FRBC RESOURCE INVENTORY PROGRAM

Reconnaissance (1:20,000 Scale) Fish and Fish Habitat Inventory in the Shea Creek Watershed

WSC: 460-600600-50800-00500-2830

TRITON
Environmental Consultants Ltd.

2586/WP1454n

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WSC: 460-600600-50800-00500-2830

Prepared for:

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P.O. Box 158
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Prepared by:

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June 1998

TRITON
Environmental Consultants Ltd.

PROJECT SUMMARY INFORMATION

Project Reference Information

FDIS Project Number:	06-BABL-3085-0001-1998
MELP Project or Contract Number:	CSK-3085
FRBC Project Number:	SB97063-IN
Name of subcontractors:	n/a
Project Manager:	Scott Northrup, R.P.Bio.
Field crew:	T. Walker, D. Lawes, E. Nyhof, S. Toth
Data entry by:	Tina Walker, David Lawes
Report prepared by:	Tina Walker
Report edited by:	Scott Northrup, R.P.Bio.
GIS analysis by:	Western Geographic Information Systems
Voucher speceis ID:	Gordon Haas
Water analysis by:	n/a
Fish aging by:	n/a

Watershed Information

Watershed Name:	Shea Creek
Watershed Code:	460-600600-50800-00500-2830
UTM at Mouth:	9.598320.6009659
Watershed Area:	19,510 ha (approx)
Total Stream Length:	317 km
Stream Order:	5
NTS Map No.'s:	93 L/3; 93 L/4; 93 L/5
TRIM Map No.'s.:	93L.022; 93L.023; 93L.033
Biogeoclimatic Zone:	SBS, ESSF, Atc
Aerial Photographs:	30BCC96049 No 116 - 30BCC96063 No. 026

Sampling Design Summary

Total Number of Reaches:	482
Total Sample Sites:	47
Random Sample Sites:	30
Discretionary Sites:	17
Field Sampling Dates:	September 16-21, 1997
Fish Species Captured During Survey:	CAS, CO, CT, DV, RB, RSC
Fish Species Present in Watershed:	CAS, CO, CT, DV, LNC, MW, RB, RSC, ST

Disclaimer

"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."*

* Product refers to the information detailed in the following pages of this report.

Acknowledgements

Funding for this inventory was provided by Forest Renewal BC - a partnership of forest companies, workers, environmental groups, First Nations, communities and government. Forest Renewal BC funding - from stumpage fees and royalties that forest companies pay for the right to harvest timber on Crown lands - is reinvested in the forests, forest workers, and forest communities.

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1.0 INTRODUCTION

Triton Environmental Consultants Ltd. (Triton Nanaimo) was retained by Northwood Pulp and Timber Ltd. (Northwood) to conduct a Reconnaissance (1:20 000 Scale) Fish and Fish Habitat Stream Inventory (inventory) in the Shea Creek watershed. The project was part of a larger inventory of three areas managed by Northwood in the Morice Timber Supply Area (TSA).

The project was funded by a Forest Renewal of British Columbia (FRBC) initiative to describe watershed-wide fish distribution and habitat characteristics for major watershed groups within the province of British Columbia. The inventory was intended to provide information regarding fish species characteristics, distributions and relative abundance, as well as stream reach biophysical data for interpretation of habitat sensitivity and capability for fish production within the Shea Creek watershed (Anonymous 1997b). The results of the inventory may be applied to initial Riparian Management Area (RMA) classification for forest development planning and watershed restoration and for the establishment of some landscape-level biodiversity objectives (Anonymous 1997b).

1.1 Study Objectives

The objectives of the study were to describe watershed wide fish distributions and to determine the extent of fish habitat within the watershed. Fish and fish habitat values were the primary components of the inventory.

The study involved:

- the identification, delineation and mapping of fish-bearing stream reaches and lakes using existing information and new information (field inventory);
- The identification and coding of all waterbodies within the watershed and;
- the identification and characterization of stream reaches utilizing topographic maps and aerial photographs, with confirmation via field sampling.

The results from the inventory were presented on 1:20 000 TRIM based maps and on BC Ministry of Environment, Lands and Parks (MELP) Field Data Information Summary (FDIS) data forms.

2.0 STUDY AREA

2.1 Location

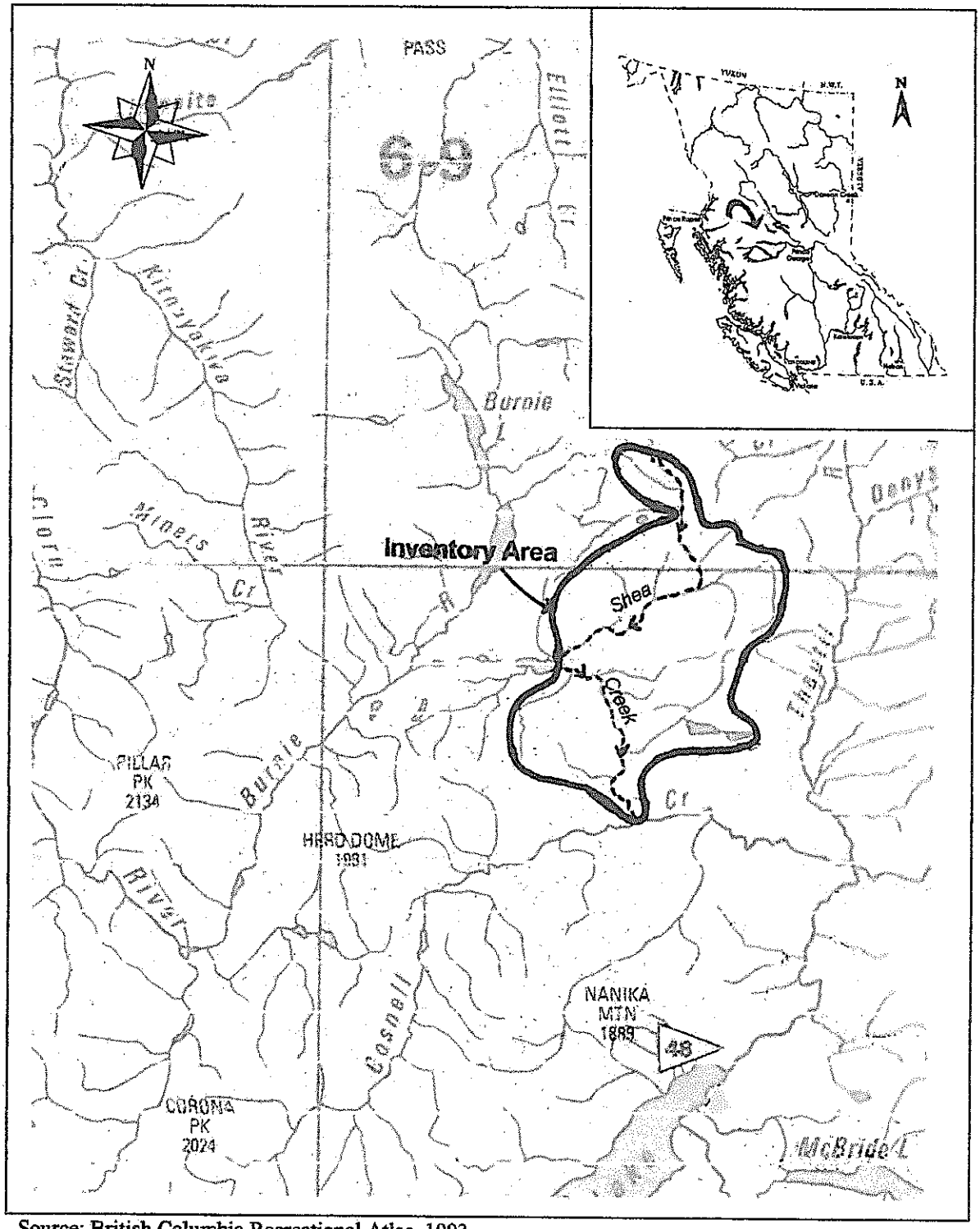
The Shea Creek watershed is located 55 km southwest of the town of Houston, BC. Shea Creek is a fifth order stream that flows south into Gosnell Creek, north of Nanika Mountain (FISS 1991) (Figure 1). Gosnell Creek is a major tributary to the Morice River.

The Shea Creek watershed lies within the Sub-Boreal Interior eco-province located east of the Coast Mountains and west of the Interior Plains (Demarchi, 1996). The watershed lies in the flat lowlands and rolling uplands of the Fraser Basin ecoregion, in the Babine Upland ecosection (Demarchi, 1996).

Demarchi (1996) describes the climate within the sub-boreal interior eco-province:

> *Prevailing westerly winds bring Pacific air to the area over the Coast Mountains by way of the low Kitimat Ranges or the higher Boundary Ranges. Much of this area is in a rain shadow...Summer surface heating leads to convective showers, and winter frontal systems result in precipitation that is evenly distributed throughout the year.*

The biogeoclimatic zonation for the Shea Creek watershed is predominantly Sub-boreal Spruce (Demarchi, 1996). Engelmann Spruce - Subalpine Fir Zones occur on the middle slopes of mountains within the Shea Creek watershed and Alpine Tundra Zones occur on the upper mountain slopes (Demarchi. 1996).



Source: British Columbia Recreational Atlas, 1993
Scale: ~ 1:300 000

Figure 1. Shea Creek Inventory Area Location Map.

3.0 METHODS

The Inventory was completed in six phases as per the *Reconnaissance (1:20 000) Fish and Fish Habitat Inventory* manual:

- Phase 1: Existing Data Review
- Phase 2: Map and Air Photo Analysis
- Phase 3: Sampling Design and Project Plan
- Phase 4: Field Data Collection
- Phase 5: Data Compilation
- Phase 6: Report and Map preparation.

The methods employed for each phase of the project followed those outlined in the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures, June 1997* (Anonymous 1997b).

3.1 Phase 1: Existing Data Review

Phase 1 involved a review of pertinent fisheries information and the production of interim maps to provide background information necessary for the planning phases of the inventory. Relevant stream and lake inventory reports, files, maps, summaries and aerial photographs were obtained from MELP Region 6 and Region 7, the Pacific Biological Station (PBS) (Department of Fisheries and Oceans *(DFO)*) and from Northwood.

The review also included the following information sources:

- Fisheries Information Summary System (FISS) database (DFO)
- Stream Information Summary System (SISS) database (MELP)
- 1: 50 000 National Topographic Series (NTS) maps
- Aquatic biophysical inventory maps (MELP)

- Stream classification maps/reports (Northwood)
- 1:20 000 Terrain Resource Information Management (TRIM) maps
- Licensee Forest Cover maps (1:20 000 scale) (Northwood)
- Forest Development Plan maps (1: 20 000 scale) (Northwood)
- Aerial photographs (1: 20 000 scale) (Northwood)
- Overview, Level 1 and Level 2 Fish Habitat Assessment (Watershed Restoration Projects *(WRP)*) (MELP)
- Other inventory and consultant reports
- BC Conservation Data Centre (CDC) summaries.

Background information obtained from these sources included:

- known fisheries values within the study area
- existing reach designations
- known locations of obstructions to fish migration
- known areas of sensitive fish habitat (FSZ's)
- identification of areas requiring priority assessment
- location of suitable access points.

A list of persons contacted and a bibliography of information sources was compiled (Appendix I and II).

The FISS database (1991) was the primary information source reviewed and this data was plotted on 1:20 000 scale TRIM maps relevant to the study area. Subsequent to the preparation of these maps other information sources were examined. Any of this latter information that was not documented by FISS was plotted on 1:50 000 NTS maps and recorded on FISS data compilation forms. Further, pertinent data from the additional sources of information were copied and forwarded to the Fisheries Inventory Specialist along with the 1:50 000 NTS maps and FISS data compilation forms.

TRIM based, 1:20 000 scale Interim maps were produced by combining existing drainage information from TRIM maps, Forest Cover maps and Forest Development Plan maps. All waterbodies, including lakes, wetlands and streams in the study area were identified. Interim Locator Points (ILPs) were assigned to each watercourse/waterbody which had not previously been assigned a watershed code or waterbody identifier. Universal Trans Mercator (UTMs) coordinates were measured and recorded for the confluences of each stream and the outlet of each lake using ARCInfo Unix version 7.2 software.

Numeric identifiers (NIDs) were assigned to features identified during the Phase I review and plotted on interim maps (NID is a unique number that links features and information on interim maps to the FDIS database to allow for quick data referencing).

Phase 1 deliverables included:

- list of contacts (Appendix I)
- bibliography of references used (Appendix II)
- FISS data maps and data compilation forms
- Interim maps
- ILP data sheets
- Phase 1 completion report (Appendix III).

All of the above items were submitted to Todd Mahon (the contract monitor) upon completion.

3.2 Phase 2: Map and Aerial Photograph Analysis

Phase 2 involved detailed map and aerial photograph interpretation. Project area boundaries and third and fourth order watershed boundaries were delineated on interim maps. Watershed characteristics (stream order, stream magnitude and basin type) for third and fourth order streams, as well as first and second order streams flowing into fourth order streams, were recorded in a basin classification table.

Map interpretation also included waterbody identification. The following definitions were used to determine the grouping of streams, lakes and wetlands:

- **stream**: a watercourse having an alluvial sediment bed, formed when water flows on a perennial or intermittent basis between continual definable streambanks (*FPC Riparian Management Area Guidebook, Dec. 1995)* (Anonymous 1995b).

- **lake**: an open body of water with a depth greater than 2 m and with less than 25 % of its surface area covered with wetland vegetation *(Reconnaissance Fish and Fish Habitat Inventory, Standards and Procedures June 1997)* (Anonymous 1997b).

- **wetland**: defined as an area where the water table is at, near or above the surface, or where soils are water saturated for a sufficient length of time so that excess water and resulting low oxygen are the principle determinants of vegetation and soil development *(Reconnaissance Fish and Fish Habitat Inventory, Standards and Procedures June 1997)* (Anonymous 1997b).

Maps and aerial photographs were also used to determine reach breaks for all streams within the project area. Reach breaks were determined using the following key characteristics:

- order
- channel pattern
- confinement
- gradient
- streambed and bank materials.

For survey purposes, lakes and wetlands were treated as separate reaches. Stream reaches were numbered sequentially upstream. Each reach break was subsequently assigned a NID.

The following reach characteristics were recorded in a Reach Table for each reach identified within the project area:

- order
- gradient
- channel pattern
- confinement
- anastamosed/braided channel
- basin type
- wetland
- features known to occur within the reach (culverts, beaver dams, falls).

Once the reach table was completed the sample size for stream reaches was determined using the following guidelines and the Reach Totals and Sample Size Sheet (Table 1).

Guidelines used for the site inventory sample size were:

- for lower gradient (less than 20 %) and small or medium streams (third order or lower), the sample size was based on the equation $y=500x^{-0.8}$, where x was

the number of reaches of a certain group, and y was the sampling proportion. (Anonymous 1997b).

- for higher gradient streams (between 20 and 30 %) or large streams (fourth order or higher), the sampling size was the lower of the results of the equation listed above or 10%. (Anonymous 1997b).

In addition to the guidelines, the following standards were observed for calculation of the minimum sample size of stream reaches:

- for low gradient or small/medium-sized streams, when the equation listed above results in a sample size less than 8, the sample size must be 8 (or total number if less than 8) (Anonymous, 1997b).

- for higher gradient streams (between 20 and 30%) or large size reaches, the sample size must be a minimum of two reaches (or all of them if there were less than 5) or a maximum of 25. (Anonymous, 1997b).

- high gradient streams (>30%) were sampled when warranted (e.g., when bull trout were suspected to occur in a reach with a 32 % gradient). Sampling in this group was based on professional judgment and the discretion of the contract monitor (Anonymous 1997b).

Table 1. Example of Reach Totals and Sample Size Table.

Gradient	Pattern	Size		
		Small	Medium	Large
	ST/EN	9	8	0
1	IM/ME	0	18	4
	AN/BR	0	2	1
	ST/EN	8	23	0
2	IM/ME	0	0	0
	AN/BR	0	0	0
	ST/EN	17	5	1
3	IM/ME	0	0	0
	AN/BR	0	0	0
	ST/EN	27	0	0
4	IM/ME	0	0	0
	AN/BR	0	0	0
5	ST/EN	63	0	0
	IM/ME	0	0	0
	AN/BR	0	0	0

Gradient	
Gradient Class	**Gradient Range**
1	< 4 %
2	> 4 % and < 8 %
3	> 8 % and < 20 %
4	> 20 % and < 30 %
5	> 30 %

Pattern	
ST/EN	Entrenched, straight and sinuous type reaches
IM/ME	Irregular/tortuous meandering, and
AN/BR	Anastamosed or braided reaches

Size	
Size Class	**Order**
Small	1
Medium	2 and 3
Large	> 4

Source: Anonymous 1997b

Note: the totals presented in this table are an example only. They are not relevant to this inventory.

Examples of Sample Size calculations as per the methods outlined in the *Reconnaissance (1: 20 000) Fish and Fish Habitat Inventory, Standards and Procedures June 1997* (Anonymous 1997b) using Table 1 were:

- For lower gradient, medium-sized irregular meandering and meandering reaches:

  Total number of reaches = 18

  Sampling rate (%) = $500 \times (18)^{-0.8} = 500 \times 0.099 = 49.5\%$

  Sample Size = $(49.5/100) \times 18 = 8.9 = 9$

- For gradient class 4, small straight and entrenched streams:

  Total number of reaches = 27

  Sampling rate (%) = 10 %

  Sample Size = $(10/100) \times 27 = 2.7 = 3$

- For gradient class 3, medium-sized straight and entrenched reaches:

  Total number of reaches = 5

  Sampling rate (%) = $500 \times 5^{-0.8}$, however a, minimum sample size of 8 is required

  Sample size = 5 (all)

Once sample sizes were determined, reaches to be sampled were identified and plotted on interim maps. Sample site selection was based on satisfying the numbers and types of stream reaches identified in the Sample Size Summary table. In addition, discretionary site selection was based on one or more of the following:

- proximity of stream reach to identified cutblocks
- site selection above and below barriers

- selection of sites to establish connectivity between sub-basins to determine fish utilization and that identify the upstream limits of fish distribution
- to ensure that all basin types and basin connectivity were adequately represented.

Forty-six (46) sample sites were selected in the Shea Creek inventory area under guidance from the information generated in the Reach Totals and Sample Size table and recommendations from the contract monitor, Northwood and the MELP Fisheries Inventory Specialist. Thirty-one (31) of these sample sites were selected on a discretionary basis and the remaining 15 were randomly selected. The random sample selection tool was not utilized for sample site selection, rather the Sample Size tables were used as a guide to select random sample sites.

The Reach Totals and Sample Size table initially generated 75 sample sites within the Shea Creek inventory area. Upon consultation with Mr. Paul Giroux, MELP's Fisheries Inventory Specialist for Region 6, the reach totals and sample size table for the Houston Tommy and Shea Creek study areas were combined. Mr. Giroux determined that the number of sample sites generated for each creek were too intense for a 1:20 000 scale reconnaissance inventory. As a result the individual reach tables for each creek were combined to generate one reach summary table and subsequently generated new sample totals. The combined totals were divided between the Houston Tommy Creek and Shea Creek watersheds based on watershed area.

None of the high gradient (>20%) stream reaches were selected by the contract monitor for sampling. Recent studies in the region indicate that bull trout *(Salvelinus confluentus)* and Dolly Varden char *(S. malma)* utilize habitat in streams having a gradient of no greater than 15 percent (Paul Giroux, *pers. comm.*).

Reach forms (a map/air photo based recording form designed to capture the physical information required to characterize a stream reach) were completed for each of the 47

sample sites. Reach forms are presented as Reach/Site summaries in Appendix V. Reach forms are presented in a separate, bound appendix (Appendix VIII; Volume II).

Lakes were designated as primary or secondary lakes based on their location and connectivity within watersheds and basin type, lake class and lake group were recorded on lake forms. Primary lakes play a dominant role in the watershed and generally possess the physical characteristics that are representative of most of the lakes within a group of lakes (Anonymous 1997b). Primary lakes often have the largest surface areas and/or are central in a cluster or chain of lakes (Anonymous 1997b).

The following deliverables for Phase 2 were submitted to the contract monitor:

- Basin Classification sheets
- Reach tables
- Lake tables
- Reach forms
- Phase 2 Completion Report.

The Phase 2 Completion report is included in Appendix III and Reach forms are included in a separate bound appendix (Appendix VIII).

3.3 Phase 3: Sampling Design and Project Plan

A project plan for the field portion of the project was developed and presented to the contract monitor. The project plan outlined the approach to be applied in field sampling, data collection and reporting, and an estimate of the time and cost required to conduct the inventory was provided. Sample sites selection and distribution was reviewed with the contract monitor, MELP's Fisheries Inventory Specialist and Triton's project manager and modified accordingly.

The following deliverables were submitted to the contract monitor:

- Fish sampling strategy for the inventory area
- Budget requirements for Phase 4
- Project plan for Phases 4 to 6 (Appendix IV)
- Phase 3 completion report (Appendix III)

3.4 Phase 4: Field Data Collection

The following sections describe the methods and approaches taken to complete field sampling and data collection. Field sampling was conducted between September 16 and 21, 1997.

3.4.1 Pre-field Preparation

Required fish collection permits from MELP and DFO were obtained prior to the commencement of field activities.

3.4.2 Field Procedures and Equipment

Field work was conducted by two field crews, each consisting of two people. In watersheds where road access was available, crews used a 4X4 crew cab and 'leap-frogged' from site to site. In watersheds where road access was unavailable crews were transported by a Bell Jet Ranger helicopter.

