
Reconnaissance 1:20,000 Fish and Fish Habitat Inventory in the Babine Watershed

**(West Babine Planning Area)
WSC 480-430700 – WSC 480-518400-75313**

Prepared for:

Pacific Inland Resources Ltd.

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March 2002

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PROJECT REFERENCE INFORMATION

FDIS Project Number:	5098
MELP Project Number:	PIR_C172_010_2002
FRBC Project Number:	01FRBC14
FRBC Region:	Skeena-Bulkley Region
MELP Region:	06
MELP District:	Skeena
FW Management Unit:	Region 6-8
Fisheries Planning Unit:	North Coast
DFO Sub-district:	4D Smithers
Forest Region:	Prince Rupert
Forest District:	Bulkley
Forest Licensee and Tenure #:	Pacific Inland Resources Ltd. FL16830
First Nation Traditional Area:	Wet'suwet'en Nation

WATERSHED INFORMATION

Watershed Group:	Babine
Watershed Code:	480-430700 – 480-518400-75313
Watershed Area:	23,089 ha
Total of All Stream Lengths:	372 kms
Largest Stream Order:	4
BGC Zones:	ESSF, SBS
NTS Maps:	93M/2, 93M/7
TRIM Maps:	93M.007 93M.017 93M.018 93M.026 93M.027 93M.028 93M.037
Air Photos:	SRS30C6244 #87-90, 111, 112, 117-123, 170, 174-178, 208-213, 272-283, 350-352 SRS30C6298 #30, 31, 277, 309, 318-324, 351-361 SRS30C6299 #58, 60, 79-86, 102-111, 318, 344-351

SAMPLE DESIGN SUMMARY

Total number of Reaches:	409
Random Sampling Sites:	13
Biased Sampling Sites:	16
Fish Sampling Only Sites:	3
Total Sampling Sites:	32
Field Sampling Dates:	July 4 to August 13, 2001
Fish Species Captured:	DV, CT

CONTRACTOR INFORMATION

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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.

ACKNOWLEDGMENTS

Triton would like to thank Alan Baxter of Pacific Inland Resources Ltd and Jay Baker of Silvicon Services for their assistance throughout the planning and field phases of this project. Matthew Jessop, Fisheries Inventory Specialist for the Skeena Region for his feedback and approval of the Non Fish Bearing Status Report and Stream Classifications associated with this project. Chris Schell for his Quality Assurance participation and support in meeting Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Standards for British Columbia. Paul Giroux and Matthew Jessop, Fisheries Inventory Specialists for the Skeena Region were the principal contract monitors.

Forest Renewal BC – a partnership of forest companies, workers, environmental groups, First Nations, communities and government, provided funding for this inventory. 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 forest, forest workers and forest companies.

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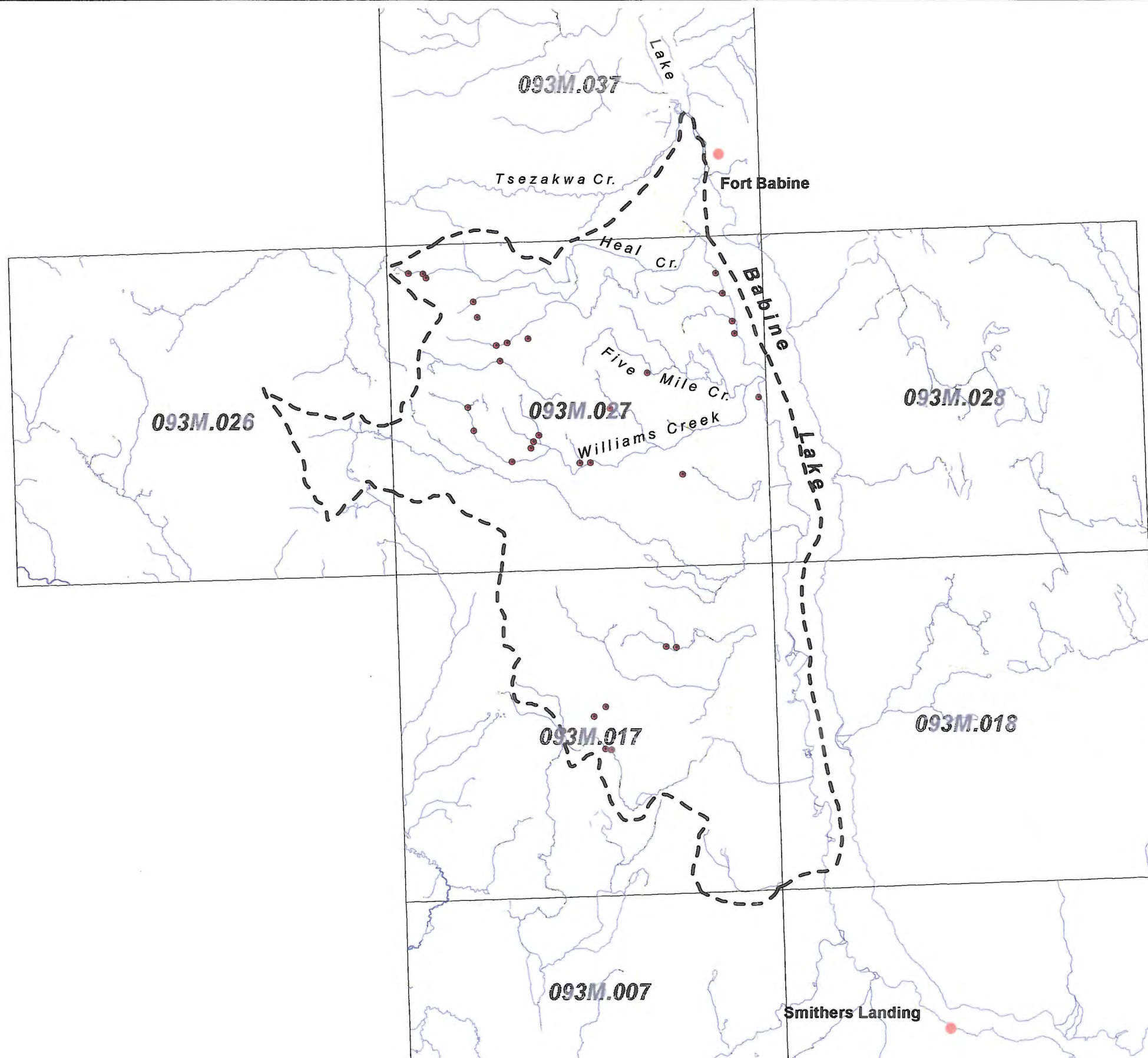
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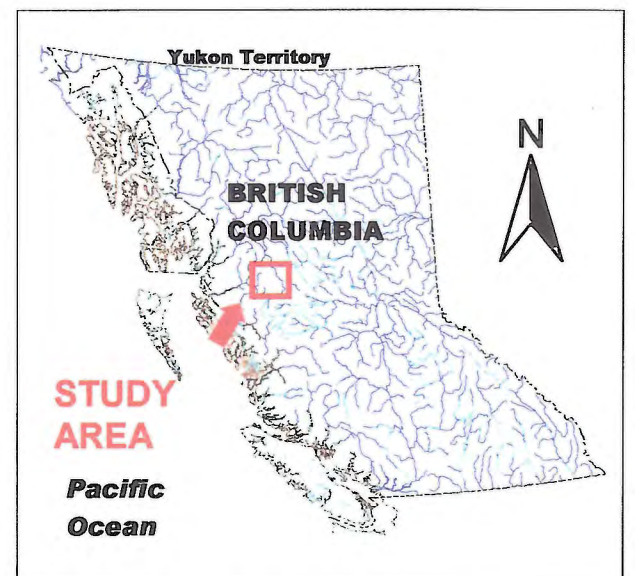
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Appendix II	Phase Completion Reports
Appendix III	Quality Assurance Forms and Correspondence
Appendix IV	Phase I-III Project Plan (with attachments)
Appendix V	Project/Interpretive Maps

LIST OF ATTACHMENTS AVAILABLE AT MELP REGIONAL OFFICE

Attachment I	Planning Document Triton Environmental Consultants Ltd., April 2001. Phase I-III Pre-field Project Planning Report Reconnaissance (1:20,000) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds. Prepared for Skeena Cellulose Inc.
Attachment II	Field Notes Site Cards/Fish Collection Forms
Attachment III	Photodocumentation Photo Summary Report Photo CD Prints in Plastic Sleeves Negatives in Plastic Sleeves
Attachment IV	Digital Data Watershed Report Files FDIS Files Mapping Files
Attachment V	FISS Update Data FISS Update Forms FISS Update Maps



Reconnaissance (1:20,000)
Fish and Fish Habitat Inventory
Babine West Planning Area
Overview Map
Figure 1



Legend

- Sample Sites
- Gravel
- Paved
- Rough
- ~ River/Stream
- ~ River/Stream Intermittent
- ~ Lake
- Marsh/Swamp
- Glacier

1: 150,000

5 0 5 Kilometers

Source: 1:20,000 TRIM Projection: UTM

Date: February 7, 2002
Created by: SJ

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1.0 INTRODUCTION

Triton Environmental Consultants Ltd. (Triton, Terrace) was retained by Pacific Inland Resources Ltd. (PIR) to conduct a Reconnaissance (1:20,000) Fish and Fish Habitat Inventory in PIR's West Babine Planning Area, which is located within the Bulkley Forest District.

This project commenced as a result of BC Fisheries and Ministry of Environment, Lands and Parks (MELP) initiatives to gather information about fish distribution, population status, and the condition and capability of stream habitats (Resource Inventory Committee, 2001). Forest Renewal of British Columbia (FRBC) funding and MELP supervision facilitated the commencement of this sample-based survey of the sub-basins outlined within the study area. The inventory provides information regarding the characteristics, the distribution and the relative abundance of fish species, as well as information on biophysical lake and stream data. This information can be used for the interpretation of habitat sensitivity and fish production capability (Resource Inventory Committee, 2001). The results of the inventory may be applied to initial Riparian Management Area (RMA) and lake classification under the Forest Practices Code for forest development planning, watershed restoration, and for the establishment of some landscape-level biodiversity objectives (BC Forest Practices Code, 1998).

1.1 Project Scope/Objectives

Fish and fish habitat values were the primary components of the inventory:

- Fish
 - identify and map fish-bearing stream reaches and lakes using existing information and new field information (field inventory).
- Fish Habitat
 - identification and coding of all waterbodies.
 - identification and characterization of stream reaches utilizing topographic maps and aerial photographs, with confirmation via field sampling.

The results of the inventory are presented on 1:20,000 scale Terrain Resource Information Management Terrain Resource Information Management (TRIM) based maps, MELP Field Data Information Summary (FDIS) data forms, and in the body of this report.

1.2 Location

The West Babine study area includes the tributaries between WSC 480-430700 and WSC 480-518400-75313 flowing into Babine Lake. The study area is outlined in Figure 1, and is located south of the village of Fort Babine. The study area lies within the southern portion of the Hazelton Mountains and is situated in the Central Interior Ecoprovince

within the Fraser Plateau Ecoregion (Demarchi, 1996). The study area is approximately 23089 ha and covers 7 TRIM map sheets (Figure 1).

1.2.1 Access

Crews accessed the watershed from either Telkwa or Smithers along the Babine Lake Road. Various spur roads along the Babine Lake Road were used to access sample site locations within the study area.

Sample sites were accessed by both road and air. Helicopter access was the most efficient method of transport due to the distribution of sample sites within the watershed. Helicopters were used extensively to recce streams and reference barriers.

2.0 RESOURCE INFORMATION

Resource values within the study area are primarily forestry based. PIR is currently logging throughout the area. Most of the study area has low capability for agriculture due to adverse climate, topography, bedrock, or poor drainage (Meidinger & Pojar, 1991). Outdoor recreation such as hiking, hunting, fishing, camping, snowmobiling, cross-country skiing and alpine skiing are prevalent within the study area.

Traditional fishing grounds of the Lake Babine Nation lie in and adjacent to the study area.

No active mines were observed in the study area and no water quality data specific to the study area was identified.

The study area, supports moose (*Alces alces*), caribou (*Rangifer tarandus*), mule deer (*Odocoileus hemionus hemionus*), whitetail deer (*O. virginianus*) and mountain goat (*Oreamnos americanus*). In addition, black bear (*Ursus americanus*), wolf (*Canis lupus*), fisher (*Martes pennanti*), and lynx (*Lynx canadensis*) are widely distributed throughout the region.

2.1 Existing Fisheries Information

Fisheries Information Summary System (FISS) (1995) and Stream Summary Catalogue (FHIIP, 1991) records indicate that chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), kokanee/sockeye salmon (*O. nerka*), steelhead (*O. mykiss*), rainbow trout (*O. mykiss*), Dolly Varden char (*Salvelinus malma*), and cutthroat trout (*O. clarki*) occur within the study area. Numerous consultant reports were reviewed and found to support FISS and FHIIP information. The reports also identified the presence bull trout (*S. confluentus*), lake trout (*S. namaycush*), largescale sucker (*Catostomus macrocheilus*), longnose sucker (*C. catostomus*), white sucker (*C.*

commersoni), northern pikeminnow (*Ptychocheilus oregonesis*), peamouth chub (*Mylocheilus caurinus*), redbreasted shiner (*Richardsonius balteatus*), longnose dace (*Rhinichthys cataractae*), mountain whitefish (*Prosopium williamsoni*), pygmy whitefish (*P. coulteri*), lake whitefish (*Coregonus clupeaformis*), burbot (*Lota lota*), prickly sculpin (*Cottus asper*) and lamprey (*Lampetra sp.*). The species identified from existing sources were placed in the Field Data Information System (FDIS) database and mapped according to Resource Inventory Committee (RIC) standards for historical information. Several barriers and obstructions were also identified from the FHIIP and FISS information. The barrier and obstruction information was incorporated into the FDIS database and placed on the maps as historical features.

MELP (Skeena Region) stream and lake files were reviewed and found to support the FHIIP and FISS information.

In 1998, Triton completed a 1:20,000 Fish and Fish Habitat Inventory of the Bulkley Forest District, which included portions of the West Babine watershed. The results of this inventory project have been incorporated into the FDIS database and mapping product.

3.0 METHODS

The Reconnaissance 1:20,000 Fish and Fish Habitat Inventory was completed in the following six phases:

- 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 (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures, April 2001* (Resource Inventory Committee, 2001). Alterations were made to the project plan in Phase 4 and are outlined in the sections below.

3.1 Field Data Collection

The following sections describe the methods and approaches taken to complete field sampling and data collection.

3.1.1 Pre-field Preparations

The stream reaches inventoried were identified by two methods: random sites generated by the FDIS planning tool and biased sites identified by PIR and Triton. Biased sites were selected to address gaps within the randomly generated sampling plan. The final sampling sites incorporated into the contract were reviewed by Alan Baxter (PIR), Jay Baker (FRBC Coordinator), Paul Giroux (FIS, MELP Skeena Region), and Triton to ensure that sample sites met the requirements of PIR, MELP and the FDIS planning model.

