): 0.01 F
Reach Symbol

(Fish)

CT

3	D	4.0	1360
---	---	-----	------

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.2

% Unstable: 30

Fines Gravels Larges Bedrock

Confinement: UC

Valley: Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.6

Bars (%): 20 pH: 7.8 Braided: Y

Water Temp. (°C): 9.0 O₂ (ppm):

Turb. (cm): 60 Cond. (µmhos):



Photo #: T-7-6, 1996/08/18
Site #: T120, Upstream view towards culvert.



Photo #: T-7-7, 1996/08/18
Site #: T120, Downstream view.



Location: TERRY 119, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-4400-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 1.9 MA Date: 18-Aug-96 Time: 12:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 .6475 .60917 Length surveyed (m): 100.0 GE Survey Crew: TD VHS \ \ \ \ \ \ \ \ \ \ Photos: T-7-4,5 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.0 MS
 Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 14 MS
 Gradient (%): 4.0 CL
 Pool: Riffle: Run: Other:
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 25 GE

Specific Data

1.8	1.7	1.6	2.2	3.7	0.8
0.9	0.7	0.5	0.3	3.7	0.3
0	1	2	0	0	0
35	23	25	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

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 = 6%, RS = 6%
 C3: No fisheries sensitive zones noted on site.
 C4: The electroshocking effort, using a Smithroot 15A model gas shocker was 101 seconds over 75 meters.
 C5: Lat N 54 57 02, Long W 126 41 50
 C6: No additional bank texture information.
 C7: No DO or conductivity measurements were taken at this site. The mean air temperature on this day was 10.0°C
 C8: This is marginal fish habitat. The channel contains a lot of organic debris as well as human garbage and discarded, rusting culverts.

Cover

Cover Total %: 75 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	70	0	0	5	15

Crown Closure %: 90 Aspect: E

Discharge

N Wetted Width (m): 0.0
 N Mean Depth (m): 0.0
 N Mean Velocity (m/s): 0.00
 N Discharge (m³/s):

Reach Symbol

(Fish)

(CT)

2	D	4.0	4330
(Width, Valley: Channel, Slope)		(Bed Material)	

Banks

Height (m): 0.1

% Unstable: 40

Fines Gravels Larges Bedrock

Confinement: UC

Valley: Channel Ratio 10+

Stage: L Flood Signs Ht(m): 0.3

Bars (%): 5 pH: 7.9 Braided: Y

Water Temp. (°C): 8.0 O₂ (ppm):

Turb. (cm): 35 Cond. (µmhos):



Photo #: T-7-4, 1996/08/18
Site #: T119, Upstream view with two culverts.



Photo #: T-7-5, 1996/08/18
Site #: T119, Downstream view.



Location: TERRY 123, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 4.4 MW Date: 18-Aug-96 Time: 14:10 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6484 .60890 Length surveyed (m): 200.0 GE Survey Crew: TD\HS \ \ \ \ \ \ \ \ \ \ Photos: T-7-10,11 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 12.5 MS
 Av. Wet. Width (m): 7.3 MS
 Av. Max Riffle Depth (cm): 19 MS
 Av. Max Pool Depth (cm): 24 MS
 Gradient (%): 5.0 CL
 Pool: 20 Riffle: 30 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 80 GE

Specific Data

15.0	19.5	10.6	9.0	10.9	9.9
9.0	3.5	6.8	6.7	9.8	7.9
9	16	32			
25	68	50			

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):		15	5
	Large (16-64mm):			10
Larges	Sm. cobble (64-128mm):			30
	Lge cobble (128-256mm):		80	20
	Blder cobble (>256mm):			30
Bedrock			0	0
D90 (cm):	50	Compaction: High		

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	8	65-120	J	R			EL
	MW	1	180	A	R			EL
	CT	1	65	J	R			EL

Comments

- C1 S2
 C2 LS = 9%, RS = 3%
 C3 No fisheries sensitive zones noted on site.
 C4 The electrofishing effort using a Smithroot 15 A model gas shocker, was 486 seconds over 350 meters.
 C5 Lat N 54 55 32, Long W 126 41 01
 C6 No additional bank texture information.
 C7 No DO or conductivity measurements were made at this site. The mean air temperature on this day was 10.0°C
 C8 Boulder and cutbank cover are abundant at this site.

Cover

Cover Total %: 20 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 20 10 30 0 10 30
 Crown Closure %: 10 Aspect: N

Discharge

Wetted Width (m): 6.4 MS
 Mean Depth (m): 0.4 MS
 Mean Velocity (m/s): 0.61 F
 Discharge (m3/s): 1.17 F

Reach Symbol

(Fish)

CT, DV, MW

13 D 5.0 | 1180

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.3
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 1.1
 Bars (%): 10 pH: 8.0 Braided: Y
 Water Temp. (°C): 8.0 02 (ppm):
 Turb. (cm): 68 Cond. (µmhos):



Photo #: T-7-10, 1996/08/18
Site #: T123, Downstream view towards bridge.



Photo #: T-7-11, 1996/08/18
Site #: T123, Upstream view.



Location: TERRY 179, Unit 9, see C5

Stream (Gaz.): Unnamed

Watershed Code: 080-4000-000-000-000-000-000-000-000-0

Map #: 93 M 097 Reach Length (km): 1.3 MA Date: 27-Aug-96 Time: 9:15 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6443 .60910 Length surveyed (m): 150.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ Photos: T-10-20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.8 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 13 MS
 Gradient (%): 9.0 CL
 Pool: 20 Riffle: 80 Run: 0 Other: 0
 % Side Channel: 10-40 GE
 % Debris Area: 0-5 GE
 % Stable: 20 GE

Specific Data

1.9	2.2	1.9	1.5	1.7	1.6
0.9	0.7	0.9	0.6	0.7	0.8
3	2	4			
20	8	11	10		

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):		30	10
	Large (16-64mm):			20
Larges	Sm. cobble (64-128mm):			15
	Lge cobble (128-256mm):		65	40
	Blder cobble (>256mm):			10
Bedrock			0	0

Fish Summary

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

Cover

Cover Total %: 30 GE

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

 Crown Closure %: 10 Aspect: NE

D90 (cm): 34 Compaction: High

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.18 F
 Discharge (m³/s): 0.00 F

Banks

Height (m): 0.8
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.9
 Bars (%): 15 pH: 6.9 Braided: N
 Water Temp. (°C): 10.0 O₂ (ppm):
 Turb. (cm): 20 Cond. (µmhos):

Reach Symbol

(Fish)
 (CT)

2	D	9.0	1360
---	---	-----	------

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

Comments

- C1 S3
 C2 LS = 9%, RS = 15%
 C3 No fisheries sensitive zones were noted at this site.
 C4 The electroshocking effort, using a Smithroot 15 A model was 120 seconds over 100 square meters.
 C5 Lat N 54 56' 54.01", Long w 126 44' 30.6"
 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 13.7°C
 C8 Some good rearing and potential spawning habitat was noted at this stie.
 C9 This creek was re routed by the road crossing, at which no culvert was installed. The creek follows the road and disappears underground. This is a barrier that might be passable during freshet.



Photo #: T-10-20, 1996/08/27
Site #: T179, Downstream view taken from road.



Photo #: T-10-21, 1996/08/27
Site #: T179, Upstream view, stream is parallel to road.



Location: TERRY 180, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-4200-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.9 MA Date: 27-Aug-96 Time: 10:10 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6447 60904 Length surveyed (m): 200.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ Photos: T-10-22,23,24 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.8 MS
 Av. Wet. Width (m): 1.0 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 18 MS
 Gradient (%): 15.0 CL
 Pool: 40 Riffle: 30 Run: 30 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 40 GE
 % Stable: 45 GE

Specific Data

1.8	2.4	1.4	1.5	1.9	1.8
1.0	1.6	1.2	0.8	1.0	0.7
5	5	2	3	4	5
18	9	20	18	25	20

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	50	35
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		15
	Lge cobble (128-256mm):	20	5
Bedrock	Blder cobble (>256mm):		0
		0	0

Fish Summary

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

Cover

Cover Total %: 60 GE

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

 Crown Closure %: 10 Aspect: E

D90 (cm): 14 Compaction: Medium

Comments

- C1: S3
 C2: LS = 10%, RS = 12%
 C3: No fisheries sensitive zones were noted at this site.
 C4: The electroshocking effort, using a Smithroot 12 B POW model, was 242 seconds over 125 meters.
 C5: Lat N 54 56' 34.6", Long W 126 44' 24.8"
 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 13.7°C
 C8: Some good rearing habitat was noted at this site. Future sampling is recommended. Many frogs was noted in the sampling area.
 C9: The stream becomes very braided 200 m upstream of the road. The culvert at this site is no longer functional and the road is overgrown with vegetation.

Discharge

Wetted Width (m): 0.4 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.21 F
 Discharge (m³/s): 0.00 F

Banks

Height (m): 0.3
 % Unstable: 30
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.5
 Bars (%): 10 pH: 6.6 Braided: Y
 Water Temp. (°C): 9.0 02 (ppm):
 Turb. (cm): 25 Cond. (µmhos):

Reach Symbol

(Fish)
 (CT)

2	D	15.0	3520
---	---	------	------

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



Photo #: T-10-22, 1996/08/27
Site #: T180, Downstream view taken from road.



Photo #: T-10-23, 1996/08/27
Site #: T180, Upstream view towards culvert.



Photo #: T-10-24, 1996/08/27

Site #: T180, Upstream view, 150m upstream of road.



Location: TERRY 178, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-4300-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.7 MA Date: 27-Aug-96 Time: 8:20 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6445 .60912 Length surveyed (m): 200.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: T-10-18,19 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.7 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 13 MS
 Gradient (%): 3.0 CL
 Pool: 25 Riffle: 60 Run: 15 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 35 GE
 % Stable: 20 GE

Specific Data

1.7	1.5	1.8	1.8	1.9	1.5
0.8	0.4	1.0	0.7	0.9	0.8
4	4	5	4		
7	14	14	15	9	21

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	7	60-90	J	R			EL

Cover

Cover Total %: 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	40	0	20	10	20

 Crown Closure %: 5 Aspect: SE

D90 (cm): 13 Compaction: Low

Comments

- C1 S3
 C2 LS = 14%, RS = 15%
 C3 No fisheries sensitive zones were noted at this site.
 C4 The electroshocking effort using a Smithroot 15 A model, was 160 seconds over 100 square meters.
 C5 Lat N 54 56' 59", Long W 126 44' 33.4"
 C6 No additional bank texture information.
 C7 DO and conductivity were not measured at this site. The mean air temperature on this day was 13.7°C
 C8 Good rearing habitat was observed at this site.

Discharge

Wetted Width (m): 0.5 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.16 F
 Discharge (m³/s): 0.00 F

Banks

Height (m): 0.6
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.7
 Bars (%): 10 pH: 7.3 Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): 25 Cond. (µmhos):

Reach Symbol

(Fish)
 CT

2	D	3.0	6310
---	---	-----	------

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



Photo #: T-10-18, 1996/08/27
Site #: T178, Upstream view taken from road.



Photo #: T-10-19, 1996/08/27
Site #: T178, Downstream view.

Location: Z16, Unit 9 on the Chapman Lake FSR

Stream (Gaz.): Unnamed

Watershed Code: 080-4500-000-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.9 MW Date: 10-Jul-97 Time: 9:25 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.64749 .609263 Length surveyed (m): 130.0 GE Survey Crew: JP\KG\ \ \ \ \ \ \ \ Photos: Z-2-24,25,26 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.6 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 15 MS
 Gradient (%): 10.5 CL
 Pool: 20 Riffle: 20 Run: 60 Other: 0
 % Side Channel: 10-40 GE
 % Debris Area: >15 GE
 %Stable: 30 GE

Specific Data

3.2	2.5	2.5	2.4	2.5	2.3
1.3	0.7	0.8	0.6	1.2	0.5
8	3	9			
22	17	10	11	16	

Obstructions

Fish Summary

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

Comments

- C1: S6.
- C2: LS = 9%, RS = 4%
- C3: No fisheries sensitive zones present.
- C4: The electroshocking effort, using a Smithroot Type VII model set at 600V, 60HZ, 6MS, was 46 seconds over 5 meters. The shocking effort at this site was limited by low flows.
- 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 16.5C.
- C7: This reach occurs above a lower reach with subterranean flow. This reach could provide some rearing habitat if it were accessible to fish, currently it is not and has been classified as non fish bearing.
- C8: This reach is a candidate for restoration, as it is inaccessible due to the road crossing.

Cover Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	15	0	70	5

 Crown Closure % : 70 Aspect : E

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	15
	Large (16-64mm):		25
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	50	25
	Blder cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 23 Compaction: High

Discharge
 Wetted Width (m): 1.3 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: 0
 Fines Gravels Larges Bedrock

Reach Symbol (Fish)
 NF

3	D	11.0	1450
---	---	------	------

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

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs H(m): 0.3
 Bars (%): 20 pH: 6.7 Braided: Y
 Water Temp. (°C): 10.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 50



Photo #: Z-2-26, 10-Jul-97
Site #: Z16, Looking downstream at a mostly dry channel



Photo #: Z-2-25, 10-Jul-97
Site #: Z16, Looking upstream at the channel



Photo #: Z-2-24, 10-Jul-97

Site #: Z16, Looking upstream at the channel, note the dense understory



Location: Z17, Unit 9 at the North end of Chapman Lake

Stream (Gaz.): Unnamed

Watershed Code: 080-4500-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 0.3 MW Date: 10-Jul-97 Time: 10:21 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6477 .60928 Length surveyed (m): 250.0 GE Survey Crew: JP\KG\ \ \ \ \ \ Photos: Z-3-1,1A,,2,3 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.3 MS
 Av. Wet. Width (m): 1.2 MS
 Av. Max Riffle Depth (cm): 8 MS
 Av. Max Pool Depth (cm): 19 MS
 Gradient (%): 6.0 CL
 Pool: 40 Riffle: 10 Run: 40 Other: 10
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 60 GE

Specific Data

2.6	2.1	2.7	2.2	1.9	2.2
1.4	2.0	0.6	1.2	0.9	1.3
9	7				
22	23	15	17		

Obstructions

Bed Material

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

D90 (cm): 16 Compaction: Medium

Fish Summary

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

Cover

Cover Total % : 40 GE

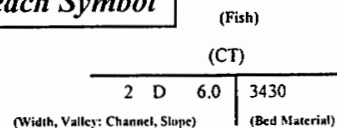
Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	25	5	10	25	10

Crown Closure % : 75 Aspect : SE

Discharge

C6 Wetted Width (m):
 N Mean Depth (m):
 N Mean Velocity (m/s):
 N Discharge (m3/s):

Reach Symbol



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 (%): 2 pH: 6.6 Braided: Y
 Water Temp. (°C): 10.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 50

Comments

- C1: S3
- C2: LS = 4% , RS = 1%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot Type VII model, set at 600V, 60HZ, 6MS, was 81 seconds over 100 meters. Limited habitat was available to electroshock.
- C5: No additional bank texture information.
- C6: DO was not measured, the air temperature at this site was 13.C.
- C7: Step pool habitat was noted at this site. The overall habitat quality is poor to fair in the sampling area.
- C8: The flow moves underground at the top end of this site, most likely marking the upper limits of fish distribution in this reach.



Photo #: Z-3-1A, 10-Jul-97

Site #: Z17, Looking upstream at the channel, note the small culvert drop



Photo #: Z-3-2, 10-Jul-97

Site #: Z17, Looking downstream at the channel, note heavy brush cover



Photo #: Z-3-3, 10-Jul-97

Site #: Z17, Looking upstream at the channel, note down wood across channel

Location: Y51, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-5000-000-000-000-000-000-000-000-000

Map #: 93 L 097 Reach Length (km): 2.2 | MA | Date: 18-Jul-97 Time: 14:30 Agency: TEC | Access: M | Fish Card: N | Field Historical
 U.T.M.: 9 6496 60901 Length surveyed (m): 100.0 | GE | Survey Crew: DD SJ \ \ \ \ \ \ \ \ Photos: Y-7-10,11,12,13 | Air Photos: |

Channel Characteristics

Av. Chan. Width (m): 2.7 | MS |
 Av. Wet. Width (m): 0.8 | MS |
 Av. Max Riffle Depth (cm): 2 | MS |
 Av. Max Pool Depth (cm): 25 | MS |
 Gradient (%): 3.0 | CL |
 Pool: 20 | Riffle: 30 | Run: 50 | Other: 0 |
 % Side Channel: 0 | GE |
 % Debris Area: 5-15 | GE |
 % Stable: 10 | GE |

Specific Data

2.3	2.1	2.7	3.6	2.7	2.8
1.0	1.1	0.9	1.0	0.7	0.4
2	2	2	3	2	
10	55	14	16	28	

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	5	73-90	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 11, 6, 400V, was 281 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 at this site was 14.9 C.
- C7: The stream was at low flow and consisted primarily of a series of isolated pools at the time of sampling. However, there was just enough water going through to keep them oxygenated. The larger pools contained very healthy CT. At higher flows this stream would provide terrific riffle/pool habitat. Some spawning gravels were observed.

Cover

Cover Total % : 40 | GE |

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

Crown Closure % : 50 | Aspect : SW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		25
Larges	Lge cobble (128-256mm):	50	20
	Blder cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 20 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): 0.03 | F |

Banks

Height (m): 0.3 |

% Unstable: 20 |

Fines Gravels Larges Bedrock

Confinement: OC

Valley : Channel Ratio 5-10 |

Stage: L | Flood Signs H(m): 1 |

Bars (%): 20 | pH: 7.5 | Braided: N |

Water Temp. (°C): 12.0 | 02 (ppm): |

Turb. (cm): | Cond. (µmhos): 70 |

Reach Symbol

(Fish)

CT

3 C 3.0 | 2350

(Width, Valley: Channel, Slope)

(Bed Material)



Photo #: Y-7-10, 18/07/97
Site #: Y51, Looking downstream at the channel.



Photo #: Y-7-11, 18/07/97
Site #: Y51, Looking upstream at the channel.



Photo #: Y-7-12, 18/07/97
Site #: Y51, CT on the fish board.



Photo #: Y-7-13, 18/07/97
Site #: Y51, CT on the fish board.



Location: Z18, Unit 9, 440m North of site T121

Stream (Gaz.): Unnamed

Watershed Code: 080-9300-000-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.1 MW: Date: 10-Jul-97 Time: 11:18 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.647889.609002 Length surveyed (m): 100.0 HC: Survey Crew: JP\KG\ \ \ \ \ \ \ \ \ \ \ Photos: Z-3-4,5,6,7 Air Photos:

Channel Characteristics

CI Av. Chan. Width (m): 1.5 MS
 CI Av. Wet. Width (m): 1.1 MS
 Av. Max Riffle Depth (cm): 6 MS
 Av. Max Pool Depth (cm): 23 MS
 Gradient (%): 11.0 CL
 Pool: 40 Riffle: 25 Run: 35 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 45 GE

Specific Data

1.8	1.5	1.1	1.4	1.8	1.2
1.2	1.0	0.9	1.1	1.5	0.6
5	7	5	6		
23	20	20	22	26	27

Obstructions

C	Height (m)	Type	Location
	1	F	0.1

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		25
	Lge cobble (128-256mm):	50	15
	Bllder cobble (>256mm):		10
Bedrock		0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	1	70	J	R			EL

Cover

Cover Total %: 50 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnbk
20	30	5	0	35	10

Crown Closure %: 60 Aspect: NE

D90 (cm): 31 Compaction: High

Discharge

Wetted Width (m): 1.3 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: 0

Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.4
 Bars (%): 5 pH: 7.6 Braided: Y
 Water Temp. (°C): 10.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 50

Reach Symbol

(Fish)

CT

2 D 11.0 | 2350

(Width, Valley: Channel, Slope)

(Bed Material)

Comments

- C1 S3. A 7th channel width taken in the sampling area of 1.6 meters, places this reach in the S3 category.
- C2 LS =19%,RS =24%
- C3 No fisheries sensitive zones noted.
- C4 The electroshocking effort, using a Smithroot Type VII model set at 600V, 60HZ, 60MS, was 40 seconds over 50 meters. The shocking effort was limited at this site as the dense underbrush made fishing very difficult.
- 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 16.C.
- C7 Some nice step pool habitat was observed in the sampling area. The small falls at the road crossing would prevent juvenile fish passage upstream.



Photo #: Z-3-4, 10-Jul-97

Site #: Z18, Looking upstream at the channel and a small falls



Photo #: Z-3-5, 10-Jul-97

Site #: Z18, Looking downstream at the channel



Photo #: Z-3-6, 10-Jul-97
Site #: Z18, Looking downstream at the channel



Photo #: Z-3-7, 11-Aug-97
Site #: Z18, Measuring fish on the fishboard

Location: HASLETT 75, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 002-9900-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 1.4 MA Date: 15-Aug-96 Time: 10:14 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6339 .60995 Length surveyed (m): 110.0 HC Survey Crew: JH\KG \ \ \ \ \ \ \ \ Photos: None Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 1.5 MS
 Av. Wet. Width (m): 1.5 MS
 Av. Max Riffle Depth (cm): 12 MS
 Av. Max Pool Depth (cm): 27 MS
 Gradient (%): 4.5 CL
 Pool: 25 Riffle: 45 Run: 30 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 80 GE

1.8	1.4	1.2	1.3	1.5	1.5
1.6	1.4	1.6	1.4	1.5	1.7
	10	11		14	13
23	31	24	29		

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	40	20
	Blider cobble (>256mm):		5
Bedrock		0	0

Fish Summary

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

Cover

Cover Total % : 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	25	10	0	10	40

 Crown Closure % : 35 Aspect : NE

D90 (cm): 40 Compaction: Medium

Comments

- C1 S3
- C2 LS = 8%, RS = 23%
- C3 No fisheries sensitive zones were noted.
- C4 The electroshocking effort, using a type VII model was 665 seconds over 100 meters. Future sampling is strongly recommended for this site. Excellent rearing habitat was observed in this stream and the electroshocker was NOT working properly on the sampling day.
- C5 Lat N 55 01' 28", Long W 126 54' 19".
- C6 No additional bank texture information.
- C7 No DO, pH or conductivity measurements were made at this site. The mean air temperature on this day was 12.8°C
- C8 Some excellent cover, in the form of undercut banks and LOD was found at this site.

Discharge

Wetted Width (m): 1.6 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.29 F
 Discharge (m3/s): 0.07 F

Banks

Height (m): 0.1
 % Unstable: 10
 Fines Gravels Larges Bedrock

Reach Symbol

(Fish)
 (CT)

2	C	5.0	3340
---	---	-----	------

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

Confinement: OC
 Valley : Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.5
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 7.0 02 (ppm):
 Turb. (cm): 31 Cond. (µmhos):

DFO/MoELP Stream Survey Form

Site Number: TERRY 99

Reach No.: 4

Fulton R.



TRITON

Environmental Consultants Ltd.

Location: TERRY 99, Unit 9, see C5.

Stream (Gaz.): Fulton River

Watershed Code: 480-6972-000-000-000-000-000-000-000-000

Map #: 93 M 007 Reach Length (km): 25.5 MA Date: 14-Aug-96 Time: 12:45 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6452 .61004 Length surveyed (m): 50.0 GE Survey Crew: TD \HS \ \ \ \ \ \ \ \ \ \ Photos: T-5 - 20 Air Photos:

Channel Characteristics

CI Av. Chan. Width (m): 8.0 GE
 Av. Wet. Width (m): 8.0 GE
 Av. Max Riffle Depth (cm): 0 GE
 Av. Max Pool Depth (cm): 250 GE
 Gradient (%): 1.0 CL
 Pool: 20 Riffle: 0 Run: 80 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0-5 GE
 %Stable: 75 GE

Specific Data

0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Obstructions

C	Height (m)	Type	Location

Cover Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	20	0	10	20	10

Crown Closure %: 0 Aspect: SE

Bed Material

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

N D90 (cm): 0 Compaction: Low

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CAS	2	60-70	J				EL
	CT	2	110-113	J				EL
	LNC	1	120	A				EL
	BB	1	160	J				EL

Discharge

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

Banks Height (m): 0.4
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.9
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 14.5 02 (ppm):

Reach Symbol (Fish)

CAS, LNC, BB, CT

8	D	1.0	F
---	---	-----	---

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

- Comments**
- C1 S2
 - C2 LS - 12% RS - 9%
 - C3 No fisheries sensitive zones noted.
 - C4 The electroshocking effort was not recorded. A minnow trap was also set at this site. Five prickly sculpin and one burbot were caught.
 - C5 Lat N 55 01' 48", Long W 126 43' 41".
 - C6 No additional bank texture information.
 - C7 No pH, DO, or conductivity tests were carried out at this site. The mean air temperature on this day was 11.5°C
 - C8 A log jam was observed downstream of the sampling area. In between dams the water depth was 80 cm and the sediment contained some algae covered boulders.
 - C9 Discharge could not be measured at this site because the water was too deep and the channel was too wide for the crew to obtain any measurements.