Each crew was equipped with the following:

- Smith-Root Model 12A backpack electrofisher
- electrofisher safety gear (leak proof waders, wading belts, Linesman's gloves, hat)
- minnow traps and bait

- backpacks
- clinometer
- compass
- hip chain
- 50 m tape
- metre stick
- VHF radio
- first aid kit
- water quality kit (hand held pH and conductivity meters)
- thermometer
- floating chip
- stop watch
- Canon waterproof camera and slide film
- voucher specimen container
- MELP Site cards
- MELP fish collection cards
- Triton photodocumentation forms
- field maps

3.4.3 Fish Species Sampling

Fish sampling efforts focused on reaches of <20 % gradient and followed the procedures outlined in the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures, June, 1997* (Anonymous 1997b) and the *Forest Practices Code Fish Stream Identification Guidebook, Dec. 1995* (Anonymous 1995a). A minimum of 100 m of stream length or a length equal to 10 bankfull widths (whichever was greater) was sampled at each sample site.

Fish presence, relative abundance and species diversity were evaluated by electroshocking at least 100 linear meters of representative habitat. In areas not suited for

electroshocking (deep pools and wetlands) and where return visits were practical, minnow traps baited with salmon roe were set and allowed to soak for a 24 hour period. Visual observations and angling were also used to document the presence of fish.

The following were collected and recorded on Fish Collection Forms at each sample site:

- species (identified using RIC's Field Key to Freshwater Fishes of BC).
- fork length (measured to the nearest mm)
- life-cycle stage
- a representative sample of any abnormal or unidentified fish or species of fish was preserved and submitted to the contract monitor.

The fish collection cards are presented in Appendix VI.

Following the initial sampling, follow-up sampling was recommended for specific sites within the study area. A written explanation detailing the areas of concern, the initial results of the survey and recommendations from the survey crew were composed and summarized in the Additional Sampling Recommendations table (Table 5).

For all reaches with non-fish bearing classifications a written explanation (Table 6: Non-Fish Bearing Status) was completed. The explanation focused on sampling methods utilized during the field program and included a summary of sampling effort, water quality parameters (conductivity and turbidity) and habitat characteristics.

3.4.4 Habitat (Site) Description

A site description was completed on Site Description forms for each reach (at fish sampling sites). The length of each sample site was between 100 and 300 m, or 10 bankfull widths (whichever was greater). The following data were collected at each sample site:

- site length (m)
- stream gradient (%)
- six individual channel width measurements (m)
- six individual wetted width measurements (m)
- six residual pool depth measurements (m)
- three individual bankfull depth measurements (m)
- flood signs (visual observation)
- water temperature (°C)
- pH
- conductivity (µs)
- turbidity (visual observation)
- total instream cover for fish (%)
- individual instream cover types for fish(%)
- presence of large woody debris (LWD)(visual observation)
- distribution of LWD (visual observation)
- crown closure (visual observation (%))
- shape of left and right stream bank (visual observation)
- texture of stream banks (visual observation)
- riparian vegetation on left and right stream banks (none, grass, shrub, conifer, mixed, deciduous and wetland)
- stage of riparian vegetation (Initial, Shrub, Pole sapling, Young Forest, Mature Forest)
- composition of bed material (dominant and subdominant)
- D95 (cm)
- D (cm)
- channel morphology (riffle/pool, step/pool, cascade/pool)
- presence of disturbance indicators
- channel pattern (tortuous/irregular meandering, meandering, sinuous, straight)
- occurrence of islands and bars

- channel coupling (coupled, decoupled, partially coupled)
- channel confinement (entrenched, confined, occasionally confined, unconfined, not applicable)
- presence of features
- habitat type and quality rating (poor, fair, moderate, good)
- identification of fisheries sensitive zones (FSZ's)
- photo documentation
- wildlife observations
- comments.

The site cards are presented in a separate bound appendix (Appendix VIII). FDIS Reach/Site summaries are presented in Appendix V.

3.4.5 Wildlife Observations

Wildlife observations were noted and specific details recorded on the Site Cards. Aquatic invertebrates and macrophytes were described. Photographs were taken for further documentation and confirmation of wildlife observations.

3.4.6 Photographic Documentation

Photographs were used to provide extensive visual records at each sample site; at least two photographs (upstream/downstream perspective) were taken at each sample site. In addition, photographs were taken of key areas of interest (*e.g.*, migration barriers, major erosion sites, fish samples, riparian conditions and any other unique features).

The photographs were documented accordingly on Site Cards, Fish Collection Cards and Photodocumentation Forms. Thumbnail photograph prints are presented in Appendix VII. Slides produced during the project are presented in a separate bound volume along with digital images presented on a CD ROM disk.

3.4.7 Field Data Compilation

Immediately following each field day, field crews met in the field office to compile field notes, review field data and summarize the field findings on hard copy maps. This system ensured that all field information was thoroughly documented while field work was still fresh with the crews and allowed for preliminary classifications to be available as required.

3.4.8 Phase 4 Deliverables

The following deliverables were submitted to the contract monitor:

- Site Forms
- Fish Collection Forms
- Phase 4 completion reports.

The Phase 4 completion report is included in Appendix III. The Site Forms are provided in a separate, bound appendix (Appendix VIII). Fish Collection Forms are presented in Appendix VI.

3.5 Phase 5: Data Compilation

Phase 5 was comprised of data entry (Site and Fish Collection Forms) into the MELP FDIS database. Interim locator points (ILPs) submitted during Phase 1 were converted to watershed codes and NID's were converted to UTM coordinates for mapping and georeferencing purposes. Photographs taken during the field portion of the project were developed, scanned, captioned and indexed in referenced binders.

Deliverables for Phase 5 included:

- electronic versions of the Reach Forms
- electronic versions of the Site Cards
- electronic versions of the Fish Collection Forms
- Photodocumentation indices
- Indexed photographic slides
- FISS update maps and data forms
- Phase 5 completion report.

The Phase 5 completion report is included in Appendix III. Indexed slides are presented in a separate, bound volume. 'Thumbnail' printouts are included in Appendix VII.

3.6 Phase 6: Reporting and Mapping

The final report and maps for all sub-basins in the study area were developed following the format outlined in Chapter 5 of the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures (June, 1997)* (Anonymous 1997b).

3.6.1 Reporting

The final report is a summary of background information and a discussion of problems and concerns with the implementation of the phased approach taken to conduct the inventory. The report focused on descriptions and justifications for non-sampled reaches, non-fish bearing reaches and reaches that require additional sampling.

3.6.2 Mapping

All maps were produced using the GIS software program ARCInfo Unix version 7.2. The final maps that were produced included:

- Hardcopy Project Overview map
- Hardcopy Inventory maps
- Hardcopy Distribution maps
- Digital copies of Project Overview, Inventory and Distribution maps.

3.6.3 Phase 6 Deliverables

The deliverables for Phase 6 included:

- Hardcopy Project Overview map
- Hardcopy Inventory maps
- Hardcopy Distribution maps
- Hardcopies of Project Overview, Inventory and Distribution maps
- Digital copies of Project Overview, Inventory and Distribution maps
- Hardcopy Final Report
- digital copies Final Report
- two Kodak Photo CD's of all photographs taken for the project
- Phase 6 Completion Report.

4.0 RESULTS

4.1 Existing Information

Coho salmon *(Oncorhyncus kisutch)*, cutthroat trout *(O. clarki)*, Dolly Varden char *(Salvelinus malma)*, longnose dace *(Rhinichthys cataracte)*, rainbow trout *(O. mykiss)*, Rocky Mountain whitefish *(Prosopium williamsoni)* and steelhead *(O. mykiss)* have been observed in the Shea Creek mainstem (Tredger, 1983). Numerous habitat and fish distribution studies have been conducted along Shea Creek in the section of stream below Shea Lake (Bibliography; Appendix II). Steelhead fry were released into Shea Creek in 1984, 1985 and 1986 above and below the falls (9 km upstream) on the mainstem (FISS, 1991).

A lake survey in August, 1996 identified the following fish species as residents of Shea Lake: cutthroat trout, Dolly Varden char, mountain whitefish, Kokanee *(O. nerka)*, prickly sculpin *(Cottus asper)*, and redside shiner *(Richardsonius balteatus)* (DeGisi, 1997). A similar survey on West Julian Holland Lake identified only two species of fish as residents: cutthroat trout and Dolly Varden char *(Salvelinus malma)* (DeGisi, 1997).

The Wet'suwet'en First Nation was conducting a Level II WRP project in the Gosnell Creek watershed. Field visitation was scheduled for eleven sites within the watershed (Michell, 1996). The results of the WRP project are available at the Region 6 MELP office.

4.2 Survey Information

Table 2 provides an overview of the survey information compiled for to the Shea Creek watershed.

Table 2. Survey Information for the Shea Creek Watershed

Watershed Name:	Shea Creek
Major Watershed Code:	460-60060-50800-00500-2830
NTS Maps:	93 L/3; 93 L/4; 93 L/5
TRIM Maps:	93L.022; 93L.023; 93L.033
Watershed Area:	19,510 ha (approx.)
Drainage:	Shea Creek → Gosnell Creek → Morice River→ Bulkley River → Skeena River
Total Number of Lakes:	22
Total Stream Length:	317 km (approximately)
Total Number of Reaches:	479
Stream Field Sampling Dates:	September 18-21, 1997
Number of Sample Sites:	47
Random Sample Sites:	30
Discretionary Sample Sites:	17
Sample Sites Located Along Proposed Cutblock Boundaries	31

Fish in Mainstems	**Gazetted Name**	**Reach #**	**Species**
	Shea Creek	3/16/20/24	CO/CT/DV/RB

Fish in Tributaries:

Stream Name	**WSC (ILP)**	**Reach #**	**Species**
Unnamed	460-600600-50800-00500-2830-3745-318 (01561)	1	DV
Unnamed	460-600600-50800-00500-2830-2968 (01595)	2	CT
Unnamed	460-600600-50800-00500-2830-2561 (01606)	1	CO
Unnamed	460-600600-50800-00500-2830-3452 (01572)	1	CO/CT/DV
Unnamed	460-600600-50800-00500-2830-2715 (01468)	3	CO/DV/RB
Unnamed	460-600600-50800-00500-2830-2968-540 (01597)	1	CT/DV
Unnamed	460-600600-50800-00500-2830-398 (01488)	1	CT
Unnamed	460-600600-50800-00500-2830-5549 (01654)	1	DV
Unnamed	460-600600-50800-00500-2830-4665 (01630)	1	CT/DV
Unnamed	460-600600-50800-00500-2830-4661 (01622)	1	CT/DV
Unnamed	460-600600-50800-00500-2830-4524 (01709)	1	DV
Unnamed	460-600600-50800-00500-2830-6320 (01758)	1	CT/DV

Note: CT= cutthroat trout, DV= Dolly Varden char, RB= rainbow trout, CO= coho salmon

4.3 Field Data

4.3.1 Site Cards

The Site Cards for the Shea Creek watershed were entered into MELP's FDIS database following the completion of Phase 4. The hard copies of the Site Cards are presented in a separate, bound appendix (Appendix VIII). FDIS Reach/Site Summary forms are presented in Appendix V.

4.3.2 Fish Collection Cards

The Fish Collection Cards were entered into MELP's FDIS database following the completion of Phase 4. The hard copies of the Fish Collection Cards are presented in Appendix VI.

4.4 Survey Comments

4.4.1 Problems

The Shea Creek watershed stream inventory was relatively problem free. Crew mobilization was very efficient as most sites were readily accessible either by road or by helicopter.

Many small, first order streams, selected through the Reach Sample Summary Table were described as No Visible Channel (5 of 20 first order sample sites), intermittent (2 of 20 firs order sample sites) or were dewatered (2 of 20 first order sample sites). In many cases first order streams did not have alluvial channels and were likely spring run-off channels (created by snow melt).

Some difficulty was experienced in distinguishing between Dolly Varden and bull trout in the field. Voucher specimen were retained when Dolly Varden/bull trout were captured. Forest ecosystem specialist Andy Witt *(pers. comm., 1997)* indicated that the two species may exhibit a sympatric distribution within the watershed. However, the meristic characteristics used to differentiate between the two species did not identify any of the fish captured as bull trout (Table 3). This assessment was confirmed by Mr. Gordon Haas

Meristic counts were tallied and LDF's (Linear Discriminant Function - a multivariate statistical procedure used to maximize separation and identification between two or more

'known' groupings (Gordon Haas, *pers comm.*) were calculated for all *Salvelinus* species retained, according to literature obtained through the bull trout and Dolly Varden Identification Workshop. If a LDF less than zero was calculated then the subject fish was identified as a Dolly Varden, if a LDF greater than zero was calculated the subject fish was identified as a bull trout. Subsequently, all six of the samples taken were identified as Dolly Varden.

Table 3. Meristics Counts for Dolly Varden Char/Bull Trout Differentiation.

Fish Number	Number of Branchiostigal Rays	Number of Anal Fin Rays	Jaw Length	Standard Length	LDF
1	20	9	0.9	9	-3.849
2	21	9	1.1	9.9	-2.80444
3	22	10	1.2	13.1	-2.72229
4	23	10	1.4	11.7	-1.04556
5	23	10	1.1	9.8	-1.32214
6	22	9	1.1	9.5	-1.99989

4.4.2 Fish Comments

Since fish distribution within the Shea Creek mainstem was well documented, primarily the Shea Creek mainstem upstream of Shea Lake and tributaries to Shea Creek were inventoried.

Fish were captured at 16 of the 47 sample sites. Fifty percent of the sample sites where fish were captured were in third or fourth order streams and fifty percent of the samples sites where fish were captured were located in first and second order streams. The following table provides a summary of reaches in which fish were captured.

Table 4. Summary Of Fish Capture Locations in the Shea Creek Watershed

Stream Name/Identifier (WSC/ILP)	Reach Number	Site No.	Stream Order	Fish Species	Mean Length (mm)
Shea Creek (460-600600-50800-00500-2830)	3	208	5	CO RB	51 99
Shea Creek (460-600600-50800-00500-2830)	16	227	4	CT DV	129 100
Shea Creek (460-600600-50800-00500-2830)	20	219	4	CT DV	85 115
Shea Creek (460-600600-50800-00500-2830)	24	210	4	CT DV	83 107
460-600600-50800-00500-2830-3745-318	1	209	1	DV	74
460-600600-50800-00500-2830-2968	2	93	2	CT	64
460-600600-50800-00500-2830-2561	1	95	1	CO	63
460-600600-50800-00500-2830-3452	1	99	2	CO CT DV	61 65 95
460-600600-50800-00500-2830-2715	3	102	1	CO DV RB	95 120 120
460-600600-50800-00500-2830-2968-540	1	103	1	CT DV	56 38
460-600600-50800-00500-2830-398	1	108	3	CT	55
460-600600-50800-00500-2830-5549	1	222	2	DV	81
460-600600-50800-00500-2830-4665	1	228	3	CT DV	67 74
460-600600-50800-00500-2830-4661	1	230	3	CT DV	87 91
460-600600-50800-00500-2830-5720	3	217	3	CAS RSC	65 29
460-600600-50800-00500-2830-4524	1	231	2	DV	81
460-600600-50800-00500-2830-6320	1	233	4	CT DV	106 107

Note: CAS = prickly sculpin, RSC = redside shiner, CO= coho salmon, RB= rainbow trout, CT= cutthroat trout, DV= Dolly Varden char

Juvenile coho salmon were captured in tributaries of Shea Creek up to Reach 8 (8.1 km upstream). Specifically in three unnamed streams (460-600600-50800-00500-2830-2561; 460-600600-50800-00500-2830-3452; 460-600600-50800-00500-2830-2715).

Cutthroat trout were captured in Reach 2 of an unnamed stream (460-600600-50800-00500-2830-2968; Site 93), approximately 100 m below a falling boundary for a proposed 1998 harvest block (GSNL 0J3). Reach 2 of this stream was dewatered but would be accessible to fish during higher flows. Cutthroat trout and Dolly Varden char were captured in an unnamed tributary (460-600600-50800-00500-2830-2968-540; Site

103) to the unnamed stream (460-600600-50800-00500-2830-2968). The unnamed tributary flows through the western half of harvest block GSNL 0J3.

Fish species identified in the Shea Creek mainstem upstream of Shea Lake (Reach 12) included cutthroat trout and Dolly Varden char. These species were captured as far upstream as Reach 24 (Sites 210, 219, 227). Dolly Varden were described as immature juveniles (FL range from 73-127 mm) and mature adults (FL from 124 to 155 mm). Cutthroat trout were captured as fry (FL 47 mm) and juveniles (FL 72-129 mm). Upstream of Reach 20, fish species sampling was not conducted in 1st and 2nd order tributaries to Shea Creek. Reach 1 of many of these tributaries was generally short (<200 m), confined and possessed gradient barriers (>15%).

Redside shiner and prickly sculpin were captured in a large, lake fed tributary to Reach 20 of Shea Creek (460-600600-50800-00500-2830-5720). Redside shiner and prickly sculpin were captured in Reach 3 (Site 217) of the tributary and no fish activity was observed in Reach 2 or Reach 4 (both are lakes). Surveys of these lakes would provide additional information regarding fish distribution and life history within the watershed.

Third order tributaries to Shea Creek, downstream of Reach 20, appear to support fish. Fish were captured/observed in the first reaches of these tributaries, usually within the floodplain area of Shea Creek. Gradient barriers (>20%) and falls (up to 25 m in height; Site 223) obstruct fish migration to the upper reaches of many of these tributaries.

Cutthroat trout and Dolly Varden char were captured in the upper reaches of Shea Creek (Reach 24; Site 210) and a 4th order tributary to Reach 24 (460-600600-50800-00500-2830-6320; Site 233). Fish likely occur throughout the upper Shea system as no barriers to fish migration were identified in the mainstem during a helicopter overflight. Due to a lack of road access, steep terrain and continuous forest cover, many of the upper reaches (upstream of Reach 24) and tributaries were inaccessible for sampling.

Fish captured throughout the system were primarily stream resident fish. Maturing Dolly Varden and cutthroat captured were less than 175 mm and 140 mm respectively. Adfluvial, or lake rearing populations likely occur in reaches adjacent to Shea Lake and the Julian Holland Lakes. Both these species were captured during lake surveys conducted in 1996 (DeGuisi and Schell 1997a; DeGuisi and Schell 1997b). Fish sampling was not conducted in the mainstem tributary to the Julian Holland lakes downstream of the lakes. Upstream of the lakes, cutthroat and Dolly Varden were immature and maturing and less than 75 mm fork length. Tributaries to Shea Creek upstream of Shea Lake were not included in the study area.

4.4.3 Habitat Comments

Shea Creek is a relatively low gradient stream confined by low-lying mountains. Anadromous fish habitat extends from the Shea/Gosnell Creek confluence to 10 km upstream. Resident fish habitat extends at least to Reach 24 and likely to Reach 25 although sampling was not conducted in Reach 25.

The availability of off-channel and side channel habitat is limited in the middle reaches of Shea Creek downstream of Shea Lake (Reaches 3-11). However, off-channel and side channel habitat is abundant in sections of Shea Creek upstream of Shea Lake (between reaches 12-20) within the floodplain. A side channel was observed at Site 95 (460-600600-50800-00500-2830-2715) in a tributary to Reach 2 of Shea Creek. This side channel would provide rearing habitat for coho salmon using the lower Shea system.

The confluences of most of Shea Creek's tributary streams provide suitable 'off-channel' rearing habitat for juvenile salmonids. In the mid to lower reaches of Shea Creek (from Reach 20 and downstream) the first reach of most tributary streams is accessible to fish. Accessibility to the upper reaches of tributaries, in this section of the watershed however, is dependent upon water level and flow stage. The upper reaches of tributaries do not appear to be accessible in low flows.

Tributary streams to Shea Creek that enter the mainstem upstream of Shea Lake appear to have limited connectivity to the mainstem. Typically the first 20 to 30 m of stream were accessible to fish. After that, gradient barriers and dewatered channels limited fish accessibility to these tributaries.

A general lack of large pool habitat may limit fish productivity within the Shea Creek watershed. Juvenile salmonid overwintering habitat and adult holding habitat were not common in this watershed.

4.4.4 Rehabilitation/Enhancement Opportunities

The reaches inventoried in the Shea Creek watershed were located in a relatively undisturbed section of the watershed. Three harvest blocks have recently been cut (approximately two years ago) in the lower 3.4 km (upstream of the Gosnell Creek confluence) of the watershed. A block was also cut in 1997 above the Shea Creek bridge. It would appear that forest harvesting occurred following the introduction of the Forest Practices Code, subsequently the impact on fish habitat is marginal.

The recent Forest Development Plan map (Northwood, 1997) indicated that forest harvest is planned for 1998, 1999 and 2000 within the Shea Creek inventory area. Consequently, rehabilitation opportunities should be explored after 1998 and 1999.

4.4.5 Additional Sampling Recommendations

A total of sixteen sites were identified for additional or follow-up sampling within the Shea Creek watershed. A summary of the amount of sampling effort, water quality and flow characteristics, seasonal habitat availability, the known presence of fish upstream/downstream, the location of any barriers to migration and recommendations for second trial sampling is shown in Table 5. In general, follow-up sampling was recommended for reaches where:

- low flow appeared to be the only factor deterring fish utilization;
- fish were captured in reaches downstream of the sample site;
- obstructions to fish migration had not been identified.