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

3.1.2 Field Procedures

All sampling procedures followed those outlined in the *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures, April 2001* (Resource Inventory Committee, 2001) and the *Forest Practices Code Fish Stream Identification Guidebook*, (BC Forest Practices Code, 1998).

Fieldwork was conducted by two person field crews. Crews accessed sites by both road and air. Helicopter transportation was provided by Highland Helicopters (Smithers).

Field data was collected on RIC field site and fish collection cards. In addition, the following information was collected at each site and recorded in the comments section of the site card:

- stream classification (as per the BC Forest Practices Code),
- comments supporting stream classification,
- comments regarding fish access (i.e. downstream barriers), and
- general comments regarding rearing, spawning and overwintering habitats were also included in the Habitat Quality section of the site card.

Each crew was equipped with the following field gear:

- Smith-Root Model 12A backpack electrofisher
- electrofisher safety gear (leak proof waders, wading belts, linesman's gloves, hat with a brim, polarized sunglasses)
- minnow traps and bait
- clinometer
- compass
- hip chain

- 50 m tape
- meter stick
- VHF radio
- first aid kit
- water quality kit (hand held pH and conductivity meters)
- thermometer
- Canon waterproof camera and print film
- voucher specimen container
- MELP Site cards
- MELP Fish collection forms
- MELP Individual fish data cards
- field maps

Fish sampling within stream reaches was conducted using two primary sampling techniques: electrofishing and visual observation. Electrofishing is the most efficient method of sampling in shallow stream habitats and was the preferred sampling method for all habitat types. In habitats where using an additional sampling method would not provide additional information (i.e. species, relative abundance), electrofishing was the only fish sampling technique employed.

3.2 Field Data Compilation

Following each field day, field crews met to compile field notes, review field data and summarize the field findings onto hardcopy maps. This ensured all information was thoroughly documented, allowing for preliminary stream classifications and changes to the sampling plan. Field crews were in constant contact with Paul Giroux (Fisheries Inventory Specialist) and Alan Baxter (PIR) when the originally proposed plan needed modifications. In most cases, sites downstream of known fish bearing reaches were moved to reduce sampling redundancy. These sites were placed in other locations to address potential barriers, identify species composition, establish fish distribution and provide additional sampling data. This did not compromise the process for selecting sites and maintained the desired geographical coverage for sampling streams.

3.2.1 Site Cards

Site Cards and Reach Forms were entered into MELP's FDIS database following the completion of the Phase 4 field inventory. Hard copy versions of the Reach/Site Cards are presented in Appendix I.

3.2.2 Fish Collection Cards

The Fish Collection Cards were entered into MELP's FDIS database following the completion of the Phase 4 field inventory. Hard copies of the Fish Collection Forms are presented in Appendix I following the Reach/Site cards.

4.0 RESULTS AND DISCUSSION

4.1 Logistics

Weather conditions were variable over the field sampling dates. Rain caused turbid and high water conditions at several sample sites. Field crews often made the decision to sample selected streams, which were not affected by the increased runoff. The turbid streams were then revisited when sampling conditions were favorable. The timing of the field sampling helped reduce the number of dry/intermittent streams and the number of these streams was low (1 of 34 sample sites). Several sites were moved in the field due to lack of helicopter access (no landing available).

4.2 Survey Information

Table 1 provides an overview of the survey information compiled for the study area.

Table 1. Summary information for the study area.

Watershed Name:	West Babine
Major sub-basins within project area:	Five Mile Creek (WSC 480-452300) Heal Creek (WSC 480-430700) Williams Creek (WSC 480-452300-13942)
Drainage:	Babine River → Skeena River → Chatham Sound
NTS Maps:	93M/2 93M/7
TRIM Maps:	93M.007 93M.017 93M.018 93M.026 93M.027 93M.037
Total Number of Lakes:	11
Total Number of Reaches:	409
Stream Field Sampling Dates:	July 4 to August 13, 2001
Number of Random Sites Sampled:	13
Number of Bias Sites Sampled:	16
Number of Fish Sampling Only Sites	3
Total Number of Sampling Sites:	32

Various consultants as well as Federal and Provincial sources were contacted to obtain information pertaining to the West Babine study area. The project planning report completed prior to field sampling activities includes a list of references and contacts that have completed various projects throughout the area. See Appendix IV (Phase I-III Project Plan), Section 2.1 for these information sources.

4.3 Summary of Sub-Basin Biophysical Information

Table 2 provides a summary of sub-basin biophysical information for the study area.

Table 2. Sub-basin biophysical information.

Gazetted Name	WSC/ILP	UTM at Mouth	Watershed Area (ha)	Stream Length (km)	Stream Order	NTS Maps	BGC Zones
Five Mile Creek	480-452300	10.66840 6125680	1,914	10.3	3	93M/7	ESSF, SBS
Heal Creek	480-430700	10.650220 6130820	2,142	12.9	3	93M7	ESSF, SBS
Williams Creek	480-452300- 13942	10.652500 6125900	5,072	15.1	4	93M/2 93M/7	ESSF, SBS

Information was collected by Triton, using GIS software and digital TRIM maps.

ESSF = Engelmann Spruce-Subalpine Fir

SBS = Sub-Boreal Spruce

4.4 Habitat and Fish Distribution

The following is a brief description of each of the major sub basins within the West Babine Watershed.

Five Mile Creek (460-452300)

Five Mile Creek, a tributary to Williams Creek, is a 3rd order stream that is 10.3 km long and is fed by 10 tributaries. A total of 5 sample sites have been completed in the Five Mile Creek drainage. No barriers to fish migration were noted in this drainage.

Rainbow trout and Dolly Varden were captured in a lake WBID 00280BABL located in Reach 4 of Five Mile Creek (British Columbia Ministry of Environment, Lands and Parks, and Department of Fisheries and Oceans, 1995). Dolly Varden were captured in a 1st order tributary WSC 480-452300-37188 to Reach 5 of Five Mile Creek (Triton, 1998). Dolly Varden were also found to be present in a 1st order tributary to Reach 8 of Five Mile Creek (SKR Consultants, 2000). Historical data indicates that coho, kokanee and prickly sculpin were captured in Williams Creek ~50 m downstream from the mouth of Five Mile Creek (British Columbia Ministry of Environment, Lands and Parks, and Department of Fisheries and Oceans, 1995).

Heal Creek (WSC 480-430700)

Heal Creek is a 3rd order stream that is 12.9 km long and is fed by 7 tributaries. A total of 30 sample sites have been completed in the Heal Creek drainage.

Historical records indicate the presence of coho, rainbow trout, Dolly Varden, kokanee, burbot, prickly sculpin and lamprey in Reach 1 of Heal Creek (British Columbia Ministry

of Environment, Lands and Parks, and Department of Fisheries and Oceans, 1995). Rainbow trout and Dolly Varden were also captured in Reach 1 of Heal Creek (Triton, 1998). Dolly Varden were captured throughout this drainage in small 1st and 2nd order tributaries to Heal Creek (Triton, 1998, SKR Consultants, 2000 and Silvicon Services, 2001). Historical information shows that bull trout were captured in Reach 10 of Heal Creek and in WSC 480-430700-44400 to Reach 4 of Heal Creek (Triton, 1998 and Silvicon Services, 2001). A set of cascades (4 m x 3 m and 1.7 m x 20 m), located in Reach 11 of Heal Creek were identified as barriers to upstream fish migration.

Williams Creek (WSC 480-452300-13942)

Williams Creek is a large 4th order stream that is 15.1 km long and is fed by 12 tributaries. A total of 21 sample sites have been completed in the Williams Creek drainage.

Historical records indicate the presence of coho, kokanee, rainbow trout, sockeye, Dolly Varden and prickly sculpin in Reach 1 of Williams Creek (British Columbia Ministry of Environment, Lands and Parks, and Department of Fisheries and Oceans, 1995). Rainbow trout and Dolly Varden were captured in Reach 2 of Williams Creek (Triton, 1998). Dolly Varden were captured throughout the drainage in small 1st and 2nd order tributaries to Williams Creek. A 4 m falls in Reach 6 of Williams Creek is a barrier to upstream fish migration and marks the upper limit of fish distribution within the mapped mainstem of this system.

4.4.1 Patterns of Fish Distribution

Bedrock cascades or falls were identified as the primary permanent barriers to fish access within the study area. Anthropogenic obstructions such as culverts were also identified as potential barriers to upstream fish migration. The barriers and obstructions identified during the 2001 sampling program are found in Table 3.

Fish were captured in 1st to 4th order streams and fish distribution was generally associated with perennial fish habitat and reaches contiguous to other fish bearing streams. Perennial habitat includes the presence of overwintering, spawning, and rearing habitat. Instream overwintering habitat was identified as containing residual pool depths greater than 0.5 m. Other overwintering habitat included wetlands and lakes with depths greater than 0.5 m.

Spawning habitat was characterized by the presence of suitable spawning substrates, perennial flows, and adequate water velocity in order to incubate eggs. The quality of spawning habitat was a field observation and field crews made judgments on how well each of the parameters were satisfied. Low or poor quality spawning habitat was characterized by a lack of significant accumulations of spawning substrates, turbulent flows, low average water velocity (<1% gradient), or high average water velocity (>1 m/s). Medium or Moderate quality spawning habitat was characterized by occasional

accumulations of spawning substrates (<10% of total habitat area), but was limited by one or more of the following parameters; turbulent flows, high proportion of fines, low average water velocity (<1% gradient), or high average water velocity (>1 m/s). High or good quality spawning habitat was characterized by abundant accumulations of suitable spawning substrates (>10% of total habitat area) perennial flows, and moderate gradient (1 to 5% gradient).

Rearing habitat was characterized as habitat where fish can live and grow. The quality of rearing habitat was a field observation and field crews made judgments on how well each of the parameters was satisfied. Low or poor quality rearing habitat was characterized by a lack of channel development and was limited by ephemeral flows, shallow average water depths (<10 cm), lack of significant pools (>10 cm), predominance of fine or organic substrates. Medium or moderate quality rearing habitat was characterized by the presence of perennial flows and was limited by one or several of the following parameters; low gradient (<2%), high gradient (>10%), lack of cover, lack of significant pools (>20 cm), lack of coarse substrates, or large average substrate size (boulders). High or good quality rearing habitat was characterized by perennial flows, abundant cover, moderate gradient (1-5%), and frequent riffles and pools.

During the 2001 sampling program no fish were captured in reaches with an average channel width of less than 0.98 m, or with an average gradient greater than 10.75%.

Table 3. Summary of features identified within the study area.

Site	ILP/WSC	Reach	Feature Type	Feature Height (m)	Feature Length (m)	Comments
62	480-430700	12	C	4	3	Barrier to all fish species (NFC upstream).
62	480-430700	12	C	1.7	2	Cascade over bedrock downstream of reach 12. Barrier to all fish species (NFC upstream).
65	10138	1	CV	0.9	NA	Twin culverts 450 mm and 900 mm, 40 cm and 35 cm drop with a 60 cm pool. Culverts may be potential barrier to upstream fish migration.
448	480-452300-13942	7	F	4	NA	Barrier to all fish species (NFC upstream).

C = cascade

CV = culvert

F = falls

4.5 Fish Age, Size and Life History

Fish were captured in 11 of 32 sample locations. Table 4 provides a summary of the sites where fish were captured.

Table 4. Summary of fish capture locations within the study area.

Site	ILP/WSC	Reach	Order	Species	Stage	Number	Minimum Length (mm)	Maximum Length (mm)
60	480-452300-13942-32072	7	2	DV	J	3	81	110
63	480-430700	11	1	DV	J	5	69	103
410	480-452300-13942	3	3	DV	J	9	60	70
411	480-452300-13942-48843	1	2	DV	J	3	55	60
413	480-452300-13942	5	2	DV	J	7	55	80
414	10125	1	1	DV	J	5	60	75
415	10123	2	2	DV	J	5	60	75
416	10124	1	1	DV	J	5	50	60
417	480-504200-67300	1	2	CT	J	4	200	210
418	480-504200	16	2	CT	J	6	200	220
446	480-504200-67300	4	2	CT	J	2	120	125

CT = cutthroat trout

DV = Dolly Varden

J= juvenile

Dolly Varden char and cutthroat trout were captured within the study area during the 2001 sampling season. Length frequency distributions for these sport species are provided in the figures below. Quantitative abundance figures were not generated for this project, as sampling methods to determine abundance were not utilized. No ageing analysis was conducted, as no ageing samples were taken for this study area.

Dolly Varden

Dolly Varden were captured at 8 locations within the study area and were found in habitats that ranged from high energy streams to low gradient stagnant pools. Fry and juvenile Dolly Varden were predominately found to inhabit the smaller first order and second order streams adjacent to overwintering habitat (larger mainstems and lakes) and the larger (mature) Dolly Varden were found in mainstem/larger tributary streams. Dolly Varden reach sexual maturity in 3-6 years and spawn in streams with cobble/gravel substrates and moderate flows. The fry hatch in the spring and reside (3-4 years) in their natal stream until reaching a size large enough to move downstream into larger bodies of water. Northern and high elevation populations are often stunted and rarely exceed 30 cm. Dolly Varden are a relatively long-lived species reaching ages of 10-12 years (Scott & Crossman, 1985). A length frequency distribution histogram for Dolly Varden captured in the study area is presented in Figure 2.

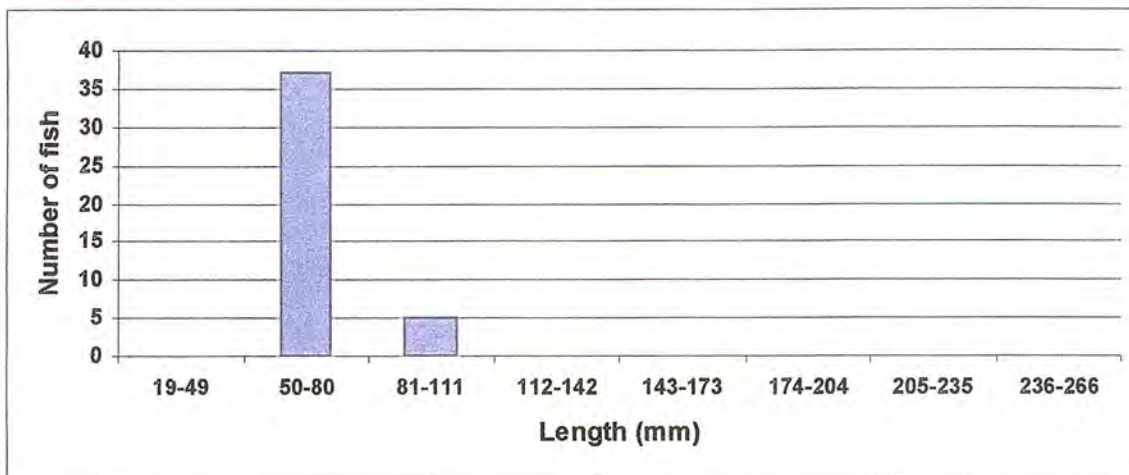


Figure 2. Length frequency distribution for Dolly Varden char captured in the study area (n=42).