Photo #: T-5-20, 1996/08\14
Site #: T99, Upstream view; large, willow-lined stream.



Location: HASSLET 79, Unit 9, see C5.

Stream (Gaz.): Fulton River

Watershed Code: 480-6972-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 3.3 MA Date: 15-Aug-96 Time: 15:46 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6350 .60992 Length surveyed (m): 300.0 GE Survey Crew: KG V H \ \ \ \ \ \ \ Photos: H-4-14,15 Air Photos:

Channel Characteristics

CI Av. Chan. Width (m): 2.9 GE
 Av. Wet. Width (m): 2.6 GE
 Av. Max Riffle Depth (cm): 15 MS
 Av. Max Pool Depth (cm): 64 MS
 Gradient (%): 7.0 MA
 Pool: 30 Riffle: 10 Run: 60 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 %Stable: 90 GE

Specific Data

3.1	2.6	3.8	2.0	2.5	3.4
2.9	2.5	2.7	2.2	2.4	3.2
16	18	12			
46	66	57	86		

Obstructions

C	Height (m)	Type	Location

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
65	5	5	5	5	15

Crown Closure %: 15 Aspect: SE

Bed Material

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

D90 (cm): 25 Compaction: Medium

Fish Summary

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

Discharge

Wetted Width (m): 4.3 MS
 Mean Depth (m): 0.3 MS
 Mean Velocity (m/s): 0.30 F
 Discharge (m³/s): 0.29 F

Banks

Height (m): 0.1
 % Unstable: 5
 Fines Gravels Larges Bedrock

Reach Symbol

(Fish)

(CT) (DV) (RB)

3	D	7.0	3340
---	---	-----	------

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

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: H Flood Signs Ht(m): 0.8
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 8.5 02 (ppm):
 Turb. (cm): 86 Cond. (µmhos):

- 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 electroshocker was not functioning properly on the sampling day. Future sampling is recommended to determine the presence or absence of fish at this site.
 - C5: N 51 05' 03", W 126 56' 22".
 - C6: No additional bank texture information.
 - C7: DO, pH and conductivity measurements were not taken at this site. The mean air temperature on this day was 12.8°C
 - C8: A lot of deep pool cover was observed at this site. This site would provide rearing habitat for cutthroat trout, rainbow trout and Dolly Varden.
 - C9: The channel widths at this site were estimated because the water became quite deep as the crew moved downstream. Future sampling is recommended, the channel grew wider as the crew moved downstream toward the helicopter landing site.



Photo #: H-4-14, 1996/08/15
Site #: H79, Looking upstream, channel through grassy area.



Photo #: H-4-15, 1996/08/16
Site #: H79, Looking downstream, grassy channel through willows.

Location: TERRY 115, Unit 9, see C5. Stream (Gaz.): Fulton River Watershed Code: 480-6972-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 25.5 MA Date: 17-Aug-96 Time: 14:00 Agency: TEC Access: V2 Fish Card: N Field Historical

U.T.M.: 9.6415 .61001 Length surveyed (m): 200.0 GE Survey Crew: HS\TD \ \ \ \ \ \ \ \ \ \ Photos: T-6-19,20 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 14.9 MS
 Av. Wet. Width (m): 9.5 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 77 MS
 Gradient (%): 5.0 CL
 Pool: 20 Riffle: 30 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 80 GE

Specific Data

12.2	13.2	14.8	19.5	10.0	20.0
12.2	11.7	7.0	9.9	8.7	7.5
5	9				
40	90	100			

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	5
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		30
	Lge cobble (128-256mm):	70	20
	Blidr cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 70 Compaction: High

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	BB	6	120-180	J	R			EL
	DV	4	110-160	J	R			EL
	RB	3	60-150	J	R			EL

Comments

- C1: S2
- C2: LS=66 RS=14
- C4: The electroshocking effort, using a Honda Mark 10 model, was 693 seconds over 200 meters. A fin ray and scale sample was taken from a rainbow trout at this site.
- C5: Lat N 55 01' 38", Long W 126 47' 11"
- 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 10.8°C
- C8: Some excellent rearing and potential spawning habitat occurs at this site.

Cover

Cover Total %: 20 GE

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

Crown Closure %: 10 Aspect: N

Discharge

Wetted Width (m): 2.2 MS
 Mean Depth (m): 0.4 MS
 Mean Velocity (m/s): 0.50 F
 Discharge (m3/s): 0.33 F

Reach Symbol

(Fish)

RB	BB	DV
15	C	5.0
		1270
(Width, Valley: Channel, Slope)		(Bed Material)

Banks

Height (m): 1.2
 % Unstable: 60
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: L Flood Signs Ht(m): 2.5
 Bars (%): 20 pH: 8.0 Braided: Y
 Water Temp. (°C): 10.5 02 (ppm):
 Turb. (cm): 100 Cond. (µmhos):

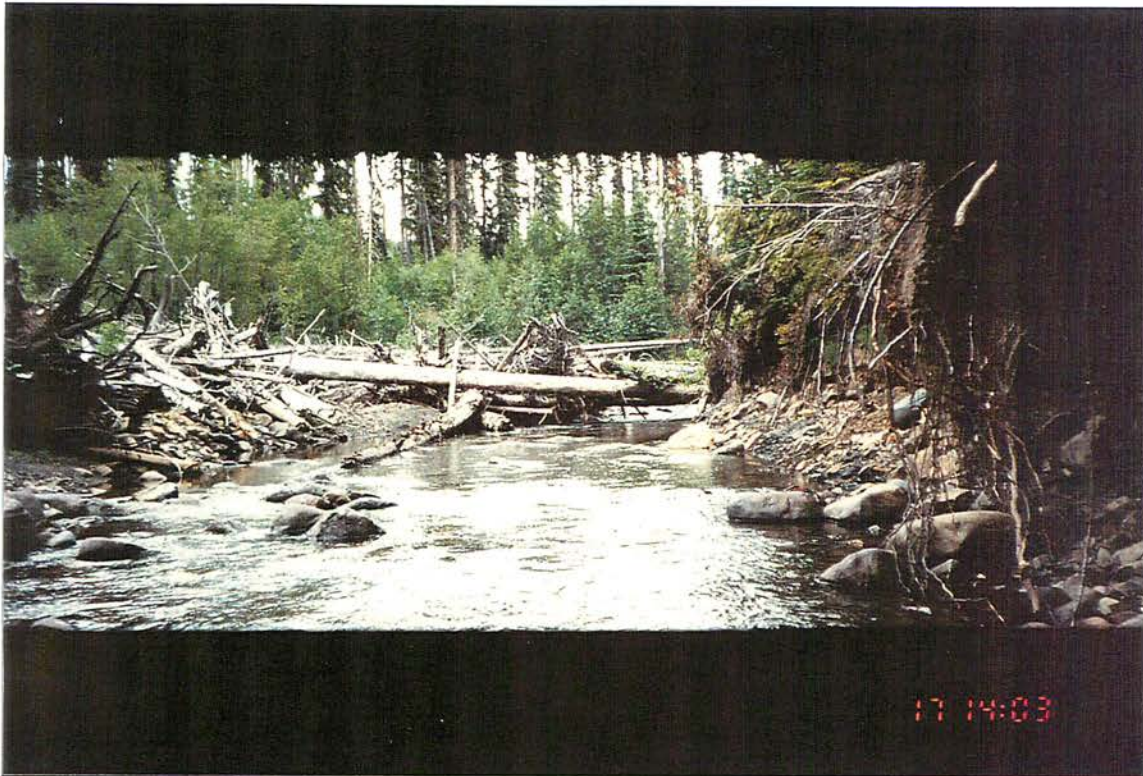


Photo #: T-6-19, 1996/08/17
Site #: T115, Upstream view, logjam and eroded bank.

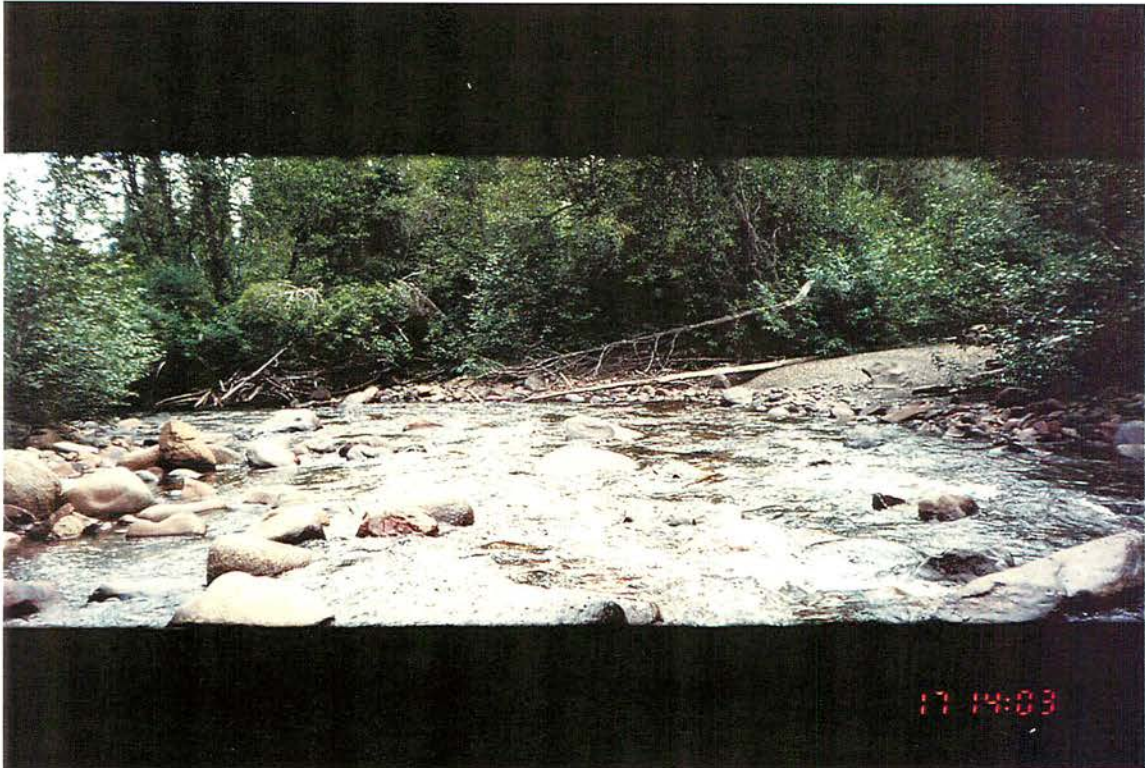


Photo #: T-6-20, 1996/08/17
Site #: T115, Downstream view with gravel bar.

Location: TERRY 146, Unit 9, see C5. Stream (Gaz.): Fulton River Watershed Code: 480-6972-472-000-000-000-000-000-000-000-000-000

Map #: 93 L 097 Reach Length (km): 14.6 MA Date: 22-Aug-96 Time: 11:25 Agency: TEC Access: V4 Fish Card: N Field Historical
U.T.M.: 9 6481 60934 Length surveyed (m): 20.0 GE Survey Crew: GM HK \ \ \ \ \ Photos: T-8B-5,6 Air Photos:

Channel Characteristics
Av. Chan. Width (m): 22.8 GE
Av. Wet. Width (m): 16.4 TA
Av. Max Riffle Depth (cm): 0 TA
Av. Max Pool Depth (cm): 232 TA
Gradient (%): 1.0 CL
Pool: 10 Riffle: 0 Run: 90 Other: 0
% Side Channel: GE
% Debris Area: 10 GE
% Stable: 20 GE

Specific Data
24.0 25.0 24.0 20.0 21.0 23.0
17.0 18.0 17.0 16.0 15.5 15.0
0 0 0 0 0 0
250 240 200 250 235 220

Obstructions
Table with columns: C, Height (m), Type, Location

Cover
Cover Total %: 55 GE
Pool LOD Bldr In Veg O Veg Ctnk
75 5 0 0 5 15
Crown Closure %: 15 Aspect: S

Bed Material
C6: Fines Clay, silt, sand (<2mm): 0 0
N Gravel Small (2-16mm): 0 0
Large (16-64mm): 0
Sm. cobble (64-128mm): 0
N Larges Lge cobble (128-256mm): 0 0
Blder cobble (>256mm): 0
N Bedrock 0 0
N D90 (cm): 0 N Compaction:

Fish Summary
Table with columns: C, Species, Number, Size Range (mm), Life Phase, Use 1, Use 2, Use 3, Method
CT 1 500 A CR

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

Banks
Height (m): 1.0
% Unstable: 20
Fines Gravel Larges Bedrock
Confinement: UC
Valley: Channel Ratio 10+
Stage: L Flood Signs Ht(m): 0.2
Bars (%): 0 pH: Braided: N
Water Temp. (°C): 9.0 O2 (ppm):
Turb. (cm): 250 Cond. (µmhos):

Comments
C1: S1
C2: LS = 3%. RS = 4%
C3: No fisheries sensitive zones noted on site.
C4: An electroshocker was not available for sampling.
C5: Lat N 54 57 58, Long W 126 41 11
C6: No additional bank texture information. The bed material could not be estimated for this site as the wading conditions were too dangerous to permit the crew to approach.
C7: No pH, DO, conductivity measurements were taken on site. The mean air temperature on this day was 16.0°C
C8: This site has some excellent fish habitat. Deep pool cover is prominent.

Reach Symbol
(Fish)
CT
17 D 1.0 0000
(Width, Valley: Channel, Slope) (Bed Material)



Photo #: T-8b-5, 1996/08/22
Site #: T146, Upstream view, Fulton R.



Photo #: T-8b-6, 1996/08/22
Site #: T146, Downstream view taken from road.

Location: Y222, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-2300-000-000-000-000-000-000-000-000-

Map #: 93 L 088 Reach Length (km): 0.7 MW Date: 07-Sep-97 Time: 9:55 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 655483.608410 Length surveyed (m): 100.0 GE Survey Crew: JP\FC\ \ \ \ \ \ \ \ Photos: Y-26-16,17 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 1.6 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 32 MS
 Gradient (%): 5.0 CL
 Pool: 10 Riffle: 5 Run: 80 Other: 5
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 40 GE

Specific Data

1.8	2.1	1.2	2.2	1.1	1.1
1.8	2.1	1.2	2.2	1.1	1.1
2	5	3	4	3	
25	20	46	35		

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, 300V, was 170 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 10.0 C.
- C7: This stream has no spawning gravel, but there is cover for rearing under LOD and overstream vegetation. There are several beaver dams below this site. The channel is smaller and should be classified as S4 just above the sample site.

Cover

Cover Total %: 20 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 15 40 0 10 25 10
 Crown Closure %: 25 Aspect: NE

Bed Material

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

D90 (cm): 3 Compaction: Low

Discharge

Wetted Width (m): 0.9 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: 0
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: 7.3 Braided: N
 Water Temp. (°C): 7.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 150

Reach Symbol

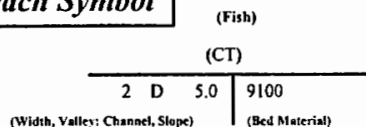




Photo #: Y-26-16, 07/09/97
Site #: Y222, Looking upstream at the channel



Photo #: Y-26-17, 07/09/97
Site #: Y222, Looking downstream at the channel



Location: TERRY 118, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8900-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 4.5 MA Date: 18-Aug-96 Time: 10:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6409 .61010 Length surveyed (m): 100.0 GE Survey Crew: TD \HK \ \ \ \ \ \ Photos: T-7-1,2,3 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.5 MS
 N Av. Wet. Width (m): 0.0 GE
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 1 MS
 Gradient (%): 3.0 CL
 Pool: 5 Riffle: 0 Run: 0 Other: 95
 % Side Channel: 10-40 GE
 % Debris Area: 0-5 GE
 % Stable: 60 GE

Specific Data

1.7	1.9	3.0	1.5	1.2	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0	0	0	0	0	0
64	0	0	0	0	0

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	20	5
	Large (16-64mm):		15
Larges	Sm. cobble (64-128mm):		25
	Lge cobble (128-256mm):	70	25
	Blder cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 28 Compaction: Medium

Cover

Cover Total %: 40 GE

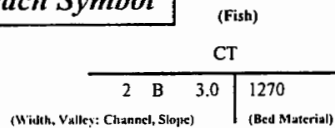
Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	5	40	0	20	25

Crown Closure %: 70 Aspect: SE

Discharge

N Wetted Width (m): 0.0
 N Mean Depth (m): 0.0
 N Mean Velocity (m/s): 0.00
 N Discharge (m³/s):

Reach Symbol



Banks

Height (m): 0.1
 % Unstable: 30
 Fines Gravels Larges Bedrock

Confinement: FC
 Valley: Channel Ratio 2-5
 Stage: L Flood Signs Ht(m): 0.25
 Bars (%): 0 pH: 8.0 Braided: Y
 Water Temp. (°C): 9.5 02 (ppm):
 Turb. (cm): 1 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
	CT	1	150	J	R			EL

Comments

- C1: S3
- C2: LS = 20%, RS = 25%
- C3: No fisheries sensitive zones noted on site.
- C4: Electroshocking effort was 11 seconds over 5 meters using a Smithroot 15 A model.
- C5: Lat N 55 02 27, Long W 126 47 41
- C6: No additional bank texture information.
- C7: No DO, conductivity measurements were made on site. The mean air temperature on this day was 10.0°C
- C8: The single fish that was captured at this site was shocked in the only pool left in a dry stream. This pool occurs at the outlet of a culvert.



Photo #: T-7-1, 1996/08/18
Site #: T118, Fish caught by electrofishing.



Photo #: T-7-2, 1996/08/18
Site #: T118, Downstream view.



Photo #: T-7-3, 1996/08/18
Site #: T118, Upstream view.

DFO/MoELP Stream Survey Form

Site Number: HASSLET 80

Reach No.: 1

Trib. to Fulton R.



TRITON

Environmental Consultants Ltd.

Location: HASSLET 80, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 002-9200-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 2.7 MW Date: 16-Aug-96 Time: 8:54 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6392 .60977 Length surveyed (m): 110.0 GE Survey Crew: KG\UH \ \ \ \ \ \ Photos: H-4-18,19 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.8 MS
 Av. Wet. Width (m): 2.4 MS
 Av. Max Riffle Depth (cm): 7 MS
 Av. Max Pool Depth (cm): 34 MS
 C9 Gradient (%): 5.0 MA
 Pool: 30 Riffle: 20 Run: 50 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 80 GE

Specific Data

2.8	2.0	2.8	3.0	2.8	3.4
2.1	2.6	2.4	1.8	2.1	3.3
	6	5		9	
25	26	52			

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	3	35-55	J	R			VO

Cover

Cover Total %: 60 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 15 35 0 5 15 30
 Crown Closure %: 65 Aspect: E

D90 (cm): 26 Compaction: Low

Discharge

Wetted Width (m): 2.3 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.07 F
 Discharge (m3/s): 0.02 F

Banks

Height (m): 0.4
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.55
 Bars (%): 10 pH: Braided: N
 Water Temp. (°C): 6.0 O2 (ppm):
 Turb. (cm): 52 Cond. (µmhos):

Reach Symbol

(Fish)
 CT

3	D	5.0	3340
---	---	-----	------

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

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 VII model, was 382 seconds over 100 meters. The electroshocker was not functioning properly.
- C5: N 55 00' 27", W 126 49' 19".
- C6: No additional bank texture information.
- C7: DO, pH, conductivity measurements were not taken at this site. The mean air temperature on this day was 11.5°C
- C8: Some good rearing cover was observed at this site.
- C9: The clinometer was too clouded to obtain a gradient reading on the sampling day.

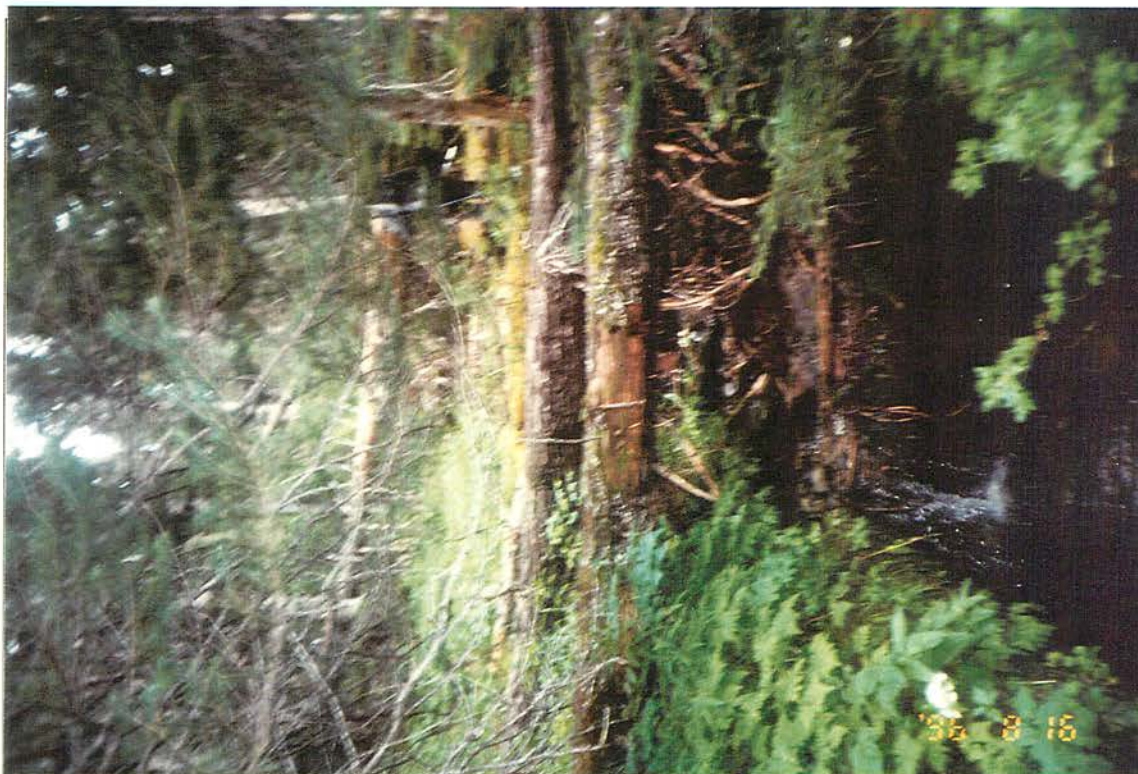


Photo #: H-4-18, 1996/08/16
Site #: H80, Looking upstream.



Photo #: H-4-19, 1996/08/16
Site #: H80, Looking downstream, debris in channel.

Location: W269, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 002-9300-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 4.1 GE Date: 12-Sep-97 Time: 14:15 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9.6393 .60991 Length surveyed (m): 100.0 GE Survey Crew: DD JP \ \ \ \ \ \ \ \ \ \ Photos: W-Q-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 2.0 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: GE
 % Debris Area: 5 GE
 % Stable: 10 GE

Specific Data

1.6	1.5	1.7	1.5	1.6	1.6
2.0	1.9	2.1	1.9	2.0	2.0

Obstructions

Cover

Cover Total %: 60 GE

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

Crown Closure %: 5 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
	Lge cobble (128-256mm):	0	0
Bedrock	Blder cobble (>256mm):		0
		0	0

D90 (cm): 0 Compaction: Low

Fish Summary

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

Comments

C1: S3 / FSZ
 C2: LS = 0%, RS = 0%
 C3: The crew identified the area surrounding the stream as a fisheries sensitive zone.
 C4: This site was not electrofished as the banks are very unstable and the stream itself is very deep.
 C5: No additional bank texture information.
 C6: DO was not measured at this site, the air temperature was 12.C.
 C7: This stream has some good rearing habitat, the deep runs provide cover.