Site Number	ILP Number	Reach Number	Date Sampled	Time Sampled	mpling tions		
94	1595	2	97/08/18	17:35	EF)		
97	1476	1	97/09/19	13:00	EF)		
104	1596	1	97/09/20	9:25	EF)		
105	1593	1	97/09/20	10:15	barriers to		
107	1600		97/09/20	11:35	; therefore spring (EF)		
110	1554	2	97/09/20	15:10	um; conduct ne locations of t (EF)		
111	1558	1	97/09/20	15:50	nd determine barriers (EF)		
211	1555	2	97/09/18	17:25	of fish during		
215	1714	1	97/09/19	13:17	ish presence/		
216	1703	1	97/09/19	13:40			
218	1691	1	97/09/19	15:02	er flows to F)		
224	1649	1	97/09/21	9:45	er flows to F)		
226	1647	1	97/09/21	10:53	nnel habitat;		
229	1630	2	97/09/21	12:45	ring higher or absence of eam barrier		
233	1758	1	97/09/21	9:08	m with &/ MT)		
217	1697	3	97/09/19	14:30	if accessible to		
General: NS= not sampled, NA= not a					olly Varden, ST= steelhead,		
CO= coho, RB= rainbow trout, LNC=							
* all sample sites were open and surve							

4.4.6 Non-Fish Bearing Status

Non-fish bearing status was assigned to 16 sites within the Shea Creek watershed. A summary of the sampling effort, water quality and flow characteristics, habitat quality, the known presence of fish upstream/downstream, the location of any barriers to migration, seasonal habitat availability as well as comments on the potential for seasonal fish use is shown in Table 6. Non-fish bearing status was assigned to reaches where:

- the stream was labeled a non-visible channel;
- the stream was deemed inaccessible from the mainstem and did not have a headwater lake;
- gradient barriers prevented fish migration further upstream and the stream did not have a headwater lake.

Site Number	ILP Number	Reach Number	Date Sampled	Time Sampled	Seasonal Fish Use
95	1606	1	97/09/19	10:5	tream above barrier is inaccessible
96	1477	1	97/09/19	12:4	o alluvial channel
98	1480	1	97/09/19	13:4	tream was likely dewatered prior to recent ains
100	1553	2	97/09/19	16:1	o alluvial channel
101	1469	2	97/09/19	17:5	5% gradient barrier
106	1593	3	97/09/20	11:1	nlikely
109	1552	1	97/09/20	13:5	o water, no channel. no water, no fish
112	1602	2	97/09/20	16:4	ish observed feeding in wetland, but channel nlikely to be utilized by fish
212	1712	1	97/09/19	11:2	ish activity was not observed in lake, herefore seasonal fish of the stream use is not uspected
213	1698	1	97/09/19	12:0	o over winter habitat identified
214	1699	1	97/09/19	12:3	o connectivity to lake
220	1683	1	97/09/19	14:2	o fish access to mainstem (ILP 1708)
223	1659	2	97/09/21	12:1	alls are 25 m in height; no winter habitat dentified
225	1648	1	97/09/21	10:2	5.5 % gradient over 30 m to Shea Creek ainstem
232	1702		97/09/21	10:2	o discernible channel
221	1717	3	97/09/20	9:5	umerous small cascades downstream, no inter habitat identified
General: NS= not sampled, NA= not applicat					ation: S/S= spring/summer, W= winter
Obstructions: G= gradient, F= falls, NI= non					dace, CT= cutthroat trout
*All sample sites were surveyed open a					

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APPENDIX I

LIST OF CONTACTS

List of Key Contacts and Information Sources for the Northwoods Stream Inventory Project

Name	Organization	Title	Telephone Number	Date	Comments
Reg Heibert (Andrew Leffers)	Northwood Pulp & Timber Ltd.	FRBC Coordinator	(250) 845 - 5277 (250) 845-5200	July 28 July 29	• requested forest cover maps and WRP contracts ongoing in area • requested relevant Northwood fisheries information related to project
Todd Mahon	WildFor Consultants Ltd.	Implementation Contractor	(250) 846 - 5449	ongoing	• stream class reports for two small openings received at September 2 meeting
John Rustad	Western Geographic	Northwood GIS Coordinator	(250) 564 - 9191	July 30	• queried re: missing maps and flightline indices
Andy Witt	Morice Forest District	Morice Forest Ecosystem Specialist	(250) 845 - 6249	August 1	• not in til 5:30
Paul Giroux	Ministry of Environment, Lands & Parks	Regional Inventory Specialist	(250) 847 - 7294	ongoing	• guidance throughout project
Sig Hatlevick	Ministry of Environment, Lands & Parks	Fisheries Technician	(250) 847 -7291	July 29 July 31	• various stream inventory reports etc: Buck, Houston Tommy Creeks, Klo, Goosly Lake • request for fish collection permit
Bruce MacDonald	Department of Fisheries and Oceans	Fisheries Technician	(250) 561 - 5534 fx 250-561-5367	July 31	• request for fish collection permit
Catherine Martel	Department of Fisheries and Oceans, Prince George	Habitat Biologist	(250) 561 - 5396	July 31 August 1	• requested fisheries information pertaining to Toccha Lake area • still looking but has not found anything associated with area, suggested trying other forest companies
Dana Atagi	Ministry of Environment, Lands & Parks; Smithers	Fisheries Biologist	(250) 847-7290	July 29	• Equity Silver Mines reports (Buck Creek, Goosly Creek)
Stacy	Archtype Prints	Office staff	(604) 602 - 0282	August 1 August 11	• ordered FISS maps • ordered missing FISS maps
Sam Buchanan	Triton; Terrace	Fisheries Technician	(250) 635-1494	July 30	• SISS catalogues: Smithers 4D vol. 2, Prince George vol. 1

List of Key Contacts and Information Sources for the Northwoods Stream Inventory Project

Name	Organization	Title	Telephone Number	Date	Comments
Andrew Wilson	FRBC - Watershed Restoration; Prince George	Watershed Restoration	(250) 565 - 6135	August 1	• away till August 5
Ted Zimmerman	Ministry of Environment, Lands & Parks; Prince George	Fisheries Habitat/Inventory Specialist	(250) 565 - 6852	August 1	• request for Tochcha, Friday, Hautete Lake data (nothing available)
Dwight Hickey	Environmental Dynamics	Consultant	(250) 562 - 5412	August 8	• queried whether any work completed by firm in Tochcha Lake area
Jim Trask	Envirowest	Consultant	(250) 562 - 9155	August 8	• queried whether any work completed by firm in Northwood TSA
Beth Rogers	British Columbia Data Conservation Centre	Assistant Data Manager	(250) 356 - 0928	August 8	• rare element occurrences, sub-basins to Skeena River watershed
Stephan Schug	Wet'suwet'en Office of Heredotary Cheifs		(250) 847 - 3630	August 11	• ongoing Morice Watershed Restoration project
J. A. Taylor	J.A. Taylor & Associates	Consultant	(250) 656 - 0163	August 11	• requested information re 1994 and 1995 sample sites; referred to Barry Finnegan
Barry Finnegan	Department of Fisheries & Oceans, Nanaimo	Fisheries Technican, North Coast	(250) 756 - 7038	August 11 August 15	• re: JA Taylor site locations - away until the 14 • left detailed message
Dave Bustard	Consultant	Fisheries Biologist		September 2	•
Ed Chernenkoff	Westland Helicopter	Pilot	Houston 845-2334 Burns Lake 692-3613	September	• Tochcha, Shea and Houston-Tommy
Regina Saimoto	SKR Environmental	President	(250) 847-4674	August	• WRP work in the Buck watershed • winter coho sampling in 1996 (DFO report)
Jeff Lough	FRBC - Watershed Restoration; Smithers	Watershed Restoration Technician	(250) 847 - 7337	July 29 August 1	• WRP reports • ongoing WRP projects
Joeseph DeGisi	Consultant	Fisheries Biologist	(250) 847 - 3575 (250) 847 - 2959 fax	September 15	• Reconnaissance Lake Inventory reports for project area

APPENDIX II

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APPENDIX III

PHASE COMPLETION REPORTS

PROJECT PHASE COMPLETION REPORT

PHASE 1

Project Name: 1:20,000 Stream Inventory of the Morice Forest District

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
ILP Maps (forwarded to MELP, Fisheries, Victoria)		
List of Contacts		
ILP Data Sheets		
Basin Classification Sheets		
Background Information Bibliography		

Activity Log

Date	Activity	Time Spent
July 29, 1997	Stream and Lake file search @ MELP Smithers	10 h
July 29-Aug 7, 1997	Requests for information	10 h
July 29, 1997	Request for FISS information	0.5 h
Aug. 5-8, 1997	Assign ILP's, delineate watershed boundaries	60 h
Aug 12, 1997	Update FISS, create contact list, bibliography	20 h

Summary of Work Completed

A background data review was conducted to establish existing information within the Northwood Stream Inventory project areas. Reports and files referencing the Skeena River watershed (specifically the Morice and Bulkley Rivers) were identified and reviewed. These reports were obtained from the Ministry of Environment, Lands and Parks (MoELP), Region 6 office in Smithers, the Department of Fisheries and Oceans (DFO), Pacific Biologic Station Library, the BC Conservation Data Center and Triton's own libraries in Richmond and Terrace. A total of fifty-four reports were identified and 46 reviewed. A bibliography listing these reports was completed (see attachment).

In the process of data collection and compilation consultant companies and government agencies were contacted. A list of contacts made during this process was completed (attached).

FISS maps were reviewed and compared with the data collected during the background review. Information that was not included on the FISS maps was subsequently transcribed to a corresponding 1:50 000 scale National Topographic Scale (NTS) map.

Three of the forty reports reviewed detailed information that was not documented on the current FISS maps. One FISS addition (WRP report written by Michell *et al,* 1996) was completed and transcribed on a NTS map and assigned a FISS reference number. This information will be forwarded to Gord Oliphant, MoELP, Victoria. FISS map updates will be submitted subsequent to the addition of field informatin for the project (Phase 5).

Two of the reports (Taylor, 1995 and 1996) reviewed contained new information but exact site location was not provided. Attempts have been made to obtain the site locations, unfortunately the contact person (Barry Finnegan, DFO) has been unavailable.

Existing FISS data was transcribed on to interim TRIM maps and assigned NID numbers. Thirty-four working TRIM mapsheets are being used for the project. Following is a list of working maps by watershed area:

Area	**Number of working maps**
• Tochcha	15
• Shea Creek	3
• Houston-Tommy Creek	5
• Buck Creek	11

Summary of Phase Costs
Professional Fees $4,787.00
Disbursements $800.00

Costs as per original budget.

Progress and Problems Summary

Phase 1 was completed as scheduled. Background information within FISS and other more recent sources was scant.

ILP assignment and UTM generation was conducted by Northwood's GIS subconsultant as the first phase of the project. Dave Gordon, Project Director, provided RIC standards for this work. ILP assignment was not consistent with RIC standards and UTM coordinates generated for Lakes were assigned to geographic centres as opposed to lake outlets. In future, ILP number assignment should be conducted by the inventory contractor and then forwarded to the GIS department for UTM coordinates and inclusion in the TRIM database. The stream length increments displayed on TRIM maps contributed to efficiencies in Phase 2.

Contract Monitor Acceptance

Report Submitted By: Scott Northrup, R.P.Bio.	Date: August 20, 1997
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 2

Project Name: Reconnaissance (1:20,000 scale) fish and fish habitat stream inventory in the Morice Forest District for Northwood Pulp and Timber Ltd.

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
Interim Maps		
Reach Tables		
Lake Tables		
FISS Updates		
Basin Classification Tables		

Activity Log

Date	Activity	Time Spent
August 13-22	Completing Reach Breaks and Basin Classification and Quality Control	290 hours
August 10-12, 19-24	Completing Reach Tables and Quality Control	52 hours
August 10-24	Completing Interim Maps and Quality Control	100 hours

Summary of Work Completed

Table 1. Number of Streams identified (by Order) and referenced, by Project Area.

	Number of Streams Identified and Referenced				
Project Area	**1st Order**	**2nd Order**	**3rd Order**	**4th Order**	**5th Order**
Houston Tommy	301	55	10	3	0
Shea Creek	164	42	10	3	0
Tochcha	420	91	30	6	1
Buck Creek	183	49	12	11	0

Table 2. Number of reaches identified and completed reach cards.

	Number of Stream Reaches Identified	Number of Reach Cards Completed
Project Area		
Houston Tommy	641	incomplete
Shea Creek	474	incomplete

Tochcha	1150	incomplete
Buck Creek	698	incomplete

Summary of Phase Costs
Professional Fees $15,888.00
Disbursements $645.00

Overflight of watersheds not conducted as per the proposal after discussions with Paul Giroux, MELP Smithers. Additional time was contributed to reach break analysis.

Progress and Problems Summary

Separation of Phase 1 to 3 deliverables is difficult. Work on basin classification, ILP datasheets, reach breaks and reach tables requires use of maps and datasheets.

Time allocation for phases 1-3 was underestimated for the project. Part of this can be accounted for by the learning process; the implementation of the new standards is not familiar to most staff. The underestimation was a common problem with other contractors and other Triton offices. Time consuming tasks include reach break determination and data entry for reach tables. Much of this data will likely not be used for the field sampling phase of the project.

Late timing of the project required that some aspects of the planning phase be left until Phase 4 has been completed. The new standards are inflexible with respect to planning in such a short time frame. The importance of beginning field work during favorable weather was an important consideration during planning. A project start date deadline, adjusted for each region or area of the province, should be an MELP consideration for future contracts. Many of the needs and requirements, including background information, air photos, inventory maps and ministry personnel are not available in the short term.

Contract Monitor Acceptance

Report Submitted By: Scott Northrup, R.P.Bio.	Date: September 1, 1997
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 3

Project Name: Reconnaissance (1:20,000 scale) fish and fish habitat inventory in the Morice Forest District for Northwood Pulp and Timber Ltd.

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
Project Plan		
Interim Maps		
Reach Forms		
Crew and Equipment List		
Sample Site Selection Rationale		

Activity Log

Date	Activity	Time Spent
	Project Plan development	3.5 d
	Phase 3 meeting (Todd Mahon)	0.5 d
	Phase 3 meeting (Paul Giroux)	0.5 d

Summary of Work Completed

The number of sample sites proposed and a brief rational for sample site selection is provided in the project plan (attached).

A total of 226 sample sites were selected. Upon discussions with Todd Mahon, an additional 10 sites were included in the Tochcha operating area for total of 236 sites.

Sample site location was discretionary in all cases. Sample sites were assigned based on the requirements generated according to the Reach Sampling Summary table, sites that would describe basin wide fish distributions and satisfy Northwood's operational needs.

Summary of Phase Costs

As per the project proposal.
Professional Fees $3,380.00
Disbursements $625

Progress and Problems Summary

Reach forms for 236 sample sites were not completed. MELP projects that the Reach form will be generated via a database printout in October. Completion of reach forms is to be completed once final sample sites are selected during field portion of project. Reach forms may change depending on field conditions.

Next Phase Project Plans and Constraints

Phase 4 (field) scheduled to commence on August 28, 1997.

Contract Monitor Acceptance

Report Submitted By: Scott Northrup	Date: September 1, 1997
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 4

Project Name: 1:20,000 Reconnaissance Inventory of Fish and Fish Habitat in the Morice Forest District for Northwood Pulp and Timber Ltd.

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
Site Cards		
Fish Cards		
Sampling Summary		

Activity Log

Date	Activity	Time Spent
Aug 29, 1997 - September 21, 1997	Gear up, travel, field work and gear down for stream inventory in the Shea, Houston-Tommy and Tochcha watersheds.	1080 hours

Summary of Work Completed

234 stream reaches sampled

Fish stream identification was not completed for the project. Information required for stream classification was gathered and should be available for use by Northwood.

The total number of stream reaches sampled, the number of reaches sampled along cutblocks, and the number reaches where follow-up sampling is recommended are summarized by project area in the following table (Table 1).

Table 1. A summary of stream reaches sampled in each project area.

Project Area	**Total Number of Reaches Sampled**	**Number of Reaches Sampled Near Cutblocks**	**Number of Reaches Recommended for Follow-up Sampling**
Tochcha	115	57	42
Houston - Tommy	73	41	40
Shea	46	31	18
Total Reaches	234	129	100

Summary of Phase Costs
Professional Fees $46,823.49
Disbursements $59,406.51

Progress and Problems Summary

The majority of first order streams identified during planning phases were small, intermittent or ephemeral drainages. A number of first order streams identified during planning were changed to 2nd order streams during the field survey. Although sampling of first order streams will indicate fish species presence/absence within the system, the bias towards these small watercourses was considered a poor use of project funds. The identification of reaches with fish and the upper distribution limits of fish was deemed more important.

Next Phase Project Plans and Constraints

Data compilation will commence October 1, 1997. The MELP FDIS data entry tool and fish entry tool are not yet available. Available versions have inherent problems causing costly time delays and staff downtime. Data entry must be complete prior to submission of interim maps and databases to the GIS subcontractor (Western).

Contract Monitor Acceptance

Report Submitted By: Scott Northrup, R.P.Bio.	Date: October 14, 1997
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT: PHASE 5

Project Name: 1:20,000 Reconnaissance Fish and Fish Habitat Inventory in the Morice Forest District for Northwood Pulp and Timber Ltd.

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
Reach Forms		
Site Cards		
Fish Collection Forms		
Photodocumentation indices		
Indexed photographic slides		
FISS updates		
Phase 5 completion report.		

Activity Log

Date	Activity	Time Spent
Dec 1997	reach form completion	5 days
Jan 1998	site card entry	21 days
Jan 1998	fish collection form entry	15 days
Jan 1998	slide development/scanning/printing	7.5 days
Feb 1998	FISS data forms/mapping	5 days
Mar 1998	phase completion report	2.0 h

Summary of Work Completed

Field Samples Processed = 235

Data Cards By Database

FDIS

Houston Tommy	74	
Shea	47	
Tochcha		114

Fish Coll

Houston Tommy	33
Shea	29
Tochcha	63

Photodocumentation

2 photographic slide binders
630 photographs catalogued
630 digital photographs scanned
2 CD's created.

FISS

FISS maps = 6
FISS forms = 240

Summary of Phase Costs
Professional Fees $10,845.00
Disbursements $3,305.00

These figures are as quoted in the original budget. Estimate that 2 times the originally estimated effort was spent on this phase.

Progress and Problems Summary

The FDIS and Fish Collection tools were released in beta style versions. Numerous problems and short comings resulted in a myriad of lost person days during Phase 5. Continous updates of each tool resulted in revisiting of databases once entered. Final (?) version of Fish Coll tool not released until February. FISS updates required a great deal of time to complete. Suggest not including FISS updates in inventory projects. Should be administered as a separate project as all inventory projects will be centrally located once submitted.

Next Phase Project Plans and Constraints

Deliverables for Phase 5 were constrained by close associations with deliverables for Phase 6. Although these two phase are described as Data Compilation and Reporting, respectively, many of the tasks are closely associated. The need for submission of Phase 5 deliverables should be coupled with Phase 6 deliverables to reduce the time spent on administratitively redundant tasks.

Contract Monitor Acceptance

Report Submitted By: Scott Northrup, R.P.Bio.	Date: March 1998
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 6

Project Name: Reconnaissance (1:20,000 Scale) Fish and Fish Habitat Inventory in the Morice Forest District for Northwood Pulp and Timber Ltd.

Project Code: 06-BABL-3085-0001-1998 Contract Number:

List of Deliverables Submitted

Deliverable Product	Received	Approved (QA)
Project Overview Map		
Inventory Map		
Distribution Map		
Final reports (3)		
Photograph CD's		
Phase 6 completion report		

Activity Log

Date	Activity	Time Spent
Feb 1998	Photograph CD's	3 days
Feb 1998	Final reports (3)	25 days
March 1998	Inventory, Distribution, overview maps	3 weeks
March 1998	Phase completion report	2 hours

Summary of Work Completed

Length of Streams 2428 km

Total Reaches: 2273

Sample Site: 233

Reaches Adjacent to Cutblocks: 129

TRIM Sheets: 19

Summary of Phase Costs
Professional Fees $18,207.00
Disbursements $1,050.00

Costs as per original budget estimate. Estimate that Phase 5 and 6 in concert required twice the alloted effort originally outlined.

Progress and Problems Summary

Mapping: GIS mapping standards and specifications were released prior to detailed routines being developed. Linking of fish collection data was not obvious and required additional effort.

Watershed codes were not received until March 1998. ILP maps were submitted to MELP in October 1997. The importation of WSC data was not straight forward and required a multitude of manual entries. The fish collection form (new version) was released in Feburary 1998 and required additional data imports.

Report formats and mapping products do not appear to be "forestry friendly". Descriptions of classified streams and locations within reaches of stream class boundaries are not obvious.

Contract Monitor Acceptance

Report Submitted By: Scott Northrup	Date: March 15, 1998
Phase Completion Approved:	Date:
Comments:	

APPENDIX IV

PROJECT PLAN

TRITON
Environmental Consultants Ltd.

413 Campbell Street
Nanaimo, B.C., Canada V9R 3G8
Telephone: 1 (250) 753-8339
Fax: 1 (250) 753-8349
Internet: triton@direct.ca

Reference: **2586/WP1400m**

Wildfor
Box 2962
Smithers, B.C.
V0J 2N0

Attention: **Todd Mahon**

Dear Mr. Mahon:

Re: **Northwood Pulp and Timber Reconnaissance Fish and Fish Habitat Inventory Project Plan**

Please find attached project deliverables for Phases 1-3 (planning phases) as outlined in the General Services Agreement for FRBC Stream Inventory.

The report is organized as follows;

- Phase 1 completion report
- Phase 2 completion report
- Project Plan for Phases 4-6
- Phase 3 completion report
- Phase 1 attachments
- Phase 2 attachments
- Phase 3 attachments

Phase 4 of the project will commence August 28, 1997. Should you have any questions or comments please do not hesitate to contact me at 753-8339.