Cutthroat trout

Cutthroat trout were captured at 3 sampling locations; 3 small 2nd order tributaries to a larger mainstem (WSC 480-504200). The cutthroat trout that were captured in these 2nd order tributaries were juveniles, which indicates that they are likely using these streams for rearing and/or refuge. Cutthroat live to a maximum of 10 years and can reach sexual maturity in as little as 2 years. Spawning takes place in the spring (February to May) in streams with adequate gravel substrates. Redds are constructed and the eggs hatch within 6-7 weeks. Fry emerge from the redds in 1-2 weeks (Scott & Crossman, 1985). A length frequency distribution histogram for cutthroat trout captured in the study area is presented in Figure 3.

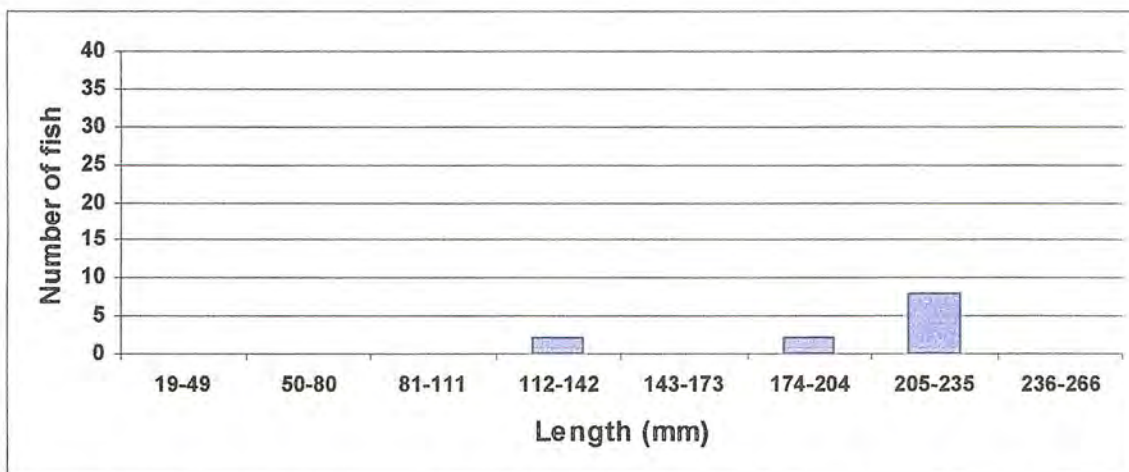


Figure 3. Length frequency distribution for cutthroat trout captured in the study area (n=12).

4.6 Significant Features and Fisheries Observations

4.6.1 Fish and Fish Habitat

Fisheries values within the sites sampled are largely associated with the limited occurrence of suitable spawning and rearing habitats for fish species. The prevalence of high gradients (>20%) and cascade/pool morphology appeared to be the primary limiting factors for spawning and rearing habitats within the sampled reaches.

4.6.1.1 Critical Fish Habitats

No critical fish habitats such as staging areas or large spawning grounds were identified.

4.6.1.2 Special Populations

The BC Conservation Data Center has blue listed bull trout within the Bulkley Forest District. Blue-listed means the species is considered vulnerable and “at risk”, but not yet endangered or threatened. Populations of bull trout may not be in decline, but their habitat or other requirements are such that they are vulnerable to further disturbance. Historical data indicates that bull trout have been captured throughout the West Babine Planning Area (Triton, 1998 and Silvicon Services, 2001). Habitat requirements and life history strategies should be considered when encroaching on watersheds where bull trout have been identified.

4.6.1.3 Sport Fishing Opportunities

Moderate value sport fishing opportunities were identified within the West Babine study area.

4.6.2 Habitat Protection Concerns

4.6.2.1 Fisheries Sensitive Zones

Numerous FSZs were identified during the historical data review. Most of the FSZs were described as swamps, sloughs or wetlands. Most of the wetlands identified were channelized and offered access to fish during flooding. Many of the FSZs provide a link between confirmed upstream and downstream fish bearing waters. Irrespective of the official classifications of the numerous wetlands and FSZs throughout the study area, the maintenance of fish passage, access and protection of habitats is a concern.

4.6.2.2 Fish above 20% Gradients

No fish were captured during the survey in gradients above 20%.

4.6.2.3 Restoration and Rehabilitation Opportunities

Twin culverts (Table 3) located in Reach 1 on ILP 10138, were identified as potential barriers to upstream fish migration. The culvert outlets were perched 35 cm and 40 cm above the outlet pool creating a potential barrier at lower flows. Restoration of the natural watercourse through culvert removal is a possible restoration option if road access is no longer needed. Culvert replacement (downsetting) or outflow pool modification can be used to restore fish access if road access is required.

4.6.2.4 Unstable Slopes

No unstable slopes were identified within the study area.

4.7 Fish Bearing Status

4.7.1 Fish Bearing Reaches

Fish species were captured in 11 of the 17 reaches classified as fish bearing (Table 5). One (1) reach in the fish bearing classification table was classified as fish bearing by default. It was determined that fish can access this reach (from downstream fish bearing waters) and further sampling is not recommended.

The fish bearing status of streams may be directly supported by sampling data or inferred based on the presence of fish habitat and available access from fish bearing waters (inferred seasonal use). For example, if fish habitat within a given reach is suitable for rearing and/or spawning, and the reach is contiguous to a fish bearing reach, but no fish were captured and no barriers were observed, the reach would be classified as fish bearing.

If the reach does not provide suitable rearing, spawning and overwintering habitat or where barriers (includes high gradient) prevent fish from accessing and utilizing the reach it would be classified as non-fish bearing.

4.7.2 Additional Sampling Recommendations

No reaches within the study area were recommended for additional sampling.

Table 5. Summary of fish bearing reaches within the study area.

Site	ILP/WSC	Reach	Width (m)	Gradient (%)	Species	Stream Class	Follow-up Sampling (y or n)	Comments
57	480-488800-10300	7	1.33	4.25	NFC	S4	n	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. No barriers to upstream fish migration were observed.
60	480-452300-13942-32072	7	2.63	6	DV	S3	n	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. No barriers to upstream fish migration were observed.
63	480-430700	11	NA	NA	DV	NA	n	Fish only sampling site.
65	10138	1	2.20	1	NFC	S3	n	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. Fish migration is impacted by non permanent barriers (downstream beaver dam complexes and twin culverts). Default fish bearing, Dolly Varden and rainbow trout were captured in downstream lake (Triton 1998).
66	480-464400	6	1.30	0.25	NFC	S4	n	No barriers to upstream fish migration were identified. Rainbow trout were captured downstream in Reach 2 (Triton 1998).
82	480-444000	1	1.18	1.75	NS	S4	n	No barriers to upstream fish migration were identified.
83	480-439800	1	1.09	1.25	NS	S4	n	No barriers to upstream fish migration were identified.
410	480-452300-13942	3	4.02	4.5	DV	S3	n	Moderate rearing, low spawning and no overwintering habitat identified within the reach. Dolly Varden captured.
411	480-452300-13942-48843	1	1.40	4	DV	S4	n	Moderate rearing, low spawning and no overwintering habitat identified within the reach. Possible overwintering habitat in upstream lake. Dolly Varden captured.
413	480-452300-13942	5	5.57	3.5	DV	S2	n	Moderate spawning, rearing and overwintering habitat available within reach. Dolly Varden captured.
414	10125	1	0.98	7.25	DV	S4	n	Moderate rearing, low spawning and low overwintering habitat observed in the reach. No barriers to upstream fish migration were identified. Dolly Varden captured.
415	10123	2	1.60	10.75	DV	S3	n	Moderate rearing, moderate overwintering and low spawning habitat observed within the reach. No barriers to fish migration were identified. Dolly Varden captured.

Table 5. Summary of fish bearing reaches within the study area.

Site	ILP/WSC	Reach	Width (m)	Gradient (%)	Species	Stream Class	Follow-up Sampling (y or n)	Comments
416	10124	1	1.39	8.25	DV	S4	n	Excellent rearing habitat with good overwintering and good spawning habitat within reach. No barriers to fish migration were identified. Dolly Varden captured.
417	480-504200-67300	1	1.75	9.75	CT	S3	n	High rearing habitat, moderate overwintering and limited spawning habitat observed within site. No mixed age classes of cutthroat trout were observed, suspect a possible soft barrier downstream only accessible for larger fish.
418	480-504200	16	1.93	5.75	CT	S3	n	Moderate rearing and moderate overwintering habitat present within reach. No mixed age classes of cutthroat trout were observed, suspect a possible soft barrier or small obstruction downstream may limit some upstream access.
446	480-504200-67300	4	2.00	9.25	CT	S3	n	Moderate rearing and spawning with low overwintering habitat observed within reach. Low numbers of cutthroat trout captured. Possible soft barrier downstream may limit recruitment to this system.
447	10030	2	1.04	8.25	NFC	S4*	n	Moderate rearing and moderate spawning with low overwintering habitat. No barriers to fish migration were identified.

CT = cutthroat trout
DV = Dolly Varden
NS = Not Sampled

NFC = No Fish Captured
NVC = No Visible Channel
* = Indicates inferred fish bearing

4.7.3 Non-Fish Bearing Status

Non-fish bearing status was assigned to 13 of the 32 sample sites within the study area (Table 6). A non-fish bearing classification has been assigned to all sampled reaches within the non-fish bearing table. Non-fish bearing classifications are associated with reaches that lack suitable habitat to sustain salmonids or are inaccessible to fish. Non-fish bearing status was assigned to reaches where any or all of the following criteria applied:

- The stream was labeled a non-visible channel containing no potential fish habitat;
- The stream was deemed inaccessible from fish bearing waters and did not have perennial fish habitat upstream of the barrier;
- Permanent barriers (cascades, falls, etc.) prevented upstream fish migration and the stream did not have perennial fish habitat upstream of the barrier;
- Permanent barriers (cascades, falls, etc.) prevented upstream fish migration and the stream habitat was found to be non fish bearing through sampling above the barrier;
- The stream gradient is >30% (through map interpretation); Gradients were calculated during the pre field planning phases.
- The stream gradient is >30% (through map interpretation) in the lower section of stream (i.e. reach 1) and all reaches upstream of that reach are >20%;

Inferred non-fish bearing status was given to non sampled reaches with the following criteria:

- Reaches above a stream section found to contain no stream channel (NVC) with no potential fish habitat;
- Reaches above a stream section with an average gradient greater than or equal to 20% (through map interpretation) with no headwater lake present.

Insufficient discharge often results in a lack of connectivity between the channelized portion of stream and downstream watercourses. Lack of connectivity can be described as the channelized portion of stream being isolated from downstream watercourses in which no surface connection or subsurface channel exists (joining the two at any time of the year). Evidence of no surface connection includes a lack of scour to mineral substrate, no alluvial deposition and no evidence of surface ponding or seasonal flooding. These small streams with no connectivity to fish bearing waters were sampled upstream of the loss of connectivity to verify fish absence.

Reaches that have been assigned a non fish bearing status and are classified as Non Visible Channel (NVC) do not possess potential fish habitat and are not streams due to the fact that they do not possess the criteria necessary to classify them as such. Reaches classified as NVC are largely drainages that are mapped incorrectly and no stream channel exists where the map indicates. They may also be drainages that lack evidence of

surface scour, contain no continuous definable channel bed, lack alluvial deposits, and exhibit no evidence of extensive ponding.

5.0 STREAM CLASSIFICATION SUMMARY

Table 7 provides a summary of stream inventory information collected during the project and Riparian Management Area (RMA) classifications for each reach sampled.

Table 6. Summary of non fish bearing reaches within the study area.

Site	ILP/WSC	Reach	Width (m)	Gradient (%)	Stream Class	Date	Electrofishing Specifications						Other Methods		Comments
							Dist. (m)	Time (s)	Cond. (uS)	Stage (vis)	Turb. (vis)	Temp. (°C)	Type	Method	
58	10038	1	NA	NA	NVC	7/10/01	NA	NA	NA	NA	NA	NA	NA	NA	Fully vegetated depression. No fish habitat.
59	10130	1	1.92	1	S6	7/10/01	100	206	30	L	C	5	NA	NA	Falls (4 m) located downstream on William's Creek block upstream fish access. Two (2) sample sites upstream of the falls confirms non fish bearing status. No perennial habitat was observed within reach. Dolly Varden were captured downstream of the falls.
61	480-430700-44400	6	0.82	3.5	S6	7/10/01	100	139	30	M	C	6	NA	NA	High gradient (23%) in downstream reach prevents upstream fish migration. No perennial habitat observed above the high gradient section and no fish captured.
62	480-430700	12	1.00	8.25	S6	7/11/01	200	246	30	M	C	8	NA	NA	Two cascades; one (1.7 m x 2 m) located in this Reach, and one (4 m x 3 m) located in Reach 11 of this stream block upstream fish access. Electrofishing effort above the cascades (one (1) site) resulted in no fish captured. Dolly Varden were captured downstream of the 4 m x 3 m cascade with minimal effort.
64	10159	1	0.90	25.75	S6	7/11/01	100	112	30	M	C	5	NA	NA	High gradient (31%) at confluence with Heal Creek blocks upstream fish migration. No perennial habitat observed and no fish captured.
80	480-456200	1	NA	NA	NVC	8/13/01	NA	NA	NA	NA	NA	NA	NA	NA	No Visible Channel. Dry depression. No fish habitat.
81	10142	1	0.50	6	S6	8/13/01	NA	NA	NA	NA	NA	NA	NA	NA	Vegetated discontinuous channel.
84	10163	1	0.42	1.25	S6	8/13/01	NA	NA	NA	NA	NA	NA	NA	NA	Heavily vegetated discontinuous channel. Ephemeral stream with no connectivity to fish bearing water.

Table 6. Summary of non fish bearing reaches within the study area.

Site	ILP/WSC	Reach	Width (m)	Gradient (%)	Stream Class	Date	Electrofishing Specifications						Other Methods		Comments
							Dist. (m)	Time (s)	Cond. (uS)	Stage (vis)	Turb. (vis)	Temp. (°C)	Type	Method	
448	480-452300-13942	7	2.28	13.75	S6	7/11/01	250	275	30	H	C	5	NA	NA	Falls (4 m) located downstream in Reach 6 of this stream block upstream fish migration. Electroshocking efforts conducted upstream of falls resulted in no fish captured. Dolly Varden were captured downstream of the falls.
449	480-430700-21000-72100	4	2.28	14.5	S6	7/11/01	470	400	40	M	C	5	NA	NA	High gradient (23% for 150 m) in Reach 3 of this stream blocks upstream fish access. No fish captured with extensive electrofishing (470 m and 400 seconds of effort).
450	480-430700-21000-72100	3	2.40	23.5	S6	7/11/01	150	159	30	M	C	5	NA	NA	High gradient (23%) throughout this Reach blocks upstream fish access. Electrofishing efforts resulted in no fish captured. Dolly Varden are present in downstream Reach (SKR 2000 and Triton 1998).
451	480-430700-21000	12	0.74	21	S6	7/11/01	150	160	40	L	C	5	NA	NA	High gradient (21%) throughout this Reach prevents upstream fish migration. No perennial habitat observed within reach and no fish captured.
452	10155	3	0.83	26	S6	7/12/01	200	120	40	M	C	6	NA	NA	High gradient (26%) throughout this Reach blocks upstream fish migration. No fish captured.