Discharge

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

Banks

Height (m): 0.0
 % Unstable: 60
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: H Flood Signs Ht(m): 0.1
 Bars (%): 0 pH: 6.3 Braided: N
 Water Temp. (°C): 8.0 O2 (ppm):
 Turb. (cm): 80 Cond. (µmhos): 70

Reach Symbol

(Fish)
 (RB) (CT)

2	D	0.5	F
---	---	-----	---

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



Photo #: W-Q-7, 12-Sep-97

Site #: W269, Looking upstream at a channel flowing through a meadow



Photo #: W-Q-8, 12-Sep-97

Site #: W269, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: HASSLET 81

Reach No.: 1

Trib. to Fulton R.



TRITON

Environmental Consultants Ltd.

Location: HASSLET 81, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 002-9500-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 1.6 MA Date: 16-Aug-96 Time: 10:58 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6357 .60975 Length surveyed (m): 100.0 GE Survey Crew: JH\KG\ \ \ \ \ \ \ \ Photos: H-4-20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.4 MS
 Av. Wet. Width (m): 2.0 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 23 MS
 Gradient (%): 9.0 MA
 Pool: 15 Riffle: 70 Run: 15 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 85 GE

Specific Data

2.3	1.3	1.3	2.7	3.4	3.3
2.1	1.5	1.4	2.8	3.0	1.4
	3	6	0	3	
15	34	20	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 60 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 5 25 40 5 10 15
 Crown Closure %: 30 Aspect: NW

D90 (cm): 27 Compaction: High

Discharge

Wetted Width (m): 2.5 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.16 F
 Discharge (m3/s): 0.02 F

Banks

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

Reach Symbol

(Fish)
 (CT)
 2 D 9.0 | 1351
 (Width, Valley: Channel, Slope) | (Bed Material)

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.55
 Bars (%): 10 pH: Braided: Y
 Water Temp. (°C): 8.5 O2 (ppm):
 Turb. (cm): 34 Cond. (µmhos):

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 Type VII model, was 413 seconds over 100 meters. The shocker was not working properly.
- C5: Lat N 55 00' 22", Long W 126 52' 40"
- 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 11.5°C
- C8: Boulders provide most of the cover for fish at this site.
- C9: The clinometer was too wet to read correctly. The GPS unit could not get any readings.



Photo #: H-4-20, 1996/08/16
Site #: H81, Looking upstream.



Photo #: H-4-21, 1996/08/16
Site #: H81, Looking downstream.

DFO/MoELP Stream Survey Form

Site Number: HASSLET 82

Reach No.: 1

Trib. to Fulton R.



TRITON

Environmental Consultants Ltd.

Location: HASSLET 82, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 002-9600-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 2.0 MW Date: 16-Aug-96 Time: 12:12 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6356 .60978 Length surveyed (m): 100.0 GE Survey Crew: JH\KG \ \ \ \ \ \ Photos: H-4-22,23 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.9 MS
 Av. Wet. Width (m): 2.9 MS
 Av. Max Riffle Depth (cm): 10 MS
 Av. Max Pool Depth (cm): 32 MS
 Gradient (%): 10.0 MA
 Pool: 20 Riffle: 35 Run: 45 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 80 GE

Specific Data

4.2	3.5	3.0	3.5	3.5	5.4
2.0	2.5	2.6	2.1	3.4	4.6
	9	7	0	13	0
22	33	41	31		

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	30	10
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	40	20
	Blder cobble (>256mm):		5
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 55 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
10	45	10	0	20	15

Crown Closure %: 30 Aspect: NE

D90 (cm): 41 Compaction: Medium

Discharge

Wetted Width (m): 2.2 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.32 F
 Discharge (m3/s): 0.05 F

Banks

Height (m): 0.3
 % Unstable: 15

Fines Gravels Larges Bedrock

Confinement: OC

Valley: Channel Ratio 5-10

Stage: M Flood Signs Ht(m):

Bars (%): 25 pH: Braided: N

Water Temp. (°C): 7.0 O2 (ppm):

Turb. (cm): 41 Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

4	C	10.0	3340
---	---	------	------

(Width, Valley: Channel, Slope)

(Bed Material)

Comments

- C1: S3
- C2: The side slopes could not be measured at this site.
- C3: No fisheries sensitive zones were noted at this site.
- C4: This site was not electrofished because the shocker was not working at the time of sampling.
- C5: Lat N 55 00' 30", Long W 126 52' 45". The GPS unit could not get a reading at this site.
- 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 11.5°C
- C8: This site has some good fish habitat, particularly at lower water velocities. Some deep pools but somewhat steep gradient was noted in the sampling area. The clinometer was too wet to read.



Photo #: H-4-22, 1996/08/16
Site #: H82, Looking upstream, cascade not a barrier.



Photo #: H-4-23, 1996/08/16
Site #: H82, Looking upstream.



Location: HASSLET 83, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 002-9800-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 1.3 MW Date: 16-Aug-96 Time: 13:21 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6362 .60982 Length surveyed (m): 100.0 GE Survey Crew: JH\KG \ \ \ \ \ \ \ Photos: H-4-24,25 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.8 MS
 Av. Wet. Width (m): 1.7 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 16 MS
 Gradient (%): 20.0 CL
 Pool: 10 Riffle: 80 Run: 10 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 75 GE

Specific Data

2.3	1.3	1.0	1.5	2.3	2.4
2.8	1.5	1.3	1.2	1.7	1.9
16	17	15			

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=55 % RS=56%
- C3: No fisheries sensitive zones were noted at this site.
- C4: The electroshocker was not working at the time of sampling.
- C5: Lat N 55 00 45.1, Long W 126 52 5.7
- C6: Larges and bedrock make up the bank texture at this site.
- C7: DO, conductivity and pH were not measured at this site. The mean air temperature on this day was 11.5°C
- C8: Marginal fish habitat was observed at this site. The gradient approaches the upper limit for fish presence in the sampling area.

Cover

Cover Total % : 20 GE

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

Crown Closure % : 40 Aspect : NE

Bed Material

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

D90 (cm): 106 Compaction: High

Banks

Height (m): 0.3

% Unstable: 20

Fines Gravels Larges Bedrock

Confinement: OC

Valley : Channel Ratio 5-10

Stage: L Flood Signs Ht(m): 0.9

Bars (%): 15 pH: Braided: N

Water Temp. (°C): 7.0 O2 (ppm):

Turb. (cm): 17 Cond. (µmhos):

Reach Symbol

(Fish)

(CT)

2 C 20.0 | 3160

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



Photo #: H-4-24, 1996/08/16

Site #: H83, Looking downstream, LOD in channel.

DFO/MoELP Stream Survey Form

Site Number: HASLETT 78

Reach No.: 1

Trib. to Fulton R.



TRITON

Environmental Consultants Ltd.

Location: HASLETT 78, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-0000-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 2.1 MW Date: 15-Aug-96 Time: 14:46 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6353 .60985 Length surveyed (m): 300.0 GE Survey Crew: JH KG \ \ \ \ \ \ Photos: H-4-11,12 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 1.6 MS
 Av. Max Riffle Depth (cm): 8 MS
 Av. Max Pool Depth (cm): 30 MS
 Gradient (%): 10.0 CL
 Pool: 30 Riffle: 25 Run: 45 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 80 GE

Specific Data

1.8	1.4	1.3	1.5	1.8	1.6
1.8	1.7	1.4	1.4	1.7	1.7
10	7	8	0	0	0
40	27	24	0	0	0

Obstructions

C	Height (m)	Type	Location

Cover

Cover Total %: 60 GE

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

 Crown Closure %: 35 Aspect: NE

Bed Material

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

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	CT	1	50	J	R			VO

Comments

- C1: S3
- C2: LS = 2%, RS = 14%.
- C3: No fisheries sensitive zones were noted.
- C4: No electroshocking was carried out at this site as the shocker was not working at the time of sampling. One (suspected) cutthroat was observed at this site.
- C5: Lat N 55 00' 55.8", Long W 126 53' 01.2".
- C6: No additional bank texture information.
- C7: DO, pH, conductivity measurements were not taken at this site. The mean air temperature on this day was 12.8°C
- C8: A great deal of debris and cutbank cover was observed at this site.
- C9: A .7m falls was observed in the sampling area, passable at high flow. The plunge pool below was .53m in depth.

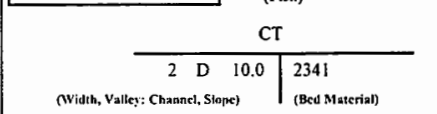
Discharge

Wetted Width (m): 1.5 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.14 F
 Discharge (m3/s): 0.02 F

Banks

Height (m): 0.2
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.7
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 8.5 O2 (ppm):
 Turb. (cm): 40 Cond. (µmhos):

Reach Symbol



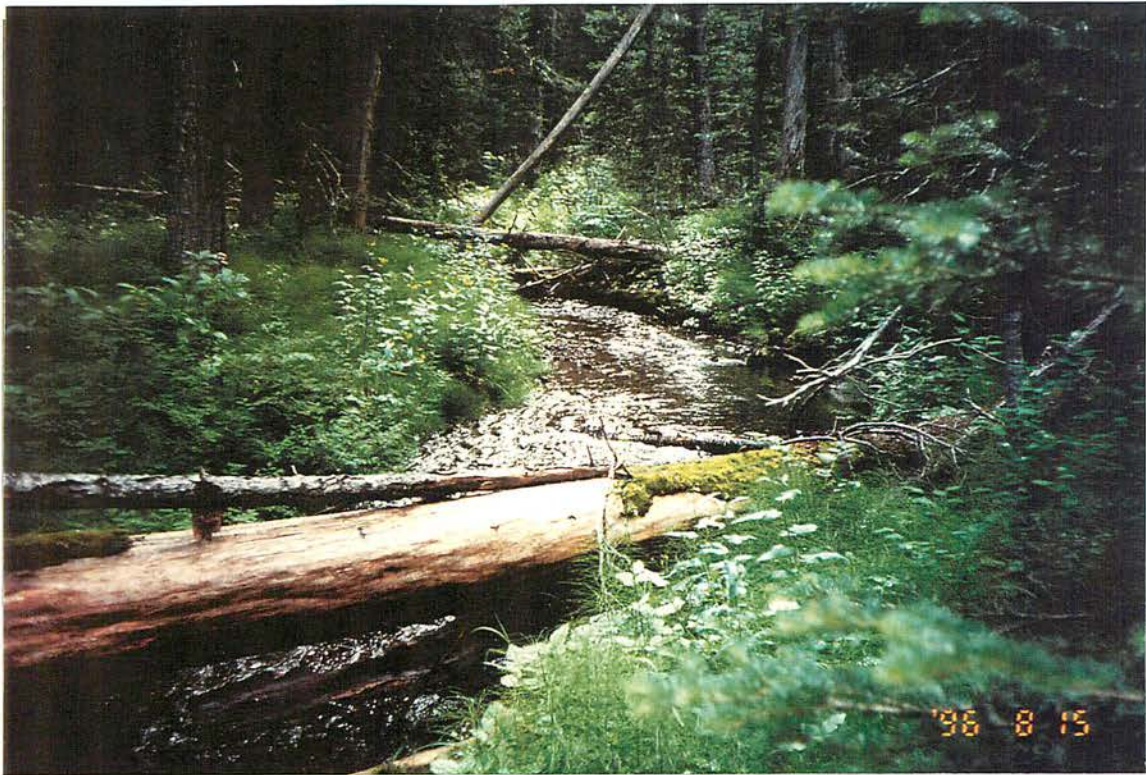


Photo #: H-4-11, 1996/08/15
Site #: H78, Looking upstream, LOD in channel.



Photo #: H-4-12, 1996/08/15
Site #: H78, Looking downstream.



Location: HASLETT 77, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-0100-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 1.8 MA Date: 15-Aug-96 Time: 12:47 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 6343 60993 Length surveyed (m): 150.0 HC Survey Crew: JH KG \ \ \ \ \ \ Photos: None Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.1 MS
 Av. Wet. Width (m): 1.9 MS
 Av. Max Riffle Depth (cm): 16 MS
 Av. Max Pool Depth (cm): 36 MS
 Gradient (%): 6.0 CL
 Pool: 25 Riffle: 30 Run: 45 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 90 GE

Specific Data

2.1	1.9	2.0	2.0	2.1	2.4
1.6	1.9	2.0	2.0	2.0	1.7
15	12	18	0	0	0
46	32	27	39	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	45	15
	Large (16-64mm):		30
	Sm. cobble (64-128mm):		20
Larges	Lge cobble (128-256mm):	35	10
	Bllder cobble (>256mm):		5
Bedrock		0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	CT	2	45-50	J	R			VO

Cover

Cover Total %: 55 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	25	5	0	20	30

Crown Closure %: 25 Aspect: N

Discharge

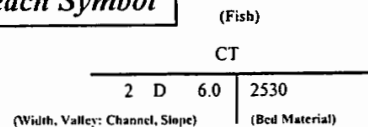
Wetted Width (m): 2.3 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.75 F
 Discharge (m³/s): 0.26 F

Banks

Height (m): 0.1
 % Unstable: 20
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.6
 Bars (%): 20 pH: Braided: N
 Water Temp. (°C): 7.0 O₂ (ppm):
 Turb. (cm): 46 Cond. (µmhos):

Reach Symbol



Comments

- C1: S3
- C2: LS = 4%, RS = 2%.
- C3: No fisheries sensitive zones were noted.
- C4: The electroshocking effort, using a type VII model, was 758 seconds over 150 meters. The shocker was not working properly at this site. Two juvenile (suspected) cutthroat were observed during sampling.
- C5: Lat N 55 01' 22.2", Long W 126 53' 56.1".
- C6: No additional bank texture information.
- C7: DO, pH and conductivity measurements were not taken at this site. The mean air temperature on this day was 12.8°C
- C8: Excellent spawning and rearing habitat occurs at this site.



Location: HASLETT 76, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-0200-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 1.0 MA Date: 15-Aug-96 Time: 11:38 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 6340 60994 Length surveyed (m): 100.0 GE Survey Crew: JH\KG\ \ \ \ \ \ \ \ \ \ Photos: H-4-9 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.0 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 43 MS
 Gradient (%): 8.0 CL
 Pool: 20 Riffle: 60 Run: 20 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 %Stable: 70 GE

Specific Data

1.0	1.2	0.9	1.0	1.1	0.8
0.8	1.0	0.8	0.9	0.7	0.7
2	3	4	2		
50	36				

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):		20	10
	Large (16-64mm):			10
	Sm. cobble (64-128mm):			15
Larges	Lge cobble (128-256mm):		40	15
	Blder cobble (>256mm):			10
Bedrock			0	0

Fish Summary

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

Cover

Cover Total %: 65 GE

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

 Crown Closure %: 30 Aspect: NE

D90 (cm): 31 Compaction: Medium

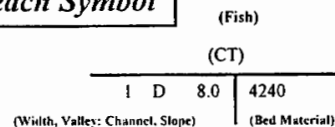
Discharge

Wetted Width (m): 0.6 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.01 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): 0.5
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 7.0 O2 (ppm):
 Turb. (cm): 50 Cond. (µmhos):

Reach Symbol



Comments

- C1 S4
- C2 LS = 5%, RS = 3%.
- C3 No fisheries sensitive zones were noted at this site.
- C4 The electroshocking effort, using a type VII model, was 221 seconds over 100 meters. The water level was too low at the time of sampling to effectively electrofish the stream.
- C5 Lat N 55 01' 24.6", Long W 126 54' 13.1".
- C6 No additional bank texture information.
- C7 No DO, pH, conductivity measurements were made at this site. The mean air temperature on this day was 12.8°C
- C8 This creek is definitely accessible to fish and contains marginal to good fish habitat. Some underground flow was observed in the sampling area. Future sampling at high flow is recommended.



Photo #: H-4-9, 1996/08/15
Site #: H76, Looking upstream.



Location: JULIE 148, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-0600-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 1.9 MW Date: 23-Aug-96 Time: 10:10 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6372 .61014 Length surveyed (m): 200.0 GE Survey Crew: JP\EM \ \ \ \ \ \ \ \ Photos: J-10-3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.3 MS
 Av. Wet. Width (m): 3.3 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 65 MS
 Gradient (%): 0.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: 0 GE
 % Stable: 0 GE

Specific Data

3.5	4.0	3.0	2.5	3.0	3.5
3.5	4.0	3.0	2.5	3.0	3.5
0	0	0	0	0	0
60	80	100	20	0	0

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: This reach flows through a meadow.
- C4: The electroshocking effort, using a Smithroot 12 B POW model, was 272 seconds over 240 square meters.
- C5: Lat N 55 02 27, Long W 126 51 09.9
- C6: No additional bank texture information.
- C7: DO measurements were not taken at this site. The mean air temperature on this day was 13.2°C
- C8: No spawning habitat, but some potential rearing habitat is available at this site. Tadpoles and adult frogs were observed in the sampling area.

Cover

Cover Total %: 50 GE

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

 Crown Closure %: 0 Aspect: N
 N D90 (cm): 0 Compaction: Low

Bed Material

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

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: Flood Flood Signs Ht(m): 0.1
 Bars (%): 0 pH: 6.7 Braided: Y
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 100 Cond. (µmhos): 21

Reach Symbol

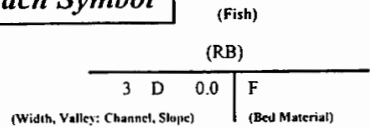




Photo #: J-10-3, 1996/08/23
Site #: J148, Looking upstream through meadow.



Photo #: J-10-4, 1996/08/23
Site #: J148, Looking downstream through meadow.



Location: JULIE 149, Unit 9, trib draining into a small lake, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-0800-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 3.2 MW Date: 23-Aug-96 Time: 10:10 Agency: TEC Access: FT Fish Card: N Field Historical
 U.T.M.: 9.6355 .61024 Length surveyed (m): 250.0 HC Survey Crew: JP\EM\ \ \ \ \ \ \ \ \ \ \ Photos: J-10-5,6 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.6 MS
 Av. Wet. Width (m): 2.3 MS
 Av. Max Riffle Depth (cm): 6 MS
 Av. Max Pool Depth (cm): 20 MS
 Gradient (%): 9.0 CL
 Pool: 20 Riffle: 40 Run: 30 Other: 10
 % Side Channel: GE
 % Debris Area: 20 GE
 % Stable: 80 GE

Specific Data

3.6	2.7	2.8	3.8	4.5	4.0
2.5	2.2	2.5	3.0	1.5	2.2
11	7	4		4	
22	18				

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 = 10%, RS = 30%
 C3: No fisheries sensitive zones were noted.
 C4: The electroshocking effort using a 12 B POW model, was 538 seconds over 300 square meters.
 C5: Lat N 55 03 00, Long W 126 53 00
 C6: No additional bank texture information.
 C7: No pH, DO, conductivity measurements were made on site. The mean air temperature on this day was 13.2°C
 C8: This creek has some good rearing habitat, but only marginal spawning habitat available to fish. Overwintering in this area is likely to occur downstream in the lake.

Cover

Cover Total %: 70 GE

Pool LOD Bldr In Veg O Veg Ctnbk
 5 25 25 0 30 15
 Crown Closure %: 30 Aspect: N

Bed Material

Fines	Clay, silt, sand (<2mm):	0	0
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		30
Larges	Lge cobble (128-256mm):	60	15
	Blder cobble (>256mm):		15
Bedrock		0	0

D90 (cm): 16 Compaction: Medium

Discharge

Wetted Width (m): 1.2 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.24 F
 Discharge (m³/s): 0.02 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): 0.3
 Bars (%): 25 pH: Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): 22 Cond. (µmhos):

Reach Symbol

(Fish)
 (DV, RB)
 4 B 9.0 | 0460
 (Width, Valley: Channel, Slope) | (Bed Material)



Photo #: J-10-5, 1996/08/23
Site #: J149, Looking upstream, good fish habitat.



Photo #: J-10-6, 1996/08/23
Site #: J149, Looking downstream.

Location: W256, Unit 9; north of Nata Cr.

Stream (Gaz.): Unnamed

Watershed Code: 003-6500-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 2.9 MA Date: 10-Sep-97 Time: 12:30 Agency: TEC Access: FT Fish Card: N Field Historical
 U.T.M.: 9.6445 .60966 Length surveyed (m): 100.0 GE Survey Crew: DDJP \ \ \ \ \ \ Photos: W-O-25 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.1 MS
 Av. Wet. Width (m): 2.2 MS
 N Av. Max Riffle Depth (cm): 0 GE
 N Av. Max Pool Depth (cm): 0 GE
 Gradient (%): 0.0 CL
 Pool: 0 Riffle: 0 Run: 100 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 50 GE

Specific Data

1.9	1.9	1.3	2.0	3.6	2.2
2.0	2.1	1.5	1.5	3.6	2.4

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=3%, RS=6%
- C3: This site could be classified as FSZ if fish have access.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 400V, was 354 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: There is good rearing habitat in this stream for RB and CT in the deep runs and cutbanks. This stream connects to Fulton River and if fish have access to this reach, it could be classified as a fisheries sensitive zone. No spawning substrate was observed. Minnow trapping is recommended as a more effective way of sampling this reach, which contains a 1m beaver dam and pond. There are old cutblocks on either side.
- C8: There is evidence of a high concentration of wildlife; moose, bear, beaver.

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
65	5	0	0	10	20

Crown Closure %: 10 Aspect: NW

Bed Material

	Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):		0	0
	Large (16-64mm):			0
	Sm. cobble (64-128mm):			0
Larges	Lge cobble (128-256mm):		20	20
	Blder 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): 0.1
 % Unstable: 75
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.5
 Bars (%): 0 pH: 7.5 Braided: N
 Water Temp. (°C): 7.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 130

Reach Symbol

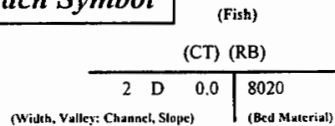




Photo #: W-O-25, 10-Sep-97

Site #: W256, Looking downstream at the channel



Photo #: W-P-1, 10-Sep-97

Site #: W256, Looking upstream at a beaver dam



Location: W257, Unit 9; 0.3km south of Bristol Lk and west of Fulton R.

Stream (Gaz.): Unnamed

Watershed Code: 003-6800-000-000-000-000-000-000-000-000-

Map #: 93 M 007 Reach Length (km): 2.2 MA Date: 10-Sep-97 Time: 14:15 Agency: TEC Access: FT Fish Card: N Field Historical
 U.T.M.: 9.6450 .60977 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ Photos: W-P-1,2,3 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 (%): 1.0 CL
 N Pool: 0 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 %Stable: 50 GE

Specific Data

1.4	0.9	1.2	0.8	1.0	1.1
-----	-----	-----	-----	-----	-----

Bed Material

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

D90 (cm): 13 Compaction: Low

Cover

Cover Total % : 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	10	0	10	50	20

Crown Closure % : 10 Aspect : SE

Discharge

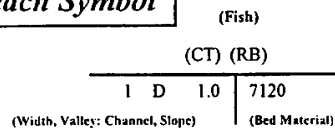
N Wetted Width (m):
 N Mean Depth (m):
 N Mean Velocity (m/s):
 N Discharge (m³/s):

Banks

Height (m): 0.0
 % Unstable: 40
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: Dry Flood Signs Ht(m): 0.3
 N Bars (%): 0 pH: Braided: N
 N Water Temp. (°C): 02 (ppm):
 Turb. (cm): Cond. (µmhos):

Reach Symbol



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=15%
- 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. The air temperature at this site was 15.0 C.
- C7: This dry stream has been impacted heavily by past logging, it was previously looged to the banks. At higher flows this reach would offer a small amount of rearing habitat. Sections of this reach are well shaded by alder and willow, and contain small sections of gravel and large cobble.
- C8: There is a large amount of moose and bear activity in the area.



Photo #: W-P-2, 10-Sep-97
Site #: W257, Looking downstream at the channel



Photo #: W-P-3, 10-Sep-97
Site #: W257, Looking upstream at the channel



Location: W254, Unit 9; 1.7km west of Fulton R.