Yours truly,
Triton Environmental Consultants Ltd.

Scott Northrup, R.P.Bio.
Project Biologist/Manager

cc Paul Giroux MELP

attach

1. PROJECT PLAN

1.1 Phase 4: Field Data Collection

Following is an outline of our approach to the field work, clarification of specific sampling methodologies, and an estimate of the effort required. The following Sections describe the methodologies and approaches to complete field sampling, data collection and reporting.

1.1.1 Pre-Field Preparation

Pre-field preparations will entail both office activities and logistics planning in coordination with members of the project team, the Implementation Contractor and Northwood. Fish collection permits have been obtained from MELP and DFO as part of pre-field planning.

1.1.2 Equipment

Triton possesses the majority of field equipment necessary to complete the project. A rental vehicle (4X4 truck) and hand held radios have been secured prior to the commencement of Phase 4 (Field work).

1.1.3 Field Assessment

Field work will be conducted by two, 2 person field crews. Crew mobilization will take place using a variety of methods which will maximize the efficiency of the field program depending on specific access available within each watershed. In watersheds in which road access is available, crews will utilize a 4X4 crew cab pickup truck. Crews will work in tandem, 'leap-frogging' from reach to reach. In watersheds for which road access is unavailable crews will be mobilized by a Bell Jet Ranger helicopter. Crews will fly out to the watersheds together, and will complete site assessments by "leap-frogging" from site to site (large creek systems) or be dropped off at the downstream end of smaller systems. Triton has used each of these methods on numerous fish inventory studies, as it maximizes effort and cost efficiency and reduces the length of the field program. Each crew will be equipped with a Smith-Root Model 12A backpack electrofisher and other standard field gear (clinometer, hip chain, tape measure, VHF radio, first aid kit, etc.). Utilizing a combination of these methodologies will ensure that field efficiency is maximized and the project target of 5 sample sites/crew/day is attained.

1.1.4 Fish Species Sampling

Fish sampling efforts will focus on reaches of <20% gradient (>20% at the FRBC Coordinator, Regional Inventory Specialist and Project Manager's discretion (i.e. suspected bull trout presence)) and will follow the procedures outlined in the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures* (May 1997)

and the *Forest Practice Code's* Fish Stream Identification Guidebook. A minimum 100m of stream length or a length equal to 10 bankfull widths (whichever is greater) will be sampled in each identified reach. In addition, intermittent fish sampling may be conducted during travel between sample sites (in an upstream direction), upstream and downstream of barriers and within habitat features (pools, debris jams etc.) that are utilized by fish.

The presence, relative abundance and diversity of fish species will generally be evaluated through electroshocking of at least 100 linear metres of stream length. In areas where return visits are practical, minnow traps baited with salmon roe and allowed to soak for a 24 hour period may be used to supplement electroshocking data, or in areas that are not suited to electroshocking (deep pools, wetlands, active spawning areas, etc.). Other sampling methods, such as snorkeling, beach seining, and angling may be used where necessary, or where requested by the Project Monitor. Triton is fully outfitted with dry suits, beach seines, minnow traps, and other fish sampling equipment and can quickly deploy the appropriate sampling tools where needed.

All fish sampling data will be recorded on waterproof Fish Collection Forms. The following data and samples will be recorded and collected for fish caught at each sampling site:

- species (keyed out using RIC's Field Key to Freshwater Fishes of BC). Special attention will be given to documenting species at risk in Region 6.
- length to the nearest mm (fork length or total length depending on species) determined for 30 random samples of each fish species captured including the longest and shortest fish;
- life stage;
- a representative sample of any abnormal or unidentified fish or a species of fish out of its normal range will be preserved and submitted to the Implementation Contractor as will all non-game fish captured from each 2nd - 4th order watershed.

For all reaches with non-fish bearing classification a written explanation supporting the classification will be submitted (Non-Fish Bearing Classification Report). The written explanation will be included in the final report. The discussion will focus on sampling methods utilized during the field program, water quality parameters including conductivity and turbidity and recommendations for follow-up sampling.

Follow-up sampling is recommended (Fish Stream Identification Guidebook) in order to establish fish absence in many cases. The need for a follow-up sample will be determined based on the results of the initial survey, recommendations from the survey team, and a data review by the Regional Inventory Specialist. In the field however, survey crews will note the areas of concern (i.e., intermittent or ephemeral channels and side channel habitat that constitute Fisheries Sensitive Zones in high water). The need for follow-up sampling will be determined by the Regional Inventory Specialist at a later date and actual sampling

will be completed using surplus funds from the existing contract or through a future contract.

1.1.5 Habitat (Site) Description

A reach description will be completed for each reach (at fish sampling sites), consistent with the Site Description form and entered into MELP's MS Access database as part of Phase 5. Each sampling site length will be 100 m, or >10 bankfull widths whichever is greater. The following data will be collected at each site:

- reach length
- site length
- stream gradient
- 6 individual channel width measurements
- estimates of the percentage areas of the different habitat units
- estimates of bed material size, by size class
- compaction of bed materials
- measurements of stream cover / riparian vegetation and large organic debris
- measurements of bank instability
- channel confinement
- percentage of stream bars
- air temperature
- water temperature
- conductivity (ambient)
- flow (see 3.3.2.4 Water Quality)
- major features (fish passage barriers, log jams, LWD, beaver dams, clay slides, etc.)
- obvious fish habitat limitations or restoration opportunities
- preliminary identification of obvious Fisheries Sensitive Zones as *per Fish-stream Identification Guidebook* specifications.

1.1.6 Water Quality

Consistent with the terms outlined in Schedule A, Triton will sample water quality parameters in the field at each sample site. Parameters will be measured in the field in order to reduce laboratory costs and shipping and receiving requirements. Specifically, Triton proposes to measure air and water temperature using standard field thermometers, pH and conductivity using hand held meters, and turbidity using visual estimates. Water quality measurements (including flow estimates using a floating ball method) will be taken in each sampled reach as specified in the RFP.

1.1.7 Wildlife Observations

Wildlife observations will be noted and specific details recorded. Amphibians will be identified in the field. Abundant invertebrates will be described and field identified to

Order or Family (where practical), as will aquatic macrophytes. Photographs will be taken for further documentation and confirmation. Wildlife observations will be recorded on the Site Card with emphasis placed on species considered rare, endangered or threatened as defined by the Conservation Data Centre.

1.1.8 Photographic Documentation

Triton will make extensive use of photography throughout the project. Photographs will be taken, as outlined in appropriate RIC standards, of each sample site (including downstream and upstream perspectives), of each feature identified and of representative or unidentifiable fish species. Photographs will be documented on Site Cards and Fish Collection Forms and Triton's Photodocumentation Form and presented in the report in a manner that meets RIC standards.

1.1.9 Working Area Specific Sampling

Through completion of Phases 1-3 we have identified specific reaches within each working area to be sampled. Sample sites will be biased towards Northwood's priortized operational needs areas as follows (Table 1):

Table 1. Watersheds And Sub-Basins Priority Assessment

Watershed	Map # ID	Priority
Tochcha Drainage		1/4
Shea Creek Drainage		2
Houston-Tommy Creek Drainage		
Buck Creek Drainage		

The reach data analysis for all watersheds provided the following sampling regime (Table 2).

Planning for the field sampling portion of this project followed a balanced approach between Ministry of Environment, Lands and Parks (MELP) requirements and Northwood Pulp and Timber Ltd.'s (Northwood) operational needs. The criteria for sample site selection was discussed with MELP's Fisheries Inventory Specialist, Mr. Paul Giroux, and Northwood's Forest Renewal BC contractor, Mr. Todd Mahon, prior to final approval of the field sampling plan. Sample site selection was discretionary and sample sites were selected using the following criteria:

- MELP's Reach Sampling Summary table for each watershed,

- existing fish species distribution data,
- strategies to determine fish distribution within each watershed,
- Northwood operational needs.

A brief description of the sampling program for each landscape unit is provided in the following sections.

1.1.9.1 Houston Tommy and Shea Creek Watersheds

The initial sampling plans for Houston Tommy and Shea Creek were revised following discussions with MELP's Fisheries Inventory Specialist, Paul Giroux. The reach summary tables for Houston Tommy and Shea Creek generated 101 and 87 samples sites, respectively. Mr. Giroux determined that the number of sample sites generated for each creek were too intense for a 1:20 000 scale reconnaissance inventory. As a result the individual reach data tables for each creek were combined to generate one reach summary table and subsequently generated new sample site totals. The combined number of sample sites was then split between Houston Tommy Creek and Shea Creek based on watershed area; 74 and 46 sample sites respectively.

The specific sampling plans for Houston Tommy Creek and Shea Creek are outlined in the following sections.

1.1.9.2 Houston Tommy Watershed

The project area of Houston Tommy includes the Houston Tommy watershed and an unnamed Morice River tributary to the west of the Houston Tommy/Morice confluence. Houston Tommy is a fourth order watershed that drains into the Morice River. The unnamed tributary is a third order watershed that also drains into the Morice River.

Pink salmon *(Onychorhyncus gorbuscha)* have been observed in Reach 1 of Houston Tommy Creek and coho salmon *(O. kisutch)*, Dolly Varden char *(Salvelinus malma)*, rainbow trout *(O. mykiss)* and steelhead *(O. mykiss)* have been observed throughout the Houston Tommy mainstem to a set of falls at 17.6 km. Extensive habitat and fish distribution studies have occurred along this 17.6 km section of the Houston Tommy. Steelhead fry were released into Houston Tommy Creek over a period of four years (from 1983 through 1984).

Fish distribution within the unnamed watershed has not been documented, however coho and pink salmon, and steelhead have been observed in the Morice just upstream of the confluence of the unnamed creek with the Morice River.

A total of seventy-four sample sites were proposed; fifty-seven samples sites within the Houston Tommy watershed and seventeen in the unnamed watershed. As fish distribution in the lower Houston Tommy is well known three sample sites located above the falls on the Houston Tommy mainstem were proposed.

The Wet'suwet'en First Nation is conducting a Level II Watershed Restoration Program (WRP) project in the Houston Tommy watershed. Sixty sites have been selected for field visitation this year (Michell,1996). Stephan Schug of the Wet'suwet'en First Nation was contacted but specific site locations were not provided. Mr. Schug did suggest that work would occur only in the road accessible areas of the watershed (*Schug, pers comm*). Subsequently, the WRP work did not alter the locations of sample sites for this project.

1.1.9.3 Shea Creek Watershed

The project area encompasses the Shea Creek, a sub-basin within the Gosnell Creek watershed. Shea Creek is a fifth order stream with important fisheries values.

Coho salmon, cutthroat trout *(O. clarki)*, Dolly Varden char, long nose dace*(Rhinichthys cataracte)*, rainbow trout *(O. mykiss)*, rocky mountain whitefish *(Prosopium williamsoni)* and steelhead have been observed in the Shea Creek mainstem. Numerous habitat and fish distribution studies have been conducted along Shea Creek in the section of stream below Shea Lake. Steelhead fry were released into Shea Creek in 1984, 1985 and 1986.

In total forty-six sample sites were proposed for the Shea Creek area. As previous fisheries studies have not focused on the section of stream above Shea Lake three mainstem sample sites above the lake were selected. The remaining forty-three sample sites were situated along tributaries to Shea Creek.

The Wet'suwet'en First Nation is conducting a Level II WRP project in the Gosnell Creek watershed. Field visitation is scheduled for eleven sites within the watershed (Michell, 1996). It is not known how many sites, if any, are located in the Shea Creek sub-basin. Again, this work was not been factored into our project plan.

1.1.9.4 Tochcha Watersheds

The Tochcha project area is comprised of a large landscape unit that includes all watersheds that drain into the following lakes: Friday, Nakinilerak, Hautète, Natowite and Tochcha. Thirty third order streams, five fourth order streams and one fifth order stream were identified within the project area.

Existing fisheries information in this area was scant. Two lake surveys conducted by Joseph DeGisi in 1996 identified the following fish species presence in lakes draining into Hautète Creek: lake char *(Salvelinus namaycush)*, Kokanee *(O. nerka)*, mountain whitefish, rainbow trout, northern squawfish *(Ptychocheilus oregonensis)*, prickly sculpin *(Cottus asper)*, redside shiner *(Richardsoni balteatus)*, longnose sucker, coarsescale sucker *(Catostomus macrocheilus)*, peamouth chub *(Mylocheilus caurinus)* and longnose dace (DeGisi, 1997). A third lake survey conducted on an unnamed lake that drains into

Natowite Lake determined the presence of these fish species: rainbow trout, longnose sucker *(Catostomus catostomus)* and lake chub *(Couesius plumbeus)* (DeGisi, 1997). FISS records indicate the presence of northern squawfish, Kokanee, rainbow trout, and prickly sculpin in Nakinilerak Lake, northern squawfish in Friday Lake and rainbow trout, kokanee and mountain whitefish in Natowite.

A total of 119 sample sites were proposed: 109 samples sites were generated in the reach summary table and an additional ten sample sites were added by Northwood to address immediate operational needs. The additional ten sample sites were not included in the original project area boundaries, as specified by Northwood, due to a pre-planning oversight.

It was not determined whether any WRP projects are ongoing in any of the watersheds within this project area.

1.1.9.5 Buck Creek Watershed

The Buck Creek project area encompasses the Buck Creek watershed, a sub-basin within the Ramsay Creek watershed and a sub-basin within the Parrott Creek watershed. Buck Creek is a fourth order stream that flows into the Bulkley River. Both Ramsay and Parrott Creek are third order drainages that flow into the Bulkley River.

Chinook *(O. tshawytscha)*, coho, Kokanee and pink salmon, rainbow trout and steelhead, longnose suckers, largescale suckers, mountain whitefish, redside shiners and peamouth chub are fish species known to utilize Buck Creek. A falls at 10 km on the creek limits further upstream migration for anadromous fish. Background research did not provide documentation as to the presence/absence of fish species in either Ramsay or Parrott Creek.

A total of 135 sample sites were generated by the Reach Summary Table for the Buck Creek project area. Ninety-six sample sites were proposed for the Buck Creek watershed, twenty-eight sample sites were proposed for the Parrott Creek sub-basin and eleven sample sites for the Ramsay Creek sub-basin.

Background research did not provide any indication of ongoing WRP projects in the Buck Creek watershed.

Phase 4 Deliverables

- Monthly progress reports
- Quarterly report
- Fish Collection Forms
- Voucher specimens
- Additional Sampling Requirements report
- Non-Fish Bearing Reach Status report
- Site Cards
- Photographs
- Phase 4 Completion Report (hardcopy and digital)

1.2 Phase 5: Data Compilation

The accurate and concise compilation of field notes, data, and photographs is essential to the successful completion of this project. Immediately following each field day, field crews will meet in the field office to compile field notes, provide a preliminary summary of the field findings on hard copy maps, prepare additional sampling requirement reports and non-fish bearing status reports (if required). This system ensures that all field information is thoroughly documented while field work is still fresh with the crews, and would allow for preliminary classifications to be available as required. It also allows for easy tracking of project progress.

The office portion of Phase 5 will entail entering hardcopy field notes and field forms into requisite electronic database forms including reach cards, site cards, fish collection forms and Photodocumentation form 1. ILP's, submitted during the initial phases will be

converted to watershed codes and NID's will be converted to UTM coordinates for mapping and georeferencing purposes. Photographs taken during the field season will be developed and captioned and coupled with Site Cards where applicable. Additional photographs will be indexed in referenced binders with Photodocumentation Cards and negatives.

Phase 5 Deliverables

- Reach Cards
- Site Cards
- Fish Collection forms
- Photodocumentation forms (1)
- Indexed photographic negatives
- FISS update maps and data forms
- Phase 5 Completion Report (hardcopy and digital)

1.3 Phase 6: Reporting and Mapping

Triton will prepare final reports and maps for all subbasins that meet the needs of MELP. Reports will be structured following the proposed report format outline presented in Chapter 5 of the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures* (May 1997).

Large appendices, including but not limited to, Site Cards and photographic appendices will be bound in separate volumes. The report format will endeavor to avoid re-iteration of field data on a reach by reach basis that may be represented in data appendices. Instead the anecdotal discussion format of the report will focus on descriptions and justifications for non-sampled reaches, non-fish bearing reaches and reaches where fish species were not captured but are likely to occur at other times of the year (follow-up sampling requirements). The report will also contain a summary of background information gathered and reviewed during the initial phases of the project.

1.3.1 GIS Mapping

GIS mapping requirements will be met by Northwood's GIS subcontractor, Western Geographic Information Systems. Interim working maps and associated databases will be forwarded to Western GIS upon completion Phase 5 data compilation works. Upon completion of the mapping requirements, Western GIS will submit the final hardcopy maps to the Triton project manager for editing and cross checking prior to submission of the draft mapping deliverable.

APPENDIX V

FDIS REACH/SITE SUMMARY

FDIS REACH/SITE SUMMARY LEGEND

REACH ATTRIBUTES

Bars

N	none
DI	diagonal
PT	point
CS	channel side
JN	junction
MC	mid-channel
DM	diamond
WD	waves/dunes
NV	not visible
TR	transverse

Setting

VF	valley floor
VW	valley wall
MP	mountain plateau
PN	plain/large plateau
PD	piedmont

Riparian Vegetation

N	none
G	grass
S	shrubs
C	coniferous
M	mixed
W	wetland
D	deciduous

Exposed/ Eroded

N	none
V	visible
NV	unknown/not visible

Land Use

NO	none/natural
AG	agricultural
UD	urban development
MI	mining
PR	developed park/recreation
FB	logging, to banks
FR	logging, with reserves
OT	other

SITE ATTRIBUTES

Access

FW	fixed wing aircraft
H	helicopter
V2	2 wheel drive
V4	4 wheel drive
FT	foot
ATV	all terrain vehicle

CHANNEL

Stage

L	Low
M	Medium
H	High

WATER

Turbidity

T	turbid
M	moderately turbid
L	lightly turbid
C	clear

COVER

Cover

SWD	small woody debris
LWD	large woody debris
B	boulders
C	cutbanks
DP	deep pools
OV	overhanging vegetation
IV	instream vegetation

LWD

N	none
F	few
A	abundant
U	unknown

LWD Dist

C	clumped
E	even

FDIS REACH/SITE SUMMARY LEGEND (cont'd.)

MORPHOLOGY

Bed Material

F	fines
G	gravel
C	cobble
B	boulder
R	bedrock

Islands

N	none
O	occasional
I	irregular
F	frequent
S	split
AN	anastamosing

Morphology

RP	riffle/pool
CP	cascade/ pool
SP	step/pool

Confinement

EN	entrenched
CO	confined
FC	frequently confined
OC	occasionally confined
UN	unconfined
N/A	not applicable

Disturbance Indicators

O1	beaver dams
B1	abandoned channels
B2	eroding banks
B3	avulsions
C1	extensive riffles/cascades
C2	minimal pool area
C3	elevated mid channel bar
C4	multiple channel or braids
C5	disturbed stone lines
D1	small woody debris
D2	large woody debris
D3	recently formed jams
S1	homogenous bed texture
S2	sediment fingers
S3	sediment wedges
S4	extensive bars
S5	extensive scour

Bars

N	none
D	diagonal
P	point
M	mid channel
T	transverse
L	longitudinal

Coupling

DC	decoupled
PC	partially coupled
CO	coupled

Pattern

TM	tortuous meanders
ME	regular meanders
IM	irregular meanders
IR	irregular meanders
SI	sinuous
ST	straight

FEATURES*

BD	beaver dam	F	falls (>2 m)
C	cascade/ chute	LS	landslide/bank sloughing
CV	culvert	VB	velocity barrier
X	LWD jam	FLD	dewatering

FISHERIES SENSITIVE ZONES

TRIB	Tributaries
SC	Side channel
FC	Flood channel
SWP/ SLG	swamp/ slough
FL/BV	Flooded area/dammed by beavers

FDIS Reach/Site Summary

Reach # 2 Site # 92

Watershed Code 460-600600-50800-00500-2830-2895-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1605 | Map 93L.023 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.2 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. S

Order 1 | BGC Zone SBS | Exposed/Eroded V | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
92					100	V4	☐	1997/09/16

CHANNEL

Mean Channel Width (m) 1.9 | Mean Wetted Width (m) 1.6 | Mean Residual Pool Depth (m) 0.3

Mean Gradient 4.0 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 9 | pH 7.1 | Cond. 40 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		10		50		40	

Total 15 % | LWD A | DIST C

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 0.4 | D (cm): 0.4 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern IM | Islands N | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

IFSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 93

Watershed Code 460-600600-50800-00500-2830-2968-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1595 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.6 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 5 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
93					100	H	☒	1997/09/18

CHANNEL

Mean Channel Width (m) 3.1 | Mean Wetted Width (m) 2.0 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 1.4 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☒ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6 | pH 7.2 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		35		15	15	35	

Total 40 % | LWD A | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: F

D95: 10 | D (cm): 10 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern IM | Islands N | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 94

Watershed Code 460-600600-50800-00500-2830-2968-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1595 Map 93L.023 Reach # 2 Sample Typ B

REACH ATTRIBUTES

Length (km) 1.7 US Elev. Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. Magnitude 2 Setting VF Riparian Veg. C

Order 2 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
94					100	H	☐	1997/09/18

CHANNEL

Mean Channel Width (m) 1.7 Mean Wetted Width (m) 0.5 Mean Residual Pool Depth (m) 0.1

Mean Gradient 1.2 Mean Wb Depth 0.1 No Vis.Ch ☐ Intermitten ☒

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7.5 pH 7.2 Cond. 50 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
				80		20	