NFC = No Fish Captured
 NVC = No Visible Channel
 NA = Not Applicable
 NS = Not Sampled
 * = Indicates inferred fish bearing
 H = High
 M = Moderate
 L = Low
 C = Clear

Table 7. Stream sampling summary for the study area.

Site	ILP/WSC	Reach	Map Number	Width (m)	Gradient (%)	Species	Stream Class	Comments
57	480-488800-10300	7	093M.017	1.33	4.25	NFC	S4	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. No barriers to upstream fish migration were observed.
58	10038	1	093M.017	NA	NA	NA	NVC	Fully vegetated depression. No fish habitat.
59	10130	1	093M.027	1.92	1	NFC	S6	Falls (4 m) located downstream on William's Creek block upstream fish access. Two (2) sample sites upstream of the falls confirms non fish bearing status. No perennial habitat was observed within reach. Dolly Varden were captured downstream of the falls.
60	480-452300-13942-32072	7	093M.027	2.63	6	DV	S3	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. No barriers to upstream fish migration were observed.
61	480-430700-44400	6	093M.027	0.82	3.5	NFC	S6	High gradient (23%) in downstream reach prevents upstream fish migration. No perennial habitat observed above the high gradient section and no fish captured.
62	480-430700	12	093M.027	1.00	8.25	NFC	S6	Two cascades; one (1.7 m x 2 m) located in this Reach, and one (4 m x 3 m) located in Reach 11 of this stream block upstream fish access. Electrofishing effort above the cascades (one (1) site) resulted in no fish captured. Dolly Varden were captured downstream of the 4 m x 3 m cascade with minimal effort.
63	480-430700	11	093M.027	NA	NA	DV	NA	Fish only sampling site.
64	10159	1	093M.027	0.90	25.75	NFC	S6	High gradient (31%) at confluence with Heal Creek blocks upstream fish migration. No perennial habitat observed and no fish captured.
65	10138	1	093M.027	2.20	1	NFC	S3	Moderate rearing, poor spawning and poor overwintering habitat identified within the reach. Fish migration is impacted by non permanent barriers (downstream beaver dam complexes and twin culverts). Default fish bearing. Dolly Varden and rainbow trout were captured in downstream lake (Triton 1998).
66	480-464400	6	093M.027	1.30	0.25	NFC	S4	No barriers to upstream fish migration were identified. Rainbow trout were captured downstream in Reach 2 (Triton 1998).
80	480-456200	1	093M.027	NA	NA	NA	NVC	No Visible Channel. Dry depression. No fish habitat.
81	10142	1	093M.027	0.50	6	NS	S6	Vegetated discontinuous channel.
82	480-444000	1	093M.027	1.18	1.75	NS	S4	No barriers to upstream fish migration were identified.
83	480-439800	1	093M.027	1.09	1.25	NS	S4	No barriers to upstream fish migration were identified.
84	10163	1	093M.027	0.42	1.25	NS	S6	Heavily vegetated discontinuous channel. Ephemeral stream with no connectivity to fish bearing water.

Table 7. Stream sampling summary for the study area.

Site	ILP/WSC	Reach	Map Number	Width (m)	Gradient (%)	Species	Stream Class	Comments
410	480-452300-13942	3	093M.027	4.02	4.5	DV	S3	Moderate rearing, low spawning and no overwintering habitat identified within the reach. Dolly Varden captured.
411	480-452300-13942-48843	1	093M.027	1.40	4	DV	S4	Moderate rearing, low spawning and no overwintering habitat identified within the reach. Possible overwintering habitat in upstream lake. Dolly Varden captured.
413	480-452300-13942	5	093M.027	5.57	3.5	DV	S2	Moderate spawning, rearing and overwintering habitat available within reach. Dolly Varden captured.
414	10125	1	093M.027	0.98	7.25	DV	S4	Moderate rearing, low spawning and low overwintering habitat observed in the reach. No barriers to upstream fish migration were identified. Dolly Varden captured.
415	10123	2	093M.027	1.60	10.75	DV	S3	Moderate rearing, moderate overwintering and low spawning habitat observed within the reach. No barriers to fish migration were identified. Dolly Varden captured.
416	10124	1	093M.027	1.39	8.25	DV	S4	Excellent rearing habitat with good overwintering and good spawning habitat within reach. No barriers to fish migration were identified. Dolly Varden captured.
417	480-504200-67300	1	093M.017	1.75	9.75	CT	S3	High rearing habitat, moderate overwintering and limited spawning habitat observed within site. No mixed age classes of cutthroat trout were observed, suspect a possible soft barrier downstream only accessible for larger fish.
418	480-504200	16	093M.017	1.93	5.75	CT	S3	Moderate rearing and moderate overwintering habitat present within reach. No mixed age classes of cutthroat trout were observed, suspect a possible soft barrier or small obstruction downstream may limit some upstream access.
446	480-504200-67300	4	093M.017	2.00	9.25	CT	S3	Moderate rearing and spawning with low overwintering habitat observed within reach. Low numbers of cutthroat trout captured. Possible soft barrier downstream may limit recruitment to this system.
447	10030	2	093M.017	1.04	8.25	NFC	S4*	Moderate rearing and moderate spawning with low overwintering habitat. No barriers to fish migration were identified.
448	480-452300-13942	7	093M.027	2.28	13.75	NFC	S6	Falls (4 m) located downstream in Reach 6 of this stream block upstream fish migration. Electroshocking efforts conducted upstream of falls resulted in no fish captured. Dolly Varden were captured downstream of the falls.
449	480-430700-21000-72100	4	093M.027	2.28	14.5	NFC	S6	High gradient (23% for 150 m) in Reach 3 of this stream blocks upstream fish access. No fish captured with extensive electrofishing (470 m and 400 seconds of effort).

Table 7. Stream sampling summary for the study area.

Site	ILP/WSC	Reach	Map Number	Width (m)	Gradient (%)	Species	Stream Class	Comments
450	480-430700-21000-72100	3	093M.027	2.40	23.5	NFC	S6	High gradient (23%) throughout this Reach blocks upstream fish access. Electrofishing efforts resulted in no fish captured. Dolly Varden are present in downstream Reach (SKR 2000 and Triton 1998).
451	480-430700-21000	12	093M.027	0.74	21	NFC	S6	High gradient (21%) throughout this Reach prevents upstream fish migration. No perennial habitat observed within reach and no fish captured.
452	10155	3	093M.027	0.83	26	NFC	S6	High gradient (26%) throughout this Reach blocks upstream fish migration. No fish captured.
453	10119	1	093M.027	NA	NA	NFC	NA	Fish only sampling site
947	480-504200	19	093M.017	NA	NA	NFC	NA	Fish only sampling site

CT = cutthroat trout
DV = Dolly Varden
NS = Not Sampled

NFC = No Fish Captured
NVC = No Visible Channel
NA = Not Applicable
* = Indicates inferred fish bearing

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APPENDIX I

Reach Cards/Site Cards/Fish Collection Forms and Photographs

(in order of ascending site number)

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-488800-10300-00000-0000-0000-000-000-000-000

Reach # ILP Map # ILP #

7.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-488800-10300-00000-0000-0000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 7.0		UTM(Zone/East/North): 10.648388.6117232				Sample Type: Biased			
Length (km): 1.02		Coupling: Coupled		Magnitude: 2		BGC Zone: SBS			
Gradient (%): 9.8		Confinement: Frequently Confin		Order: 2		Open water: Absent			
US Elev (m): 980		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 57		Field UTM ...		Agency: C172		Crew: EL/JD		Date: 2001/07/10	
Site Length (m): 100		GIS UTM 10.649159.6116791		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 1.33		1.100		1.5	
Stage: Low ☐				Wetted Width (m): 1.33		1.100		1.5	
Med ☒				Bankfull Depth (m): 0.33		0.3		0.4	
High ☐				Temp (C): 7		pH: 7.4		Conductivity: 70	
								Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Fines		D95 (cm): 7.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Gravels		D (cm): 2.00				Mid-channel ☐		Span ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Occasionally Confin				C1		C2		C3	
Morphology: RP Riffle Pool				C4		C5		S1	
				C6		S2		S3	
				C7		S4		S5	
				C8		S6		S7	
				C9		S8		S9	
				C10		S10		S11	
				C11		S12		S13	
				C12		S14		S15	
				C13		S16		S17	
				C14		S18		S19	
				C15		S20		S21	
				C16		S22		S23	
				C17		S24		S25	
				C18		S26		S27	
				C19		S28		S29	
				C20		S30		S31	
				C21		S32		S33	
				C22		S34		S35	
				C23		S36		S37	
				C24		S38		S39	
				C25		S40		S41	
				C26		S42		S43	
				C27		S44		S45	
				C28		S46		S47	
				C29		S48		S49	
				C30		S50		S51	
				C31		S52		S53	
				C32		S54		S55	
				C33		S56		S57	
				C34		S58		S59	
				C35		S60		S61	
				C36		S62		S63	
				C37		S64		S65	
				C38		S66		S67	
				C39		S68		S69	
				C40		S70		S71	
				C41		S72		S73	
				C42		S74		S75	
				C43		S76		S77	
				C44		S78		S79	
				C45		S80		S81	
				C46		S82		S83	
				C47		S84		S85	
				C48		S86		S87	
				C49		S88		S89	
				C50		S90		S91	
				C51		S92		S93	
				C52		S94		S95	
				C53		S96		S97	
				C54		S98		S99	
				C55		S100		S101	
				C56		S102		S103	
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				C199		S388		S389	
				C200		S390		S391	
				C201		S392		S393	
				C202		S394		S395	
				C203		S396		S397	
				C204		S398		S399	
				C205		S399		S400	
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FDIS Site Card

West Babine Study Area

Watershed Code: 480-488800-10300-00000-0000-0000-000-000-000-000-000

Reach # 7.0 ILP Map # ILP # 5098 Site 57

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-0000-000-000-000-000-000

Project Code: 5098

WATERSHED

Gazetted Name: Watershed Code: 480-488800-10300-00000-0000-0000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.017 NID #: 10057 Reach #: 7.0 Site #: 57
Field UTM (Z.E.N): .. Method: Site Lg: 100 Method: HC Access: H
GIS UTM (Z.E.N): 10.649159.6116791 Ref. Name:
Date: 2001/07/10 Time: 12:30 Agency: C172 Crew: EL/JD Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS	1.30	1.40	1.10	1.30	1.40	1.50					1.33	Method I:	3.0	4.0	C 4.25
Wetted Width (m):	MS	1.30	1.40	1.10	1.30	1.40	1.50					1.33	Method II:	5.0	5.0	C
Pool Depth (m):	MS	0.30	0.40	0.40	0.30	0.20	0.30					0.32				

Wb Depth: .4 .3 .3 Avg: 0.33 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	S	N	T	T	D	N
Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☐

LWD: F DIST: E

LB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

CROWN CLOSURE

3 41-70%

INSTREAM VEG: N ☐ A ☐ M ☐ V ☒

RB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

WATER

EMS: Temp: 7 Method: T4 Req #: Cond.: 70 Method: S3
pH: 7.4 Method: P2 Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: F Subdom: G O1 B1 B2 B3 D1 D2 D3
D95: 7.00 D (cm): 2.00 Morph: RP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: OC
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	Poor - deep sections of stream but lacks water velocity so it would most likely freeze in the winter
Rearing Habitat	Moderate - riffle pool complex with abundant overstream vegetation
Spawning Habitat	Poor - lack of strong water flow - dirty gravel

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 05 F: 13 STD U			upstream photo of overstream vegetation choking channel (typical)
R: 05 F: 14 STD D			downstream photo of open glide section (not typical)

FDIS Site Card

West Babine Study Area

Watershed Code: 480-488800-10300-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

7.0

57

COMMENTS	
Section	Comments
CHANNEL	Shocking was difficult due to the amount of overstream vegetation

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-488800-10300-00000-00000-000-000-000-000-000-000

Reach # 7.0
ILP Map #
ILP #

WATERBODY															
Gazetted Name:										Local: None					
Project Code: 480-000000-00000-00000-0000-000-000-000-000-000-0															
WS Code: 480-488800-10300-00000-0000-000-000-000-000-000-000															
Waterbody ID:										ILP Map #:		ILP #:		Reach #: 7 -	
Project ID: 5098										Lake/Stream: S		Lake From Date:			
Fish Permit #: 145086K			Date: 2001/07/10			To: 2001/07/10			Agency: C172		Crew: EL/JD		Resample: ☐		
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
57	093M.017	10057				GPU EF 1	7	70	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
57	EF	1	2001/07/10	12:30	2001/07/10	13:00									
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
57	EF	1	1	O	169	100.0	1.0	600	60	6	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
57	EF	1	1	NFC		0									



Site #57, upstream photo of overstream vegetation choking channel (typical).
Roll #5, Frame #13, Date: 2001/07/10



Site #57, downstream photo of open glide section (not typical).
Roll #5, Frame #14, Date: 2001/07/10

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.017 ILP # 10038

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.017		ILP #: 10038		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.649399.6117189				Sample Type: Random			
Length (km): .65		Coupling: Partially Couple		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 4.2		Confinement: Occasionally Conf		Order: 1		Open water: Absent			
US Elev (m): 881		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 58		Field UTM ..		Agency: C172		Crew: EL/JD		Date: 2001/07/10	
Site Length (m): 100		GIS UTM 10.649498.6116759		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☒		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m):		0.00		0	
Stage: Low ☐				Wetted Width (m):		0.00		0	
Med ☐				Bankfull Depth (m):		0.00		0	
High ☐		Temp (C):		pH:		Conductivity:		Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☐	
MORPHOLOGY									
Bed Material: Dominant:		D95 (cm):		Bars: Non ☐		Side ☐		Diagonal ☐	
Subdominant:		D (cm):				Mid-channel ☐		Span ☐	
Channel Pattern:		Islands:		DISTURBANCE		O1		B1	
Coupling:				INDICATORS		B2		B3	
Confinement:						D1		D2	
Morphology:						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover:		Type:		SWD		LWD		B	
LWD:		Amount:							
LWD Dist:		Location: P/S/O:							
Right Bank: Shape:		Texture: Fines ☐		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape:		Texture: Fines ☐		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg:		Stage:							
Left Bank: Rip.Veg:		Stage:							
		Instream Veg: None ☐		Algae ☐		Moss ☐		Vascular ☐	