Stream (Gaz.): Unnamed

Watershed Code: 003-6900-000-000-000-000-000-000-000-

Map #: 93 M 007 Reach Length (km): 1.4 MA Date: 09-Sep-97 Time: 14:15 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6440 .60997 Length surveyed (m): 100.0 GE Survey Crew: JP\DD\ \ \ \ \ \ \ \ \ Photos: W-O-22,23 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): 13 MS
 Gradient (%): 8.0 CL
 Pool: Riffle: Run: Other:
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 90 GE

Specific Data

1.3	0.9	1.0	1.2	0.4	1.1
1.2	0.9	0.9	1.1	0.4	1.0
2	1	2	1	1	1
17	12	12	14	11	

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=15%
 C3: No fisheries sensitive zones noted.
 C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 83 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 25.5 C.
 C7: This stream has previously been logged to it's banks. Regrowth currently consists of aspen, twinberry and alder. There is marginal rearing habitat and no spawning habitat in this reach. This stream flows directly into the Fulton River and could accomodate CT at higher flows. Future sampling recommended.

Cover

Cover Total %: 15 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	10	0	10	50	15

Crown Closure %: 30 Aspect: NE

Bed Material

	Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):		20	0
	Large (16-64mm):			20
Larges	Sm. cobble (64-128mm):			0
	Lge cobble (128-256mm):		0	0
	Blder 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): 0.07 F
 Discharge (m³/s): 0.02 F

Reach Symbol

(Fish)

(CT)

1	C	8.0	8200
---	---	-----	------

(Width, Valley: Channel, Slope)

(Bed Material)

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 (%): 0 pH: 7.7 Braided: N
 Water Temp. (°C): 8.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 240

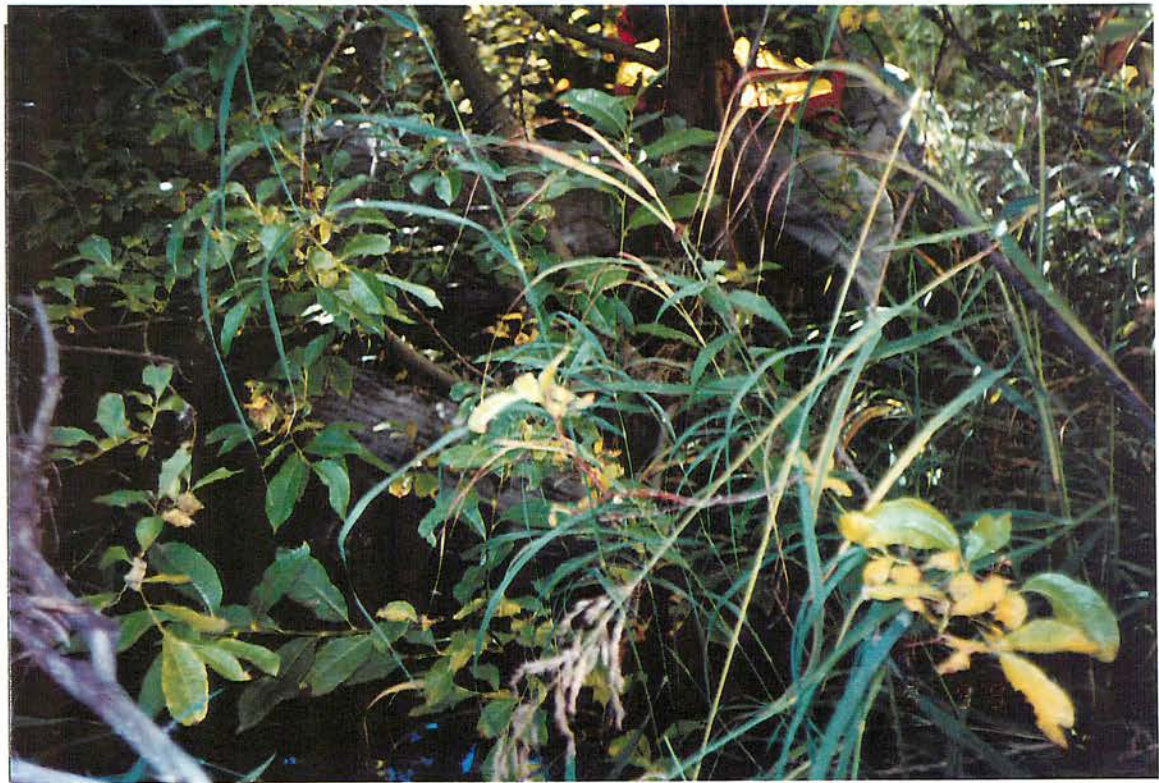


Photo #: W-O-22, 09-Sep-97

Site #: W254, Looking upstream at the channel, note the dense shrub cover



Photo #: W-O-23, 09-Sep-97

Site #: W254, Looking downstream at the channel

DFO/MoELP Stream Survey Form

Site Number: JULIE 147

Reach No.: 3

Trib. to Fulton R.



TRITON
Environmental Consultants Ltd.

Location: JULIE 147, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8500-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 0.4 MA Date: 23-Aug-96 Time: 8:00 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 .6380 .61041 Length surveyed (m): 120.0 GE Survey Crew: JPEM \ \ \ \ \ \ Photos: J-10-1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 0.3 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 12 MS
 Gradient (%): 2.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: 5 GE
 % Stable: 70 GE

Specific Data

1.5	1.7	2.5	1.6	1.0	1.2
0.9	0.9	0.0	0.0	0.0	0.0
0	0	0	0	0	0
13	10	0	0	0	0

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 10 GE
 Pool LOD Bldr In Veg O Veg Ctbnk
 0 5 0 0 50 45
 Crown Closure %: 5 Aspect: N

D90 (cm): 13 Compaction: Low

Comments

- C1: S3
- C2: LS = 15%, RS = 20%
- C3: No fisheries sensitive zones noted on site.
- C4: No electroshocking was carried out at this site as there was too little water to shock.
- C5: Lat N 55 03 54.2, Long W 126 50 18.8
- C6: The banks along this site are high, defined and deeply eroded.
- C7: DO, pH, conductivity measurements were not taken at this site. The mean air temperature on this day was 13.2°C
- C8: Little habitat is available to fish at this site. Fish may move into the lower 120 meters of this creek at high water.
- C9: This creek shows signs of flash flooding, as well as upstream channel alteration.

Discharge

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

Banks

Height (m): 0.6
 % Unstable: 20
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: L Flood Signs Ht(m): 0.6
 Bars (%): 70 pH: Braided: N
 N Water Temp. (°C): 02 (ppm):
 Turb. (cm): 13 Cond. (µmhos):

Reach Symbol

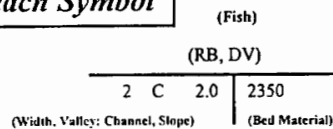




Photo #: J-10-1, 1996/08/23
Site #: J147, Looking upstream, dry channel.



Photo #: J-10-2, 1996/08/23
Site #: J147, Looking downstream, dry channel.

Location: TERRY 113, Unit 9, sec C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8590-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 2.5 MA Date: 17-Aug-96 Time: 12:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 .6403 .61038 Length surveyed (m): 100.0 GE Survey Crew: HS\TD \ \ \ \ \ \ Photos: T-6-15,16 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.7 MS
 Av. Wet. Width (m): 1.0 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 21 MS
 Gradient (%): 2.0 CL
 Pool: 70 Riffle: 10 Run: 20 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0.5 GE
 %Stable: 80 GE

Specific Data

1.0	1.9	2.0	2.0	1.8	1.7
0.5	1.9	1.6	1.1	0.7	0.5
	2	0	0	3	3
14	20	28			

Bed Material

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

D90 (cm): 32 Compaction: Medium

Cover

Cover Total %: 85 GE

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

Crown Closure %: 90 Aspect: NE

Discharge

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

Reach Symbol

(Fish) CT

2	D	2.0	1360
---	---	-----	------

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

Banks

Height (m): 0.2
 % Unstable: 10
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.6
 Bars (%): 0 pH: 7.0 Braided: N
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 28 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
	CT	16	25-80	J	R			EL

- Comments**
- C1: S3
 - C2: LS=26 RS=18
 - C3: No fisheries sensitive zones were noted at this site.
 - C4: The electroshocking effort, using a Smithroot 15 A model was 120 seconds over 50 meters.
 - C5: Lat N 55 03 40, Long W 126 48 12
 - C6: No additional bank texture information.
 - C7: DO and conductivity were not measured at this site. The mean air temperature on this day was 10.8°C
 - C8: Boulders and overstream vegetation provide most of the cover for fish at this site.
 - C9: A great deal of blowdown associated with the cutblock was observed at this site. Two culverts were found at this site, one of which was completely blocked with debris. The other was accumulating debris near the opening.



Photo #: T-6-15, 1996/08/17
Site #: T113, Channel, LOD over large cobble.



Photo #: T-6-16, 1996/08/17
Site #: T113, Channel through alders and grass.



Location: TERRY 114, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8600-000-000-000-000-000-000-000-000

Map #: 93 M 006 Reach Length (km): 4.4 MA Date: 17-Aug-96 Time: 13:10 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6406 .61031 Length surveyed (m): 100.0 GE Survey Crew: HS\TD\ \ \ \ \ \ \ \ Photos: T-6-17,18 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.9 MS
 Av. Wet. Width (m): 1.2 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 18 MS
 Gradient (%): 3.0 CL
 Pool: 40 Riffle: 30 Run: 30 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 30 GE

Specific Data

2.5	2.7	3.0	3.9	2.6	2.7
0.8	0.8	1.1	2.6	0.8	0.8
1	2	2			
22	8	25			

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C1	CT	6	60-140	J	R			EL

Comments

- C1 S3
- C2 RS=44 LS=15
- C3 No fisheries sensitive zones noted.
- C4 The electroshocking effort, using a Smithroot 15 A model was 67 seconds over 15 meters.
- C5 Lat N 55 03' 18", Long W 126 47' 58"
- C6 No additional bank texture information. A bank is collapsing into a pool at the road crossing.
- C7 DO and conductivity were not measured at this site. The mean air temperature on this day was 10.8°C
- C8 The culverts at this crossing have collapsed because of a pileup of woody debris that may be associated with beaver activity. The remnants of a beaver dam were found 30 meters upstream from the road. Fish were caught above and below the road.

Cover Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
15	5	20	0	60	0

 Crown Closure %: 60 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	30	30
Gravels	Small (2-16mm):	40	20
	Large (16-64mm):		20
	Sm. cobble (64-128mm):		15
Larges	Lge cobble (128-256mm):	30	5
	Blder cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 25 Compaction: Medium

Discharge

Wetted Width (m): 0.5 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.07 F
 Discharge (m3/s): 0.00 F

Banks Height (m): 0.2
 % Unstable: 20
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.8
 Bars (%): 10 pH: 7.0 Braided: Y
 Water Temp. (°C): 10.5 02 (ppm):
 Turb. (cm): 25 Cond. (µmhos):

Reach Symbol

(Fish) CT

3	D	3.0	3430
---	---	-----	------

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



Photo #: T-6-17, 1996/08/17
Site #: T114, Upstream view, two culverts.



Photo #: T-6-18, 1996/08/17
Site #: T114, Downstream view with gravel bar.



Photo #: T-8b-13, 1996/08/22
Site #: T149, Downstream view.



Location: W250, Unit 9; 0.9km west of Fulton Cr.

Stream (Gaz.): Unnamed

Watershed Code: 003-8700-000-000-000-000-000-000-000-000-

Map #: 93 M 006 Reach Length (km): 2.2 MA Date: 09-Sep-97 Time: 10:15 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6405 .61029 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ \ \ Photos: W-O-16,17 Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 1.0 MS
 Av. Wet. Width (m): 0.3 MS
 N Av. Max Riffle Depth (cm): 0 GE
 N Av. Max Pool Depth (cm): 0 GE
 Gradient (%): 4.0 CL
 Pool: 0 Riffle: 0 Run: 100 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 50 GE

1.2	1.0	1.3	0.9	0.6	1.0
0.1	0.0	1.0	0.1	0.4	0.0

Obstructions

Bed Material

Fines	Clay, silt, sand (<2mm):	50	50
Gravels	Small (2-16mm):	10	5
	Large (16-64mm):		5
	Sm. cobble (64-128mm):		5
Larges	Lge cobble (128-256mm):	40	20
	Bllder cobble (>256mm):		15
Bedrock		0	0

D90 (cm): 35 Compaction: Medium

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=12%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 30 seconds over 75 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 14.0 C.
- C7: Rearing habitat at this site consists primrily of boulders and cutbanks. At higher flows CT would have access from the FSZ downstream.

Cover

Cover Total %: 20 GE

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

Crown Closure %: 40 Aspect: NE

Discharge

Wetted Width (m): 0.2 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: 70
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.5
 Bars (%): 50 pH: 7.4 Braided: N
 Water Temp. (°C): 6.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 90

Reach Symbol

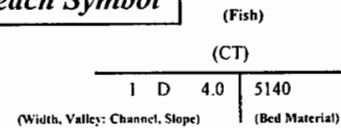




Photo #: W-O-16, 09-Sep-97
Site #: W250, Looking upstream at the channel



Photo #: W-O-17, 09-Sep-97
Site #: W250, Looking downstream at the channel



Location: W252, Unit 9; 0.4km west of Fulton R.

Stream (Gaz.): Unnamed

Watershed Code: 003-9000-000-000-000-000-000-000-000-000-

Map #: 93 M 007 Reach Length (km): 1.8 MA Date: 09-Sep-97 Time: 11:45 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6410 .61007 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ Photos: W-O-18.19 Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 1.7 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 17 MS
 Gradient (%): 2.0 CL
 Pool: 15 Riffle: 5 Run: 80 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 75 GE

1.0	1.5	0.9	1.9	1.0	1.2
0.5	6.0	0.4	1.5	0.8	0.8
1	1	1	1	1	1
20	16	15	18	19	12

Obstructions

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
Bedrock	Blder cobble (>256mm):		0
		0	0

Fish Summary

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

Cover

Cover Total % : 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	0	0	40	10

Crown Closure % : 70 Aspect : NE

N D90 (cm): 0 Compaction: Low

Comments

- C1: S4.
- C2: LS=3%, RS=3%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 600V, was 65 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 14.0 C.
- C7: There is some rearing habitat here in the form of pools, LOD and overstream vegetation shading. The stream flows into Fulton River so CT should have access to this reach. Abundant organic matter was observed at this site. Sampling is recommended at higher flows.

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.10 F
 Discharge (m3/s): 0.02 F

Banks

Height (m): 0.1
 % Unstable: 50
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.5
 Bars (%): 0 pH: 6.7 Braided: N
 Water Temp. (°C): 5.5 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 60

Reach Symbol

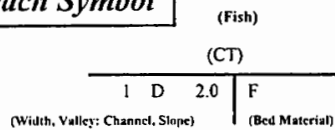




Photo #: W-O-18, 09-Sep-97
Site #: W252, Looking upstream at the channel



Photo #: W-O-19, 09-Sep-97
Site #: W252, Looking downstream at the channel



Location: W253, Unit 9; 0.9km east of Fulton R.

Stream (Gaz.): Unnamed

Watershed Code: 003-9100-000-000-000-000-000-000-000-

Map #: 93 M 007 Reach Length (km): 1.4 MA Date: 09-Sep-97 Time: 12:40 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6420 .60988 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ \ \ Photos: W-O-20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 0.8 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 15 MS
 Gradient (%): 6.0 CL
 Pool: 20 Riffle: 10 Run: 70 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 %Stable: 80 GE

Specific Data

1.3	1.1	1.3	1.4	1.2	1.3
0.9	0.9	0.2	1.3	0.9	0.4
1	2	2	1	1	1
14	13	16	14	15	17

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=10%
 C3: No fisheries sensitive zones noted.
 C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 300V, was 236 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 16.0 C.
 C7: This stream was previously logged to the banks. Second growth is thick with alder and willow. Rearing habitat at this site consists of pools and LOD. In some section the flow travels beneath logging debris. There are spotty areas of spawning gravels and enough flow to keep most of the substrate free of detritus build-up. It is recommended that this area is protected from future logging and brushing activity.

Cover

Cover Total %: 30 GE

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

Crown Closure %: 70 Aspect: NW

Bed Material

	Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):		10	5
	Large (16-64mm):			5
Larges	Sm. cobble (64-128mm):			20
	Lge cobble (128-256mm):		50	20
	Blder cobble (>256mm):			10
Bedrock			0	0

D90 (cm): 26 Compaction: Medium

Discharge

Wetted Width (m): 0.6 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.22 F
 Discharge (m3/s): 0.01 F

Reach Symbol

(Fish)

(CT)

1 D 6.0 | 4150

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.1

% Unstable: 25

Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.5
 Bars (%): 20 pH: 8.2 Braided: Y
 Water Temp. (°C): 6.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 310



Photo #: W-O-20, 09-Sep-97
Site #: W253, Looking upstream at the channel



Photo #: W-O-21, 09-Sep-97
Site #: W253, Looking downstream at the channel, note the organic debris

Location: Y279, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-2200-000-000-000-000-000-000-000-000-

Map #: 93 L 088 Reach Length (km): 0.8 MW Date: 07-Sep-97 Time: 15:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.654689.6084974 Length surveyed (m): 100.0 GE Survey Crew: JP\FC \ \ \ \ \ \ \ \ Photos: Y-34-23 Air Photos:

Channel Characteristics

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

Specific Data

0.8	0.9	0.7	0.8	0.9	0.8
-----	-----	-----	-----	-----	-----

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.
- C3: No fisheries sensitive zones present.
- C4: This dry site was not electrofished.
- C5: No additional bank texture information.
- C6: Water quality not applicable. The mean air temperature on this day was 9.7.C.
- C7: A small dry channel was located in a grassy, alder swale. This channel is not continuous throughout.

Cover

Cover Total % : 0 GE

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

 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
	Lge cobble (128-256mm):	0	0
Bedrock	Blder cobble (>256mm):		0
		0	0

D90 (cm): 0 Compaction: Low

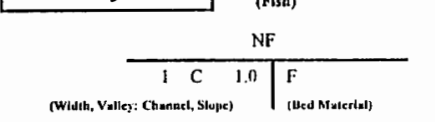
Discharge

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

Banks

Height (m): 0.1
 % Unstable: 10
 Fines Gravels Larges Bedrock

Reach Symbol



Confinement: OC
 Valley : Channel Ratio 5-10
 Stage: Dry Flood Signs H(m): 0
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 02 (ppm):
 Turb. (cm): Cond. (µmhos):



Photo #: Y-27-6, 07/09/97
Site #: Y279, Looking upstream at the channel



Photo #: Y-27-7, 07/09/97
Site #: Y279, Looking downstream at the channel

Location: Y242, Unit 9; south of Bristow Cr.

Stream (Gaz.): Unnamed

Watershed Code: 080-2500-000-000-000-000-000-000-000-000-

Map #: 93 L 088 Reach Length (km): 1.3 MW Date: 10-Sep-97 Time: 12:40 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9_656197.6082681 Length surveyed (m): 100.0 GE Survey Crew: JP\FC\ \ \ \ \ \ \ \ \ \ \ Photos: Y-29-11,12,13,14 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.5 MS
 Av. Wet. Width (m): 1.5 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 23 MS
 Gradient (%): 3.0 CL
 Pool: 10 Riffle: 10 Run: 80 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 15 GE

Specific Data

1.3	2.0	1.4	1.7	1.1	1.8
1.0	1.8	1.6	1.8	1.3	1.5
7	4	3	6	2	
27	24	19	20	23	

Obstructions

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	CT	4	62-100	J				EL

Comments

- C1: S3.
- C2: LS-47%, RS-43%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 400V, was 125 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 20.0 C.
- C7: This channel is choked with debris which is mostly small sticks and leaves, however there is also lots of LOD. This stream has good rearing cover due to the large amount of LOD and SWD, as well as some suitable spawning gravel for small trout, in those areas not covered by debris. The south side of the stream has been surveyed and flagged for logging and a "No Harvest" zone of 20-30 meters has been flagged.

Cover

Cover Total %: 40 GE

Pool LOD Bldr In Veg O Veg Ctnk
 5 45 10 0 25 15
 Crown Closure %: 25 Aspect: NE

Bed Material

Fines	Clay, silt, sand (<2mm):	40	40
Gravels	Small (2-16mm):	40	25
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		10
Larges	lge cobble (128-256mm):	20	5
	Blder cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 24 Compaction: Medium

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.37 F
 Discharge (m3/s): 0.08 F

Banks

Height (m): 0.2
 % Unstable: 5
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley : Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.7
 Bars (%): 5 pH: 7.9 Braided: N
 Water Temp. (°C): 10.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 200

Reach Symbol

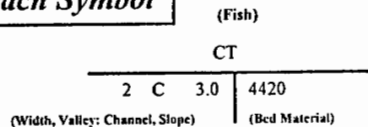




Photo #: Y-29-11, 10/09/97
Site #: Y242, Looking upstream at the channel

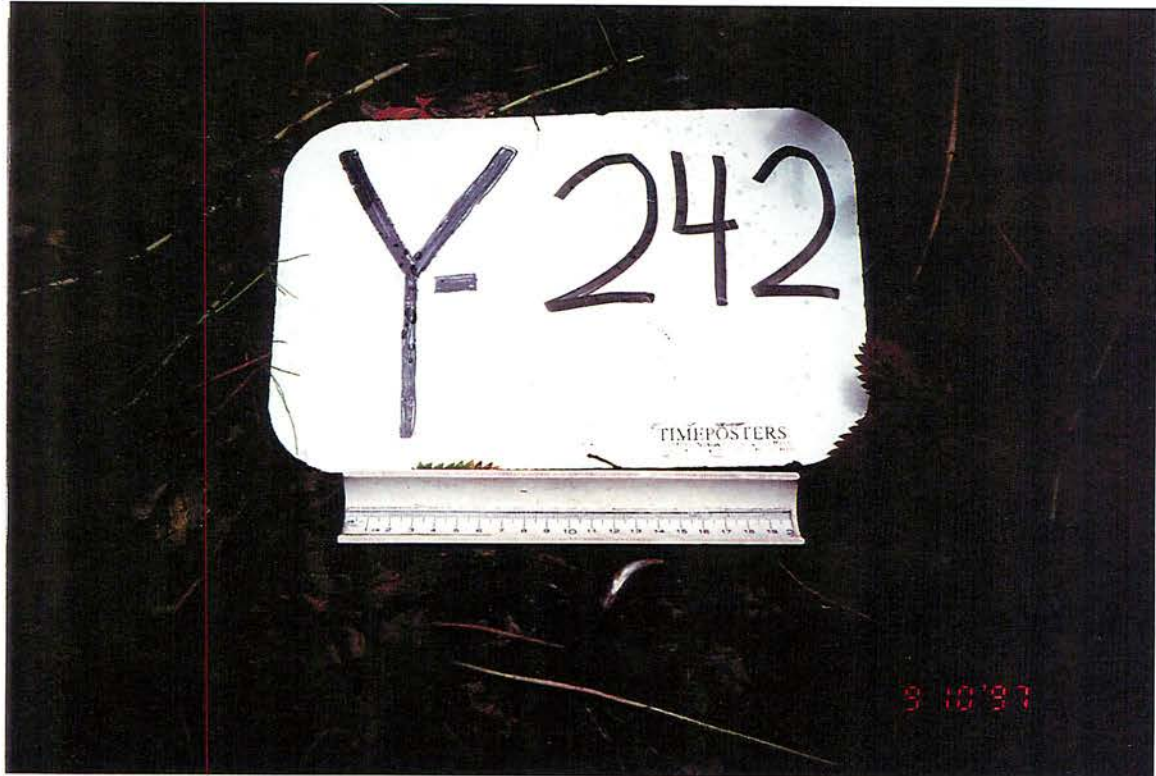


Photo #: Y-29-12, 10/09/97
Site #: Y242, Measuring fish on the fish board

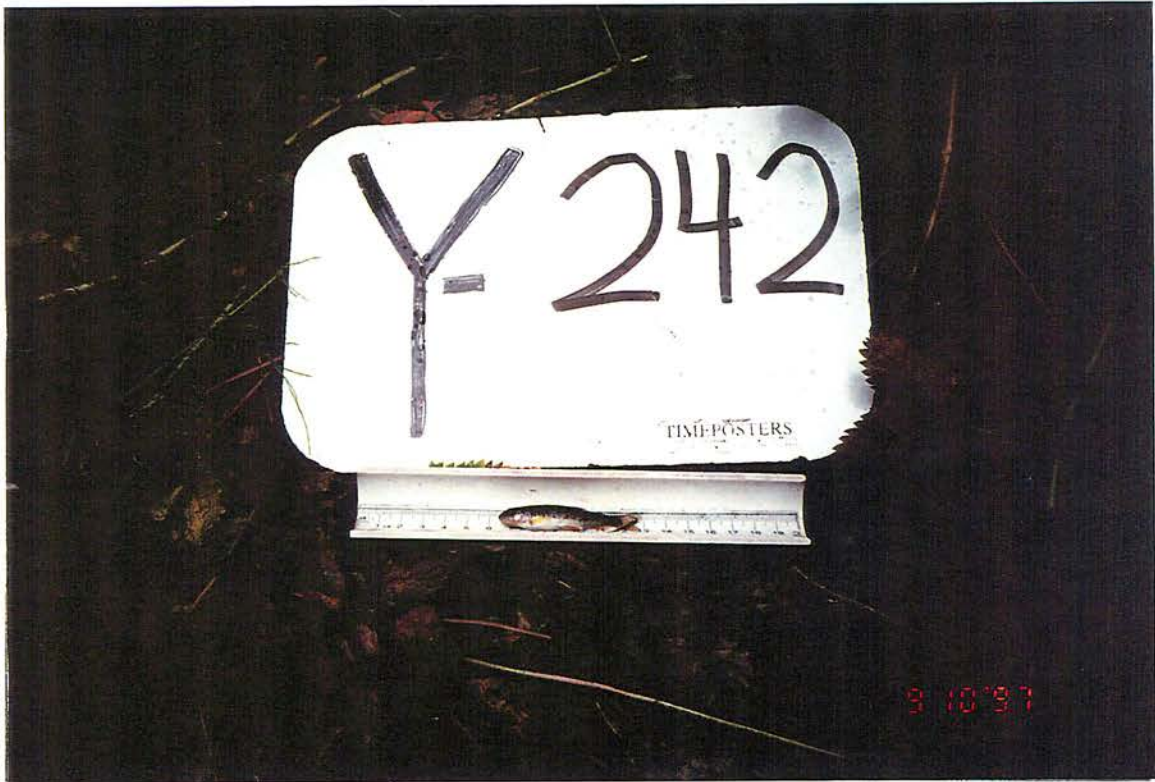


Photo #: Y-29-13, 10/09/97
Site #: Y242, Measuring fish on the fish board



Photo #: Y-29-14, 10/09/97
Site #: Y242, Looking downstream at the channel

Location: E8, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-5700-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.3 MA Date: 10-Jul-97 Time: 10:50 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6485 .60933 Length surveyed (m): 100.0 GE Survey Crew: JL \EM \ \ \ \ \ \ \ \ \ \ Photos: E-1-11,12 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.7 MS
 Av. Wet. Width (m): 0.7 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 20 MS
 Gradient (%): 3.0 CL
 Pool: 10 Riffle: 5 Run: 70 Other: 15
 % Side Channel: 0-10 GE
 % Debris Area: 5-15 GE
 % Stable: 15 GE