Total 20 % LWD F DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 8 D (cm): 8 Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ME Islands N Coupling DC Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1– Site # 95

Watershed Code: 460-600600-50800-00500-2830-2561-000-000-000-000-000-000

WATERSHED

Gazetted Name | Local Name

ILP: 1606 | Map: 93L.023 | Reach #: 1 | Sample Type: B

REACH ATTRIBUTES

Length (km): 1.2 | US Elev. | Bars: ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude: 1 | Setting: VF | Riparian Veg.: C

Order: 1 | BGC Zone: SBS | Exposed/Eroded: N | Landuse: NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
95		150	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m): 1.3 | Mean Wetted Width (m): 1.3 | Mean Residual Pool Depth (m): 0.1

Mean Gradient: 3.0 | Mean Wb Depth: 0.1 | No Vis.Ch. ☐ | Intermittent ☐

Stage ☐ L ☒ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp.: 6.5 | pH: 6.9 | Cond.: 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWB	MWB	B	C	MF	DV	TV
		60				20	20

Total: 40 % | LWD: A | DIST: E

MORPHOLOGY

BED MATERIAL Dominant: F | Subdom: C

D95: 12 | D (cm): 0.002 | Morph: RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern: SI | Islands: N | Coupling: DC | Confinement: OC

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)	Comment
3061	93L.023		F	1.8		8	23		90 m upstream from confluence

FSZ

TRIB ☒ SC ☒ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 96

Watershed Code 460-600600-50800-00500-2830-3023-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1477 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.7 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
96					100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 1.4 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 9.0 | Mean Wb Depth 0.0 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☒ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	V	Total	%	LWD	DIST
		100						10		A	E

MORPHOLOGY

BED MATERIAL Dominant F | Subdom: G

D95: 15 | D (cm): 0.002 | Morph SP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement CO

REACH FEATURES

SITE FEATURES

F/S/Z

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 97

Watershed Code 460-600600-50800-00500-2830-3013-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1476 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.4 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
97					100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 1.4 | Mean Wetted Width (m) 1.0 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 6.3 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 7.3 | Cond. 50 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		40		60			

Total 20 % | LWD A | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: F

D95: 8 | D (cm): 2 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

FISZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 98

Watershed Code 460-600600-50800-00500-2830-3266-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1480 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.35 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 3 | Setting VW | Riparian Veg. M

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
98					100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 1.3 | Mean Wetted Width (m) 1.2 | Mean Residual Pool Depth (m) 0.1

Mean Gradient 4.5 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☒ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7 | pH 7.3 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
				50		50	

Total 10 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 10 | D (cm): 2 | Morph SP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ME | Islands N | Coupling DC | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 99

Watershed Code 460-600600-50800-00500-2830-3452-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1572 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.8 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 4 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
99		100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.5 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 7.2 | Cond. 50 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant F | Subdom: B

D95: 40 | D (cm): 0.002 | Morph NS

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST | Islands N | Coupling DC | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 100

Watershed Code 460-600600-50800-00500-2830-3778-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1553 Map 93L.023 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.6 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 Setting VW Riparian Veg. M

Order 1 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
100		100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 0.0 Mean Wetted Width (m) 0.0 Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 Mean Wb Depth 0.0 No Vis.Ch ☒ Intermitten ☐

Stage ☐ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. pH Cond. Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % LWD DIST

MORPHOLOGY

BED MATERIAL Dominant Subdom:

D95: D (cm): Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern Islands Coupling Confinement

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 101

Watershed Code 460-600600-50800-00500-2830-2798-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1469 | Map 93L.023 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.4 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
101					100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 2.4 | Mean Wetted Width (m) 1.8 | Mean Residual Pool Depth (m) 0.3

Mean Gradient 5.0 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☒ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6.5 | pH 7.2 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		50				50	

Total 10 % | LWD A | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 15 | D (cm): 6 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling CO | Confinement CO

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.		UTM (Zone/Easting/Northing)		Commen
3080	93L.023		F	30		9	2				55% gradient

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 102

Watershed Code 460-600600-50800-00500-2830-2715-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1468 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.4 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
102					100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 1.7 | Mean Wetted Width (m) 1.1 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 8.0 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☒ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 7.2 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		40		40		20	

Total 25 % | LWD A | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 35 | D (cm): 5 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 103

Watershed Code 460-600600-50800-00500-2830-2968-540-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1597 Map 93L.023 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.9 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 Setting VW Riparian Veg. S

Order 1 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
103		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 1.0 Mean Wetted Width (m) 1.0 Mean Residual Pool Depth (m) 0.2

Mean Gradient 1.0 Mean Wb Depth 0.0 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 5.5 pH 7.0 Cond. 40 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV	Total	%	LWD	DIST
										N	NA

MORPHOLOGY

BED MATERIAL Dominant F Subdom:

D95: 0.002 D (cm): 0.002 Morph NS

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI Islands N Coupling DC Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 104

Watershed Code 460-600600-50800-00500-2830-2968-507-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1596 Map 93L.023 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.7 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 Setting VF Riparian Veg. C

Order 1 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
104		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 1.3 Mean Wetted Width (m) 1.2 Mean Residual Pool Depth (m) 0.1

Mean Gradient 3.0 Mean Wb Depth 0.1 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7 pH 7.2 Cond. 40 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		40		10		50	

Total 15 % LWD A DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 20 D (cm): 4 Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ME Islands N Coupling DC Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 105

Watershed Code 460-600600-50800-00500-2830-2968-433-086-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1593 | Map 93L.023 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.1 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 2 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
105					200	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 1.7 | Mean Wetted Width (m) 1.4 | Mean Residual Pool Depth (m) 0.1

Mean Gradient 4.3 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 7.1 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		30		20		50	

Total 15 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 18 | D (cm): 5 | Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 3 Site # 106

Watershed Code 460-600600-50800-00500-2830-2968-433-086-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1593 | Map 93L.023 | Reach # 3 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.2 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. G

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
106		100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7.5 | pH 4.1 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD N | DIST NA

MORPHOLOGY

BED MATERIAL Dominant F | Subdom: | D95: 0.002 | D (cm): 0.002 | Morph NS

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern NS | Islands N | Coupling DC | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 107

Watershed Code 460-600600-50800-00500-2830-2968-433-596-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1600 Map 93L.023 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.2 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 Setting VW Riparian Veg. C

Order 1 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
107		100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 0.0 Mean Wetted Width (m) 0.0 Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 Mean Wb Depth 0.0 No Vis.Ch ☒ Intermitten ☐

Stage ☐ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7 pH 7.0 Cond. 30 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % LWD DIST

MORPHOLOGY

BED MATERIAL Dominant F Subdom:

D95: 0.002 D (cm): 0.002 Morph NS

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern | Islands N Coupling DC Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 108

Watershed Code 460-600600-50800-00500-2830-3980-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1488 Map 93L.023 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 1 US Elev. Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. Magnitude 11 Setting VW Riparian Veg. C

Order 3 BGC Zone SBS Exposed/Eroded N Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
108		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 4.5 Mean Wetted Width (m) 2.6 Mean Residual Pool Depth (m) 0.3

Mean Gradient 4.3 Mean Wb Depth 0.4 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7 pH 7.1 Cond. 40 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		60		10	10	20	

Total 15 % LWD A DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 20 D (cm): 20 Morph RP

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Bars ☐ N ☐ D ☒ P ☒ M ☐ T ☒ L

Pattern SI Islands N Coupling DC Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 109

Watershed Code 460-600600-50800-00500-2830-4233-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1552 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.5 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
109					100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD | DIST

MORPHOLOGY

BED MATERIAL Dominant | Subdom: | D95: | D (cm): | Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern | Islands | Coupling | Confinement

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 110

Watershed Code 460-600600-50800-00500-2830-3745-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1554 Map 93L.023 Reach # 2 Sample Typ B

REACH ATTRIBUTES

Length (km) 2 US Elev. | Bars ☐ N ☐ DI ☐ PT ☐ CS ☐ JN ☒ MC ☐ DM ☒ WD ☐ NV ☐ TR

DS Elev. | Magnitude 9 Setting VW Riparian Veg. C

Order 3 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
110		100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 4.1 Mean Wetted Width (m) 0.0 Mean Residual Pool Depth (m) 0.0

Mean Gradient 4.0 Mean Wb Depth 0.5 No Vis.Ch ☐ Intermitten ☐

Stage ☐ L ☐ M ☐ H Dw ☒ Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		50		30	20		

Total 35 % LWD A DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 15 D (cm): 4 Morph SP

Bars ☐ N ☐ D ☐ P ☒ M ☐ T ☒ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ME Islands N Coupling PC Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 111

Watershed Code 460-600600-50800-00500-2830-3745-177-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1558 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
111		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 1.4 | Mean Wetted Width (m) 1.2 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 11.0 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6 | pH 7.0 | Cond. 70 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		30		50		20	

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 32 | D (cm): 5 | Morph SP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST | Islands N | Coupling CO | Confinement EN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 112

Watershed Code 460-600600-50800-00500-2830-2968-433-179-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1602 | Map 93L.023 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VF | Riparian Veg. M

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
112					100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 1.0 | Mean Wetted Width (m) 0.8 | Mean Residual Pool Depth (m) 0.1

Mean Gradient 2.0 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☒

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 12 | pH 6.8 | Cond. 20 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant F | Subdom:

D95: 0.002 | D (cm): 0.002 | Morph NS

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 3 Site # 208

Watershed Code 460-600600-50800-00500-2830-0000-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name: Shea Creek

ILP: 1439 | Map: 93L.023 | Reach #: 3 | Sample Typ: B

REACH ATTRIBUTES

Length (km): 0.9 | US Elev. | Bars ☐ N ☒ DI ☒ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude: 396 | Setting: VF | Riparian Veg.: M

Order: 4 | BGC Zone: SBS | Exposed/Eroded: N | Landuse: FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
208					250	V4	☒	1997/09/16

CHANNEL

Mean Channel Width (m): 18.7 | Mean Wetted Width (m): 8.4 | Mean Residual Pool Depth (m): 0.8

Mean Gradient: 1.5 | Mean Wb Depth: 0.5 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp.: 11 | pH: 7.8 | Cond.: 40 | Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	30	10	20	15	10	5

Total: 30 % | LWD: F | DIST: C

MORPHOLOGY

BED MATERIAL Dominant: C | Subdom: G

D95: 50 | D (cm): 50 | Morph: RP

Bars ☐ N ☒ D ☒ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern: IR | Islands: I | Coupling: DC | Confinement: OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 209

Watershed Code 460-600600-50800-00500-2830-3745-318-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1561 | Map 93L.023 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.2 | US Elev. | Bars ☐ N ☒ DI ☒ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. M

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse OT

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
209		100	H	☒	1997/09/18

CHANNEL

Mean Channel Width (m) 5.1 | Mean Wetted Width (m) 1.7 | Mean Residual Pool Depth (m) 0.5

Mean Gradient 3.0 | Mean Wb Depth 0.6 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6.2 | pH 7.6 | Cond. 40 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	20	40		30		10	

Total 35 % | LWD A | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 20 | D (cm): 20 | Morph RP

Bars ☐ N ☒ D ☒ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☒	☒	☐

Pattern SI | Islands O | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 24 Site # 210

Watershed Code 460-600600-50800-00500-2830-0000-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name: Shea Creek

ILP: 1439 | Map: 93L.023 | Reach #: 24 | Sample Typ: B

REACH ATTRIBUTES

Length (km): 3.2 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude: 100 | Setting: VW | Riparian Veg.: C

Order: 4 | BGC Zone: SBS | Exposed/Eroded: N | Landuse: NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
210		250	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m): 15.9 | Mean Wetted Width (m): 8.3 | Mean Residual Pool Depth (m): 1.6

Mean Gradient: 4.0 | Mean Wb Depth: 1.6 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp.: 8 | pH: 7.7 | Cond.: 40 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	30	30	10	15	5	

Total: 40 % | LWD: F | DIST: E

MORPHOLOGY

BED MATERIAL Dominant: NS | Subdom: | D95: 50 | D (cm): 20 | Morph: NS

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☒	☐	☐	☒	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern: ST | Islands: N | Coupling: CO | Confinement: EN

REACH FEATURES

SITE FEATURES

NID	NID #	Map Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)			Commen
3062	93L.033	LS			19	12				eroding bank 100 m upstream of confluence
3063	93L.033	X			19	14				LWD accumulation

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 2 Site # 211

Watershed Code 460-600600-50800-00500-2830-3745-060-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1555 | Map 93L.023 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.5 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 16 | Setting VW | Riparian Veg. M

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse OT

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
211		100	H	☐	1997/09/18

CHANNEL

Mean Channel Width (m) 1.8 | Mean Wetted Width (m) 0.7 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 3.0 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 5.9 | pH 7.4 | Cond. 40 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	30	30		30		10	

Total 25 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 10 | D (cm): 5 | Morph RP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 212

Watershed Code 460-600600-50800-00500-2830-5720-682-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1712 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.75 US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 2 Setting VW Riparian Veg. M

Order 2 BGC Zone SBS Exposed/Eroded N Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
212		100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 2.7 Mean Wetted Width (m) 1.1 Mean Residual Pool Depth (m) 0.2

Mean Gradient 4.0 Mean Wb Depth 0.1 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 6.5 pH 7.3 Cond. 60 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	40		30		20	

Total 20 % LWD F DIST E

MORPHOLOGY

BED MATERIAL Dominant C Subdom: G

D95: 40 D (cm): 25 Morph CP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☒	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☒	☐

Pattern SI Islands I Coupling CO Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 213

Watershed Code 460-600600-50800-00500-2830-5720-637-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1698 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.8 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. M

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
213		100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 0.8 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 24.0 | Mean Wb Depth 0.0 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☒ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV	Total	%	LWD	DIST
		100						5		F	E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: F

D95: 10 | D (cm): 10 | Morph NS

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST | Islands NS | Coupling CO | Confinement CO

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 214

Watershed Code 460-600600-50800-00500-2830-5720-628-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1699 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.75 US Elev. Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. Magnitude 2 Setting VW Riparian Veg. C

Order 2 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
214		100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 0.0 Mean Wetted Width (m) 0.0 Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 Mean Wb Depth 0.0 No Vis.Ch ☒ Intermitten ☐

Stage ☐ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. pH Cond. Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV	Total	%	LWD	DIST

MORPHOLOGY

BED MATERIAL Dominant Subdom:

D95: D (cm): Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern Islands Coupling Confinement

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 215

Watershed Code 460-600600-50800-00500-2830-5720-533-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1714 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.4 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. M

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
215		100	H	☐	1997/09/18

CHANNEL

Mean Channel Width (m) 1.9 | Mean Wetted Width (m) 1.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 11.8 | Mean Wb Depth 0.3 | No Vis.Ch ☐ | Intermitten ☒

Stage ☐ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7.9 | pH 7.3 | Cond. 90 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	20	30		30		10	10

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 15 | D (cm): 12 | Morph RP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands I | Coupling PC | Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 216

Watershed Code 460-600600-50800-00500-2830-5720-509-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1703 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.6 US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 2 Setting VW Riparian Veg. C

Order 2 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
216		100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 1.2 Mean Wetted Width (m) 0.8 Mean Residual Pool Depth (m) 0.3

Mean Gradient 9.0 Mean Wb Depth 0.1 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7 pH 7.6 Cond. 90 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	30		30		20	10

Total 20 % LWD F DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 20 D (cm): 10 Morph RP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI Islands I Coupling PC Confinement FC

REACH FEATURES

SITE FEATURES

FISZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 3 Site # 217

Watershed Code 460-600600-50800-00500-2830-5720-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1697 | Map 93L.033 | Reach # 3 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 6 | Setting VF | Riparian Veg. W

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
217		100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 7.6 | Cond. 40 | Turb. ☐ T ☒ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
				25	50		25

Total 25 % | LWD | DIST

MORPHOLOGY

BED MATERIAL Dominant | Subdom: | D95: | D (cm): | Morph

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern IM | Islands O | Coupling DC | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 218

Watershed Code 460-600600-50800-00500-2830-5720-280-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1691 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.7 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 5 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
218		100	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m) 1.9 | Mean Wetted Width (m) 0.9 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 8.5 | Mean Wb Depth 0.1 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 5 | pH 7.6 | Cond. 40 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	G	DP	OV	IV
	10	20		40		30	

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 35 | D (cm): 10 | Morph CP

Bars ☐ N ☒ D ☐ P ☒ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 20 Site # 219

Watershed Code 460-600600-50800-00500-2830-0000-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name: Shea Creek

ILP: 1439 | Map: 93L.023 | Reach #: 20 | Sample Typ: B

REACH ATTRIBUTES

Length (km): 0.8 | US Elev. | Bars: ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☒ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude: 67 | Setting: VF | Riparian Veg.: M

Order: 4 | BGC Zone: SBS | Exposed/Eroded: N | Landuse: NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
219		200	H	☒	1997/09/19

CHANNEL

Mean Channel Width (m): 12.8 | Mean Wetted Width (m): 9.1 | Mean Residual Pool Depth (m): 1.3

Mean Gradient: 2.5 | Mean Wb Depth: 0.6 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	5	25	5	20	25	10	10

Total: 30 % | LWD: F | DIST: E

MORPHOLOGY

BED MATERIAL Dominant: C | Subdom: G

D95: 40 | D (cm): 35 | Morph: RP

Bars ☐ N ☐ D ☐ P ☒ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern: IM | Islands: F | Coupling: PC | Confinement: OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 | Site # 220

Watershed Code 460-600600-50800-00500-2830-5720-078-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1683 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.1 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 5 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
220		100	H	☐	1997/09/19

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 50.0 | Mean Wb Depth 0.0 | No Vis.Ch ☐ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☒ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD | DIST

MORPHOLOGY

BED MATERIAL Dominant | Subdom:

D95: | D (cm): | Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern | Islands | Coupling | Confinement

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 3 Site # 221

Watershed Code 460-600600-50800-00500-2830-5907-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1717 | Map 93L.033 | Reach # 3 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.9 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting MP | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
221		100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 0.4 | Mean Wetted Width (m) 0.4 | Mean Residual Pool Depth (m) 0.1

Mean Gradient 24.0 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 5.9 | pH 7.6 | Cond. 10 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	30	10	30	10	5	5

Total 30 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: G

D95: 25 | D (cm): 20 | Morph CP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST | Islands N | Coupling CO | Confinement CO

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)		Commen
3064	93L.033		C	0.3		40	5			numerous throughout

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

END OF REPORT

FDIS Reach/Site Summary

Reach # 1 Site # 222

Watershed Code 460-600600-50800-00500-2830-5549-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1654 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 1.05 US Elev. Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☒ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. Magnitude 5 Setting VW Riparian Veg. M

Order 2 BGC Zone SBS Exposed/Eroded N Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
222		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 2.0 Mean Wetted Width (m) 1.3 Mean Residual Pool Depth (m) 0.3

Mean Gradient 3.5 Mean Wb Depth 0.3 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7 pH 7.6 Cond. 30 Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	5	50	5	30		10	

Total 30 % LWD F DIST E

MORPHOLOGY

BED MATERIAL Dominant G Subdom: C

D95: 51 D (cm): 12 Morph NS

Bars ☐ N ☒ D ☐ P ☒ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI Islands N Coupling DC Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☑

FDIS Reach/Site Summary

Reach # 2 Site # 223

Watershed Code 460-600600-50800-00500-2830-5314-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1659 Map 93L.033 Reach # 2 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.8 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 9 Setting VW Riparian Veg. M

Order 3 BGC Zone SBS Exposed/Eroded N Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
223		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 1.4 Mean Wetted Width (m) 1.3 Mean Residual Pool Depth (m) 0.2

Mean Gradient 2.0 Mean Wb Depth 0.2 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 7.2 pH 7.6 Cond. 0 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10		65	15		10	

Total 15 % LWD N DIST NA

MORPHOLOGY

BED MATERIAL Dominant C Subdom: R

D95: 35 D (cm): 10 Morph RP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern IR Islands N Coupling DC Confinement OC

REACH FEATURES

SITE FEATURES

NID	NID #	Map Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)		Commen
3065	93L.033	F	25		19	24			25 m falls

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 224

Watershed Code 460-600600-50800-00500-2830-5038-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1649 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.8 | US Elev. | Bars ☐ N ☒ DI ☒ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 2 | Setting VW | Riparian Veg. M

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
224		100	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m) 2.2 | Mean Wetted Width (m) 1.2 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 8.3 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 5.5 | pH 8.3 | Cond. 10 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	G	DP	OV	IV
	10	30		50		10	

Total 25 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant G | Subdom: C

D95: 15 | D (cm): 10 | Morph CP

Bars ☐ N ☒ D ☒ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement FC

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.		UTM (Zone/Easting/Northing)		Commen
3081	93L.033		C	1		20	6				small cascade 50 m upstream of mainstem

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 225

Watershed Code 460-600600-50800-00500-2830-5031-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1648 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 2.4 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
225		100	H	☐	1997/09/21

CHANNEL

Mean Channel Width (m) 1.2 | Mean Wetted Width (m) 0.9 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 42.5 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6.5 | pH 8.1 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	20	30	10	30		10	

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: R

D95: 25 | D (cm): 25 | Morph CP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement FC

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)	Commen
3066	93L.033		C	0.5		20	12		numerous cascades through lower 50 m

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 226

Watershed Code 460-600600-50800-00500-2830-4887-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1647 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 0.8 US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. M

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
226		100	H	☐	1997/09/21

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 6 | pH 8.3 | Cond. 20 | Turb. ☐ T ☒ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV	Total	%	LWD	DIST

MORPHOLOGY

BED MATERIAL Dominant | Subdom:

D95: | D (cm): | Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands | Coupling | Confinement UN