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0	093M.017	10038	58

PROJECT

Project Name: Babine River Fish Inventory - 2001	Project Code: 5098
Stream Name (gaz.): BABINE RIVER	
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000	

WATERSHED

Gazetted Name:	Local Name: None				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000					
ILP Map#: 093M.017	ILP #: 10038	NID Map #: 093M.017	NID #: 10058	Reach #: 1.0	Site #: 58
Field UTM (Z.E.N): ..	Method:	Site Lg: 100	Method: GE	Access: H	
GIS UTM (Z.E.N): 10.649498.6116759		Ref. Name:			
Date: 2001/07/10	Time: 13:35	Agency: C172	Crew: EL/JD	Fish Crd?: ☐	Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS											0.00	Method I:		C	0.00
Wetted Width (m):	MS											0.00	Method II:		C	
Pool Depth (m):	MS											0.00				

Wb Depth:				Avg: 0.00	Method: MS	Stage: L ☐ M ☐ H ☐	No Vis.Ch.: ☒ Intermittent: ☐	Dw: ☐ Tribs.: ☐
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COVER Total:

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:							
Loc: P/S/O:	☐	☐	☐	☐	☐	☐	☐

CROWN CLOSURE

INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: DIST:

LB SHP:

Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐

RB SHP:

Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐

RIP:

RIP:

STG:

STG:

WATER

EMS:	Method: T4	Req #:	
Temp:	Method: P2	Cond.:	Method: S3
pH:	Method: GE	Turb.: T ☐ M ☐ L ☐ C ☐	Method: GE
Flood Signs:			

MORPHOLOGY

Bed Material:	Dominant:	Subdom:	O1	B1	B2	B3	D1	D2	D3			
D95:	D (cm):	Morph:	☐	☐	☐	☐	☐	☐	☐			
Pattern:			C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
Islands:			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coupling:												
Confinement:												
FSZ: ☐			Bars: N ☐	SIDE ☐	DIAG ☐	MID ☐	SPAN ☐	BR ☐				

HABITAT QUALITY

Name	Comments
Cover	None - No Visible Channel
Rearing Habitat	None - No Visible Channel
OverWinter Habitat	None - No Visible Channel
Spawning Habitat	None - No Visible Channel

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 05 F: 15	STD	U	upstream photo of vegetated depression
R: 05 F: 16	STD	D	downstream photo of vegetated depression

FDIS Site Card

West Babine Study Area

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000	1.0	093M.017	10038	58

COMMENTS	
Section	Comments
CHANNEL	Fully vegetated linear depression, No Fish Habitat



Site #58, upstream photo of vegetated depression.
Roll #5, Frame #15, Date: 2001/07/10



Site #58, downstream photo of vegetated depression.
Roll #5, Frame #16, Date: 2001/07/10

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10130

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10130		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.642504.6125029				Sample Type: Random			
Length (km): .19		Coupling: Decoupled		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 3.2		Confinement: Unconfined		Order: 1		Open water: Absent			
US Elev (m): 1395		Islands: NONE		Riparian Vegetation: Shrubs					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 59		Field UTM 9.642436.6124940		Agency: C172		Crew: EL/JD		Date: 2001/07/10	
Site Length (m): 100		GIS UTM 10.642435.6124938		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m):		1.92		1.5	
Stage: Low ☒				Wetted Width (m):		1.92		1.5	
Med ☐				Bankfull Depth (m):		0.30		0.3	
High ☐		Temp (C): 5		pH: 7.8		Conductivity: 30		Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 14.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Fines		D (cm): 1.00				Mid-channel ☐		Span ☐	
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Unconfined				C1		C2		C3	
Morphology: RP Riffle Pool				C4		C5		S1	
				C6		S2		S3	
				C7		S4		S5	
				C8		S6		S7	
				C9		S8		S9	
				C10		S10		S11	
				C11		S12		S13	
				C12		S14		S15	
				C13		S16		S17	
				C14		S18		S19	
				C15		S20		S21	
				C16		S22		S23	
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				C18		S26		S27	
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				C30		S50		S51	
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				C42		S74		S75	
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				C53		S96		S97	
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				C55		S100		S101	
				C56		S102		S103	
				C57		S104		S105	
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				C73		S136		S137	
				C74		S138		S139	
				C75		S140		S141	
				C76		S142		S143	
				C77		S144		S145	
				C78		S146		S147	
				C79		S148		S149	
				C80		S150		S151	
				C81		S152		S153	
				C82		S154		S155	
				C83		S156		S157	
				C84		S158		S159	
				C85		S160		S161	
				C86		S162		S163	
				C87		S164		S165	
				C88		S166		S167	
				C89		S168		S169	
				C90		S170		S171	
				C91		S172		S173	
				C92		S174		S175	
				C93		S176		S177	
				C94		S178		S179	
				C95		S180		S181	
				C96		S182		S183	
				C97		S184		S185	
				C98		S186		S187	
				C99		S188		S189	
				C100		S190		S191	
				C101		S192		S193	
				C102		S194		S195	
				C103		S196		S197	
				C104		S198		S199	
				C105		S200		S201	
				C106		S202		S203	
				C107		S204		S205	
				C108		S206		S207	
				C109		S208		S209	
				C110		S210		S211	
				C111		S212		S213	
				C112		S214		S215	
				C113		S216		S217	
				C114		S218		S219	
				C115		S220		S221	
				C116		S222		S223	
				C117		S224		S225	
				C118		S226		S227	
				C119		S228		S229	
				C120		S230		S231	
				C121		S232		S233	
				C122		S234		S235	
				C123		S236		S237	
				C124		S238		S239	
				C125		S240		S241	
				C126		S242		S243	
				C127		S244		S245	
				C128		S246		S247	
				C129		S248		S249	
				C130		S250		S251	
				C131		S252		S253	
				C132		S254		S255	
				C133		S256		S257	
				C134		S258		S259	
				C135		S260		S261	
				C136		S262		S263	
				C137		S264		S265	
				C138		S266		S267	
				C139		S268		S269	
				C140		S270		S271	
				C141		S272		S273	
				C142		S274		S275	
				C143		S276		S277	
				C144		S278		S279	
				C145		S280		S281	
				C146		S282		S283	
				C147		S284		S285	
				C148		S286		S287	
				C149		S288		S289	
				C150		S290		S291	
				C151		S292		S293	
				C152		S294		S295	
				C153		S296		S297	
				C154		S298		S299	
				C155		S300		S301	
				C156		S302		S303	
				C157		S304		S305	
				C158		S306		S307	
				C159		S308		S309	
				C160		S310		S311	
				C161		S312		S313	
				C162		S314		S315	
				C163		S316		S317	
				C164		S318		S319	
				C165		S320		S321	
				C166		S322		S323	
				C167		S324		S325	
				C168		S326		S327	
				C169		S328		S329	
				C170		S330		S331	
				C171		S332		S333	
				C172		S334		S335	
				C173		S336		S337	
				C174		S338		S339	
				C175		S340		S341	
				C176					

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10130 Site 59

PROJECT																
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098						
Stream Name (gaz.): BABINE RIVER																
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000																
WATERSHED																
Gazetted Name:										Local Name: None						
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000																
ILP Map#: 093M.027			ILP #: 10130			NID Map #: 093M.027			NID #: 20059			Reach #: 1.0		Site #: 59		
Field UTM (Z.E.N): 9.642436.6124940					Method: GPU					Site Lg: 100		Method: GE		Access: H		
GIS UTM (Z.E.N): 10.642435.6124938					Ref. Name:											
Date: 2001/07/10			Time: 14:05			Agency: C172			Crew: EL/JD			Fish Crd?: ☒		Incomplete: ☐		
CHANNEL																
										Gadient %		Mtd		Avg		
Channel Width (m):		Mtd	width	width	width	width	width	width	width	width	width	width	width	Avg		
Wetted Width (m):		Mtd	width	width	width	width	width	width	width	width	width	width	width	Avg		
Pool Depth (m):		Mtd	width	width	width	width	width	width	width	width	width	width	width	Avg		
Wb Depth:		.3	.3	.3	Avg: 0.30			Method: MS			Stage: L ☒ M ☐ H ☐			Dw: ☐ Tribs.: ☐		
COVER Total: A																
Type:	SWD	LWD	B	U	DP	OV	IV	CROWN CLOSURE								
Amount:	N	N	T	T	T	D	S	0 0%								
Loc: P/S/O:	☐	☐	☒	☒	☒	☒	☒	INSTREAM VEG: N ☐ A ☐ M ☒ V ☐								
LWD: N			DIST: NA			RB SHP: S										
LB SHP: S			Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐			Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐										
RIP: S			STG: SHR			RIP: S										
						STG: SHR										
WATER																
EMS:					Method: T4					Req #:						
Temp: 5					Method: P2					Cond.: 30						
pH: 7.8					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒						
Flood Signs: None										Method: S3						
										Method: GE						
MORPHOLOGY																
Bed Material:		Dominant: C		Subdom: F		D95: 14.0		D (cm): 1.00		Morph: RP		O1 B1 B2 B3 D1 D2 D3				
Pattern: IR												C1 C2 C3 C4 C5 S1 S2 S3 S4 S5				
Islands: N																
Coupling: DC																
Confinement: UN																
FSZ: ☐																
Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐																
HABITAT QUALITY																
Name		Comments														
Cover		Poor - some sections of stream with overhanging vegetation, and some undercut banks														
Rearing Habitat		Poor - mostly glide morphology with little cover														
OverWinter Habitat		None - no deep pools														
Spawning Habitat		None - no gravel seen in sample area														
PHOTOS																
Photo		Foc Lg		Dir		Comments										
R:	05	F:	17	STD		U		upstream photo of glide								
R:	05	F:	18	STD		D		downstream photo of glide with some overhanging vegetation on bank								

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093M.027	10130	59

COMMENTS	
Section	Comments
CHANNEL	Stream substrates mostly fine organics and moss
CHANNEL	No Fish Captured. Falls located by helicopter downstream on Willaims Creek

West Babine Study Area

000-000000-000000-000000-0000-0000-000-000-000-000-000-000

1.0

093M.027

10130

Triton Environmental Consultants Ltd.



Site #59, upstream photo of glide.
Roll #5, Frame #17, Date: 2001/07/10



Site #59, downstream photo of glide with some overhanging vegetation on bank.
Roll #5, Frame #18, Date: 2001/07/10

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

7.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 7.0		UTM(Zone/East/North): 10.641520.6126521				Sample Type: Biased			
Length (km): 2.64		Coupling: Partially Couple		Magnitude: 2		BGC Zone: SBS			
Gradient (%): 5.2		Confinement: Frequently Confin		Order: 2		Open water: Absent			
US Elev (m): 1413		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 60		Field UTM 9.643681.6126456		Agency: C172		Crew: EL/JD		Date: 2001/07/10	
Site Length (m): 100		GIS UTM 10.643535.6126515		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max	
Dewatered: ☐ Tribs.: ☐				Avg		Min		Max	
Stage: Low ☒		Channel Width (m): 2.63		2.3		2.900		6	
Med ☐		Wetted Width (m): 2.63		2.3		2.900		6	
High ☐		Bankfull Depth (m): 0.33		0.3		0.4		3	
Temp (C): 7		pH: 7.4		Conductivity: 30		Turbidity: Turbid ☐ Low ☐		Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 72.00		Bars: Non ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐		Braid ☐			
Subdominant: Gravels		D (cm): 8.00							
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS					
Coupling: Decoupled				O1 B1 B2 B3 D1 D2 D3					
Confinement: Confined				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5					
Morphology: CP Cascade Pool									
COVER									
Total Cover: Abundant		Type: SWD LWD B U DP OV IV							
LWD: Few		Amount: S D S T T T T N							
LWD Dist: Evenly Distributed		Location: P/S/O: ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐		FSZ: ☐					
Right Bank: Shape: Sloping (g)		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☒ Rock ☐ Manmade ☐		Crown Closure 1-20%					
Left Bank: Shape: Sloping (g)		Texture: Fines ☒ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐							
Right Bank: Rip.Veg: Coniferous		Stage: Mature forest		Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☐					
Left Bank: Rip.Veg:		Stage: Mature forest							
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
60	EF	1	100	112 sec	700	DV	3	81	110

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000

Reach # 7.0 ILP Map # ILP # Site 60

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-0000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: None
Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 20060 Reach #: 7.0 Site #: 60
Field UTM (Z.E.N): 9.643681.6126456 Method: GPU Site Lg: 100 Method: GE Access: H
GIS UTM (Z.E.N): 10.643535.6126515 Ref. Name:
Date: 2001/07/10 Time: 14:45 Agency: C172 Crew: EL/JD Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %		Mtd	Avg
Channel Width (m):	MS	2.50	2.30	2.50	2.90	2.80	2.80					2.63	Method I:	6.0	6.0	C	6.00
Wetted Width (m):	MS	2.50	2.30	2.50	2.90	2.80	2.80					2.63	Method II:	7.0	5.0	C	
Pool Depth (m):	MS	0.30	0.40	0.40	0.40	0.30	0.20					0.33					

Wb Depth: .3 .3 .4 Avg: 0.33 Method: MS Stage: L ☒ M ☐ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	D	S	T	T	T	N
Loc: P/S/O:	☒	☒	☒	☒	☒	☒	☐

LWD: F DIST: E

LB SHP: S

Texture: F ☒ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: C

STG: MF

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☐

RB SHP: S

Texture: F ☐ G ☒ C ☐ B ☒ R ☐ A ☐

RIP: C

STG: MF

WATER

EMS: Req #: Cond.: 30 Method: S3
Temp: 7 Method: T4 Method: P2 Method: GE
pH: 7.4 Method: GE
Flood Signs: None

MORPHOLOGY

Bed Material: Dominant: C Subdom: G O1 B1 B2 B3 D1 D2 D3
D95: 72.0 D (cm): 8.00 Morph: CP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: CO
FSZ: ☐
Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Overwinter Habitat	Poor - some pools that may not freeze
Cover	Good - good functioning LWD and boulder cobble cover
Rearing Habitat	Moderate - cascade pool complex with good holding areas around cascades
Spawning Habitat	Poor - some clean gravel pockets, but mainly cobble substrates

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 05 F: 19 STD U			upstream photo of cascade over boulders
R: 05 F: 20 STD D			downstream photo of cascade over functioning LWD

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

7.0

60

COMMENTS	
Section	Comments
CHANNEL	DV captured in sample site
CHANNEL	Channel has been abandoned downstream by cutblock. Channel is completely exposed.