Specific Data

1.0	0.7	0.6	0.5	0.6	0.8
0.7	0.4	0.8	0.5	0.7	1.0
2					
15	25	20	20		

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=3%
- C3 No fisheries sensitive zones noted.
- C4 The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, was 400 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 13.7 C.
- C7 The substrate in this creek is mostly fines, making it unsuitable for spawning. Cascades over LOD make up 15% of the flow. Alder cover is abundant.

Cover Cover Total %: 30 GE

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

 Crown Closure %: 50 Aspect: SW

Bed Material

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

D90 (cm): 1 Compaction: Low

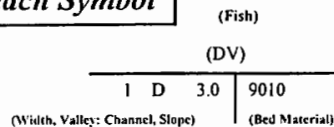
Discharge

Wetted Width (m): 0.7 MS
 Mean Depth (m): 0.1 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

Reach Symbol



Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.3
 Bars (%): 0 pH: 7.4 Braided: N
 Water Temp. (°C): 8.5 02 (ppm):
 Turb. (cm): Cond. (µmhos): 40



Photo #: E-1-11, 10-Jul-97
Site #: E8, Looking downstream at the channel.



Photo #: E-1-12, 10-Jul-97
Site #: E8, Looking downstream at the channel.

Location: Y49, Unit 9			Stream (Gaz.): Unnamed			Watershed Code: 080-6300-000-000-000-000-000-000-000-000-		
Map #: 93 L 097	Reach Length (km): 1.8	MA	Date: 18-Jul-97	Time: 12:00	Agency: TEC	Access: M	Fish Card: N	Field <input checked="" type="checkbox"/> Historical <input type="checkbox"/>
U.T.M.: 9 6517 60946	Length surveyed (m): 100.0	GE	Survey Crew: DD\SJ\ \ \ \ \ \ \ \ \ \ \	Photos:	Y-7-6,7	Air Photos:		

Channel Characteristics

Av. Chan. Width (m):	1.1	MS	
Av. Wet. Width (m):	0.8	MS	
Av. Max Riffle Depth (cm):	2	MS	
Av. Max Pool Depth (cm):	16	MS	
Gradient (%):	1.0	CL	
Pool: 30	Riffle: 5	Run: 65	Other: 0
% Side Channel:	10-40	GE	
% Debris Area:	>15	GE	
%Stable:	80	GE	

Specific Data							
	1.3	1.0	1.1	0.8	1.2	1.1	
	0.7	0.8	0.7	0.6	0.8	1.0	
	2	2	3	2	2		
	18	9	20	20	12		

Cover

Cover Total %: 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	25	0	5	40	10

Crown Closure %: 60 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
	Lge cobble (128-256mm):	0	0
Bedrock	Blder cobble (>256mm):		0
		0	0

N D90 (cm): 0 Compaction: Low

Discharge

Wetted Width (m):	0.3	MS
Mean Depth (m):	0.1	MS
Mean Velocity (m/s):	0.27	F
Discharge (m ³ /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: 6.9 Braided: Y

Water Temp. (°C): 12.0 O2 (ppm):

Turb. (cm): Cond. (µmhos): 50

Reach Symbol

(Fish) _____

(DV) _____

I	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: S4

C2: 1.S-2%, RS=2%

C3: No fisheries sensitive zones noted.

C4: The electroshocking effort, using a Smithroot 12 B POW model set at II, 6, 400V, was 130 seconds over 100 meters.

C5: No additional bank texture information.

C6: DO was not measured at this site, the water was clear to bottom but slightly tannin in colour. The air temperature at this site was 18.0 C.

C7: There is reasonable rearing abhbit in this reach in the form of deep pools and LOD cover habitat. this stream drains a large swampy area and is well channelized. Downstream of the road the creek is bordered by a large cutblock approximately 12-15 years old that is cut to the bank.



Photo #: Y-7-6, 18/07/97
Site #: Y49, Looking upstream at the channel.



Photo #: Y-7-7, 18/07/97
Site #: Y49, Looking downstream at the channel.



Location: TERRY 149, Unit 9, 500 m E of T 148, see C5

Stream (Gaz.): Unnamed

Watershed Code: 080-7300-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 1.5 MA Date: 22-Aug-96 Time: 15:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 6438 60959 Length surveyed (m): 100.0 HC Survey Crew: GM\HK \ \ \ \ \ \ \ Photos: T-8B-13 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.9 MS
 Av. Wet. Width (m): 0.4 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 17 MS
 Gradient (%): 4.0 CL
 Pool: 15 Riffle: 5 Run: 80 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0-5 GE
 %Stable: 80 GE

Specific Data

0.8	0.7	1.0	1.1	1.0	0.7
0.6	0.5	0.5	0.4	0.4	0.2
1	1	2			
24	15	12			

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	70	70
Gravels	Small (2-16mm):	15	10
	Large (16-64mm):		5
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	15	5
	Blder cobble (>256mm):		0
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 90 GE
 Pool LOD Bldr In Veg O Veg Ctnk
 25 10 5 10 35 15
 Crown Closure %: 90 Aspect: SE

D90 (cm): 19 Compaction: Medium

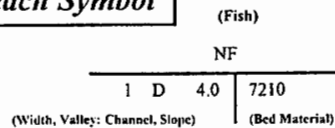
Discharge

Wetted Width (m): 0.2 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.10 F
 Discharge (m3/s): 0.00 F

Banks

Height (m): 0.1
 % Unstable: 15
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs H(m): 0
 Bars (%): 0 pH: Braided: N
 Water Temp. (°C): 8.0 02 (ppm):
 Turb. (cm): 24 Cond. (µmhos):

Reach Symbol



Comments

- C1: S6
- C2: LS = 16%, RS = 20%
- C3: No fisheries sensitive zones noted on site.
- C4: An electroshocker was not available for sampling.
- C5: Lat N 54 59 22, Long W 126 45 08.6
- C6: No additional bank texture information.
- C7: DO, pH, conductivity measurements were not taken at this site. The mean air temperature on this day was 16.0°C
- C8: This site does not contain suitable fish habitat.

DFO/MoELP Stream Survey Form

Site Number: HASSLET 84
Trib. to Fulton R.

Reach No.: 1



Location: HASSLET 84, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-000-000-000-000-000-000-000-000

Map #: 93 M 006 Reach Length (km): 3.2 MW Date: 16-Aug-96 Time: 14:21 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6359 .60984 Length surveyed (m): 100.0 GE Survey Crew: KGUH \ \ \ \ \ \ Photos: H-5-1,2 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.2 MS
 Av. Wet. Width (m): 1.4 MS
 Av. Max Riffle Depth (cm): 12 MS
 Av. Max Pool Depth (cm): 33 MS
 Gradient (%): 9.0 CL
 Pool: 25 Riffle: 25 Run: 50 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 %Stable: 85 GE

Specific Data

1.2	1.1	1.1	1.0	1.1	1.7
1.7	1.1	1.2	1.2	1.3	1.6
	14	8		13	
40	29	26	36		

Obstructions

C	Height (m)	Type	Location

Cover

Cover Total %: 65 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	30	20	5	10	25

Crown Closure %: 25 Aspect: NE

Bed Material

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

D90 (cm): 38 Compaction: Medium

Fish Summary

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

Discharge

Wetted Width (m): 1.1 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.40 F
 Discharge (m³/s): 0.03 F

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: Braided: N
 Water Temp. (°C): 7.0 O2 (ppm):
 Turb. (cm): 40 Cond. (µmhos):

Reach Symbol

(Fish)
 TR

I	D	9.0	3430
---	---	-----	------

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

Comments

C1: S4
 C2: LS=48 RS=63
 C3: No fisheries sensitive zones were noted at this site.
 C4: The electroshocker was not working.
 C5: Lat N 55 00 52.4, Long W 126 52 24.9
 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 11.5°C
 C8: Some fairly good rearing habitat and some spawning sized gravels were observed at this site.



Photo #: H-5-1, 1996/08/16
Site #: H84, Aerial view of site H84.

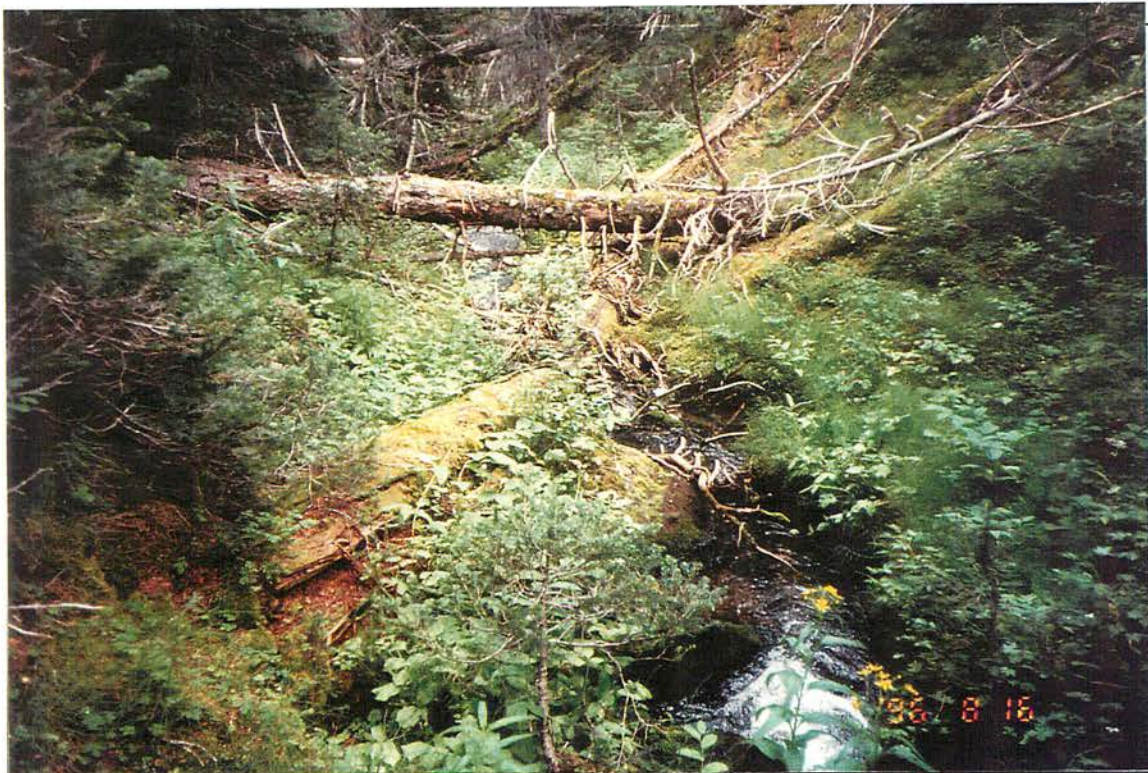


Photo #: H-5-1a, 1996/08/16
Site #: H84, Looking downstream, LOD and boulder cover.



Photo #: H-5-2, 1996/08/16
Site #: H84, Looking upstream.

Location: HASLETT 109, Unit 9, see C5. Stream (Gaz.): Unnamed Watershed Code: 480-6972-000-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 1.1 MA Date: 21-Aug-96 Time: 15:00 Agency: TEC Access: V2 Fish Card: N Field Historical

U.T.M.: 9.6507.60847 Length surveyed (m): 250.0 GE Survey Crew: JH\HK\ \ \ \ \ \ \ \ \ Photos: H-7-23,24 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.7 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 21 MS
 Gradient (%): 3.0 CL
 Pool: 20 Riffle: 45 Run: 35 Other: 0
 % Side Channel: 0 GE
 % Debris Area: >15 GE
 % Stable: 70 GE

Specific Data

1.7	1.7	1.5	1.6	2.0	1.8
1.4	1.6	1.2	1.1	1.3	1.3
4	3	4	0	5	0
20	18	23	24	0	0

Obstructions

C	Height (m)	Type	Location

Cover Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
10	30	5	10	25	20

Crown Closure %: 80 Aspect: NE

Bed Material

Material	Clay, silt, sand (<2mm):	Small (2-16mm):	Large (16-64mm):	Sm. cobble (64-128mm):	Lge cobble (128-256mm):	Blder cobble (>256mm):
Fines	20	20				
Gravels		40	15			
			25			
Larges			40	10		
				5		
Bedrock						0

D90 (cm): 29 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	115	J	R			EL

Comments

C1: S3
 C2: LS/ RS not measured
 C3: No fisheries sensitive zones were noted at this site.
 C4: The electroshocking effort, using a Smithroot 12 B POW model was : 115 seconds over 50 meters.
 C5: Lat 54 53 25.9 Long 126 39 02.6
 C6: Fines and gravels were noted in the banks at this site.
 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 occurs at this site. The bridge at the road crossing is beginning to collapse and may need repairs to prevent it from becoming an obstruction to fish passage upstream.

Discharge

Wetted Width (m): 1.4 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.22 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: L Flood Signs Ht(m): 1.4
 Bars (%): 35 pH: Braided: N
 Water Temp. (°C): 9.5 O2 (ppm):
 Turb. (cm): 24 Cond. (µmhos):

Reach Symbol (Fish)

DV

2	E	3.0	2440
---	---	-----	------

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



Photo #: H-7-23, 1996/08/21
Site #: H109, Channel through alder and dogwood.

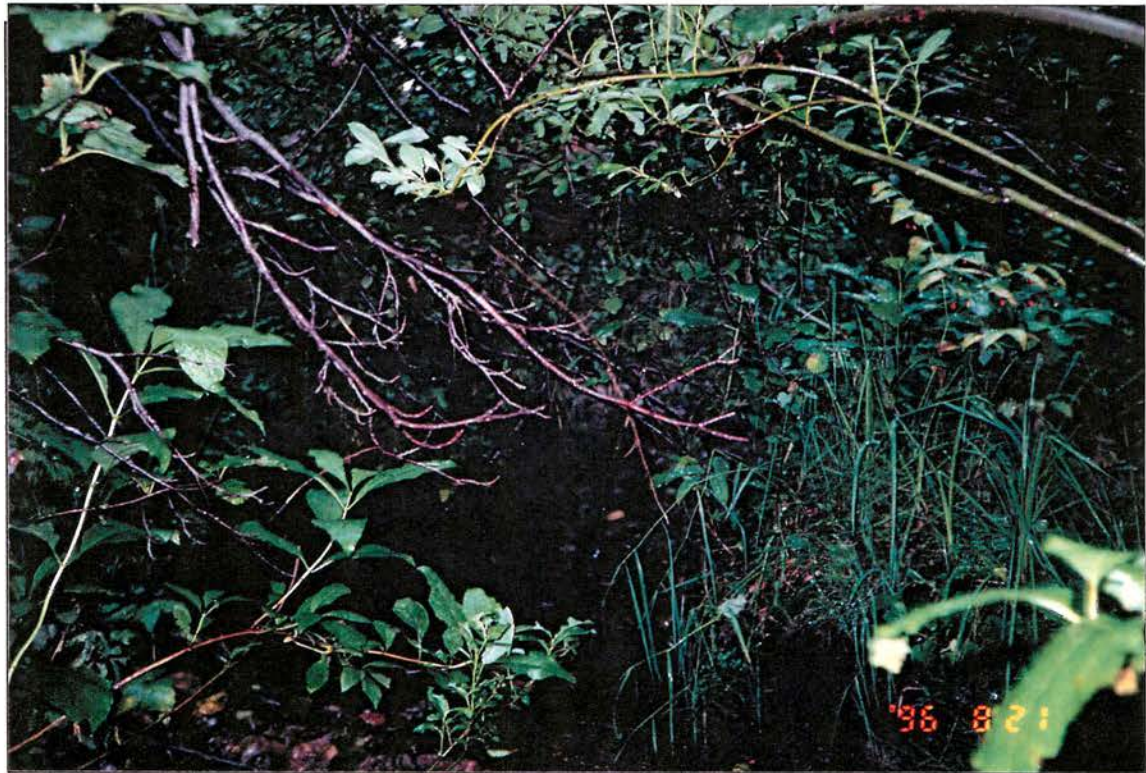


Photo #: H-7-24, 1996/08/21
Site #: H109, Channel through alder, willow, and grass.



Location: TERRY 148, Unit 9, E of Morin Lake, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-000-000-000-000-000-000-000-000

Map #: 93 L 097

Reach Length (km): 2.2 MA

Date: 22-Aug-96 Time: 14:30

Agency: TEC

Access: V4

Fish Card: N

Field Historical

U.T.M.: 9 6432 60960

Length surveyed (m): 100.0 HC

Survey Crew: GM \ HK \ \ \ \ \ \ \

Photos: T-8B-11,12

Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 1.0 MS
 Av. Max Riffle Depth (cm): 3 MS
 Av. Max Pool Depth (cm): 9 MS
 Gradient (%): 2.0 CL
 Pool: 10 Riffle: 30 Run: 60 Other: 0
 % Side Channel: 0-10 GE
 % Debris Area: 0-5 GE
 % Stable: 90 GE

Specific Data

1.3	1.5	1.4	1.9	2.0	0.0
0.7	0.7	0.5	1.2	1.0	1.8
2	3	3		3	2
8	10	8	10	7	10

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	35	15
	Large (16-64mm):		20
Larges	Sm. cobble (64-128mm):		55
	Lge cobble (128-256mm):	55	0
	Blder cobble (>256mm):		0
Bedrock		0	0

D90 (cm): 18 Compaction: Medium

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
0	10	0	10	80	0

Crown Closure %: 35 Aspect: SE

Discharge

Wetted Width (m): 0.4 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.14 F
 Discharge (m3/s): 0.00 F

Reach Symbol

(Fish)

NF

1	D	2.0	1450
---	---	-----	------

(Width, Valley: Channel, Slope)

(Bed Material)

Banks

Height (m): 0.3

% Unstable: 10

Fines Gravels Larges Bedrock

Confinement: UC

Valley: Channel Ratio 10+

Stage: M Flood Signs Ht(m): 0

Bars (%): 0 pH: Braided: N

Water Temp. (°C): 8.0 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				NA

Comments

- C1: S6
- C2: LS = 30%, RS = 25%
- C3: No fisheries sensitive zones were noted at this site.
- C4: An electroshocker was not available for sampling this day.
- C5: Lat N 54 59 27, Long W 126 45 41
- C6: No additional bank texture information.
- C7: DO, pH and conductivity measurements were not made at this site. The mean air temperature on this day was 16.0°C
- C8: Fish were not seen at this site. The lack of available cover and shallow water suggest that the site has little habitat available to fish.



Photo #: T-8b-11, 1996/08/22
Site #: T148, Downstream view.



Photo #: T-8b-12, 1996/08/22
Site #: T148, Upstream view.

DFO/MoELP Stream Survey Form

Site Number: TERRY 112

Reach No.: 2

Trib. to Fulton River



TRITON

Environmental Consultants Ltd.

Location: TERRY 112, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8400-000-000-000-000-000-000-000-0

Map #: 93 M 006 Reach Length (km): 1.6 MA Date: 17-Aug-96 Time: 11:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 6401 61052 Length surveyed (m): 100.0 GE Survey Crew: TD\HS \ \ \ \ \ \ \ \ \ \ Photos: T-6-13,14 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.6 MS
 Av. Wet. Width (m): 0.9 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 15 MS
 Gradient (%): 1.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0-10
 % Debris Area: >15 GE
 % Stable: 40 GE

Specific Data

1.7	1.5	2.5	1.0	2.1	1.0
1.6	0.5	0.8	0.9	1.0	0.6
14	13	18			

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):	20	5
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		5
Larges	Lge cobble (128-256mm):	75	10
	Blder cobble (>256mm):		60
Bedrock		0	0

Fish Summary

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

Cover

Cover Total %: 20 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
0	80	0	5	5	10

Crown Closure %: 10 Aspect: NE

Discharge

N Wetted Width (m): 0.0
 N Mean Depth (m): 0.0
 N Mean Velocity (m/s): 0.00
 N Discharge (m³/s):

Reach Symbol

(Fish)

NF

2 D 1.0 | 1270

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

Banks

Height (m): 0.1
 % Unstable: 20
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 0.3
 Bars (%): 0 pH: 7.3 Braided: N
 Water Temp. (°C): 12.0 02 (ppm):
 Turb. (cm): 18 Cond. (µmhos):

Comments

- C8: No fisheries sensitive zones noted.
- C1: S6
- C2: LS=20 RS=20
- C3: This site was not electrofished.
- C4: 55 04 26 126 48 19
- C5: No additional bank texture information.
- C6: DO and conductivity were not measured at this site. The mean air temperature on this day was 10.8°C
- C7: This reach does not contain suitable fish habitat. cover is lacking and the substrate is inappropriate.



Photo #: T-6-13, 1996/08/17
Site #: T112, Channel.



Photo #: T-6-14, 1996/08/17
Site #: T112, Channel with isolated pool.