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 16 Site # 227

Watershed Code 460-600600-50800-00500-2830-0000-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name: Shea Creek

ILP: 1439 | Map: 93L.023 | Reach #: 16 | Sample Typ: B

REACH ATTRIBUTES

Length (km): 2.4 | US Elev. | Bars: ☐ N ☒ DI ☒ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude: 166 | Setting: VF | Riparian Veg.: M

Order: 4 | BGC Zone: SBS | Exposed/Eroded: N | Landuse: FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
227		200	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m): 13.4 | Mean Wetted Width (m): 9.2 | Mean Residual Pool Depth (m): 0.8

Mean Gradient: 2.5 | Mean Wb Depth: 0.7 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp.: 7 | pH: 8.1 | Cond.: 30 | Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	30	15	25	10	5	5

Total: 30 % | LWD: F | DIST: C

MORPHOLOGY

BED MATERIAL Dominant: C | Subdom: B

D95: 53 | D (cm): 35 | Morph: RP

Bars ☐ N ☒ D ☒ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern: IM | Islands: I | Coupling: PC | Confinement: OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 228

Watershed Code 460-600600-50800-00500-2830-4665-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1630 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 1.2 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 16 | Setting VW | Riparian Veg. M

Order 3 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
228		100	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m) 2.0 | Mean Wetted Width (m) 1.2 | Mean Residual Pool Depth (m) 0.1

Mean Gradient 3.8 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7.6 | pH 8.2 | Cond. 20 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		10	65	20		5	

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant C | Subdom: B

D95: 36 | D (cm): 20 | Morph RP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☒	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☒	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling DC | Confinement OC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 2 Site # 229

Watershed Code 460-600600-50800-00500-2830-4665-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1630 | Map 93L.033 | Reach # 2 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.9 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 12 | Setting VW | Riparian Veg. M

Order 3 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)				Site Lg	Access	Fish Crd?	Date
229					100	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m) 1.2 | Mean Wetted Width (m) 0.9 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 4.3 | Mean Wb Depth 0.2 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7.9 | pH 8.1 | Cond. 10 | Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	5	10	50	25		10	

Total 20 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant B | Subdom: C

D95: 50 | D (cm): 35 | Morph CP

Bars ☒ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern ST | Islands N | Coupling CO | Confinement CO

REACH FEATURES

SITE FEATURES

NID	NID #	Map	Type	Ht.	Lgth.	Roll No.	Frame No.		UTM (Zone/Easting/Northing)		Commen
3067	93L.033		F	3		20	23				at bottom of reach

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 230

Watershed Code 460-600600-50800-00500-2830-4661-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1622 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.9 | US Elev. | Bars ☐ N ☒ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 7 | Setting VW | Riparian Veg. M

Order 3 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
230		100	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m) 3.2 | Mean Wetted Width (m) 1.8 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 7.5 | Mean Wb Depth 0.4 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 7.9 | pH 8.0 | Cond. 30 | Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	10	10	25	30		20	5

Total 20 % | LWD F | DIST C

MORPHOLOGY

BED MATERIAL Dominant B | Subdom: C

D95: 40 | D (cm): 30 | Morph RP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☒	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

FDIS Reach/Site Summary

Reach # 1 Site # 231

Watershed Code 460-600600-50800-00500-2830-4524-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1709 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.7 | US Elev. | Bars ☐ N ☒ DI ☒ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 10 | Setting VW | Riparian Veg. C

Order 2 | BGC Zone SBS | Exposed/Eroded N | Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
231		100	H	☒	1997/09/21

CHANNEL

Mean Channel Width (m) 3.6 | Mean Wetted Width (m) 1.9 | Mean Residual Pool Depth (m) 0.2

Mean Gradient 10.3 | Mean Wb Depth 0.3 | No Vis.Ch ☐ | Intermitten ☐

Stage ☒ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. 8 | pH 8.1 | Cond. 10 | Turb. ☐ T ☐ M ☒ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
	20	30	10	40			

Total 35 % | LWD F | DIST E

MORPHOLOGY

BED MATERIAL Dominant B | Subdom: G

D95: 45 | D (cm): 40 | Morph CP

Bars ☐ N ☒ D ☒ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI | Islands N | Coupling PC | Confinement FC

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 232

Watershed Code 460-600600-50800-00500-2830-5720-337-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1702 | Map 93L.033 | Reach # 1 | Sample Typ B

REACH ATTRIBUTES

Length (km) 0.7 | US Elev. | Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. | Magnitude 1 | Setting VW | Riparian Veg. C

Order 1 | BGC Zone SBS | Exposed/Eroded N | Landuse FR

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
232		100	H	☐	1997/09/20

CHANNEL

Mean Channel Width (m) 0.0 | Mean Wetted Width (m) 0.0 | Mean Residual Pool Depth (m) 0.0

Mean Gradient 0.0 | Mean Wb Depth 0.0 | No Vis.Ch ☒ | Intermitten ☐

Stage ☐ L ☐ M ☐ H | Dw ☐ | Tribs. ☐

WATER

Temp. | pH | Cond. | Turb. ☐ T ☐ M ☐ L ☐ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV

Total % | LWD | DIST

MORPHOLOGY

BED MATERIAL Dominant | Subdom: | D95: | D (cm): | Morph

Bars ☐ N ☐ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☐	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern | Islands | Coupling | Confinement

REACH FEATURES

SITE FEATURES

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☒

FDIS Reach/Site Summary

Reach # 1 Site # 233

Watershed Code 000-000000-00000-00000-0000-0000-000-000-000-000-000-0

WATERSHED

Gazetted Name | Local Name

ILP 1758 Map 93L.033 Reach # 1 Sample Typ B

REACH ATTRIBUTES

Length (km) 1.2 US Elev. Bars ☒ N ☐ DI ☐ PT ☐ CS ☐ JN ☐ MC ☐ DM ☐ WD ☐ NV ☐ TR

DS Elev. Magnitude 64 Setting VW Riparian Veg. M

Order 4 BGC Zone SBS Exposed/Eroded N Landuse NO

SITE ATTRIBUTES

Site #	UTM(Zone/East/North/Method)	Site Lg	Access	Fish Crd?	Date
233		100	H	☒	1997/09/20

CHANNEL

Mean Channel Width (m) 14.1 Mean Wetted Width (m) 5.5 Mean Residual Pool Depth (m) 0.7

Mean Gradient 5.0 Mean Wb Depth 0.4 No Vis.Ch ☐ Intermitten ☐

Stage ☒ L ☐ M ☐ H Dw ☐ Tribs. ☐

WATER

Temp. 5.5 pH 7.8 Cond. 10 Turb. ☐ T ☐ M ☐ L ☒ C

COVER

COVER	SWD	LWD	B	C	DP	OV	IV
		20	60	5	15		

Total 25 % LWD F DIST E

MORPHOLOGY

BED MATERIAL Dominant C Subdom: B

D95: 120 D (cm): 45 Morph CP

Bars ☐ N ☒ D ☐ P ☐ M ☐ T ☐ L

DISTURBANCE INDICATORS

O1	B1	B2	B3	D1	D2	D3
☐	☐	☒	☐	☐	☐	☐

C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Pattern SI Islands O Coupling CO Confinement CO

REACH FEATURES

SITE FEATURES

NID	NID #	Map Type	Ht.	Lgth.	Roll No.	Frame No.	UTM (Zone/Easting/Northing)	Commen
3070	93L.033	C	0.5		19	16		frequent throughout

FSZ

TRIB ☐ SC ☐ FC ☐ SWP/SLG ☐ FL/BV ☐

Accompanying Reach or Site Comments ? ☐

APPENDIX VI

FISH COLLECTION DATA FORMS

Fish Data Collection Form

A. Location Referencing

Gazetted Name Shea Creek **Alias**

Watrshed Cod 460600600508000050028300000000000000000000000 **WBID #** 0

Reach # 3 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 093L023 **Locational Point** 1439

B. Survey Information

Survey Dat 1997/09/16 **to** 1997/09/16 **Agenc** C151

Crew DL /EN/ **Fish Collection Permit** 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
208	EF	1		10.9	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
208	EF	1	1	RB	J		2	93	105	R
208	EF	1	1	CO	F		10	40	78	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
208	EF	1	1	09/16		09/16		360	200	20	O								600	I	5	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
208	EF	1	1	CO	45			IM									
208	EF	1	1	CO	40			IM									
208	EF	1	1	CO	40			IM									
208	EF	1	1	CO	40			IM									
208	EF	1	1	CO	78			IM									
208	EF	1	1	CO	58			IM									
208	EF	1	1	RB	93			IM									
208	EF	1	1	CO	50			IM									
208	EF	1	1	RB	105			IM				8					
208	EF	1	1	CO	64			IM									
208	EF	1	1	CO	49			IM									
208	EF	1	1	CO	48			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028303745318000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1561

B. Survey Information

Survey Dat 1997/09/18 **to** 1997/09/18 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
209	EF	1		6.2	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
209	EF	1	1	DV	A		1		120	R
209	EF	1	1	DV	J		11	61	94	R
209	EF	1	1	DV	F		5	46	51	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
209	EF	1	1	09/18		09/18		300	150	5	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
209	EF	1	1	DV	51			IM									
209	EF	1	1	DV	120			MT									
209	EF	1	1	DV	89			IM									
209	EF	1	1	DV	93			IM									
209	EF	1	1	DV	94			IM									
209	EF	1	1	DV	48			IM									
209	EF	1	1	DV	94			IM									
209	EF	1	1	DV	84			IM									
209	EF	1	1	DV	85			IM									
209	EF	1	1	DV	61			IM									
209	EF	1	1	DV	65			IM									
209	EF	1	1	DV	48			IM									
209	EF	1	1	DV	46			IM									
209	EF	1	1	DV	63			IM									
209	EF	1	1	DV	46			IM									
209	EF	1	1	DV	95			IM									
209	EF	1	1	DV	69			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Shea Creek **Alias**
Watrshed Cod 460600600508000050028300000000000000000000000000 **WBID #** 0
Reach # 24 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1439

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
210	EF	1		8	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
210	EF	1	1	CT	F		1	47		R
210	EF	1	1	DV	J		1		107	R
210	EF	1	1	CT	J		2	97	105	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
210	EF	1	1	09/19		09/19		310	170	17	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
210	EF	1	1	CT	47			IM									
210	EF	1	1	DV	107			IM									
210	EF	1	1	CT	97			IM									
210	EF	1	1	CT	105			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305720509000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1703

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
216	EF	1		7	7.6		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
216	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
216	EF	1	1	09/19		09/19		200	150	1.5	O								500	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
216	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305720000000000000000000 **WBID #** 0
Reach # 3 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1697

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
217	EF	1		8	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
217	EF	1	1	CAS	J		1	65		
217	EF	1	1	RSC	J		2	23	35	

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
217	EF	1	1	09/19		09/19		600	200		O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
217	EF	1	1	CAS	65			IM				7					
217	EF	1	1	RSC	35			IM									
217	EF	1	1	RSC	23			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305720280000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1691

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
218	EF	1		5	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
218	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
218	EF	1	1	09/19		09/19		250	100	2	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
218	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Shea Creek **Alias**

Watrshed Cod 460600600508000050028300000000000000000000000 **WBID #** 0

Reach # 20 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 93L.033 **Locational Point** 1439

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151

Crew DL /EN/ **Fish Collection Permit** 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
219	EF	1					

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
219	EF	1	1	DV	A		2	124	155	R
219	EF	1	1	CT	J		2	72	98	R
219	EF	1	1	DV	J		3	95	105	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
219	EF	1	1	09/19		09/19		325	200	13	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
219	EF	1	1	CT	98			IM				6					
219	EF	1	1	CT	72			IM									
219	EF	1	1	DV	105			IM				5					
219	EF	1	1	DV	98			IM				3					
219	EF	1	1	DV	95			IM				2					
219	EF	1	1	DV	124			MT				4					
219	EF	1	1	DV	155			MT									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 000-1758-000-000-000-000-000-000-000-000-000-000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1758

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments
Not in original study area.

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
233	EF	1		5.5	0		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
233	EF	1	1	DV	F		1		39	R
233	EF	1	1	CT	J		2	75	104	R
233	EF	1	1	CT	A		1		140	R
233	EF	1	1	DV	A		1		175	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
233	EF	1	1	09/20		09/20		200	75	12	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
233	EF	1	1	DV	39			MT									
233	EF	1	1	CT	104			IM									
233	EF	1	1	CT	75			IM									
233	EF	1	1	CT	140			MT									
233	EF	1	1	DV	175			MT				1					

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305907000000000000000000 **WBID #** 0
Reach # 3 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1717

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
221	EF	1		7	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
221	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
221	EF	1	1	09/20		09/20		200	100	0.5	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
221	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305549000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1654

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
222	EF	1		7	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
222	EF	1	1	DV	F		1	42		R
222	EF	1	1	DV	J		4	78	110	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
222	EF	1	1	09/20		09/20		250	100	2	O								500	I	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
222	EF	1	1	DV	42			IM									
222	EF	1	1	DV	89			IM									
222	EF	1	1	DV	85			IM									
222	EF	1	1	DV	78			IM									
222	EF	1	1	DV	110			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305314000000000000000000 **WBID #** 0
Reach #2 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1659

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
223	EF	1		7.2	0		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
223	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
223	EF	1	1	09/20		09/20		400	100	2	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
223	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305038000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1649

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
224	EF	1		5.5	10		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
224	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
224	EF	1	1	09/21		09/21		220	100	3	O								600	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
224	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Shea Creek **Alias** 1708
Watrshed Cod 460600600508000050028300000000000000000000000 **WBID #** 0
Reach # 16 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1439

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
227	EF	1		7	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
227	EF	1	1	DV	J		9	73	127	R
227	EF	1	1	CT	J		1		129	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
227	EF	1	1	09/21		09/21		300	200	13	O								400	60	2	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
227	EF	1	1	DV	75			IM									
227	EF	1	1	DV	73			IM									
227	EF	1	1	DV	106			IM									
227	EF	1	1	DV	127			IM									
227	EF	1	1	DV	117			IM				10					
227	EF	1	1	DV	110			IM									
227	EF	1	1	DV	83			IM									
227	EF	1	1	DV	108			IM									
227	EF	1	1	DV	92			IM									
227	EF	1	1	CT	129			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028304665000000000000000000 **WBID #** 0
Reach #1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1630

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
228	EF	1		7.6	20		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
228	EF	1	1	DV	J		1	74		R
228	EF	1	1	CT	J		1	97		R
228	EF	1	1	CT	F		1	37		R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
228	EF	1	1	09/21		09/21		200	100	2	O								500	60	2	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
228	EF	1	1	DV	74			IM									
228	EF	1	1	CT	37			IM									
228	EF	1	1	CT	97			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed Alias

Watrshed Cod 460600600508000050028304665000000000000000000 WBID # 0

Reach # 2 Interim Locational ID: Project ID 06BABL308500011998

(BCGS/NTS) Map # 93L.033 Locational Point 1630

B. Survey Information

Survey Dat 1997/09/21 to 1997/09/21 Agenc C151

Crew DL /EN/ Fish Collection Permit 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
229	EF	1		7.9	10		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
229	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
229	EF	1	1	09/21		09/21		187	100	2	O								500	60	2	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
229	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028304661000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1622

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
230	EF	1		7.9	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
230	EF	1	1	DV	J		2	73	109	R
230	EF	1	1	CT	J		1	87		R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
230	EF	1	1	09/21		09/21		260	100	3	O								500	60	2	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
230	EF	1	1	DV	109			IM									
230	EF	1	1	DV	73			IM									
230	EF	1	1	CT	87			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028304524000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.033 **Locational Point** 1709

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL /EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
231	EF	1		8	10		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
231	EF	1	1	DV	J		5	76	109	R
231	EF	1	1	DV	F		2	41	67	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
231	EF	1	1	09/21		09/21		220	100	3	O								500	60	5	Smith-Root	TYPE VII

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
231	EF	1	1	DV	67			IM									
231	EF	1	1	DV	98			IM									
231	EF	1	1	DV	76			IM									
231	EF	1	1	DV	109			IM									
231	EF	1	1	DV	83			IM									
231	EF	1	1	DV	41			IM									
231	EF	1	1	DV	94			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**

Watrshed Cod 406600600508000050028302968000000000000000000 **WBID #** 0

Reach # 2 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 93L.023 **Locational Point** 1595

B. Survey Information

Survey Dat 1997/09/18 **to** 1997/09/18 **Agenc** C151

Crew ST /TW/ **Fish Collection Permit** 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
93	EF	1		6	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
93	EF	1	1	CT	F		5	40	60	R
93	EF	1	1	CT	J		3	70	95	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
93	EF	1	1	09/18		09/18		550	150	3	O								700	60	5	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
93	EF	1	1	CT	40			IM									
93	EF	1	1	CT	60			IM									
93	EF	1	1	CT	40			IM									
93	EF	1	1	CT	60			IM									
93	EF	1	1	CT	70			IM									
93	EF	1	1	CT	90			IM									
93	EF	1	1	CT	60			IM									
93	EF	1	1	CT	95			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028302895000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1606

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew ST /TW/ **Fish Collection Permit** 34770-20
General Comments
no fish above the barrier

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
95	EF	1		6.5	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
95	EF	1	1	CO	F		1	45		R
95	EF	1	1	CO	J		1	80		R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
95	EF	1	1	09/19		09/19		262	150	1	O								700	60	5	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
95	EF	1	1	CO	45			IM									
95	EF	1	1	CO	80			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**

Watrshed Cod 460600600508000050028303266000000000000000000 **WBID #** 0

Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 93L.023 **Locational Point** 1480

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151

Crew TW /ST/ **Fish Collection Permit** 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
98	EF	1		7	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
98	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
98	EF	1	1	09/19		09/19		282	100	2	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
98	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028303452000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1572

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew ST /TW/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
99	EF	1		8	50		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
99	EF	1	1	CT	J		1		65	R
99	EF	1	1	DV	J		1		60	R
99	EF	1	1	DV	A		1		130	R
99	EF	1	1	CO	J		4	80	90	R
99	EF	1	1	CO	F		10	45	60	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
99	EF	1	1	09/19		09/19		300	100		O								600	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
99	EF	1	1	CO	45			IM									
99	EF	1	1	CO	52			IM									
99	EF	1	1	CO	50			IM									
99	EF	1	1	CT	65			IM									
99	EF	1	1	CO	50			IM									
99	EF	1	1	CO	50			IM									
99	EF	1	1	CO	55			IM									
99	EF	1	1	CO	60			IM									
99	EF	1	1	CO	80			IM									
99	EF	1	1	CO	85			IM									
99	EF	1	1	CO	90			IM									
99	EF	1	1	CO	40			IM									
99	EF	1	1	DV	60			IM									
99	EF	1	1	CO	50			IM									
99	EF	1	1	CO	85			IM									
99	EF	1	1	CO	55			IM									
99	EF	1	1	DV	130			MT									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028302798000000000000000000 **WBID #** 0
Reach # 2 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1469

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew TW /ST/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
101	EF	1		6.5	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
101	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
101	EF	1	1	09/19		09/19		180	100	3	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
101	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028302715000000000000000000 **WBID #** 0
Reach # 3 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1468

B. Survey Information

Survey Dat 1997/09/19 **to** 1997/09/19 **Agenc** C151
Crew TW /ST/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
102	EF	1		8	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
102	EF	1	1	DV	A		3	100	140	S
102	EF	1	1	CO	J		1	95	95	R
102	EF	1	1	RB	J		1	120	120	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
102	EF	1	1	09/19	1755	09/19	1830		100	1.5	O								500	K	8	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
102	EF	1	1	DV	120			MT				12					
102	EF	1	1	DV	140			MT									
102	EF	1	1	DV	100			MT				11					
102	EF	1	1	CO	95			IM									
102	EF	1	1	RB	120			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**

Watrshed Cod 460600600508000050028302968540000000000000000 **WBID #** 0

Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 93L.023 **Locational Point** 1597

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151

Crew TW /ST/ **Fish Collection Permit** 34770-20

General Comments

fished mainstem (1588)and confluence(1597) likely acessible in spring

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
103	EF	1		5.5	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
103	EF	1	1	DV	F		1		38	R
103	EF	1	1	CT	J		1		90	R
103	EF	1	1	CT	F		15	40	65	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
103	EF	1	1	09/20		09/20		213	100	1	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
103	EF	1	1	CT	47			IM									
103	EF	1	1	CT	55			IM									
103	EF	1	1	CT	60			IM									
103	EF	1	1	CT	45			IM									
103	EF	1	1	CT	62			IM									
103	EF	1	1	CT	58			IM									
103	EF	1	1	DV	38			IM									
103	EF	1	1	CT	55			IM									
103	EF	1	1	CT	65			IM									
103	EF	1	1	CT	48			IM									
103	EF	1	1	CT	90			IM									
103	EF	1	1	CT	50			IM									
103	EF	1	1	CT	50			IM									
103	EF	1	1	CT	50			IM									
103	EF	1	1	CT	65			IM									
103	EF	1	1	CT	50			IM									
103	EF	1	1	CT	40			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028303980000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1488

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew TW /ST/ **Fish Collection Permit** 34770-20
General Comments
no fish after 30 m

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
108	EF	1		7	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
108	EF	1	1	CT	F		1		55	R

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
108	EF	1	1	09/20		09/20		521	200	5	O								700	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
108	EF	1	1	CT	55			IM									

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**

Watrshed Cod 460600600508000050028302968507000000000000000 **WBID #** 0

Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998

(BCGS/NTS) Map # 93L.023 **Locational Point** 1596

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151

Crew ST//tw/ **Fish Collection Permit** 34770-20

General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
104	EF	1		7	40		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
104	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
104	EF	1	1	09/20		09/20		298	100	1.2	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
104	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028302968433086000000000000 **WBID #** 0
Reach # 2 **Interim Locational ID:** **Project ID** 06BABL08500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1593