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000

Reach # 7.0
ILP Map #
ILP #

WATERBODY																
Gazetted Name:										Local: None						
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0																
WS Code: 480-452300-13942-32072-0000-0000-000-000-000-000-000																
Waterbody ID:				ILP Map #:				ILP #:		Reach #:		7 -				
Project ID: 5098				Lake/Stream: S				Lake From Date:								
Fish Permit #:		145086K		Date: 2001/07/10		To: 2001/07/10		Agency: C172		Crew: EL/JD		Resample: ☐				
SITE / METHOD																
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment						
60	093M.027	20060	9	643681	6126456	GPU EF 1	7	30	C							
A. GEAR SETTINGS																
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment									
60	EF	1	1	2001/07/10	14:46	2001/07/10	15:00									
C. ELECTROFISHER SPECIFICATIONS																
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model					
60	EF	1	1	O	112	100.0	1.0	700	60	6	SMITH ROOT	12B				
FISH SUMMARY																
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)		FishAct	Comment						
60	EF	1	1	DV	J	3	81	110	R							
INDIVIDUAL FISH DATA																
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment	
								Str/Smpl#	Age		Str/Smpl#					
60	EF	1	1	DV	81		U	U								
60	EF	1	1	DV	110		U	U								
60	EF	1	1	DV	94		U	U								



Site #60, upstream photo of cascade over boulders.
Roll #5, Frame #19, Date: 2001/07/10



Site #60, downstream photo of cascade over functioning LWD.
Roll #5, Frame #20, Date: 2001/07/10

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-430700-44400-00000-00000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

6.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-430700-44400-00000-00000-0000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 6.0		UTM(Zone/East/North): 10.642515.6128140				Sample Type: Random			
Length (km): .45		Coupling: Coupled		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 9.3		Confinement: Occasionally Conf		Order: 1		Open water: Absent			
US Elev (m): 1340		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 61		Field UTM 9.642705.6128006		Agency: C172		Crew: ELJD		Date: 2001/07/10	
Site Length (m): 100		GIS UTM 10.642757.6127975		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 0.82		0.600		1	
Stage: Low ☐				Wetted Width (m): 0.82		0.600		1	
Med ☒				Bankfull Depth (m): 0.23		0.2		0.3	
High ☐		Temp (C): 6		pH: 7.5		Conductivity: 30			
								Turbidity.: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Fines		D95 (cm): 17.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Cobble		D (cm): 1.00				Mid-channel ☐		Span ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Occasionally Confine				C1		C2		C3	
Morphology: RP Riffle Pool				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: D		S		N		S	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☐		☒	
		☐		☐		☒		☒	
Right Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Coniferous		Stage: Mature forest		Instream Veg: None ☐		Algae ☐		Moss ☒	
Left Bank: Rip.Veg:		Stage: Mature forest		Vascular ☐					
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
61	EF	1	100	139 sec	700	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-44400-00000-0000-000-000-000-000-000

Reach # 6.0 ILP Map # ILP # 5098 Site # 61

PROJECT																																																																													
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																			
Stream Name (gaz.): BABINE RIVER																																																																													
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000																																																																													
WATERSHED																																																																													
Gazetted Name:										Local Name: None																																																																			
Watershed Code: 480-430700-44400-00000-0000-000-000-000-000-000																																																																													
ILP Map#:		ILP #:		NID Map #: 093M.027		NID #: 20061		Reach #: 6.0		Site #: 61																																																																			
Field UTM (Z.E.N): 9.642705.6128006				Method: GPU		Site Lg: 100		Method: GE		Access: H																																																																			
GIS UTM (Z.E.N): 10.642757.6127975						Ref. Name:																																																																							
Date: 2001/07/10		Time: 16:10		Agency: C172		Crew: EL/JD		Fish Crd?: ☒		Incomplete: ☐																																																																			
CHANNEL																																																																													
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EMS:				Method: T4				Req #:				Method: S3																																																																	
Temp: 6				Method: P2				Cond.: 30				Method: GE																																																																	
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Confinement: OC						☐		☐		☐		☐		☐		☐		☐																																																											
FSZ: ☐						Bars: N ☒		SIDE ☐		DIAG ☐		MID ☐		SPAN ☐		BR ☐																																																													
HABITAT QUALITY																																																																													
Name										Comments																																																																			
Cover										Moderate - SWD and LWD jams																																																																			
Rearing Habitat										Moderate - riffle pool complex with some standing water																																																																			
OverWinter Habitat										None - no pools																																																																			
Spawning Habitat										Poor - mostly fines																																																																			
PHOTOS																																																																													
Photo		Foc Lg		Dir		Comments																																																																							
R:	05	F:	21	STD		U		upstream photo of small channel																																																																					
R:	05	F:	22	STD		D		downstream photo of riffle/pool section																																																																					

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-44400-00000-00000-00000-00000-00000-000

Reach #	ILP Map #	ILP #	Site
6.0			61

COMMENTS	
Section	Comments
CHANNEL	No Fish Captured above gradient of 23% in downstream Reach

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-430700-44400-00000-00000-0000-000-000-000-000-000

Reach # 6.0
ILP Map #
ILP #

WATERBODY													
Gazetted Name: Local: None													
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0													
WS Code: 480-430700-44400-00000-0000-000-000-000-000-000													
Waterbody ID: ILP Map #: ILP #: Reach #: 6 -													
Project ID: 5098 Lake/Stream: S Lake From Date:													
Fish Permit #: 145086K Date: 2001/07/10 To: 2001/07/10 Agency: C172 Crew: EL/JD Resample: ☐													
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment			
61	093M.027	20061	9	642705	6128006	GPU EF 1	6	30	C				
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
61	EF	1	1	2001/07/10	16:10	2001/07/10	16:25						
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
61	EF	1	1	O	139	100.0	1.0	700	60	6	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
61	EF	1	1	NFC		0							



Site #61, upstream photo of small channel.
Roll #5, Frame #21, Date: 2001/07/10



Site #61, downstream photo of riffle/pool section.
Roll #5, Frame #22, Date: 2001/07/10

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000-000

Reach # ILP Map # ILP #

12.0

STREAM REFERENCING									
Gazetted Name: HEAL CREEK					Local Name:				
Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 12.0		UTM(Zone/East/North): 10.640303.6129500				Sample Type: Biased			
Length (km): .33		Coupling: Partially Couple		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 7.0		Confinement: Occasionally Conf		Order: 1		Open water: Present			
US Elev (m): 1419		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 62		Field UTM 9.640560.6129444		Agency: C172		Crew: EL/JD		Date: 2001/07/11	
Site Length (m): 200		GIS UTM 10.640417.6129458		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max	
Dewatered: ☐ Tribs.: ☐				Avg		Min		Max	
Stage: Low ☐		Channel Width (m): 1.00		0.800		1.200		6	
Med ☒		Wetted Width (m): 1.00		0.800		1.200		6	
High ☐		Bankfull Depth (m): 0.23		0.2		0.3		3	
Temp (C): 8		pH: 7.6		Conductivity: 30		Turbidity: Turbid ☐		Low ☐	
						Moderate ☐		Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 32.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Gravels		D (cm): 3.00				Mid-channel ☐		Span ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE		O1		B1	
Coupling: Partially Coupled				INDICATORS		B2		B3	
Confinement: Frequently Confined						D1		D2	
Morphology: CP Cascade Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Abundant		Type: SWD		LWD		B		U	
LWD: Few		Amount: D		S		S		T	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☒		☒	
		☒		☒		☒		☒	
Right Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☒		Boulder ☐	
Left Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☒		Boulder ☐	
Right Bank: Rip.Veg: Coniferous		Stage: Mature forest		Instream Veg: None ☐		Algae ☐		Moss ☒	
Left Bank: Rip.Veg:		Stage: Mature forest		Vascular ☐					
FEATURES									
NID Map	NID	Type	Hgt	Method	Lg	Method	Photo		AirPhoto
093M.027	88016	C	4.0	GE	3	GE	R: 06	F: 01	UTM (Z/E/N)
Comments: cascade barrier								10.640709.6129	
NID Map	NID	Type	Hgt	Method	Lg	Method	Photo		AirPhoto
093M.027	88015	C	1.7	GE	2	GE	R: 05	F: 25	UTM (Z/E/N)
Comments: cascade over bedrock downstream of reach 12								10.640541.6129	
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
62	EF	1	200	246 sec	900	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000

Reach # 12.0 ILP Map # ILP # 5098 Site # 62

PROJECT																																																																														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																				
Stream Name (gaz.): BABINE RIVER																																																																														
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000																																																																														
WATERSHED																																																																														
Gazetted Name: HEAL CREEK										Local Name: None																																																																				
Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000																																																																														
ILP Map#:		ILP #:		NID Map #: 093M.027		NID #: 20062		Reach #: 12.0		Site #: 62																																																																				
Field UTM (Z.E.N): 9.640560.6129444				Method: GPU		Site Lg: 200		Method: GE		Access: H																																																																				
GIS UTM (Z.E.N): 10.640417.6129458						Ref. Name:																																																																								
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FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000-000

Reach # 12.0 ILP Map # ILP # Site 62

HABITAT QUALITY				
Name		Comments		
OverWinter Habitat		Poor - poor in reach but lake in Reach 13		
Cover		Moderate - SWD and LWD jams		
Rearing Habitat		Moderate - cascade / pool complex, good pools and glides		
Spawning Habitat		Poor - some gravel but covered in moss		

PHOTOS				
Photo		Foc Lg	Dir	Comments
R:	05 F: 23	STD	U	upstream photo of cascade section (typical)
R:	05 F: 24	STD	D	downstream photo of LWD jam
R:	05 F: 25	STD	X	photo of cascade barrier 1.7m high x 2m long (cascade over bedrock downstream of reach 12)
R:	06 F: 01	STD	X	photo of cascade barrier in Reach 11 - (4m high x 3m long)

COMMENTS	
Section	Comments
CHANNEL	Barrier located at the downstream end of Reach 12 (cascade 1.7 x 2m). Cascade barrier also located in Reach 11. No Fish Captured during shocking.

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-430700-00000-00000-0000-000-000-000-000-000-000

Reach #

ILP Map #

ILP #

12.0

WATERBODY

Gazetted Name: HEAL CREEK

Local: None

Project Code: 480-000000-00000-00000-0000-000-000-000-000-000-0

WS Code: 480-430700-00000-00000-0000-000-000-000-000-000-000

Waterbody ID:

ILP Map #:

ILP #:

Reach #: 12 -

Project ID: 5098

Lake/Stream: S

Lake From Date:

Fish Permit #: 145086K

Date: 2001/07/11

To: 2001/07/11

Agency: C172

Crew: EL/JD

Resample: ☐

SITE / METHOD

Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment
62	093M.027	20062	9	640560	6129444	GPU EF 1	8	30	C	

A. GEAR SETTINGS

Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment
62	EF 1	1	2001/07/11	08:00	2001/07/11	08:20	

C. ELECTROFISHER SPECIFICATIONS

Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model
62	EF 1	1	O	246	200.0	1.0	900	60	6	SMITH ROOT	12B

FISH SUMMARY

Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment
62	EF 1	1	NFC			0			



Site #62, upstream photo of cascade section (typical).
Roll #5, Frame #23, Date: 2001/07/11



Site #62, downstream photo of LWD jam.
Roll #5, Frame #24, Date: 2001/07/11



Site #62, photo of cascade barrier 1.7m high x 2m long (cascade over bedrock downstream of reach 12).
Roll #5, Frame #25, Date: 2001/07/11



Site #62, photo of cascade barrier in Reach 11 - (4m high x 3m long).
Roll #6, Frame #01, Date: 2001/07/11

FDIS Reach Card

West Babine Study Area

Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000

Reach # 11.0
ILP Map #
ILP #

PROJECT												
Project Name: Babine River Fish Inventory - 2001					Project Code: 5098							
Stream Name (gaz.): BABINE RIVER												
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000												
WATERSHED												
Reach Watershed Code: 480-430700-00000-00000-0000-000-000-000-000-000												
ILP Map #:	ILP #:	Reach #:	11.0	NID Map #:	093M.027	NID #:	10066					
Air Photos	Names			UTM(Zone/East/North/Method)								
LINE: SRS30C6298	Gaz.: HEAL CREEK			10.640610.6129490 GIS								
#: 323	Local:			Sample Type: B Wetland: ☐								
SURVEY INFO												
Date: 2001/02/01			Agency: C172			Crew: SH						
ATTRIBUTES												
Length (km): .54	Gradient: 15.56	Setting: VW	DISTURBANCE O1 B1 B2 B3 D1 D2 D3									
DS Elev.: 1312	Order: 1	Open water: A	INDICATORS ☐ ☐ ☐ ☐ ☐ ☐ ☐									
US Elev: 1396	Magnitude: 1	Confinement: CO	C1	C2	C3	C4	C5	S1	S2	S3	S4	S5
	BGC Zone: SBS	Coupling: CO	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Valley Flat: N	C/D:	Islands: N										
Active Floodplain Visible: ☐	Est. Width:	Bars: ☒ N ☐ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR										
Channel Pattern: SI		Mass Movement: H	Exposed/Eroded: NS									
		Riparian Veg.: M	Landuse: NS									

MAPS		
Map Type	Map #	Year
TRIM	093M.027	

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-430700-00000-00000-0000-0000-000-000-000-000-000

Reach # 11.0
ILP Map #
ILP #

WATERBODY															
Gazetted Name: HEAL CREEK										Local: None					
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0															
WS Code: 480-430700-00000-00000-0000-000-000-000-000-000															
Waterbody ID:				ILP Map #:				ILP #:		Reach #: 11 -					
Project ID: 5098				Lake/Stream: S				Lake From Date:							
Fish Permit #: 145086K				Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: EL/JD		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
63	093M.027	20063	9	641094	6129477	GPU EF 1	8	30	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
63	EF	1	1	2001/07/11	08:21	2001/07/11	09:00								
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
63	EF	1	1	O	620	600.0	1.0	900	60	6	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
63	EF	1	1	DV	J	5	69 103	R							
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment
								Str/Smpl#/Age			Str/Smpl#				
63	EF	1	1	DV	88		U	U							
63	EF	1	1	DV	103		U	U							
63	EF	1	1	DV	69		U	U							
63	EF	1	1	DV	74		U	U							
63	EF	1	1	DV	76		U	U							

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10159

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10159		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.640795.6129098				Sample Type: Random			
Length (km): .45		Coupling: Coupled		Magnitude: 2		BGC Zone: SBS			
Gradient (%): 22.9		Confinement: Confined		Order: 2		Open water: Absent			
US Elev (m): 1407		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 64		Field UTM 9.641092.6129483		Agency: C172		Crew: EL/JD		Date: 2001/07/11	
Site Length (m): 100		GIS UTM 10.641011.6129303		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max	
Dewatered: ☐ Tribes.: ☐									
Stage: Low ☐		Channel Width (m):		0.90		0.600		1.200	
Med ☒		Wetted Width (m):		0.55		0.400		0.7	
High ☐		Bankfull Depth (m):		0.33		0.3		0.4	
Temp (C): 5		pH: 7.8		Conductivity: 30		Turbidity: Turbid ☐		Low ☐	
						Moderate ☐		Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 40.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Boulders		D (cm): 5.00				Mid-channel ☐		Span ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE		O1		B1	
Coupling: Partially Coupled				INDICATORS		B2		B3	
Confinement: Frequently Confined						D1		D2	
Morphology: CP Cascade Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Abundant		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		S		D		T	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☒		☒	
		☒		☒		☒		☒	
Right Bank: Shape: Overhang		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: Overhang		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Coniferous		Stage: Mature forest		Instream Veg: None ☐		Algae ☐		Moss ☒	
Left Bank: Rip.Veg:		Stage: Mature forest		Vascular ☐					
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
64	EF	1	100	112 sec	900	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10159 Site # 64