5.7 Unnamed Tributary to the Fulton River (480-6972-669) (93 M 007)

5.7.1 Sensitive Habitats and Barriers

Reach 1 of this small system has low gradient and is unconfined and reach 2 is a small fish bearing lake (341 meters x 177 meters) This lake is surrounded by fisheries sensitive wetlands. Reach 3 has low gradient and flows through a wetland also identified as a fisheries sensitive zone. Reach 4 is unconfined and drains a steep slope. This tributary was sampled at three locations including reaches 1 and 3 of the mainstem.

5.7.2 Fish Summary Tables and Stream Classification

Both reach 1 and the small lake on this stream historically contain cutthroat trout. Two sites were sampled for fish in this system, 1 was minnow trapped and the other was electrofished. Red sided shiner were caught by minnow trapping at site J152, located downstream of the small lake. The mainstem was classified as S4 based on an average channel width of 1.3 meters and the presence of red sided shiner in the sampling area. The upper reaches of the headwater tributaries were classified as S6. The lower reaches were classified as S4 based on average channel widths of 0.4 and 0.9 m and the presence of accessible fish habitat in the surveyed areas.



Location: JULIE 150, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8100-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 0.2 MA Date: 23-Aug-96 Time: 12:10 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9.6429 .61010 Length surveyed (m): 80.0 HC Survey Crew: JP\EM \ \ \ \ \ Photos: J-10-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.4 MS
 Av. Wet. Width (m): 0.4 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 28 MS
 Gradient (%): 0.5 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: 10 GE
 % Stable: 70 GE

Specific Data

0.6	0.4	0.2	0.3	0.2	0.5
0.6	0.4	0.2	0.3	0.2	0.5
0	0	0	0	0	0
20	30	35			

Obstructions

C	Height (m)	Type	Location

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
Bedrock	Blder cobble (>256mm):		0
		0	0

Fish Summary

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

Cover

Cover Total %: 70 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
30	0	0	40	30	0

 Crown Closure %: 20 Aspect: SE

N D90 (cm): 0 Compaction: Low

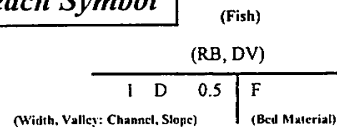
Discharge

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 H(m): 0.1
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 11.0 02 (ppm):
 Turb. (cm): 35 Cond. (µmhos):

Reach Symbol



Comments

- C1: S4
- C2: LS = 2%, RS = 2%
- C3: No fisheries sensitive zones were noted at this site.
- C4: No electroshocking was carried out at this site.
- C5: Lat N 55 02 08.6, Long W 126 45 49.1
- C6: No additional bank texture information.
- C7: No DO, pH or conductivity measurements were taken at this site. The mean air temperature on this day was 13.2°C
- C8: Potential rearing habitat could be found in the lower 60 m of the creek that connect with the lake. Many tadpoles and frogs were seen at this site.
- C9: The air temperature at this site was 12.C.



Photo #: J-10-7, 1996/08/23
Site #: J150, Tiny channel through grassy area.

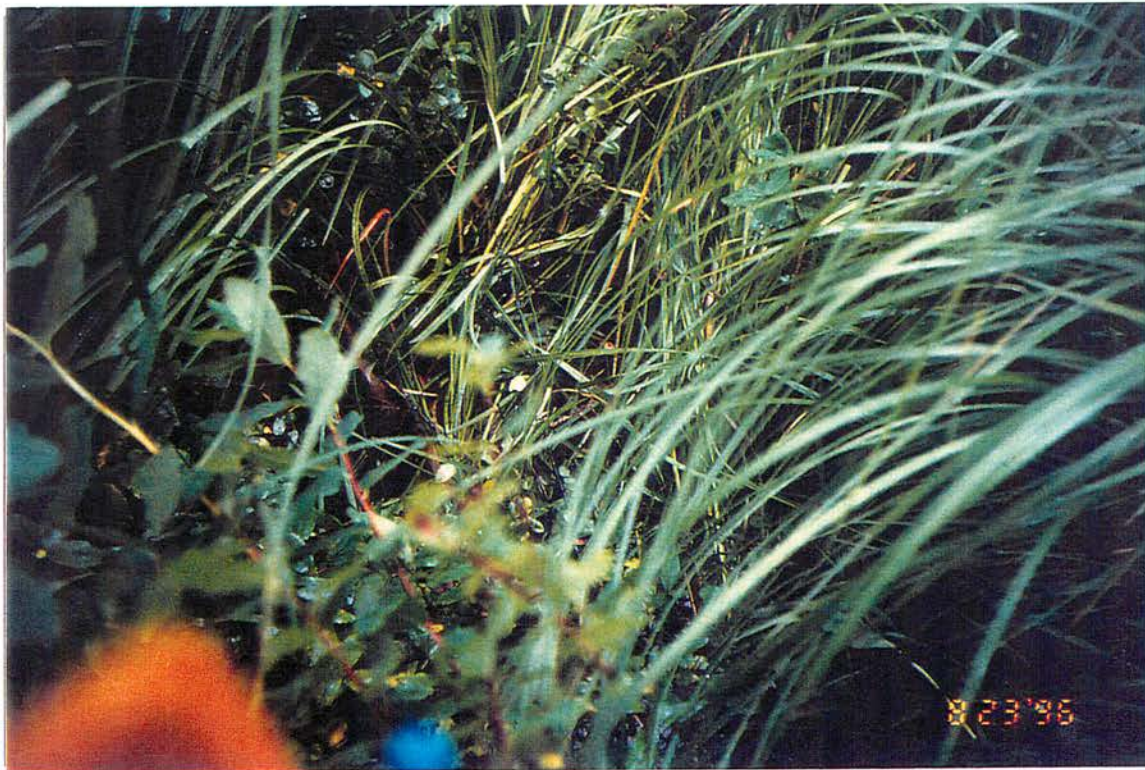


Photo #: J-10-8, 1996/08/23
Site #: J150, Tiny channel through grassy area.

DFO/MoELP Stream Survey Form

Site Number: JULIE 151

Reach No.: 1

Trib. to Fulton R



TRITON

Environmental Consultants Ltd.

Location: JULIE 151, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8200-000-000-000-000-000-000-000-0

Map #: 93 M 007 Reach Length (km): 0.1 MA Date: 23-Aug-96 Time: 12:35 Agency: TEC Access: HL Fish Card: N Field Historical
 U.T.M.: 9 .6430 .61008 Length surveyed (m): 200.0 GE Survey Crew: JP\EM\ \ \ \ \ \ Photos: J-10-9,10 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 0.9 MS
 Av. Wet. Width (m): 0.4 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 38 MS
 Gradient (%): 1.0 CL
 Pool: 100 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 10-40 GE
 % Debris Area: 10 GE
 % Stable: 80 GE

Specific Data

0.8	0.9	1.2	1.0	0.6	0.7
0.8	0.9	0.0	0.0	0.6	0.0
0	0	0	0	0	0
50	35	30			

Obstructions

Fish Summary

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

Bed Material

Fines	Clay, silt, sand (<2mm):	80	80
Gravels	Small (2-16mm):	0	0
	Large (16-64mm):		0
Larges	Sm. cobble (64-128mm):		10
	Lge cobble (128-256mm):	20	10
	Blidr cobble (>256mm):		0
Bedrock		0	0

Comments

- C1: S4
- C2: LS = 2%, RS = 2%
- C3: No fisheries sensitive zones were noted at this site.
- C4: This site was electrofished with a 12 B POW model over 80 square meters.
- C5: Lat N 55 02' 00.5", Long W 126 45' 44 3"
- 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 13.2°C
- C8: This site may provide rearing habitat at certain times of the year. Future sampling is recommended. Many tadpoles and frogs were observed in this area.
- C9: The air temperature at this site was 13.C.

Cover

Cover Total %: 70 GE

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

 Crown Closure %: 20 Aspect: E

D90 (cm): 13 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: H Flood Signs H(m): 0.1
 Bars (%): 0 pH: 6.6 Braided: Y
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 50 Cond. (µmhos): 55

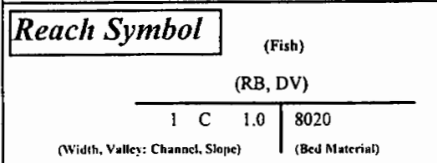




Photo #: J-10-9, 1996/08/23
Site #: J151, Looking upstream, channel in grassy area.



Photo #: J-10-10, 1996/08/23
Site #: J151, Looking downstream toward meadow.

DFO/MoELP Stream Survey Form

Site Number: JULIE 152

Reach No.: 1

Trib. to Fulton Cr



TRITON

Environmental Consultants Ltd.

Location: JULIE 152, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 003-8100-000-000-000-000-000-000-000-0

Map #: 93 M 007

Reach Length (km): 1.3 MA

Date: 23-Aug-96

Time: 12:55

Agency: TEC

Access: HL

Fish Card: N

Field Historical

U.T.M.: 9. 6435 . 61011

Length surveyed (m): 200.0 AE

Survey Crew: JP\EM \ \ \ \ \ \

Photos: J-10-11,12

Air Photos:

Channel Characteristics

Specific Data

Av. Chan. Width (m): 1.3 MS
 Av. Wet. Width (m): 1.3 MS
 N Av. Max Riffle Depth (cm): 0 MS
 Av. Max Pool Depth (cm): 110 MS
 Gradient (%): 1.0 CL
 Pool: 50 Riffle: 0 Run: 50 Other: 0
 % Side Channel: GE
 % Debris Area: 15 GE
 % Stable: 100 GE

1.5	1.2	1.1	1.0	1.5	1.4
1.5	1.2	1.1	1.0	1.5	1.4
0	0	0	0	0	0
80	100	150	0	0	0

Obstructions

C	Height (m)	Type	Location

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
Bedrock	Blder cobble (>256mm):			0
			0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
C4	RSC	30	40-120	A				MT

Comments

- C1 S4
- C2 LS = 15%, RS = 10%
- C3 No fisheries sensitive zones noted.
- C4 A mixture of adult and juvenile red side shiners was caught at this site.
- C5 Lat N 55 02 10.3, Long W 126 45 15.8
- C6 No additional bank texture information.
- C7 No pH, DO, or conductivity measurements were made at this site. The mean air temperature on this day was 13.2°C
- C8 Instream and overstream vegetation provide most of the cover for fish at this site. This reach could provide rearing habitat for rainbow trout and Dolly Varden.
- C9 The air temperature at this site was 12.C.

Cover

Cover Total % : 80 GE

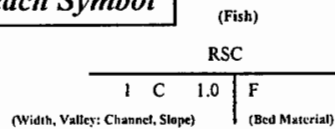
Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	0	30	30	10

Crown Closure % : 20 Aspect : E

Discharge

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

Reach Symbol



Banks

Height (m): 0.3
 % Unstable: 0
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley : Channel Ratio 5-10
 Stage: H Flood Signs Ht(m): 0.2
 Bars (%): 0 pH: Braided: Y
 Water Temp. (°C): 11.0 O2 (ppm):
 Turb. (cm): 150 Cond. (µmhos):



Photo #: J-10-11, 1996/08/23
Site #: J152, Aerial photo of site J152.

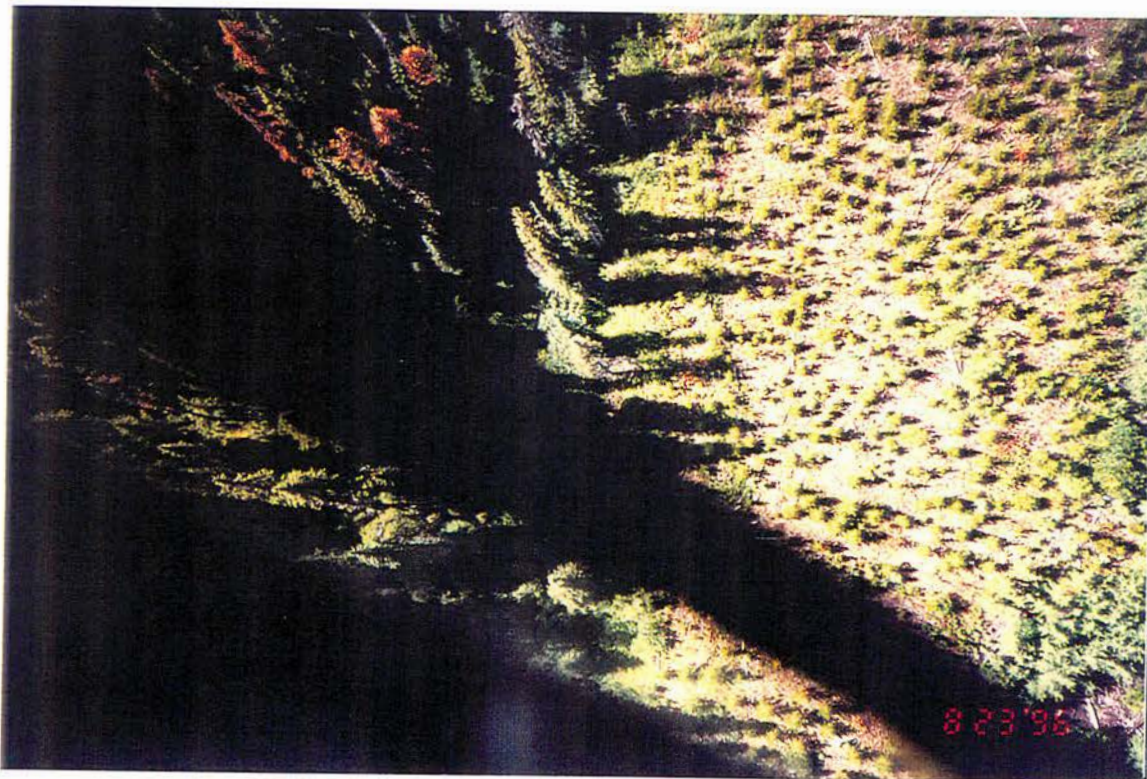


Photo #: J-10-12, 1996/08/23
Site #: J152, Aerial photo of site J152.

5.8 Hagarty Creek (480-6972-528) (93 L 097)

5.8.1 Sensitive Habitats and Barriers

The mainstem of Hagarty Creek, which drains Hagarty Lake, is 5.7 km in length and is fed by 2 tributaries. Reach 1 has low gradient and is occasionally confined and reach 2 is a small lake. Reach 3 has low gradient and reach 4 is Hagarty Lake. Reach 5 has moderate gradient and is unconfined. Hagarty Lake is surrounded by wetlands and reach 1 has a large wetland in direct contact with the channel, just downstream of reach 2. These have been identified as fisheries sensitive zones. No barriers to fish migration were identified in this system, which was sampled at 8 locations, including the mainstem. Two of these sites were classified as "NC" based on the absence of defined channels in the sampling areas.

5.8.2 Fish Summary Tables and Stream Classification

No fisheries information was found for Hagarty Creek. A visual observation of Dolly Varden was made at site T145 on the mainstem. An unidentified salmonid was also seen at site T147. Dolly Varden and cutthroat trout were caught by electrofishing at W272, located on a tributary to reach 2 of Hagarty Creek.

The mainstem was classified as an S3 at two locations, sites T145 and T147, based on average channel widths of 3.6 meters and 4.0 meters and the observation of fish in the sampling areas. The tributary to reach 2 of this stream was sampled in reaches 1 and 2 and classified as an S3. Fish were caught in reach 1 only, however some potential rearing habitat was noted in reach 2.



Location: TERRY 145, Unit 9, see C5.

Stream (Gaz.): Hagarty Creek

Watershed Code: 480-6972-528-000-000-000-000-000-000-000-0

Map #: 93 M 097 Reach Length (km): 3.6 MA Date: 22-Aug-96 Time: 9:45 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6427 .60938 Length surveyed (m): 100.0 GE Survey Crew: HK \GM \ \ \ \ \ \ Photos: T-8B-3,4 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.6 MS
 Av. Wet. Width (m): 2.7 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 17 MS
 Gradient (%): 3.0 CL
 Pool: 25 Riffle: 65 Run: 10 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 5-15 GE
 % Stable: 75 GE

Specific Data

3.1	4.2	3.8	2.2	3.7	4.6
2.2	3.1	3.8	1.6	2.0	3.5
8	4	3		7	5
14	23	15	17	20	15

Obstructions

C	Height (m)	Type	Location

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):		20	10
	Large (16-64mm):			10
Larges	Sm. cobble (64-128mm):			30
	Lge cobble (128-256mm):		70	35
Bedrock	Blder cobble (>256mm):			5
			0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	30	J	R			VO

Cover

Cover Total %: 85 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
10	15	5	5	55	10

Crown Closure %: 50 Aspect: E

Banks

Height (m): 0.5

% Unstable: 10

Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.2
 Bars (%): 35 pH: 6.8 Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): 23 Cond. (µmhos): 74

Comments

- C1: S3
 C2: LS = 8%, RS = 4%
 C3: No fisheries sensitive zones noted on site.
 C4: An electroshocker was not available for sampling on this day.
 C5: Lat N 54 58 11, Long W 126 41 58
 C6: No additional bank texture information.
 C7: DO measurements were not taken at this site. The mean air temperature on this day was 16.0°C
 C8: Good rearing habitat was observed on site.
 C9: The culvert at this road crossing was in good condition.

Reach Symbol

(Fish)

DV

3 D 3.0 | 1270

(Width, Valley: Channel, Slope)

(Bed Material)

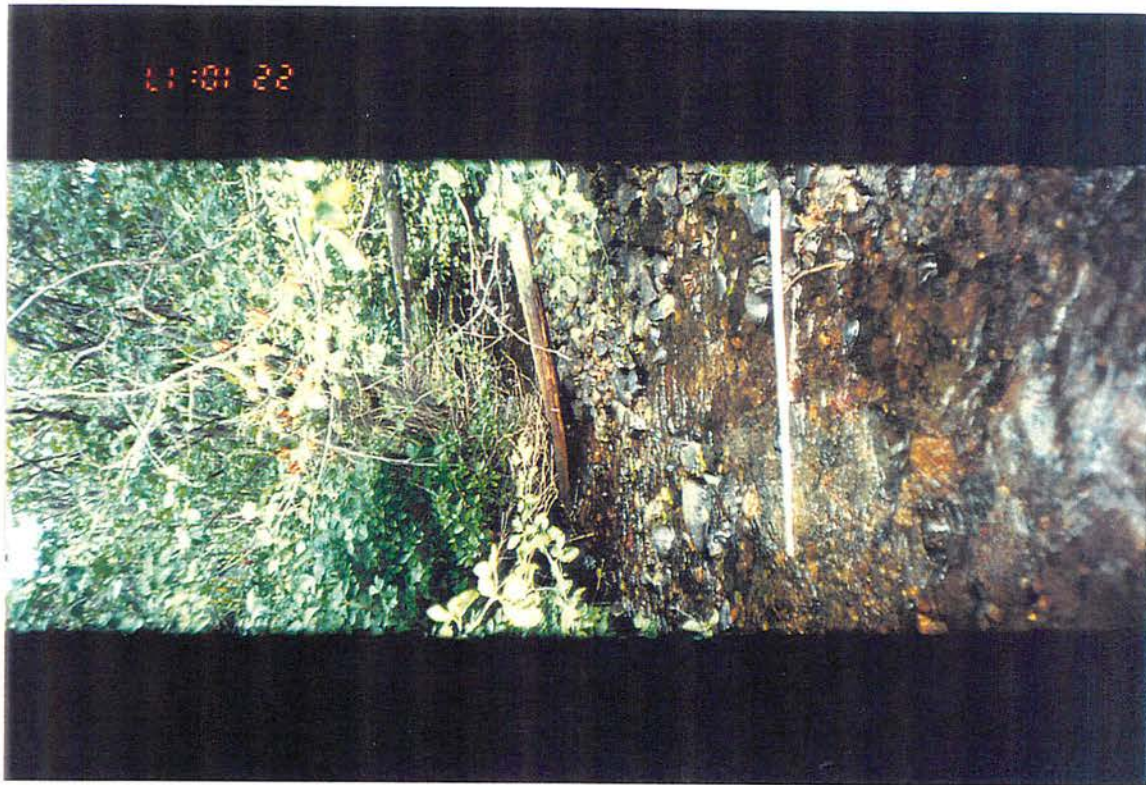


Photo #: T-8b-3, 1996/08/22
Site #: T145, Downstream view, Haggarty C.



Photo #: T-8b-4, 1996/08/22
Site #: T145, Upstream view, culvert on Haggarty C.



Location: TERRY 147, Unit 9, SE of Hagarty Lake, see C5.

Stream (Gaz.): Hagarty Creek

Watershed Code: 480-6972-528-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 3.6 MA Date: 22-Aug-96 Time: 12:30 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9 .6455 .60928 Length surveyed (m): 100.0 GE Survey Crew: HK \GM \ \ \ \ \ \ Photos: T-8B-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 4.0 MS
 Av. Wet. Width (m): 1.9 MS
 Av. Max Riffle Depth (cm): 5 MS
 Av. Max Pool Depth (cm): 42 MS
 Gradient (%): 3.0 CL
 Pool: 25 Riffle: 10 Run: 65 Other: 0
 % Side Channel: 0 GE
 % Debris Area: 0-5 GE
 %Stable: 90 GE

Specific Data

3.0	3.4	4.0	4.4	4.1	5.2
2.5	2.2	2.6	1.1	1.7	1.1
4	9	5	0	3	10
35	34	48	37	42	53

Obstructions

C	Height (m)	Type	Location

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	40	10
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):		15
	Lge cobble (128-256mm):	50	15
	Blder cobble (>256mm):		20
Bedrock		0	0

D90 (cm): 63 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	1	100	J	R			VO

Cover

Cover Total % : 90 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	10	30	5	25	10

 Crown Closure % : 80 Aspect : NE

Comments

- C1 S3
- C2 LS = 30%, RS = 30%
- C3 No fisheries sensitive zones noted on site.
- C4 An electroshocker was not available for sampling.
- C5 Lat N 54 57 35, Long W 126 44 00
- C6 No additional bank texture information.
- C7 DO measurements were not taken at this site. The water was clear to the bottom. The mean air temperature on this day was 16.0°C
- C8 Boulders, deep pools and overstream vegetation comprise most of the fish cover at this site.
- C9 The culvert at this road crossing creates a deep pool that is used by fish. Several Dolly Varden were observed in this pool.

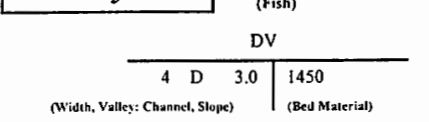
Discharge

Wetted Width (m): 1.0 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.45 F
 Discharge (m3/s): 0.01 F

Banks

Height (m): 0.8
 % Unstable: 10
 Fines Gravels Larges Bedrock
 Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0
 Bars (%): 15 pH: 7.1 Braided: Y
 Water Temp. (°C): 11.0 02 (ppm):
 Turb. (cm): 53 Cond. (µmhos):

Reach Symbol



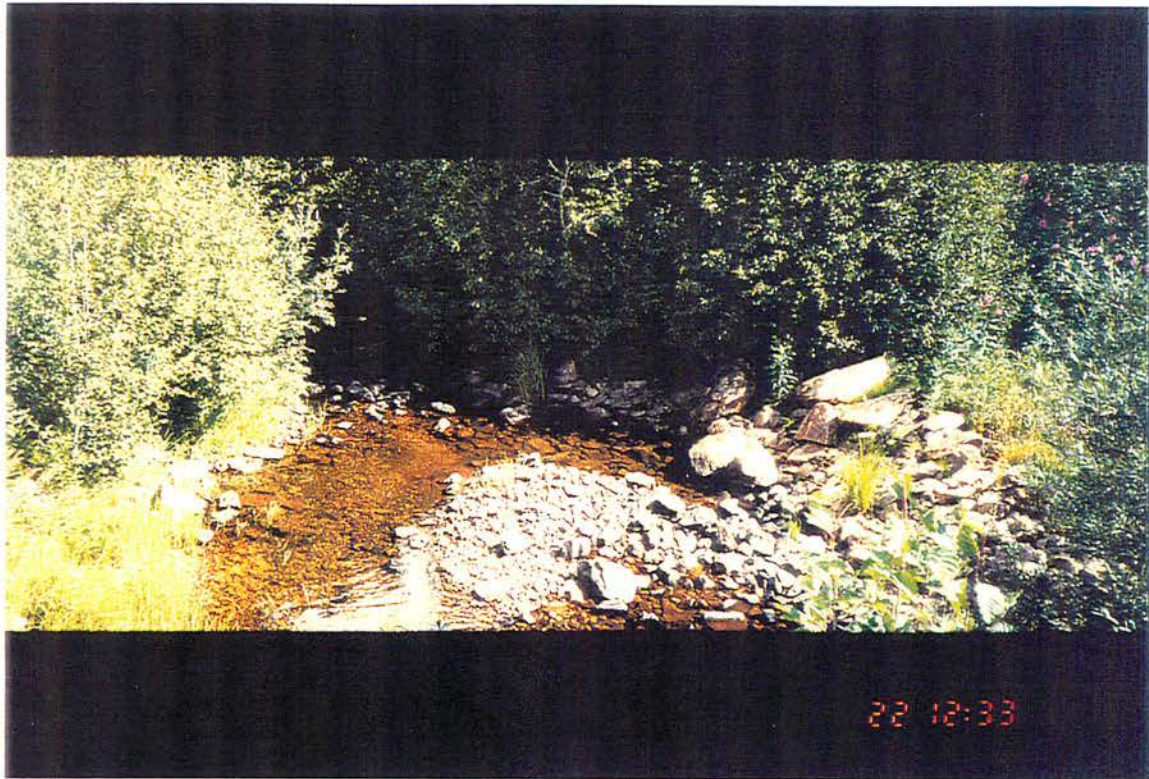


Photo #: T-8b-7, 1996/08/22
Site #: T147, Downstream view, culvert on Hay C.