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew St//tw/ **Fish Collection Permit** 34770-20
General Comments
recommend spring sampling

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
105	EF	1		8	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
105	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
105	EF	1	1	09/20		09/20		200	100	1.5	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
105	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 406600600508000050028303745177000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1558

B. Survey Information

Survey Dat 1997/09/20 **to** 1997/09/20 **Agenc** C151
Crew ST /TW/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
111	EF	1		6	70		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
111	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
111	EF	1	1	09/20		09/20		300	100	1.4	O								500	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
111	EF	1	1														

Fish Data Collection Form

A. Location Referencing

Gazetted Name Unnamed **Alias**
Watrshed Cod 460600600508000050028305031000000000000000000 **WBID #** 0
Reach # 1 **Interim Locational ID:** **Project ID** 06BABL308500011998
(BCGS/NTS) Map # 93L.023 **Locational Point** 1648

B. Survey Information

Survey Dat 1997/09/21 **to** 1997/09/21 **Agenc** C151
Crew DL//EN/ **Fish Collection Permit** 34770-20
General Comments

C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
225	EF	1		6.5	30		

D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
225	EF	1	1							

E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
225	EF	1	1	09/21		09/21		220	100	1	O								600	60	6	Smith-Root	POW-12A

F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
225	EF	1	1														

APPENDIX VII

PHOTODOCUMENTATION FORMS AND THUMBNAIL PHOTOGRAPHS

PHOTO SURVEY FORM 1 - EQUIPMENT DETAILS

Survey start date: 97/08/29 **Agency** Triton
Survey end date: 97/09/21 **Crew:** ST/TW
DL/EN

CAMERA #1

Make & Model:	Canon Sureshot A1			**Lenses:**	A
Format:	135mm film	**Other film:**	N/A	**Digital**	**Still Video**
Resolution (for digital and video cameras):	N/A				
Output file type (for digital and video cameras):	N/A				

CAMERA #2

Make & Model:	Ricoh RW1			**Lenses:**	A
Format:	135mm film	**Other film:**	N/A	**Digital**	**Still Video**
Resolution (for digital and video cameras):	N/A				
Output file type (for digital and video cameras):	N/A				

LENSES

Focal length (mm)		Focal length (mm)
A	Standard	**D**
B		**E**
C		**F**

ROLL AND/OR BATCH DETAILS

Roll# or Batch#	Camera #	Output medium	For film cameras: Film type	ISO
1	1	slides	colour	400
2	1	slides	colour	400
3	1	slides	colour	400
4	1	slides	colour	400
5	1	slides	colour	400
6	1	slides	colour	400
7	1	slides	colour	400
8	1	slides	colour	400
9	1	slides	colour	400
10	1	slides	colour	400
11	2	slides	colour	400
12	2	slides	colour	400
13	2	slides	colour	400
14	2	slides	colour	400
15	2	slides	colour	400
16	2	slides	colour	400
17	2	slides	colour	400
18	2	slides	colour	400
19	2	slides	colour	400
20	2	slides	colour	400

Shea Creek - Photodocumentation Form

Agency: C151
Survey Dates: 09/16/97 to 09/20/97

Watershed: Shea Creek
Major Watershed Code: 460-600600-50800-00500-2830

Project Code: 06-BABL-3085-0001-1998
Crew: TW/DL/ST/EN

ILP	WSC	Site #	Reach #	Roll #	Frame #	Focal Lgh	Direction	Comments	CD Image #
1468	460-600600-50800-00500-2830-2715	102	3	8	3	ST	D	downstream view - heavily vegetated channel	8_003
1468	460-600600-50800-00500-2830-2715	102	3	8	4	ST	U	upstream view - heavily vegetated channel	8_004
1605	460-600600-50800-00500-2830-2895	92	2	8	5	ST	D	view downstream	8_005
1605	460-600600-50800-00500-2830-2895	92	2	8	6	ST	U	view upstream	8_006
1595	460-600600-50800-00500-2830-2968	94	2	8	15	ST	U	representative habitat	8_015
1595	460-600600-50800-00500-2830-2968	94	2	8	16	ST	D	representative habitat	8_016
1595	460-600600-50800-00500-2830-2968	93	2	8	17	ST	U	representative habitat	8_017
1595	460-600600-50800-00500-2830-2968	93	2	8	18	ST	BD	substrate	8_018
1595	460-600600-50800-00500-2830-2968	93	2	8	19	ST	D	view downstream	8_019
1595	460-600600-50800-00500-2830-2968	93	2	8	20	ST	U	view upstream	8_020
1606	460-600600-50800-00500-2830-2561	95	1	8	21	ST	U	view upstream	8_021
1606	460-600600-50800-00500-2830-2561	95	1	8	22	ST	U	representative habitat	8_022
1606	460-600600-50800-00500-2830-2561	95	1	8	23	ST	U	falls	8_023
1606	460-600600-50800-00500-2830-2561	95	1	8	24	ST	D	view downstream	8_024
1606	460-600600-50800-00500-2830-2561	95	1	8	25	ST	X	confluence from right bank of Shea Creek	8_025
1477	460-600600-50800-00500-2830-3023	96	1	8	26	ST	U	defined channel	8_026
1477	460-600600-50800-00500-2830-3023	96	1	8	27	ST	U	undefined channel	8_027
1476	460-600600-50800-00500-2830-3013	97	1	8	28	ST	U	subsurface flow	8_028
1476	460-600600-50800-00500-2830-3013	97	1	8	29	ST	U	channel	8_029
1480	460-600600-50800-00500-2830-3266	98	1	8	30	ST	D	representative habitat	8_030
1480	460-600600-50800-00500-2830-3266	98	1	8	31	ST	D	view downstream into wetland	8_031
1480	460-600600-50800-00500-2830-3266	98	1	8	32	ST	U	view upstream	8_032
1480	460-600600-50800-00500-2830-3266	99	1	8	33	ST	X	channel dewaters and loses definition	8_033
1480	460-600600-50800-00500-2830-3266	99	1	8	34	ST	BD	drop from bank of 1480 to Shea mainstem	8_034
1572	460-600600-50800-00500-2830-3452	99	1	8	35	ST	D	view downstream	8_035
1572	460-600600-50800-00500-2830-3452	99	1	8	36	ST	U	view upstream	8_036
1572	460-600600-50800-00500-2830-3452	99	1	8	37	ST	D	pool where most of the fish were captured	8_037
1553	460-600600-50800-00500-2830-3778	100	1	9	1	ST	U	gravel bar on mainstem at confluence	9_001
1469	460-600600-50800-00500-2830-2798	101	2	9	2	ST	U	falls	9_002
1469	460-600600-50800-00500-2830-2798	101	2	9	3	ST	U	representative habitat	9_003
1469	460-600600-50800-00500-2830-2798	101	2	9	4	ST	U	representative habitat	9_004
1468	460-600600-50800-00500-2830-2715	102	3	9	5	ST	U	representative habitat	9_005
1468	460-600600-50800-00500-2830-2715	102	3	9	6	ST	BD	substrate	9_006
1468	460-600600-50800-00500-2830-2715	102	3	9	7	ST	U	confluence	9_007
n/a	n/a	n/a	n/a	9	8	ST	---	alpine - between sample sites	9_008
n/a	n/a	n/a	n/a	9	9	ST	---	alpine - between sample sites	9_009
n/a	n/a	n/a	n/a	9	10	ST	---	mountain goats	9_010
1597	460-600600-50800-00500-2830-2968-540	103	1	9	11	ST	U	undefined channel	9_011
1579	460-600600-50800-00500-2830-3144	103	1	9	12	ST	D	wetland channel	9_012

Triton Environmental Consultants Ltd.

Shea Creek - Photodocumentation Form

Agency: C151
Survey Dates: 09/16/97 to 09/20/97

Watershed: Shea Creek
Major Watershed Code: 460-600600-50800-00500-2830

Project Code: 06-BABL-3085-0001-1998
Crew: TW/DL/ST/EN

ILP	WSC	Site #	Reach #	Roll #	Frame #	Focal Lgh	Direction	Comments	CD Image #
1596	460-600600-50800-00500-2830-2968-507	104	1	9	13	ST	U	representative habitat	9_013
1596	460-600600-50800-00500-2830-2968-507	104	1	9	14	ST	U	view upstream from POC	9_014
1593	460-600600-50800-00500-2830-2968-433-0	105	2	9	15	ST	U	view upstream	9_015
1593	460-600600-50800-00500-2830-2968-433-0	105	2	9	16	ST	U	representative habitat	9_016
1593	460-600600-50800-00500-2830-2968-433-0	105	2	9	17	ST	U	view from 200 m upstream of confluence	9_017
1593	460-600600-50800-00500-2830-2968-433-0	106	3	9	18	ST	D	view downstream at channel	9_018
1600	460-600600-50800-00500-2830-2968-433-5	107	1	9	19	ST	U	no visible channel	9_019
1600	460-600600-50800-00500-2830-2968-433-5	107	1	9	20	ST	D	view downstream into lake	9_020
1600	460-600600-50800-00500-2830-2968-433-5	107	1	9	21	ST	U	view of channel	9_021
n/a	n/a	n/a	n/a	9	22	ST	---	aerial view, Shea Creek	9_022
n/a	n/a	n/a	n/a	9	23	ST	---	aerial view, Shea Creek	9_023
1488	460-600600-50800-00500-2830-3980	108	1	9	24	ST	U	view of channel	9_024
1488	460-600600-50800-00500-2830-3980	108	1	9	25	ST	D	view of channel as it splits	9_025
1488	460-600600-50800-00500-2830-3980	108	1	10	1	ST	U	view upstream from confluence	10_001
1488	460-600600-50800-00500-2830-3980	108	1	10	2	ST	BD	mushrooms	10_002
1552	460-600600-50800-00500-2830-4233	109	1	10	3	ST	D	view downstream	10_003
1552	460-600600-50800-00500-2830-4233	109	1	10	4	ST	BD	view from helicopter	10_004
1552	460-600600-50800-00500-2830-4233	109	1	10	5	ST	BD	view from helicopter	10_005
1554	460-600600-50800-00500-2830-3748	110	2	10	6	ST	D	aggraded bed	10_006
1554	460-600600-50800-00500-2830-3748	110	2	10	7	ST	U	aggraded bed	10_007
1558	460-600600-50800-00500-2830-3745-177	111	1	10	8	ST	D	representative habitat	10_008
1558	460-600600-50800-00500-2830-3745-177	111	1	10	9	ST	U	representative habitat	10_009
1558	460-600600-50800-00500-2830-3745-177	111	1	10	10	ST	D	view of vertical right bank	10_010
1602	460-600600-50800-00500-2830-2968-433-1	112	2	10	11	ST	D	view downstream	10_011
1602	460-600600-50800-00500-2830-2968-433-1	112	2	10	12	ST	D	view downstream	10_012
1602	460-600600-50800-00500-2830-2968-433-1	112	2	10	13	ST	D	view of wetland	10_013
1439	460-600600-50800-00500-2830	208	3	18	11	ST	U	gravel bar	18_011
1439	460-600600-50800-00500-2830	208	3	18	12	ST	D	riparian vegetation and bar	18_012
1561	460-600600-50800-00500-2830-3745-318	209	1	18	17	ST	U	LWD	18_017
1561	460-600600-50800-00500-2830-3745-318	209	1	18	18	ST	D	log jam	18_018
1555	460-600600-50800-00500-2830-3745-060	211	2	18	19	ST	D	confluence with ILP 1561	18_019
1555	460-600600-50800-00500-2830-3745-060	211	2	18	20	ST	U	dewatered channel	18_020
1555	460-600600-50800-00500-2830-3745-060	211	2	18	21	ST	X	LWD and overhanging riparian vegetation	18_021
1561	460-600600-50800-00500-2830-3745-318	209	1	18	22	ST	U	elevated mid channel bars	18_022
1561	460-600600-50800-00500-2830-3745-318	209	1	18	23	ST	U	elevated mid-channel bars	18_023
1712	460-600600-50800-00500-2830-5720-682	212	1	18	24	ST	u	subsurface flow starts approximately 150 m upstream of lake	18_024
1712	460-600600-50800-00500-2830-5720-682	212	1	18	25	ST	U	40% cascade over 20 m high	18_025
1712	460-600600-50800-00500-2830-5720-682	212	1	18	26	ST	U	LWD	18_026
1712	460-600600-50800-00500-2830-5720-682	212	1	18	27	ST	D	watered channel	18_027

Shea Creek - Photodocumentation Form

Agency: C151
Survey Dates: 09/16/97 to 09/20/97

Watershed: Shea Creek
Major Watershed Code: 460-600600-50800-00500-2830

Project Code: 06-BABL-3085-0001-1998
Crew: TW/DL/ST/EN

ILP	WSC	Site #	Reach #	Roll #	Frame #	Focal Lgh	Direction	Comments	CD Image #
1698	460-600600-50800-00500-2830-5720-637	213	1	18	28	ST	D	dry vegetated channel - note bed material	18_028
1698	460-600600-50800-00500-2830-5720-637	213	1	18	29	ST	U	dry channel - alluvium present	18_029
1699	460-600600-50800-00500-2830-5720-628	214	1	18	30	ST	U	RMA flagged area	18_030
1699	460-600600-50800-00500-2830-5720-628	214	1	18	31	ST	D	no visible channel	18_031
1714	460-600600-50800-00500-2830-5720-533	215	1	18	32	ST	U	very little flow	18_032
1714	460-600600-50800-00500-2830-5720-533	215	1	18	33	ST	D	minimal flow	18_033
1703	460-600600-50800-00500-2830-5720-509	216	1	18	34	ST	U	subsurface flow	18_034
1703	460-600600-50800-00500-2830-5720-509	216	1	18	35	ST	U	gravels and minimal flow	18_035
1703	460-600600-50800-00500-2830-5720-509	216	1	18	36	ST	D	LWD and spawning channel	18_036
1439	460-600600-50800-00500-2830	217	12	19	1	ST	U	instream vegetation, wetland	19_001
1439	460-600600-50800-00500-2830	217	12	19	2	ST	D	instream vegetation, deep channel	19_002
1691	460-600600-50800-00500-2830-5720-280	218	1	19	3	ST	U	boulder/ riffle	19_003
1691	460-600600-50800-00500-2830-5720-280	218	1	19	4	ST	D	LWD	19_004
1691	460-600600-50800-00500-2830-5720-280	218	1	19	5	ST	U	creek channel with overhanging vegetation	19_005
1439	460-600600-50800-00500-2830	219	20	19	6	ST	U	log jam and typical riffle	19_006
1439	460-600600-50800-00500-2830	219	20	19	7	ST	D	riffle and Dave	19_007
1638	460-600600-50800-00500-2830-4665-698	220	1	19	8	ST	U	up 50 % 60 m off mainstem	19_008
1638	460-600600-50800-00500-2830-4665-698	220	1	19	9	ST	U	pool fed by subsurface flow	19_009
1638	460-600600-50800-00500-2830-4665-698	220	1	19	10	ST	D	Dave down slope	19_010
1439	460-600600-50800-00500-2830	210	24	19	11	ST	U	riffle with large boulders	19_011
1439	460-600600-50800-00500-2830	210	24	19	12	ST	X	eroding bank on left bank	19_012
1439	460-600600-50800-00500-2830	210	24	19	13	ST	D	LWD and boulders	19_013
1439	460-600600-50800-00500-2830	210	24	19	14	ST	D	LWD accumulation	19_014
1758	460-600600-50800-00500-2830-6320	233	1	19	15	ST	X	eroding left bank	19_015
1758	460-600600-50800-00500-2830-6320	233	1	19	16	ST	U	failed bank, LWD, Cascade	19_016
1758	460-600600-50800-00500-2830-6320	233	1	19	17	ST	D	Dave, riffle-pool habitat	19_017
1717	460-600600-50800-00500-2830-5907	221	3	19	18	ST	D	gradient = 24 %	19_018
1717	460-600600-50800-00500-2830-5907	221	3	19	19	ST	D	towards headwater meadow	19_019
1702	460-600600-50800-00500-2830-5720-337	232	1	19	20	ST	U	wet area - channel	19_020
1702	460-600600-50800-00500-2830-5720-337	232	1	19	21	ST	U	wet area - feeding	19_021
1702	460-600600-50800-00500-2830-5720-337	232	1	19	22	ST	U	wet area	19_022
1654	460-600600-50800-00500-2830-5549	222	1	19	23	ST	U	small pool a\cascade	19_023
1654	460-600600-50800-00500-2830-5549	222	2	19	24	ST	D	wd and cobble in channel	19_024
1659	460-600600-50800-00500-2830-5314	223	2	19	25	ST	U	falls	19_025
1659	460-600600-50800-00500-2830-5314	223	2	19	26	ST	U	riparian vegetation	19_026
1659	460-600600-50800-00500-2830-5314	223	2	19	27	ST	D	channel meandering through mossy boulders	19_027
n/a	n/a	n/a	n/a	19	28	ST	D	downstream view from creek CL	19_028
n/a	n/a	n/a	n/a	19	29	ST	X	from LB to RB/55% slope on RB	19_029
n/a	n/a	n/a	n/a	19	30	ST	X	from stream bed to LB (white flagging)	19_030

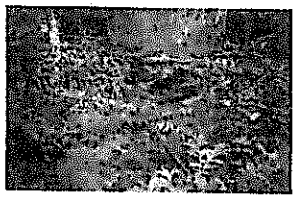
Shea Creek - Photodocumentation Form

Agency: C151
Survey Dates: 09/16/97 to 09/20/97

Watershed: Shea Creek
Major Watershed Code: 460-600600-50800-00500-2830

Project Code: 06-BABL-3085-0001-1998
Crew: TW/DL/ST/EN

ILP	WSC	Site #	Reach #	Roll #	Frame #	Focal Lgh	Direction	Comments	CD Image #
n/a	n/a	n/a	n/a	19	31	ST	U	upstream view from creek CL	19_031
n/a	n/a	n/a	n/a	19	32	ST	D	DS view from creek CL	19_032
n/a	n/a	n/a	n/a	19	33	ST	D	from CL to edge of right of way	19_033
n/a	n/a	n/a	n/a	19	34	ST	U	upstream view from creek CL	19_034
n/a	n/a	n/a	n/a	19	35	ST	D	downstream view from creek CL	19_035
n/a	n/a	n/a	n/a	19	36	ST	X	right of way	19_036
n/a	n/a	n/a	n/a	20	1	ST	U	cascades and LWD	20_001
n/a	n/a	n/a	n/a	20	2	ST	D	cascades and LWD	20_002
1649	n/a	n/a	n/a	20	3	ST	D	heavy alder cover/cascades	20_003
1649	n/a	n/a	n/a	20	4	ST	U	heavy alder cover/cascades	20_004
1649	n/a	n/a	n/a	20	5	ST	U	salmonberry	20_005
1649	460-600600-50800-00500-2830-5038	224	1	20	6	ST	U	falls 1m 50 upstream of mainstem (Shea)	20_006
1649	460-600600-50800-00500-2830-5038	224	1	20	7	ST	D	cascade pool habitat downstream from falls	20_007
1649	460-600600-50800-00500-2830-5038	224	1	20	8	ST	U	small cascade 10 m upstream from mainstem (0.3M)	20_008
1649	460-600600-50800-00500-2830-5038	224	1	20	9	ST	D	connection to mainstem accessible to fish	20_009
n/a	n/a	n/a	1	20	10	ST	U	upstream view - travel to sample site	20_010
n/a	n/a	n/a	1	20	11	ST	X	bank view - travel to sample site	20_011
1648	460-600600-50800-00500-2830-5031	225	1	20	12	ST	U	Dave up steep slope from confluence	20_012
1648	460-600600-50800-00500-2830-5031	225	1	20	13	ST	D	confluence	20_013
1647	460-600600-50800-00500-2830-4887	226	1	20	14	ST	U	30 m upstream of main creek creates off-channel habitat	20_014
1647	460-600600-50800-00500-2830-4887	226	1	20	15	ST	U	dry channel	20_015
1439	460-600600-50800-00500-2830	227	16	20	16	ST	U	gravel bar/ typical riffle	20_016
1439	460-600600-50800-00500-2830	227	16	20	17	ST	D	boulder bar/LWD typical in reach	20_017
1630	460-600600-50800-00500-2830-4665	228	1	20	18	ST	U	confluence with mainstem	20_018
1630	460-600600-50800-00500-2830-4665	228	1	20	19	ST	D	cobble riffle; Dave's boot	20_019
1630	460-600600-50800-00500-2830-4665	228	1	20	20	ST	U	straight high bank, cobble/riffle	20_020
1630	460-600600-50800-00500-2830-4665	229	2	20	21	ST	U	cobble/boulder riffle typical of reach	20_021
1630	460-600600-50800-00500-2830-4665	229	2	20	22	ST	D	riparian vegetation, cobble/riffle	20_022
1630	460-600600-50800-00500-2830-4665	229	2	20	23	ST	U	barrier = waterfall	20_023
1622	460-600600-50800-00500-2830-4661	230	1	20	24	ST	D	eroded bank	20_024
1622	460-600600-50800-00500-2830-4661	230	1	20	25	ST	U	boulder riffle and riparian vegetation	20_025
1709	460-600600-50800-00500-2830-4524	231	1	20	26	ST	U	channel dewaters at 75 m	20_026
1709	460-600600-50800-00500-2830-4524	231	1	20	27	ST	U	cascade over LWD	20_027
1709	460-600600-50800-00500-2830-4524	231	1	20	28	ST	U	cascade over LWD	20_028
n/a	n/a	n/a	n/a	20	29	ST	---	DL/EN hamming it up for the folks back home	20_029
n/a	n/a	n/a	n/a	20	30	ST	---	aerial - glacier	20_030
n/a	n/a	n/a	n/a	20	31	ST	---	aerial - glacier	20_031
n/a	n/a	n/a	n/a	20	32	ST	---	aerial - glacier	20_032
n/a	n/a	n/a	n/a	20	33	ST	---	aerial - glacier	20_033