PROJECT																																																																														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																				
Stream Name (gaz.): BABINE RIVER																																																																														
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
WATERSHED																																																																														
Gazetted Name:										Local Name: None																																																																				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
ILP Map#: 093M.027			ILP #: 10159			NID Map #: 093M.027			NID #: 20064			Reach #: 1.0		Site #: 64																																																																
Field UTM (Z.E.N): 9.641092.6129483					Method: GPU					Site Lg: 100			Method: GE		Access: H																																																															
GIS UTM (Z.E.N): 10.641011.6129303					Ref. Name:																																																																									
Date: 2001/07/11			Time: 09:00			Agency: C172			Crew: EL/JD			Fish Crd?: ☒		Incomplete: ☐																																																																
CHANNEL																																																																														
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Mtd</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Channel Width (m):</td> <td>MS</td> <td>1.10</td> <td>0.70</td> <td>0.80</td> <td>1.00</td> <td>0.60</td> <td>1.20</td> <td></td> <td></td> <td></td> <td></td> <td>0.90</td> </tr> <tr> <td>Wetted Width (m):</td> <td>MS</td> <td>0.70</td> <td>0.60</td> <td>0.50</td> <td>0.40</td> <td>0.40</td> <td>0.70</td> <td></td> <td></td> <td></td> <td></td> <td>0.55</td> </tr> <tr> <td>Pool Depth (m):</td> <td>MS</td> <td>0.10</td> <td>0.10</td> <td>0.05</td> <td>0.06</td> <td>0.10</td> <td>0.07</td> <td></td> <td></td> <td></td> <td></td> <td>0.08</td> </tr> </tbody> </table>													Mtd	width	width	width	width	width	width	width	width	width	width	Avg	Channel Width (m):	MS	1.10	0.70	0.80	1.00	0.60	1.20					0.90	Wetted Width (m):	MS	0.70	0.60	0.50	0.40	0.40	0.70					0.55	Pool Depth (m):	MS	0.10	0.10	0.05	0.06	0.10	0.07					0.08	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Gradient %</th> <th>Mtd</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Method I:</td> <td>27.0</td> <td>25.0</td> <td>C</td> </tr> <tr> <td>Method II:</td> <td>31.0</td> <td>20.0</td> <td>C</td> </tr> </tbody> </table>				Gradient %	Mtd	Avg	Method I:	27.0	25.0	C	Method II:	31.0	20.0	C
	Mtd	width	width	width	width	width	width	width	width	width	width	Avg																																																																		
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COVER <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Type:</th> <th>SWD</th> <th>LWD</th> <th>B</th> <th>U</th> <th>DP</th> <th>OV</th> <th>IV</th> </tr> </thead> <tbody> <tr> <td>Amount:</td> <td>T</td> <td>S</td> <td>D</td> <td>T</td> <td>N</td> <td>T</td> <td>T</td> </tr> <tr> <td>Loc: P/S/O:</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☐</td> <td>☒</td> <td>☒</td> </tr> </tbody> </table> CROWN CLOSURE 2 21-40% INSTREAM VEG: N ☐ A ☐ M ☒ V ☐															Type:	SWD	LWD	B	U	DP	OV	IV	Amount:	T	S	D	T	N	T	T	Loc: P/S/O:	☒	☒	☒	☒	☐	☒	☒																																								
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Loc: P/S/O:	☒	☒	☒	☒	☐	☒	☒																																																																							
LWD: F LB SHP: O Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: C STG: MF DIST: E RB SHP: O Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: C STG: MF																																																																														
WATER																																																																														
EMS:					Method: T4					Req #:																																																																				
Temp: 5					Method: P2					Cond.: 30																																																																				
pH: 7.8					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒																																																																				
Flood Signs: None										Method: S3																																																																				
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Bed Material: Dominant: C					Subdom: B					O1 B1 B2 B3 D1 D2 D3																																																																				
D95: 40.0 D (cm): 5.00					Morph: CP					<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																			
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Pattern: SI					DISTURBANCE INDICATORS					C1 C2 C3 C4 C5 S1 S2 S3 S4 S5																																																																				
Islands: N										<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																			
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HABITAT QUALITY																																																																														
Name					Comments																																																																									
Cover					Poor - SWD jams and boulder cover																																																																									
Rearing Habitat					Poor - small pools with little holding areas																																																																									
OverWinter Habitat					None - no deep pools in surveyed section																																																																									
Spawning Habitat					Poor - moss covered gravel with poor water depth																																																																									
PHOTOS																																																																														
Photo			Foc Lg		Dir		Comments																																																																							
R:	06	F:	02	STD		U		photo looking upstream from confluence, 31% gradient cascade																																																																						
R:	06	F:	03	STD		D		downstream photo of flooded section of stream																																																																						

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0	093M.027	10159	64

COMMENTS	
Section	Comments
CHANNEL	S6 Stream
CHANNEL	Gradient of 31% at confluence with Heal Creek
CHANNEL	No Fish Captured

West Babine Study Area

Reach #	ILP Map #	ILP #
1.0	093M.027	10159

Triton Environmental Consultants Ltd.



Site #64, photo looking upstream from confluence, 31% gradient cascade.
Roll #6, Frame #02, Date: 2001/07/11



Site #64, downstream photo of flooded section of stream.
Roll #6, Frame #03, Date: 2001/07/11

West Babine Study Area

Reach #	ILP Map #	ILP #
1.0	093M.027	10138

Triton Environmental Consultants Ltd.

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10138 Site 65

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000
ILP Map#: 093M.027 ILP #: 10138 NID Map #: 093M.027 NID #: 20065 Reach #: 1.0 Site #: 65
Field UTM (Z.E.N): 9.649314.6126312 Method: GPU Site Lg: 200 Method: GE Access: H
GIS UTM (Z.E.N): 10.648515.6126128 Ref. Name:
Date: 2001/07/11 Time: 09:55 Agency: C172 Crew: EL/JD Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS	2.10	2.40	1.90	2.30	2.40	2.10					2.20	Method I:	1.0	1.0	1.00
Wetted Width (m):	MS	1.90	2.10	1.90	2.20	2.40	2.10					2.10	Method II:	0.0	2.0	C
Pool Depth (m):	MS	0.30	0.20	0.30	0.20	0.20	0.40					0.27				

Wb Depth: .2 .3 .2 Avg: 0.23 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	D	S	N	T	T	S	T
Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☒

LWD: F DIST: C

LB SHP: S

Texture: F ☒ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

CROWN CLOSURE

2 21-40%

INSTREAM VEG: N ☐ A ☒ M ☒ V ☐

RB SHP: S

Texture: F ☒ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

WATER

EMS: Temp: 8 Method: T4 Req #: Cond.: 50 Method: S3
pH: 7.6 Method: P2 Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 17.0 D (cm): 7.00 Morph: RP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

FEATURES

NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093M.027	88026	CV	.9	GE		HC	R: 06 F: 04 L:	#:	10.648672.6126086	GIS

Comments: twin culverts

HABITAT QUALITY

Name	Comments
OverWinter Habitat	Poor - no deep pools except for BD complexes downstream
Cover	Moderate - some sections of stream had abundant SWD complexes submerged
Rearing Habitat	Moderate - riffle pool complex, some riffles and lots of holding areas

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10138 Site # 65

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000
Project Code: 5098

WATERSHED

Gazetted Name: Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000
ILP Map#: 093M.027 ILP #: 10138 NID Map #: 093M.027 NID #: 20065 Reach #: 1.0 Site #: 65
Field UTM (Z.E.N): 9.649314.6126312 Method: GPU Site Lg: 200 Method: GE Access: H
GIS UTM (Z.E.N): 10.648515.6126128 Ref. Name:
Date: 2001/07/11 Time: 09:55 Agency: C172 Crew: EL/JD Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS	2.10	2.40	1.90	2.30	2.40	2.10					2.20	Method I:	1.0	1.0	1.00
Wetted Width (m):	MS	1.90	2.10	1.90	2.20	2.40	2.10					2.10	Method II:	0.0	2.0	C
Pool Depth (m):	MS	0.30	0.20	0.30	0.20	0.20	0.40					0.27				

Wb Depth: .2 .3 .2 Avg: 0.23 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐ Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	D	S	N	T	T	S	T
Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☒

LWD: F DIST: C

LB SHP: S

Texture: F ☒ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

CROWN CLOSURE

2 21-40%

INSTREAM VEG: N ☐ A ☒ M ☒ V ☐

RB SHP: S

Texture: F ☒ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

WATER

EMS: Temp: 8 Method: T4 Req #: Cond.: 50 Method: S3
pH: 7.6 Method: P2 Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 17.0 D (cm): 7.00 Morph: RP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

FEATURES

NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093M.027	88026	CV	.9	GE		HC	R: 06 F: 04 L: #:		10.648672.6126086	GIS

Comments: twin culverts

HABITAT QUALITY

Name	Comments
OverWinter Habitat	Poor - no deep pools except for BD complexes downstream
Cover	Moderate - some sections of stream had abundant SWD complexes submerged
Rearing Habitat	Moderate - riffle pool complex, some riffles and lots of holding areas

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0	093M.027	10138	65

HABITAT QUALITY					
Name			Comments		
Spawning Habitat			Poor - good gravel but shallow water		
PHOTOS					
Photo		Foc Lg	Dir	Comments	
R: 06	F: 04	STD	U	twin culverts, 450mm and 900mm, 40cm and 35cm drop, 60cm pool	
R: 06	F: 05	STD	U	upstream photo of glide section with shallow water (typical)	
R: 06	F: 06	STD	D	downstream photo of stream with overhanging vegetation (typical)	
COMMENTS					
Section			Comments		
CHANNEL			Culverts may be a partial barrier, but fish migration upstream is impacted by beaver dam complexes downstream. Shocking was also done downstream of culvert and upstream.		

FDIS Fish Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000-000 Reach # 1.0 ILP Map # 093M.027 ILP # 10138

WATERBODY													
Gazetted Name:						Local: None							
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0													
WS Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000													
Waterbody ID:						ILP Map #: 093M.027			ILP #: 10138		Reach #: 1 -		
Project ID: 5098						Lake/Stream: S			Lake From Date:				
Fish Permit #: 145086K			Date: 2001/07/11			To: 2001/07/11			Agency: C172		Crew: EL/JD		Resample: ☐
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO		Temp	Cond	Turbid	Comment		
65	093M.027	20065	9	649314	6126312	GPU	EF 1	8	50	C			
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
65	EF	1	1	2001/07/11	09:55	2001/07/11	10:35						
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
65	EF	1	1	O	230	200.0	1.0	600	60	6	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
65	EF	1	1	NFC		0							



Site #65, twin culverts, 450mm and 900mm, 40cm and 35cm drop, 60cm pool.
Roll #6, Frame #04, Date: 2001/07/11



Site #65, upstream photo of glide section with shallow water (typical).
Roll #6, Frame #05, Date: 2001/07/11



Site #65, downstream photo of stream with overhanging vegetation (typical).
Roll #6, Frame #06, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-464400-00000-00000-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

6.0

STREAM REFERENCING																																	
Gazetted Name:					Local Name:																												
Watershed Code: 480-464400-00000-00000-0000-0000-000-000-000-000					ILP Map #:		ILP #:																										
REACH																																	
Reach #: 6.0		UTM(Zone/East/North): 10.648759.6122573				Sample Type: Biased																											
Length (km): 1.15		Coupling: Partially Couple		Magnitude: 2		BGC Zone: SBS																											
Gradient (%): 4.3		Confinement: Occasionally Conf		Order: 2		Open water: Absent																											
US Elev (m): 915		Islands: NONE		Riparian Vegetation: Mixed C/D																													
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified																																	
SITE																																	
Site #: 66		Field UTM 9.649600.6122720		Agency: C172		Crew: EL/JD		Date: 2001/07/11																									
Site Length (m): 100		GIS UTM 10.649711.6122699		Agency Name: Triton Environmental Consultants (Terrace)																													
CHANNEL																																	
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max																									
Dewatered: ☐		Tribes.: ☐		Channel Width (m):		1.30		1.200																									
Stage: Low ☐				Wetted Width (m):		1.30		1.200																									
Med ☒				Bankfull Depth (m):		0.70		0.7																									
High ☐		Temp (C): 9		pH: 7.8		Conductivity: 50		Turbidity: Turbid ☐ Low ☒																									
								Moderate ☐ Clear ☐																									
MORPHOLOGY																																	
Bed Material: Dominant: Fines		D95 (cm): 1.00		Bars: Non ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐		Braid ☐																											
Subdominant: Not Applicable		D (cm): 0.01																															
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE INDICATORS																													
Coupling: Decoupled				O1 B1 B2 B3 D1 D2 D3																													
Confinement: Not Applicable				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5																													
Morphology: LC Large Channel																																	
COVER																																	
Total Cover: Abundant		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Type:</th> <th>SWD</th> <th>LWD</th> <th>B</th> <th>U</th> <th>DP</th> <th>OV</th> <th>IV</th> </tr> <tr> <th>Amount:</th> <td>T</td> <td>T</td> <td>N</td> <td>T</td> <td>S</td> <td>T</td> <td>D</td> </tr> <tr> <th>Location: P/S/O:</th> <td>☒</td> <td>☒</td> <td>☐</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> </tr> </table>								Type:	SWD	LWD	B	U	DP	OV	IV	Amount:	T	T	N	T	S	T	D	Location: P/S/O:	☒	☒	☐	☒	☒	☒	☒
Type:	SWD	LWD	B	U	DP	OV	IV																										
Amount:	T	T	N	T	S	T	D																										
Location: P/S/O:	☒	☒	☐	☒	☒	☒	☒																										
LWD: None		FSZ: ☐																															
LWD Dist: Not Applicable																																	
Right Bank: Shape: Undercut		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		Crown Closure																													
Left Bank: Shape: Undercut		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		1-20%																													
Right Bank: Rip.Veg: Grass		Stage: Not Applicable																															
Left Bank: Rip.Veg:		Stage: Not Applicable		Instream Veg: None ☐ Algae ☒ Moss ☐ Vascular ☒																													
FISH																																	
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)																								
66	EF	1	100	132 sec	600	NFC	0																										

West Babine Study Area

Reach #	ILP Map #	ILP #	Site
6.0			66

Triton Environmental Consultants Ltd.

FDIS Site Card

West Babine Study Area

Watershed Code: 480-464400-00000-00000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
6.0			66

COMMENTS	
Section	Comments
CHANNEL	Channel had no pools, but the depth of the water was generally 60cm. No Fish Captured during shocking.