Photo #: T-8b-8, 1996/08/22
Site #: T147, Downstream view; taken from culvert.

Location: W258, Unit 9; south of Hagarty Cr.

Stream (Gaz.): Unnamed

Watershed Code: 080-8900-000-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 2.3 MA Date: 10-Sep-97 Time: 16:00 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6436 .60918 Length surveyed (m): 300.0 GE Survey Crew: DDJP \ \ \ \ \ \ \ \ \ \ Photos: W-P-4,5 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.3 MS
 Av. Wet. Width (m): 1.8 MS
 Av. Max Riffle Depth (cm): 2 MS
 Av. Max Pool Depth (cm): 35 MS
 Gradient (%): 8.0 CL
 Pool: 20 Riffle: 20 Run: 40 Other: 20
 % Side Channel: 10-40 GE
 % Debris Area: >15 GE
 %Stable: 80 GE

Specific Data

2.0	2.6	2.4	2.2	2.0	2.7
1.4	1.9	1.9	1.5	1.7	2.6
2	4	3	1	2	2
23	33	35	50	29	39

Obstructions

Fish Summary

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

Cover

Cover Total % : 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	20	50	0	10	0

Crown Closure % : 10 Aspect : SE

Bed Material

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

D90 (cm): 42 Compaction: Medium

Comments

- C1: S3.
- C2: LS=32%, RS=32%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at I, 5, 500V, was 402 seconds over 300 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 16.0 C.
- C7: This stream has previously been logged to it's banks and holds a very large amount of logging debris. It has good rearing possibilities in plunge pool and boulder cover habitat. Downstream of the road crossing; the gradient increases, the channel becomes more defined and the flow becomes a series of 0.5-1.5m cascades.

Discharge

Wetted Width (m): 0.9 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: 50
 Fines Gravels Larges Bedrock
 Confinement: OC
 Valley : Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.6
 Bars (%): 20 pH: 8.1 Braided: N
 Water Temp. (°C): 9.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 120

Reach Symbol

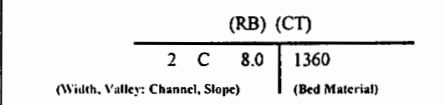




Photo #: W-P-4, 10-Sep-97

Site #: W258, Looking upstream at the channel, note the instream LOD



Photo #: W-P-5, 10-Sep-97

Site #: W258, Looking downstream at the channel

Location: W272, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-8900-000-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.6 MA Date: 13-Sep-97 Time: 15:30 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 .6448 .60917 Length surveyed (m): 100.0 GE Survey Crew: DD UPA \ \ \ \ \ \ \ \ \ \ Photos: W-Q-15,16,17,18,19 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.3 MS
 Av. Wet. Width (m): 2.3 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 31 MS
 Gradient (%): 3.0 CL
 Pool: 30 Riffle: 10 Run: 60 Other: 0
 % Side Channel: GE
 % Debris Area: 60 GE
 % Stable: 50 GE

Specific Data

1.8	2.2	2.3	2.6	2.4	2.5
2.2	2.4	2.4	2.3	2.5	1.7
1	1	1	1	1	1
23	27	38	31	26	41

Obstructions

Cover

Cover Total %: 60 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
40	10	5	5	10	30

Crown Closure %: 10 Aspect: NW

Bed Material

Fines	Clay, silt, sand (<2mm):	20	20
Gravels	Small (2-16mm):	50	20
	Large (16-64mm):		30
Larges	Sm. cobble (64-128mm):		15
	Lge cobble (128-256mm):	30	10
	Blder cobble (>256mm):		5
Bedrock		0	0

D90 (cm): 38 Compaction: Medium

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	2	115-180	A	S			EL
C4	CT	2	70-115	J	R			EL

Discharge

Wetted Width (m): 1.4 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.14 F
 Discharge (m³/s): 0.00 F

Banks

Height (m): 0.1
 % Unstable: 20
 Fines Gravels Larges Bedrock

Reach Symbol

(Fish)
 DV CT
 2 D 3.0 | 2530
 (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): 8.0 02 (ppm):
 Turb. (cm): Cond. (µmhos): 110

Comments

C1: S3
 C2: LS = 11%, RS = 16%
 C3: No fisheries sensitive zones noted.
 C4: The electroshocking effort, using a 12 B POW model set at J-4-400V, was 285 seconds over 100 meters. In addition to the fish captured at this site, 30 cutthroat ranging from 35-115mm in length were visually observed.
 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: Spawning and rearing habitat were observed at this site. Deep runs with occasional riffles characterize the flow in the sampling area. LOD, cutbanks and pools provide cover for fish at this site. The LOD in the stream is derived from previous logging activity which took place right down to the stream banks.



Photo #: W-Q-15, 13-Sep-97
Site #: W272, Looking downstream at the channel



Photo #: W-Q-16, 13-Sep-97
Site #: W272, Looking upstream at the channel



Photo #: W-Q-17, 13-Sep-97
Site #: W272, Measuring fish with the meterstick

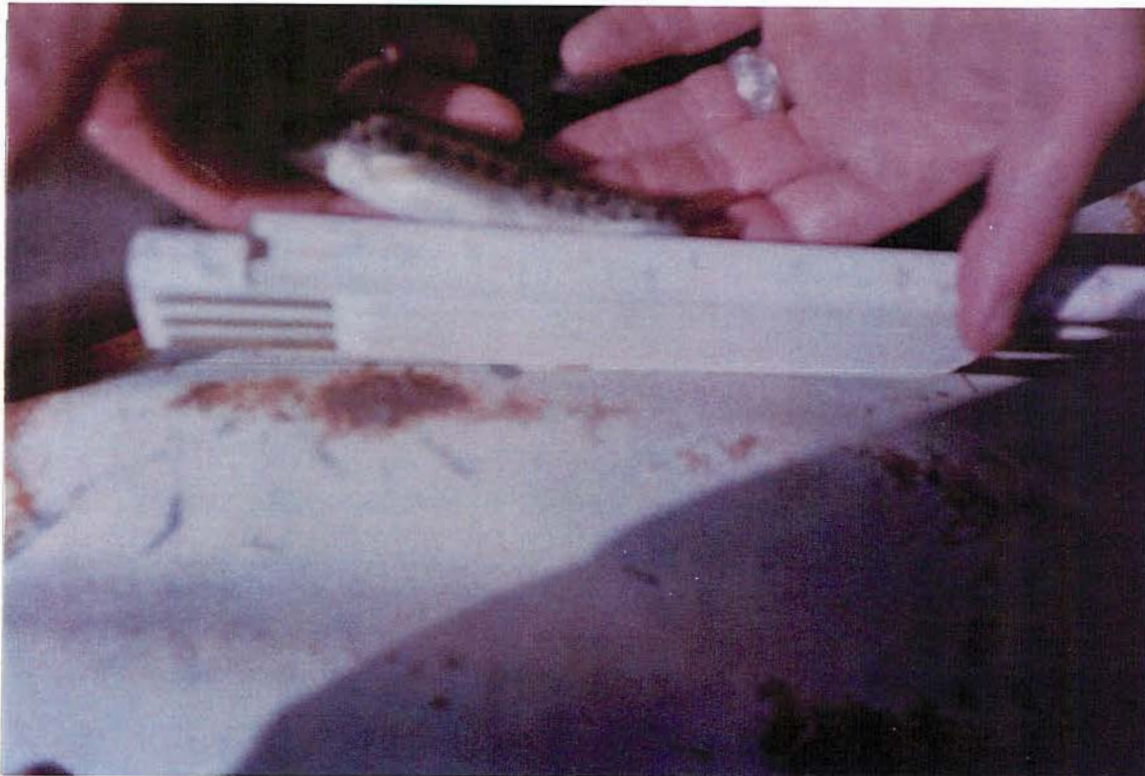


Photo #: W-Q-18, 13-Sep-97
Site #: W272, Measuring fish with the meterstick



Photo #: W-Q-19, 13-Sep-97

Site #: W272, Measuring fish with the meterstick



Location: TERRY 169, Unit 9, 100m downstream of T168, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 080-8700-000-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 0.6 MA Date: 25-Aug-96 Time: 17:25 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6438 .60931 Length surveyed (m): 50.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: None Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.4 MS
 Av. Wet. Width (m): 0.0 GE
 Av. Max Riffle Depth (cm): 0 GE
 Av. Max Pool Depth (cm): 0 GE
 Gradient (%): 2.0 CL
 Pool: 0 Riffle: 0 Run: 0 Other: 0
 % Side Channel: 0-10
 % Debris Area: 30 GE
 % Stable: 80 GE

Specific Data

1.2	1.5	1.4	1.9	1.2	1.1
-----	-----	-----	-----	-----	-----

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	30	15
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		25
Larges	Lge cobble (128-256mm):	60	25
	Blder cobble (>256mm):		10
Bedrock		0	0

D90 (cm): 42 Compaction: High

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
0	10	20	30	40	0

Crown Closure %: 80 Aspect: E

Discharge

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

Reach Symbol

(Fish)
 (DV)
 1 D 2.0 | 1360
 (Width, Valley: Channel, Slope) | (Bed Material)

Banks

Height (m): 0.2
 % Unstable: 20
 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):

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 = 15%, RS = 20%
 C3: No fisheries sensitive zones were noted at this site.
 C4: No electroshocking was carried out at this site.
 C5: Lat N 54 58' 10.1", Long W 126 44' 59.6"
 C6: No additional bank texture information.
 C7: Water quality was not evaluated at this site. The mean air temperature on this day was 14.5°C
 C8: This site may provide some habitat during high flow but access to the lake appears to be limited.



Location: TERRY 170, Unit 9, see C5.

Stream (Gaz.): Unnamed

Watershed Code: 480-6972-528-000-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 1.0 MA Date: 25-Aug-96 Time: 17:40 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9.6440 .60928 Length surveyed (m): 100.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: None 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): 11 MS
 Gradient (%): 7.0 CL
 Pool: 90 Riffle: 10 Run: 0 Other: 0
 % Side Channel: GE
 % Debris Area: 30 GE
 % Stable: 30 GE

Specific Data

2.3	1.7	1.8	1.4	1.8	2.1
0.3	0.3	0.4	0.4	0.6	0.4
1	1				
3	4	13	11	15	22

Obstructions

C	Height (m)	Type	Location

Bed Material

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

Fish Summary

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

Cover

Cover Total %: 35 GE

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

Crown Closure %: 0 Aspect: E

D90 (cm): 27 Compaction: High

Discharge

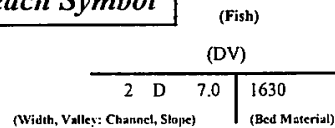
Wetted Width (m): 0.0 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.12 F
 Discharge (m3/s): 0.00 F

Banks

Height (m): 0.3
 % Unstable: 20
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs H(m): 0.7
 Bars (%): 10 pH: 6.8 Braided: N
 Water Temp. (°C): 16.0 02 (ppm):
 Turb. (cm): 22 Cond. (µmhos):

Reach Symbol



Comments

- C1: S3
- C2: LS = 20%, RS = 25%
- C3: No fisheries sensitive zones were noted in the area.
- C4: No electroshocking was carried out at this site.
- C5: Lat N 54 58' 08", Long W 126 44' 59.6"
- C6: No additional bank texture information.
- C7: DO and conductivity were not measured at this site. The mean air temperature on this day was 14.5°C
- C8: Some spawning and limited rearing habitat occurs at this site. At the time of sampling, the flow consisted of a series of isolated pools.
- C9: This stream runs through a cutblock in which logging has taken place right down to the banks of the stream.

5.9 Haystack Creek (480-6972-544-458) (93 L 096, 93 L 097)

5.9.1 Sensitive Habitats and Barriers

The Haystack mainstem is 7.2 km in length and is fed by 6 tributaries. Reach 1 has low gradient and is unconfined while reach 2 has moderate gradient and is somewhat confined. Reach 3 has steep gradient and is separated from reach 4 by a 30 meter falls. Reach 4 has steep gradient and drains a high elevation lake. Haystack Creek was sampled at 3 locations, including reaches 1 and 2 of the mainstem.

5.9.2 Fish Summary Tables and Stream Classification

No historical records were found for Haystack Creek. Dolly Varden were captured by electrofishing in reaches 1 and 2 and in a tributary to reach 2 of the mainstem. Reaches 1 and 2 were classified as S2, based on average channel widths of 5.57 meters and 5.22 meters and the presence of Dolly Varden in the sampling areas. Spawning habitat was identified in both reaches. The tributary sampled in this inventory was classified as an S3 based on an average channel width of 2.03 meters and the presence of fish and fish habitat in the sampling area. The headwater tributaries were not sampled and would be classified as non fish bearing due to steep, impassable gradient.



Location: BRUCE 95, Unit 9, see C5

Stream (Gaz.): Haystack Creek

Watershed Code: 480-6972-544-458-000-000-000-000-000-000-0

Map #: 93 L 096

Reach Length (km): 4.9 MA

Date: 25-Aug-96

Time: 11:15

Agency: TEC

Access: HL

Fish Card: N

Field Historical

U.T.M.: 9.6405 .6902

Length surveyed (m): 100.0 GE

Survey Crew: BM\DD \ \ \ \ \ \

Photos: B-6-20,21

Air Photos:

Channel Characteristics

Av. Chan. Width (m): 5.2 MS
 Av. Wet. Width (m): 4.6 MS
 Av. Max Riffle Depth (cm): 37 MS
 Av. Max Pool Depth (cm): 40 MS
 Gradient (%): 7.0 CL
 Pool: 20 Riffle: 50 Run: 10 Other: 20
 % Side Channel: GE
 % Debris Area: 0.5 GE
 % Stable: 10 GE

Specific Data

4.8	4.9	7.0	3.9	5.9	4.8
3.9	4.3	5.5	3.6	5.6	4.8
24	37	33	49	36	45
41	33	33	49	36	45

Obstructions

Bed Material

Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):	25	10
	Large (16-64mm):		15
	Sm. cobble (64-128mm):		25
Larges	Lge cobble (128-256mm):	65	20
	Blder cobble (>256mm):		20
Bedrock		0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	8	56-110	J	R			EL

Cover

Cover Total %: 35 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
25	10	30	0	5	30

Crown Closure %: 35 Aspect: NW

Banks

Height (m): 0.6

% Unstable: 50

Fines Gravels Larges Bedrock

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs Ht(m): 1

Bars (%): 10 pH: 5.6 Braided: N

Water Temp. (°C): 6.5 O2 (ppm):

Turb. (cm): 49 Cond. (µmhos): 149

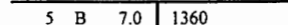
Comments

- C1: S2
- C2: LS = 40%, RS = 37%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 15 A model was 281 seconds over 50 meters.
- C5: Lat N 54 56' 19.5", Long W 126 48' 24.5"
- C6: No additional bank texture information.
- C7: DO was not measured. The mean air temperature on this day was 14.5°C
- C8: This site has some good rearing and spawning habitat.

Reach Symbol

(Fish)

DV



(Width, Valley: Channel Slope)

(Bed Material)



Photo #: B-6-20, 1996/08/25
Site #: B95, Looking downstream.



Photo #: B-6-21, 1996/08/25
Site #: B95, Looking upstream, LOD in Haystack C.



Location: TERRY 167, Unit 9, Bulkley forest district, see C5.

Stream (Gaz.): Haystack Creek

Watershed Code: 480-6972-544-458-000-000-000-000-000-0

Map #: 93 L 097 Reach Length (km): 1.4 MA Date: 25-Aug-96 Time: 15:40 Agency: TEC Access: V4 Fish Card: N Field Historical
 U.T.M.: 9.6419 .60935 Length surveyed (m): 200.0 GE Survey Crew: GM\HK \ \ \ \ \ \ \ \ \ \ Photos: T-9-23,24 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 5.6 T
 Av. Wet. Width (m): 3.6 T
 Av. Max Riffle Depth (cm): 10 MS
 Av. Max Pool Depth (cm): 42 MS
 Gradient (%): 10.0 CL
 Pool: 30 Riffle: 30 Run: 30 Other: 10
 % Side Channel: 0-10 GE
 % Debris Area: 20 GE
 % Stable: 10 GE

Specific Data

5.8	5.5	4.4	4.0	6.4	7.3
3.0	3.5	2.6	2.3	4.8	5.5
10	10	10	11	10	
32	34	45	38	35	69

Obstructions

C	Height (m)	Type	Location
	1	C	0.1

Bed Material

Fines	Clay, silt, sand (<2mm):	5	5
Gravels	Small (2-16mm):	20	10
	Large (16-64mm):		10
Larges	Sm. cobble (64-128mm):		25
	Lge cobble (128-256mm):	75	40
	Bllder cobble (>256mm):		10
Bedrock		0	0

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	5	55-130	J				EL

Cover

Cover Total %: 80 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
30	30	15	0	10	15

Crown Closure %: 30 Aspect: NE

D90 (cm): 42 Compaction: High

Discharge

Wetted Width (m): 2.9 MS
 Mean Depth (m): 0.3 MS
 Mean Velocity (m/s): 0.62 F
 Discharge (m3/s): 0.41 F

Banks

Height (m): 0.5
 % Unstable: 15
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley : Channel Ratio 10+
 Stage: M Flood Signs Ht(m): 0.7
 Bars (%): 10 pH: 7.5 Braided: N
 Water Temp. (°C): 9.0 02 (ppm):
 Turb. (cm): 55 Cond. (µmhos):

Reach Symbol

(Fish)

DV

6 D 10.0 | 1270

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

Comments

- C1: S2
- C2: LS = 11%, RS = 14%
- C3: No fisheries sensitive zones were noted at this site.
- C4: The electroshocking effort, using a Smithroot 15 A model, was 224 seconds.
- C5: Lat N 54 58' 17.9", Long W 126 46' 56.9"
- C6: No additional bank texture information.
- C7: DO conductivity were not measured at this site. The mean air temperature on this day was 14.5°C
- C8: Spawning, rearing and overwintering habitat were observed at this site.
- C9: A series of small (<.5m) cascades with step pools, was observed at this site. These cascades would not obstruct fish passage upstream. A .7m high cascade seen in this area would not prevent adult fish from moving upstream.

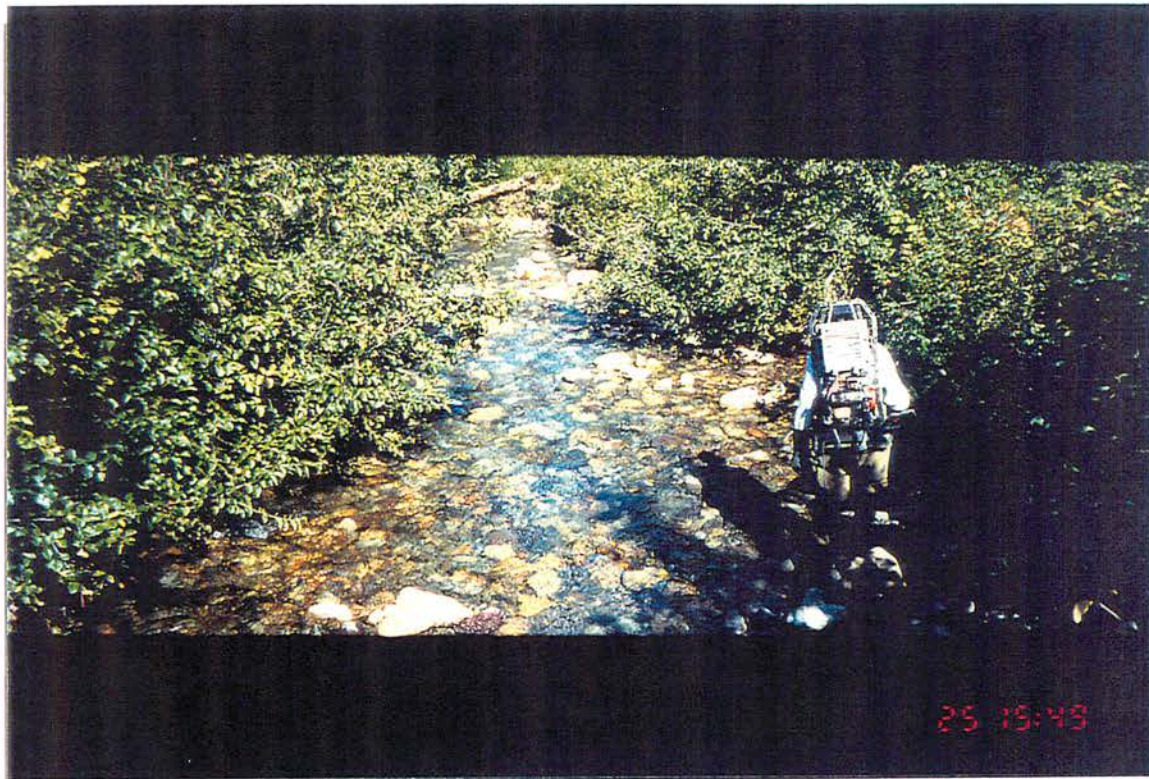


Photo #: T-9-23, 1996/08/25
Site #: T167, Downstream view.



Photo #: T-9-24, 1996/08/25
Site #: T167, Upstream view.

DFO/MoELP Stream Survey Form

Site Number: W271

Reach No.: 1

Trib. to Haystack Cr.



TRITON

Environmental Consultants Ltd.

Location: W271, Unit 9

Stream (Gaz.): Unnamed

Watershed Code: 080-8200-000-000-000-000-000-000-000-

Map #: 93 L 097 Reach Length (km): 1.6 MA Date: 13-Sep-97 Time: 13:00 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6475 .60928 Length surveyed (m): 100.0 GE Survey Crew: DD UP \ \ \ \ \ \ \ \ Photos: W-Q-10,11,12,13A,14 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 2.0 MS
 Av. Wet. Width (m): 1.7 MS
 Av. Max Riffle Depth (cm): 1 MS
 Av. Max Pool Depth (cm): 31 MS
 Gradient (%): 6.0 CL
 Pool: 20 Riffle: 30 Run: 50 Other: 0
 % Side Channel: GE
 % Debris Area: 70 GE
 % Stable: 60 GE

Specific Data

2.2	1.6	2.0	1.9	2.1	2.4
2.3	1.2	1.9	1.5	1.4	2.1
1	1	1	1	1	1
49	12	35	33	24	31

Obstructions

Bed Material

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

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	9	80-145	J				EL

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	40	10	0	10	20

Crown Closure %: 20 Aspect: N

D90 (cm): 41 Compaction: Medium

Discharge

Wetted Width (m): 1.3 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.22 F
 Discharge (m3/s): 0.02 F

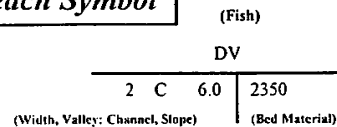
Banks

Height (m): 0.1
 % Unstable: 10

Fines Gravels Larges Bedrock

Confinement: OC
 Valley: Channel Ratio 5-10
 Stage: M Flood Signs Ht(m): 0.1
 Bars (%): 10 pH: 7.8 Braided: N
 Water Temp. (°C): 6.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 100

Reach Symbol



Comments

- C1: S3
- C2: LS = 20%, RS = 41%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a 12 B POW model, set at J-4-400V, was 243 seconds over 175 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 7.C.
- C7: Both spawning and rearing habitat were observed at this site. A lot of blowdown was noted in and across the channel. The fish were caught in deep pools associated with LOD.