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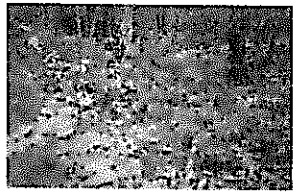

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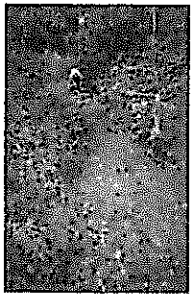

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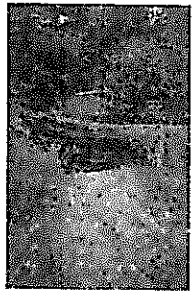

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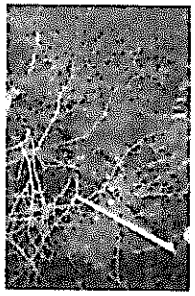

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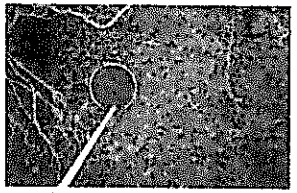

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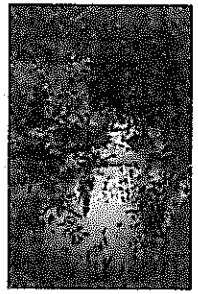

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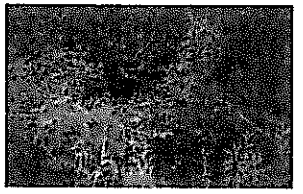

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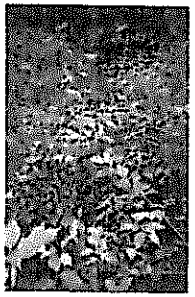

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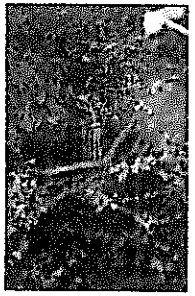

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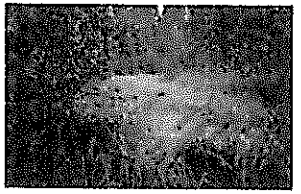

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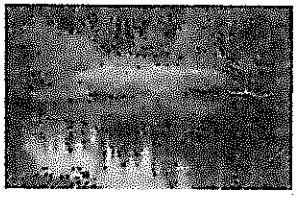

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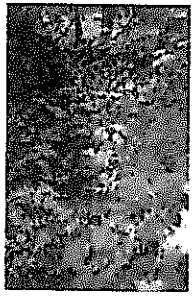

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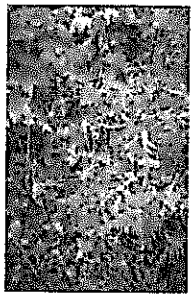
8_027



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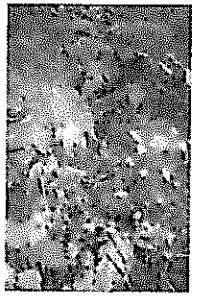

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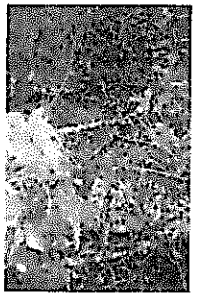

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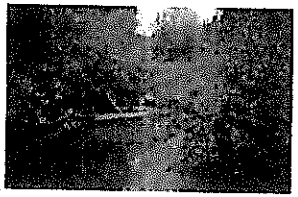

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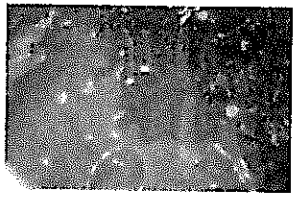

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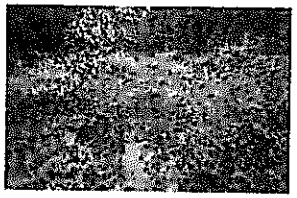

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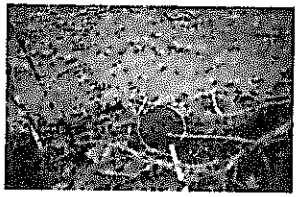

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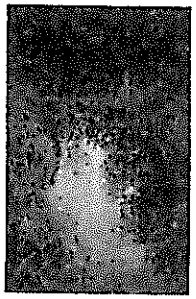

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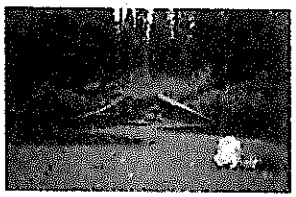

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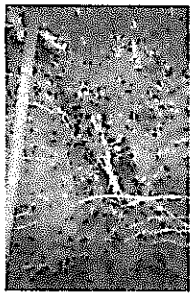

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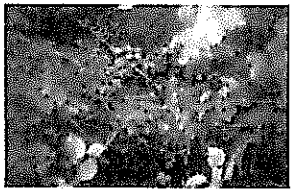

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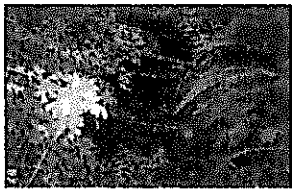

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#9_007

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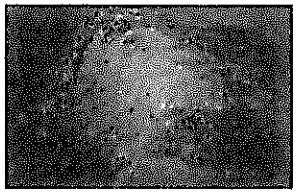

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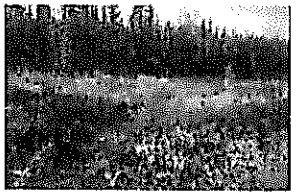

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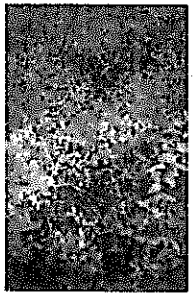

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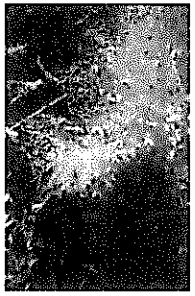

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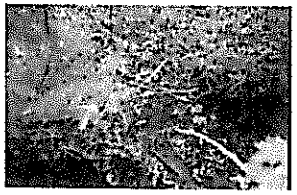

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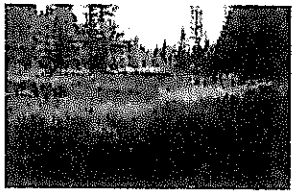

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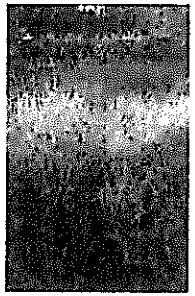

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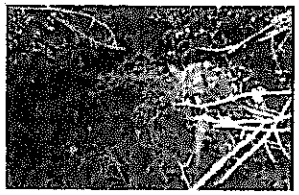

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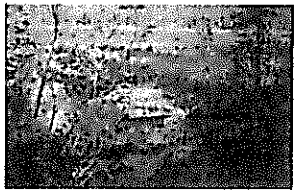

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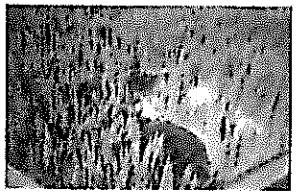

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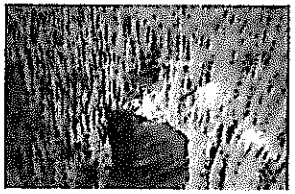

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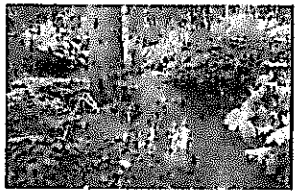

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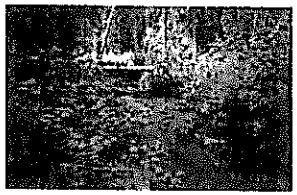

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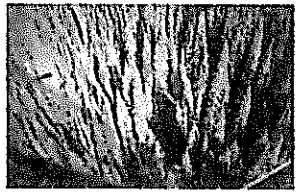
10_002

10_003



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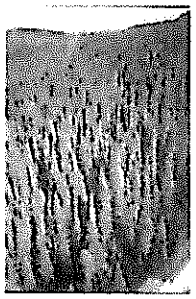

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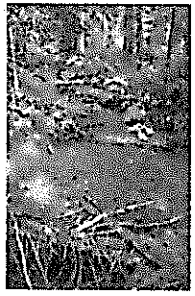

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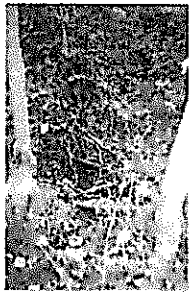

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10_009

10_010

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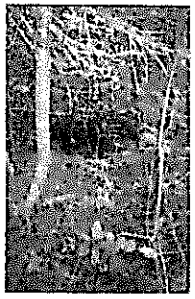

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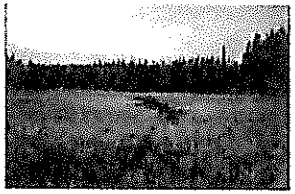

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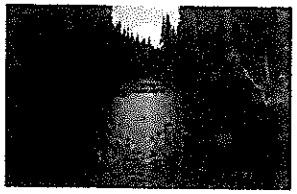
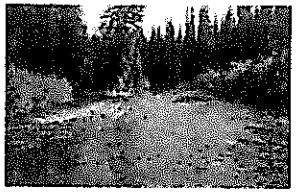


18_011



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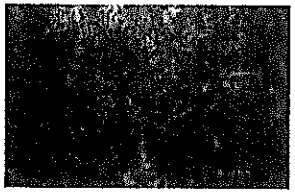

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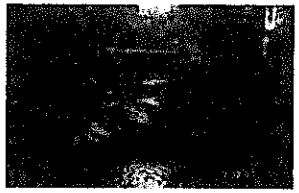

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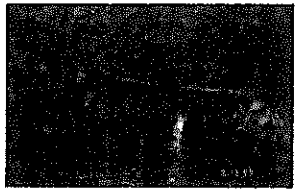

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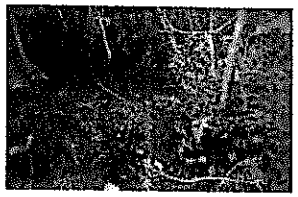

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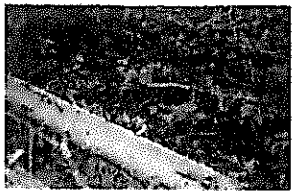

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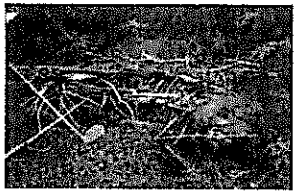

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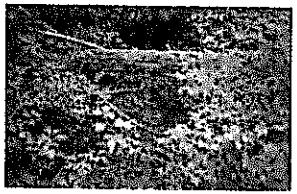

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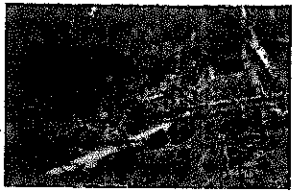

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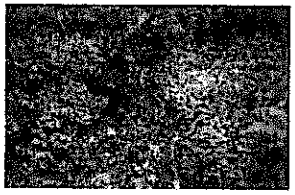

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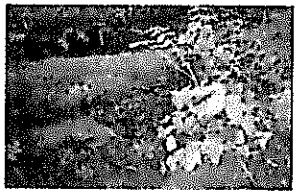

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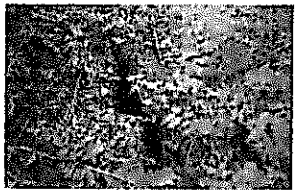

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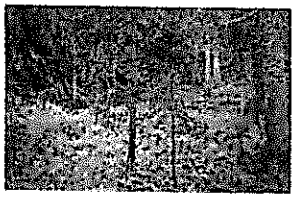

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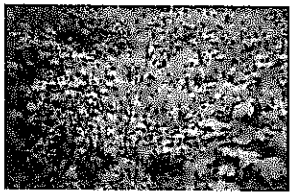

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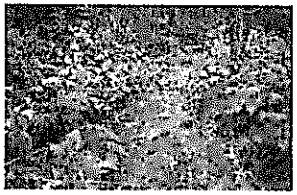

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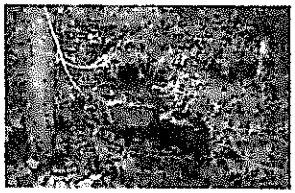

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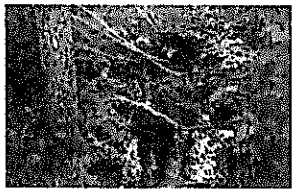

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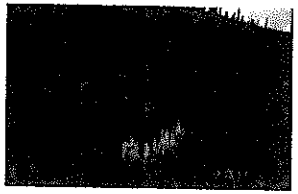

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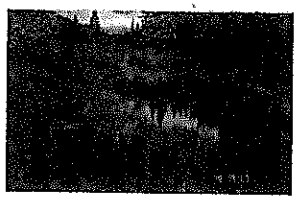

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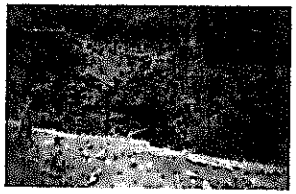

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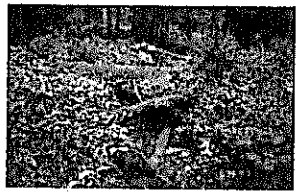

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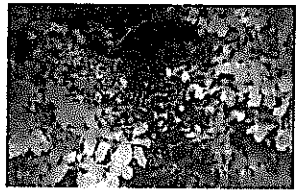

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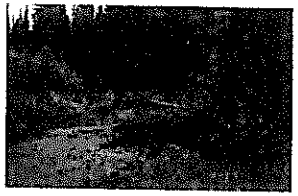

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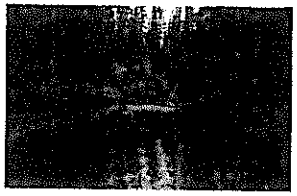

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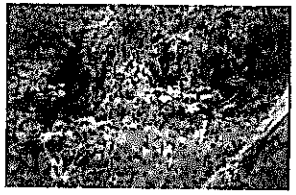

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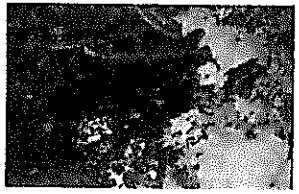

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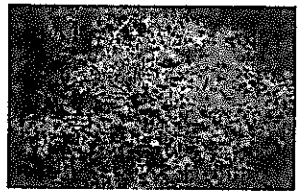

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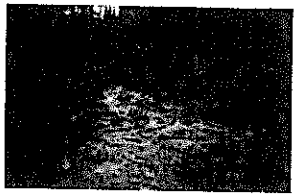

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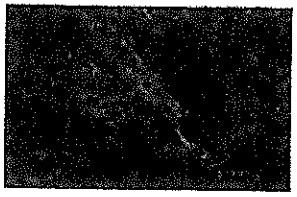

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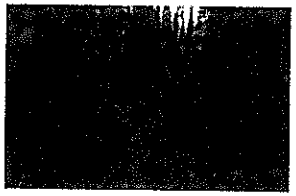

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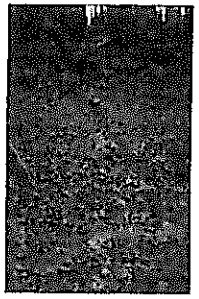

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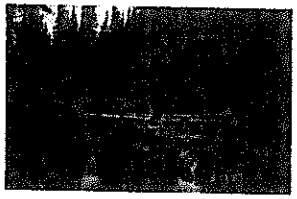

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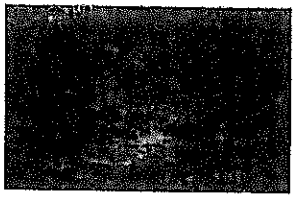

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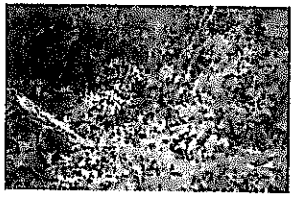

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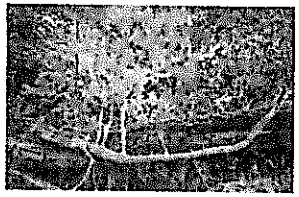

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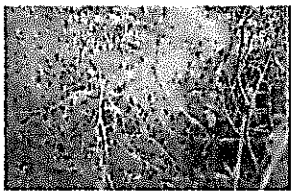

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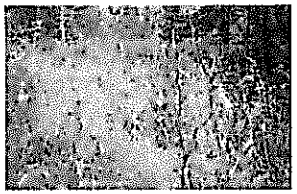
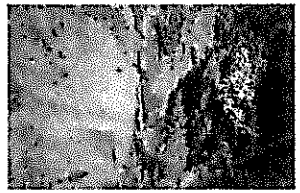


19_022

19_023

19_024

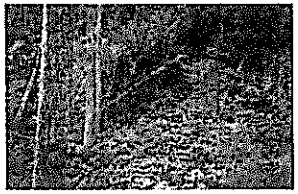


19_025

19_026

19_027

19_028



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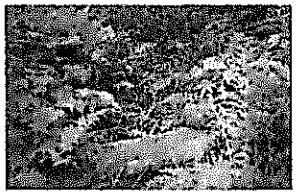

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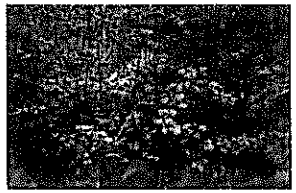
19_032



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19_034

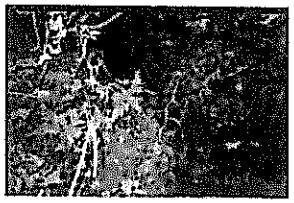
19_035

19_036

20_001

20_002

20_003



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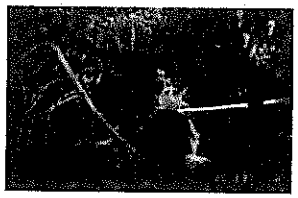

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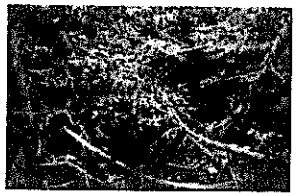

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20_011

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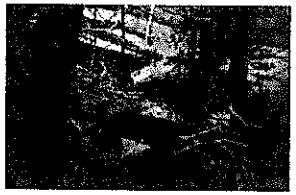

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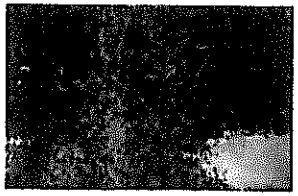

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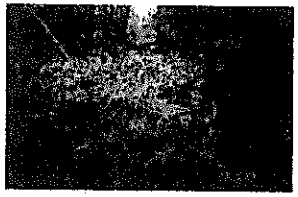

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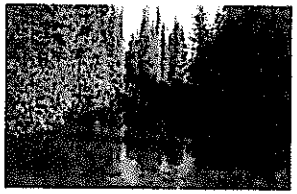

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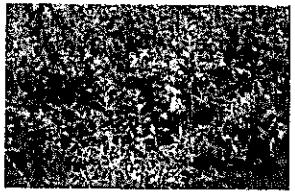

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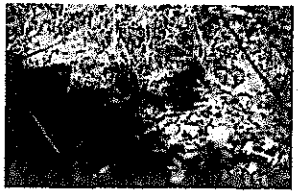

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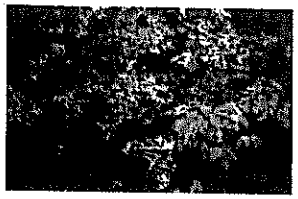

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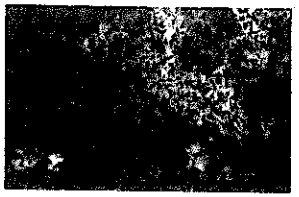

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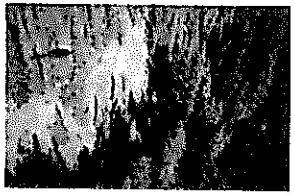

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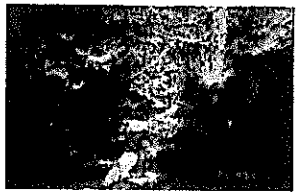

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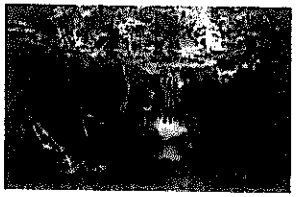

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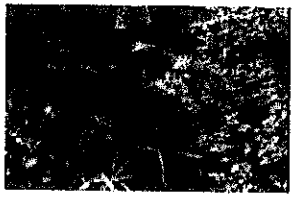

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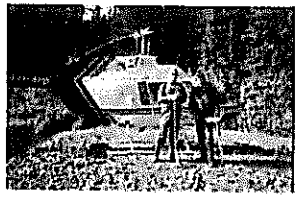

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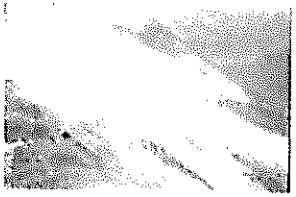

20_032

20_033