Photo #: W-Q-10, 13-Sep-97

Site #: W271, Looking upstream at the channel, note the mosses on the substrate



Photo #: W-Q-11, 13-Sep-97

Site #: W271, Looking downstream at the channel



Photo #: W-Q-12, 13-Sep-97
Site #: W271, Measuring fish with the meterstick



Photo #: W-Q-13, 13-Sep-97
Site #: W271, Measuring fish with the meterstick



Photo #: W-Q-14, 13-Sep-97
Site #: W271, Looking across stream at redd

5.10 Little Joe Creek (480-6972-427-541) (93 L 086, 93 L 087)

5.10.1 Sensitive Habitats and Barriers

The mainstem of Little Joe Creek is 9.5 km in length and is fed by 22 tributaries. The headwaters of Little Joe Creek are the Little Joe Lakes. Reaches 1 and 2 are quite confined, with particularly steep side slopes in reach 1. Occasional sections of steep gradient occur in reach 2 and extreme gradient was noted in reach 3. Extreme gradient was also noted in reach 4, which has a 50 meter falls. Reach 5 has moderate gradient, and reach 6 is the first of two large lakes in this system. Reach 7 also has moderate gradient and drains reach 8, the largest lake in this system. Reach 9 has steep to extreme gradient. The Little Joe watershed was sampled in 5 locations, including reach 1 and 5 of the mainstem and the outlet of the Four Lakes system.

5.10.2 Fish Summary Tables and Stream Classification

No historical information exists for this stream. Dolly Varden were caught by electrofishing in reach 1 and no fish were caught at any other sample site in this system. Little Joe Creek was classified as an S2 in reach 1, based on an average channel width of 13.07 meters and the presence of Dolly Varden in the sampling area. Reaches 3 and above of the Little Joe watershed have been classified as non fishbearing because no evidence of resident populations of fish was found in the sampling areas. Little Joe was classified as an S5 in reach 5, based on an average channel width of 6.28 meters and the absence of fish in the sampling area, which was electrofished. Little Joe Lakes were also minnow trapped and no fish were caught. The outlet of Four Lake was also classified as an S5, based on an average channel width of 3.47 meters and the absence of fish in the sampling area.

DFO/MoELP Stream Survey Form

Site Number: HASLETT 99
Little Joe Cr.

Reach No.: 1



Location: HASLETT 99, Unit 9, see C5.

Stream (Gaz.): Little Joe Cr.

Watershed Code: 480-6972-427-541-000-000-000-000-000-000-0

Map #: 93 L 087 Reach Length (km): 4.0 MA Date: 20-Aug-96 Time: 10:15 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9.6449 .60808 Length surveyed (m): 200.0 GE Survey Crew: JH\HK \ \ \ \ \ \ \ \ \ \ Photos: H-6-19,20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 13.1 MS
 Av. Wet. Width (m): 5.5 MS
 Av. Max Riffle Depth (cm): 21 MS
 Av. Max Pool Depth (cm): 108 MS
 Gradient (%): 8.0 CL
 Pool: 20 Riffle: 45 Run: 35 Other: 0
 % Side Channel: GE
 % Debris Area: 20 GE
 % Stable: 80 GE

Specific Data

15.5	12.2	18.0	10.4	10.9	11.4
3.4	4.8	7.5	6.3	6.4	4.9
30	14	16		23	
75	160	90			

Obstructions

C	Height (m)	Type	Location
	0	CV	0.6

Bed Material

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

D90 (cm): 45 Compaction: High

Fish Summary

C	Species	Number	Size Range (mm)	Life Phase	Use 1	Use 2	Use 3	Method
	DV	2	69-109	J	R			EL

Cover

Cover Total %: 40 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
20	30	35	0	10	5

Crown Closure %: 50 Aspect: SE

Comments

- C1: S2
- C2: LS = 4%, RS = 7%
- C3: The electroshocking effort, using a Smithroot 12 B POW model, was 649 seconds over 50 meters.
- C4: Lat N 54 51' 13.8" Long W 126 44' 32.9"
- C5: DO, pH and conductivity were not measured at this site. The water was clear to the bottom.
- C6: The banks in the sampling area contain fines and larges. The mean air temperature on this day was 11.8°C
- C7: Some good spawning habitat was observed at this site. Evidence of bank erosion was noted near the road. The culvert could be a barrier at low flow. A large pool is located at the downstream end of the culvert that would ease fish passage upstream. The culvert may still prevent smaller fish from moving upstream.

Discharge

Wetted Width (m): 4.8 MS
 Mean Depth (m): 0.2 MS
 Mean Velocity (m/s): 0.57 F
 Discharge (m3/s): 0.41 F

Banks

Height (m): 0.3
 % Unstable: 20
 Fines Gravels Larges Bedrock

Confinement: UC
 Valley: Channel Ratio 10+
 Stage: L Flood Signs Ht(m): 1.5
 Bars (%): 30 pH: Braided: N
 Water Temp. (°C): 8.0 O2 (ppm):
 Turb. (cm): 160 Cond. (µmhos):

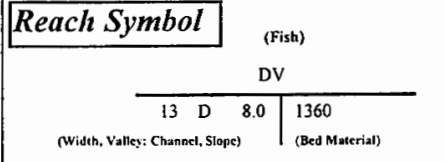




Photo #: H-6-19, 1996/08/20
Site #: H99, Looking downstream.



Photo #: H-6-20, 1996/08/20
Site #: H99, Looking upstream, cutbank and LOD cover.



Photo #: H-6-21, 1996/08/20
Site #: H99, Looking upstream toward culvert.



Location: Y227, Unit 9; just below Little Joe Lakes

Stream (Gaz.): Little Joe Creek

Watershed Code: 480-6972-427-541-000-000-000-000-000-000-000-000

Map #: 93 L 086 Reach Length (km): 0.6 MW Date: 08-Sep-97 Time: 8:26 Agency: TEC Access: H Fish Card: N Field Historical Photos: Y-27-9,10,11 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 6.3 MS
Av. Wet. Width (m): 5.1 MS
Av. Max Riffle Depth (cm): 17 MS
Av. Max Pool Depth (cm): 40 MS
Gradient (%): 7.0 CL
Pool: 20 Riffle: 20 Run: 45 Other: 15
% Side Channel: 10-40 GE
% Debris Area: 0 GE
%Stable: 0 GE

Specific Data

Table with 7 columns: 2.2, 5.0, 6.7, 9.4, 8.0, 6.4, 2.2, 5.0, 6.9, 8.5, 1.8, 6.4, 3, 26, 20, 22, 13, 36, 43, 54, 34, 33

Obstructions

Table with 4 columns: C, Height (m), Type, Location. Row 1: 50, F, 5.5

Bed Material

Table with 4 columns: Material, Clay, silt, sand (<2mm), Fines, Gravels, Larges, Bedrock

Fish Summary

Table with 8 columns: C, Species, Number, Size Range (mm), Life Phase, Use 1, Use 2, Use 3, Method. Row 1: NF, NA, EL

Cover

Cover Total % : 25 GE

Table with 6 columns: Pool, LOD, Bldr, In Veg, O Veg, Ctlank. Row 1: 30, 0, 55, 5, 0, 10

D90 (cm): Compaction: High

Comments

- C1: S5.
C2: LS=22%, RS=28%
C3: No fisheries sensitive zones noted.
C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 500V, was 576 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 13.5 C.
C7: There is lots of good boulder and pool cover here. There is also overwintering habitat in Little Joe Lake. A 50 m falls below the site is a fish barrier. Small cascades over boulders and bedrock makes up 15% of the flow in the sampling area.

Discharge

Wetted Width (m): 1.8 MS
Mean Depth (m): 0.3 MS
Mean Velocity (m/s): 0.56 F
Discharge (m3/s): 0.23 F

Banks

Height (m): 0.2
% Unstable: 0
Fines [] Gravels [] Larges [] Bedrock [x]
Confinement: OC
Valley : Channel Ratio 5-10
Stage: M Flood Signs Ht(m): 0.3
Bars (%): 5 pH: 7.6 Braided: Y
Water Temp. (°C): 10.0 O2 (ppm):
Turb. (cm): Cond. (µmhos): 70

Reach Symbol

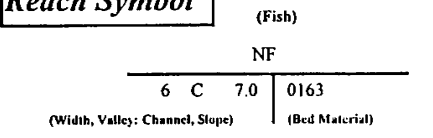




Photo #: Y-27-9, 08/09/97
Site #: Y227, Looking upstream at the waterfall

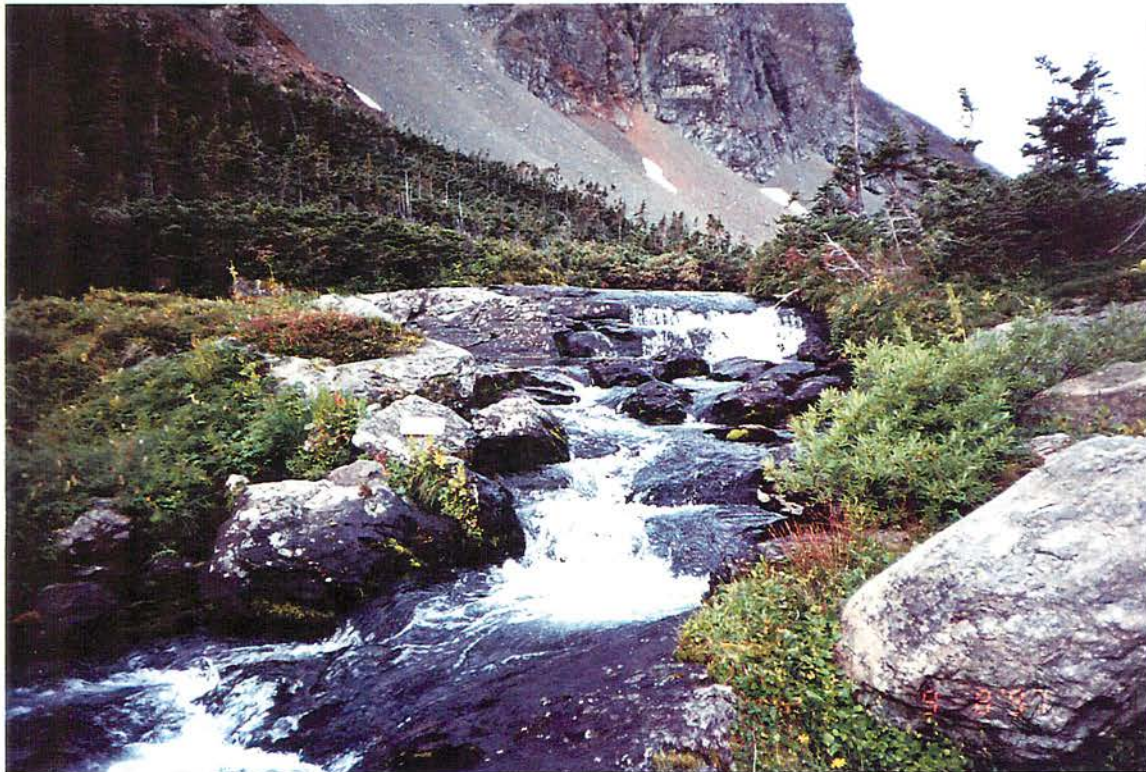


Photo #: Y-27-10, 08/09/97
Site #: Y227, Looking upstream at the channel and cascade/step pool habitat

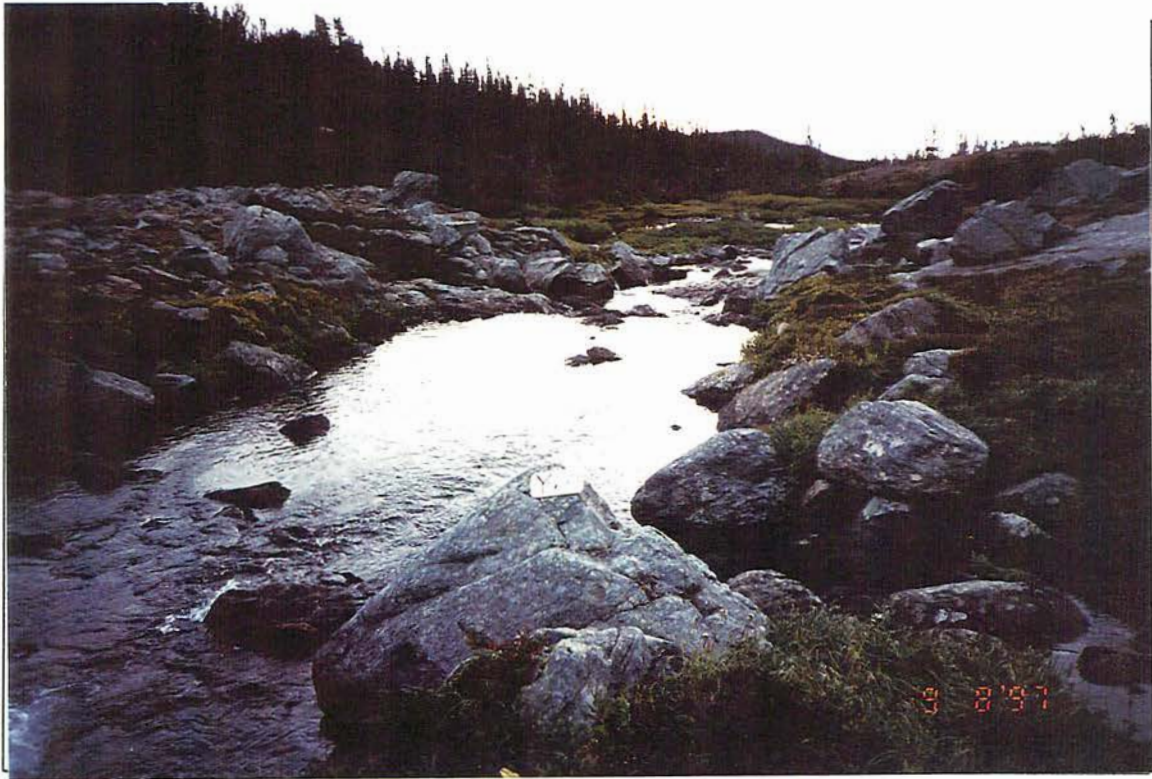


Photo #: Y-27-11, 08/09/97

Site #: Y227, Looking downstream at the channel



Location: Y213, Unit 9; 100m before the start of Little Joe Creek trail Stream (Gaz.): Unnamed Watershed Code: 079-4800-000-000-000-000-000-000-000-000-000-000-000-000

Map #: 93 L 087 Reach Length (km): 1.3 MW Date: 05-Sep-97 Time: 13:22 Agency: TEC Access: V2 Fish Card: N Field Historical
 U.T.M.: 9 6441 60812 Length surveyed (m): 200.0 GE Survey Crew: JP\FC\ \ \ \ \ \ \ \ \ \ Photos: Y-25-7,8 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 1.9 MS
 Av. Wet. Width (m): 1.3 MS
 Av. Max Riffle Depth (cm): 4 MS
 Av. Max Pool Depth (cm): 21 MS
 Gradient (%): 21.0 GE
 Pool: 30 Riffle: 15 Run: 40 Other: 15
 % Side Channel: 0-10 GE
 % Debris Area: >15 GE
 % Stable: 10 GE

Specific Data

3.1	2.4	1.2	1.8	1.3	1.8
1.3	0.7	1.2	1.8	1.2	1.6
3	4	5	4		
25	21	14	30	17	

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=26%, RS=23%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at J, 5, 400V, was 187 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 10.5 C.
- C7: This reach contains a number of cascades over LOD and boulders. The gradient becomes steep near Little Joe Creek (30%) with an increased number of cascades over boulders. Step-pool habitat was noted and fish may use the lower end of the creek seasonally.

Cover

Cover Total % : 30 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctnk
15	40	15	5	15	10

Crown Closure % : 20 Aspect : SE

Bed Material

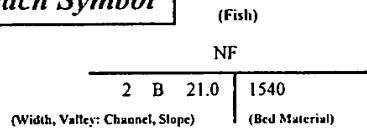
	Fines	Clay, silt, sand (<2mm):		
Gravels		Small (2-16mm):	50	25
		Large (16-64mm):		25
		Sm. cobble (64-128mm):	20	
Larges		Lge cobble (128-256mm):	40	10
		Blder cobble (>256mm):		10
Bedrock			0	0

D90 (cm): 35 Compaction: Medium

Discharge

Wetted Width (m): 0.3 MS
 Mean Depth (m): 0.0 MS
 Mean Velocity (m/s): 0.44 F
 Discharge (m³/s): 0.10 F

Reach Symbol



Banks

Height (m): 0.2
 % Unstable: 10

Fines Gravels Larges Bedrock

Confinement: FC

Valley : Channel Ratio 2-5

Stage: M Flood Signs II(m): 0.4

Bars (%): 5 pH: 7.9 Braided: Y

Water Temp. (°C): 10.5 02 (ppm):

Turb. (cm): Cond. (µmhos): 90



Photo #: Y-25-7, 05/09/97

Site #: Y213, Looking upstream at the channel, sm. cascade over LOD , pool



Photo #: Y-25-8, 05/09/97

Site #: Y213, Looking downstream at the channel

Location: Y228, Unit 9, Four Lakes region.

Stream (Gaz.): Four Creek

Watershed Code: 480-6972-427-541-501-000-000-000-000-000-0

Map #: 93 L 086 Reach Length (km): 0.9 MW Date: 08-Sep-97 Time: 9:21 Agency: TEC Access: H Fish Card: N Field Historical
 U.T.M.: 9.6406.60812 Length surveyed (m): 300.0 GE Survey Crew: JP\FC \ \ \ \ \ \ \ \ Photos: 3,14,15,16,17,18,19,20,21 Air Photos:

Channel Characteristics

Av. Chan. Width (m): 3.5 MS
 Av. Wet. Width (m): 3.1 MS
 Av. Max Riffle Depth (cm): 9 MS
 Av. Max Pool Depth (cm): 32 MS
 Gradient (%): 9.0 CL
 Pool: 10 Riffle: 30 Run: 50 Other: 10
 % Side Channel: 0-10 GE
 % Debris Area: 0 GE
 % Stable: 0 GE

Specific Data

3.1	3.6	3.8	3.9	3.7	2.7
3.1	3.5	3.6	3.0	3.5	1.9
10	11	11	7	8	
28	36	33	32	32	

Obstructions

C	Height (m)	Type	Location
	10	C	1.5
	5	C	1.6
	8	F	1.6

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=20%
- C3: No fisheries sensitive zones noted.
- C4: The electroshocking effort, using a Smithroot 12 B POW model set at 1, 5, 500V, was 312 seconds over 300 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 14.0 C.
- C7: Cascades were observed throughout the sampling area. Most of the cover for fish at this site is provided by boulders. There is lots of spawning sized gravel, but no access to this site.

Cover

Cover Total %: 10 GE

Pool	LOD	Bldr	In Veg	O Veg	Ctbnk
25	0	60	10	0	5

 Crown Closure %: 0 Aspect: SE

Bed Material

	Fines	Clay, silt, sand (<2mm):	10	10
Gravels	Small (2-16mm):		30	15
	Large (16-64mm):			15
	Sm. cobble (64-128mm):			15
Larges	Lge cobble (128-256mm):		50	15
	Blder cobble (>256mm):			20
Bedrock			10	10

D90 (cm): Compaction: High

Discharge

Wetted Width (m): 1.7 MS
 Mean Depth (m): 0.1 MS
 Mean Velocity (m/s): 0.52 F
 Discharge (m3/s): 0.07 F

Banks

Height (m): 0.1
 % Unstable: 0
 Fines Gravels Larges Bedrock

Confinement: FC
 Valley: Channel Ratio 2-5
 Stage: M Flood Signs Ht(m):
 Bars (%): 5 pH: 7.5 Braided: Y
 Water Temp. (°C): 9.0 O2 (ppm):
 Turb. (cm): Cond. (µmhos): 20

Reach Symbol

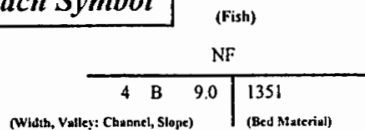




Photo #: Y-27-12, 08/09/97
Site #: Y228, Looking upstream at the channel



Photo #: Y-27-13, 08/09/97
Site #: Y228, Looking downstream at the channel



Photo #: Y-27-14, 08/09/97
Site #: Y228, Looking upstream at the channel

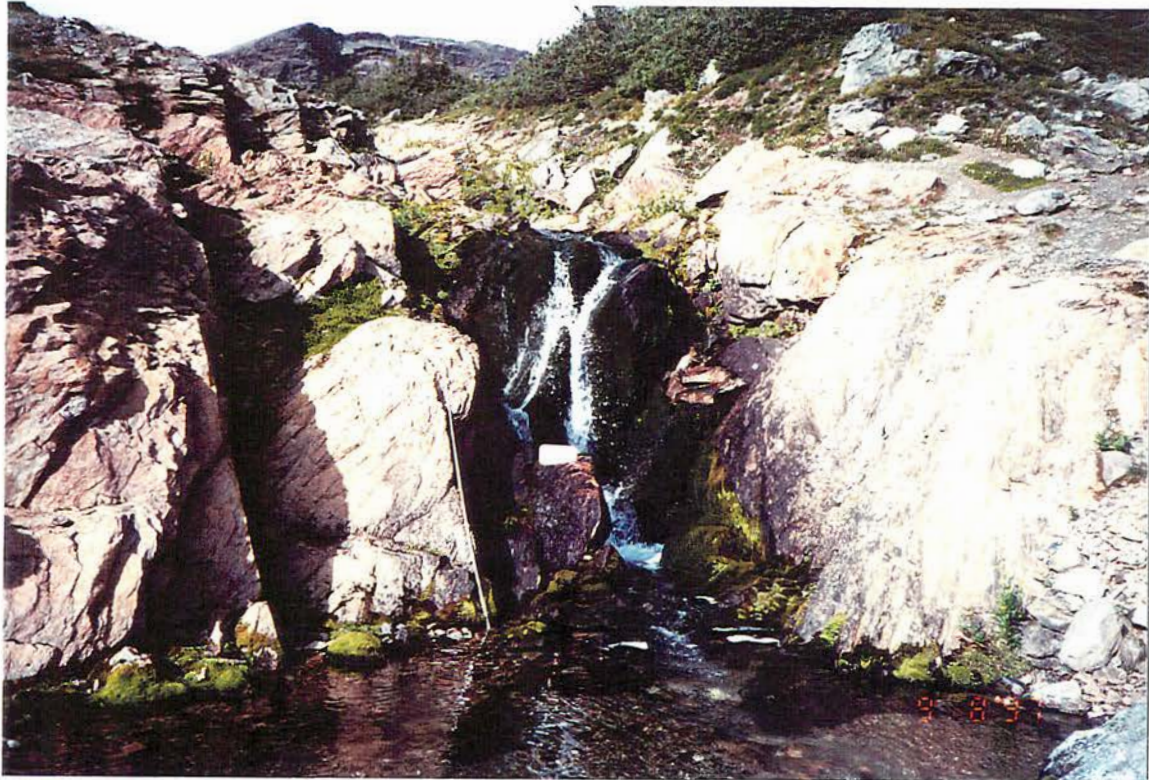


Photo #: Y-27-15, 08/09/97
Site #: Y228, Looking upstream at the channel



Photo #: Y-27-17, 08/09/97
Site #: Y228, Aerial photo of waterfall in avalanche area



Photo #: Y-27-20, 08/09/97
Site #: Y228, Looking upstream at the channel



Photo #: J-12-1, 1996/08/25
Site #: Aerial photo of falls, headwaters to Nata C.



Photo #: J-12-2, 1996/08/25
Site #: Aerial photo of falls, tributary to Nata C.