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-464400-00000-00000-0000-000-000-000-000-000-000

Reach #

ILP Map #

ILP #

6.0

WATERBODY													
Gazetted Name:						Local: None							
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0													
WS Code: 480-464400-00000-00000-0000-000-000-000-000-000													
Waterbody ID:			ILP Map #:			ILP #:			Reach #: 6 -				
Project ID: 5098						Lake/Stream: S			Lake From Date:				
Fish Permit #:		145086K		Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: EL/JD		Resample: ☐	
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO		Temp	Cond	Turbid	Comment		
66	093M.027	20066	9	649600	6122720	GPU	EF 1	9	50	C			
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
66	EF 1	1	2001/07/11	11:15	2001/07/11	11:35							
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
66	EF	1	1	O	132	100.0	1.0	600	60	6	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
66	EF	1	1	NFC		0							



Site #66, upstream photo of grassy riparian area glide (typical).
Roll #6, Frame #07, Date: 2001/07/11



Site #66, downstream photo of grassy riparian area- glide (typical).
Roll #6, Frame #08, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-456200-00000-00000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

1.0

STREAM REFERENCING																																																	
Gazetted Name:					Local Name:																																												
Watershed Code: 480-456200-00000-00000-0000-000-000-000-000-000					ILP Map #:		ILP #:																																										
REACH																																																	
Reach #: 1.0		UTM(Zone/East/North): 10.652156.6125187				Sample Type: Random																																											
Length (km): .23		Coupling: Coupled		Magnitude: 1		BGC Zone: SBS																																											
Gradient (%): 23.0		Confinement: Confined		Order: 1		Open water: Absent																																											
US Elev (m): 764		Islands: NONE		Riparian Vegetation: Mixed C/D																																													
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified																																																	
SITE																																																	
Site #: 80		Field UTM 9.652300.6125300		Agency: C172		Crew: JD/DT		Date: 2001/08/13																																									
Site Length (m): 400		GIS UTM 10.652282.6125292		Agency Name: Triton Environmental Consultants (Terrace)																																													
CHANNEL																																																	
No Vis.Ch.: ☒		Intermittent: ☐		<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Avg</th> <th>Min</th> <th>Max</th> <th>#</th> </tr> </thead> <tbody> <tr> <td>Channel Width (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Wetted Width (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Bankfull Depth (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>				Avg	Min	Max	#	Channel Width (m):	0.00	0	0	0	Wetted Width (m):	0.00	0	0	0	Bankfull Depth (m):	0.00	0	0	0	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Avg</th> <th>Min</th> <th>Max</th> <th>#</th> </tr> </thead> <tbody> <tr> <td>Gradient %:</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Pool Depth (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>				Avg	Min	Max	#	Gradient %:	0.00	0	0	0	Pool Depth (m):	0.00	0	0	0					
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Dewatered: ☐		Tribes: ☐																																															
Stage: Low ☐		Temp (C):		pH:		Conductivity:		Turbidity: Turbid ☐ Low ☐																																									
Med ☐								Moderate ☐ Clear ☐																																									
High ☐																																																	
MORPHOLOGY																																																	
Bed Material: Dominant:		D95 (cm):		Bars: Non ☐ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐																																													
Subdominant:		D (cm):		Braid ☐																																													
Channel Pattern:		Islands:		<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th colspan="10">DISTURBANCE INDICATORS</th> </tr> <tr> <th>O1</th> <th>B1</th> <th>B2</th> <th>B3</th> <th>D1</th> <th>D2</th> <th>D3</th> <th>C1</th> <th>C2</th> <th>C3</th> </tr> </thead> <tbody> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>						DISTURBANCE INDICATORS										O1	B1	B2	B3	D1	D2	D3	C1	C2	C3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
DISTURBANCE INDICATORS																																																	
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☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																								
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																								
Coupling:																																																	
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Amount:																																																	
Location: P/S/O:	☐	☐	☐	☐	☐	☐	☐																																										
LWD:																																																	
LWD Dist:		FSZ: ☐																																															
Right Bank: Shape:		Texture: Fines ☐ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐ Crown Closure																																															
Left Bank: Shape:		Texture: Fines ☐ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐																																															
Right Bank: Rip.Veg:		Stage:																																															
Left Bank: Rip.Veg:		Stage:																																															
Instream Veg: None ☐ Algae ☐ Moss ☐ Vascular ☐																																																	

FDIS Site Card

West Babine Study Area

Watershed Code: 480-456200-00000-00000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # ILP # Site 80

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000
Project Code: 5098

WATERSHED

Gazetted Name: Local Name: None
Watershed Code: 480-456200-00000-00000-0000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 11080 Reach #: 1.0 Site #: 80
Field UTM (Z.E.N): 9.652300.6125300 Method: GPU Site Lg: 400 Method: GE Access: B
GIS UTM (Z.E.N): 10.652282.6125292 Ref. Name:
Date: 2001/08/13 Time: 10:30 Agency: C172 Crew: JD/DT Fish Crd?: ☐ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS											0.00	Method I:		C	0.00
Wetted Width (m):	MS											0.00	Method II:		C	
Pool Depth (m):	MS											0.00				

Wb Depth: Avg: 0.00 Method: MS Stage: L ☐ M ☐ H ☐ No Vis.Ch.: ☒ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total:

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:							
Loc: P/S/O:	☐	☐	☐	☐	☐	☐	☐

CROWN CLOSURE

INSTREAM VEG: N ☐ A ☐ M ☐ V ☐

LWD: DIST:

LB SHP:

Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐

RB SHP:

Texture: F ☐ G ☐ C ☐ B ☐ R ☐ A ☐

RIP:

RIP:

STG:

STG:

WATER

EMS: Req #: Method: T4 Cond.: Method: S3
Temp: Method: P2 Turb.: T ☐ M ☐ L ☐ C ☐ Method: GE
pH: Method: GE
Flood Signs:

MORPHOLOGY

Bed Material: Dominant: Subdom: O1 B1 B2 B3 D1 D2 D3
D95: D (cm): Morph: DISTURBANCE INDICATORS
Pattern: C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: Coupling: Confinement: FSZ: ☐
Bars: N ☐ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name Comments
Other No Visible Channel, no channel found 200m on either side of mapped drainage. Dry depression.

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 7 F: 1	STD	U	upstream photo of dry gully
R: 7 F: 2	STD	NS	photo of shoreline

COMMENTS

Section Comments

FDIS Site Card

West Babine Study Area

Watershed Code: 480-456200-00000-00000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

1.0

80

COMMENTS

Section	Comments
CHANNEL	No Visible Channel



Site #80, upstream photo of dry gully.
Roll #7, Frame #1, Date: 2001/08/13



Site #80, photo of shoreline.
Roll #7, Frame #2, Date: 2001/08/13

West Babine Study Area

1.0 093M.027 10142

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10142 Site # 81

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000
Project Code: 5098

WATERSHED

Gazetted Name: Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000
ILP Map#: 093M.027 ILP #: 10142 NID Map #: 093M.027 NID #: 11081 Reach #: 1.0 Site #: 81
Field UTM (Z.E.N): .. Method: Site Lg: 100 Method: GE Access: B
GIS UTM (Z.E.N): 10.651452.6127446 Ref. Name:
Date: 2001/08/13 Time: 11:30 Agency: C172 Crew: JD/DT Fish Crd?: ☐ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	0.50	0.60	0.40	0.60	0.40	0.50					0.50
Wetted Width (m):	MS											0.00
Pool Depth (m):	MS											0.00

	Gadient %		Mtd	Avg
Method I:	4.0	8.0	C	6.00
Method II:	6.0	6.0	C	

Wb Depth: .1 .2 .1 Avg: 0.13 Method: GE Stage: L ☒ M ☐ H ☐

No Vis.Ch.: ☐ Intermittent: ☒
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	T	N	N	N	D	S
Loc: P/S/O:	☒	☒	☐	☐	☐	☒	☒

CROWN CLOSURE

2 21-40%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☒

LWD: N

DIST: NA

LB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

RB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

WATER

EMS: Temp: Method: T4 Req #: Cond.: Method: S3
pH: Method: P2 Turb.: T ☐ M ☐ L ☐ C ☐ Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: F Subdom: NA
D95: 0.10 D (cm): 0.10 Morph: CP

Pattern: IR
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐

DISTURBANCE INDICATORS

O1 B1 B2 B3 D1 D2 D3

C1 C2 C3 C4 C5 S1 S2 S3 S4 S5

Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	None
Rearing Habitat	None - channel is discontinuous, with no residual pools, ephemeral
Spawning Habitat	None - 100% fines, ephemeral stream, vegetated channel

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 7 F: 3	STD	U	upstream photo of dry vegetated channel
R: 7 F: 4	STD	D	downstream photo of dry vegetated channel

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093M.027	10142	81

COMMENTS	
Section	Comments
CHANNEL	Discontinuous channel, vegetated
CHANNEL	S6 Stream



Site #81, upstream photo of dry vegetated channel.
Roll #7, Frame #3, Date: 2001/08/13



Site #81, downstream photo of dry vegetated channel.
Roll #7, Frame #4, Date: 2001/08/13

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-444000-00000-00000-0000-000-000-000-000-000-000

Reach # ILP Map # ILP #

1.0

STREAM REFERENCING											
Gazetted Name:						Local Name:					
Watershed Code: 480-444000-00000-00000-0000-000-000-000-000-000-000						ILP Map #:			ILP #:		
REACH											
Reach #: 1.0		UTM(Zone/East/North): 10.649950.6127923				Sample Type: Biased					
Length (km): 2.34		Coupling: Decoupled		Magnitude: 3		BGC Zone: SBS					
Gradient (%): 4.0		Confinement: Occasionally Conf		Order: 2		Open water: Absent					
US Elev (m): 803		Islands: NONE		Riparian Vegetation: Mixed C/D							
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified											
SITE											
Site #: 82		Field UTM ..		Agency: C172		Crew: DT/JD		Date: 2001/08/13			
Site Length (m): 200		GIS UTM 10.651367.6127844		Agency Name: Triton Environmental Consultants (Terrace)							
CHANNEL											
No Vis.Ch.: ☐ Intermittent: ☒				Avg		Min		Max		#	
Dewatered: ☐ Tribs.: ☐				Channel Width (m): 1.18		1.06		1.3		6	
Stage: Low ☒				Wetted Width (m): 0.00		0		0		0	
Med ☐				Bankfull Depth (m): 0.27		0.2		0.3		3	
High ☐		Temp (C):		pH:		Conductivity:					
								Turbidity.: Turbid ☐ Low ☐			
								Moderate ☐ Clear ☐			
MORPHOLOGY											
Bed Material: Dominant: Gravels		D95 (cm): 18.00		Bars: Non ☒		Side ☐		Diagonal ☐		Mid-channel ☐ Span ☐	
Subdominant: Fines		D (cm): 2.00								Braid ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS		O1		B1		B2 B3 D1 D2 D3	
Coupling: Decoupled						☐		☐		☐	
Confinement: Unconfined						C1 C2 C3 C4 C5 S1 S2 S3 S4 S5					
Morphology: RP Riffle Pool						☐		☐		☐	
COVER											
Total Cover: Abundant		Type: SWD		LWD		B		U		DP OV IV	
LWD: None		Amount: T		T		N		T		N D T	
LWD Dist: Not Applicable		Location: P/S/O:		☒		☒		☐		☒	
Right Bank: Shape: Overhang		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐		Rock ☐ Manmade ☐	
Left Bank: Shape: Overhang		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐		Rock ☐ Manmade ☐	
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest								Crown Closure 21-40%	
Left Bank: Rip.Veg:		Stage: Mature forest								Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☒	

FDIS Site Card

West Babine Study Area

Watershed Code: 480-444000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # ILP # 5098 Site # 82

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

Project Code: 5098

WATERSHED

Gazetted Name: Watershed Code: 480-444000-00000-00000-0000-000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 11082 Reach #: 1.0 Site #: 82
Field UTM (Z.E.N): ... Method: Site Lg: 200 Method: GE Access: B
GIS UTM (Z.E.N): 10.651367.6127844 Ref. Name:
Date: 2001/08/13 Time: 12:30 Agency: C172 Crew: DT/JD Fish Crd?: ☐ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	1.20	1.11	1.15	1.30	1.26	1.06					1.18
Wetted Width (m):	MS											0.00
Pool Depth (m):	MS											0.00

	Gadient %	Mtd	Avg
Method I:	2.0	1.0	C
Method II:	2.0	2.0	C

Wb Depth: .3 .3 .2 Avg: 0.27 Method: MS Stage: L ☒ M ☐ H ☐

No Vis.Ch.: ☐ Intermittent: ☒
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	T	N	T	N	D	T
Loc: P/S/O:	☒	☒	☐	☒	☐	☒	☒

CROWN CLOSURE
2 21-40%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☒

LWD: N DIST: NA

LB SHP: O

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

RB SHP: O

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

WATER

EMS: Req #: Method: T4 Cond.: Method: S3
Temp: Method: P2 Method: GE
pH: Method: GE
Flood Signs: None Turb.: T ☐ M ☐ L ☐ C ☐

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 18.0 D (cm): 2.00 Morph: RP
Pattern: SI DISTURBANCE INDICATORS
Islands: N C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	None
Rearing Habitat	Poor - lack of residual pools, perennial flows
Spawning Habitat	Poor - gravels absent but ephemeral stream

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 7 F: 5	STD	U	upstream photo of a dry channel
R: 7 F: 6	STD	D	downstream photo of gravel substrates

FDIS Site Card

West Babine Study Area

Watershed Code: 480-444000-00000-00000-0000-000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

1.0

82

COMMENTS	
Section	Comments
CHANNEL	No barriers to upstream fish migration were identified
CHANNEL	S4 Stream



Site #82, upstream photo of a dry channel.
Roll #7, Frame #5, Date: 2001/08/13



Site #82, downstream photo of gravel substrates.
Roll #7, Frame #6, Date: 2001/08/13

West Babine Study Area

Watershed Code: 480-439800-00000-00000-00000-00000-000-000-000-000-000-000

Reach #	ILP Map #	ILP #
---------	-----------	-------

1.0

STREAM REFERENCING																																												
Gazetted Name:				Local Name:																																								
Watershed Code: 480-439800-00000-00000-0000-000-000-000-000-000-000				ILP Map #:				ILP #:																																				
REACH																																												
Reach #: 1.0		UTM(Zone/East/North): 10.649579.6128971				Sample Type: Random																																						
Length (km): 1.95		Coupling: Decoupled		Magnitude: 5		BGC Zone: SBS																																						
Gradient (%): 4.0		Confinement: Occasionally Conf				Order: 2		Open water: Absent																																				
US Elev (m): 788		Islands: NONE				Riparian Vegetation: Mixed C/D																																						
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified																																												
SITE																																												
Site #: 83		Field UTM ..		Agency: C172		Crew: JD/DT		Date: 2001/08/13																																				
Site Length (m): 100		GIS UTM 10.651039.6128800		Agency Name: Triton Environmental Consultants (Terrace)																																								
CHANNEL																																												
No Vis.Ch.: ☐		Intermittent: ☒		<table border="1"> <tr> <th>Avg</th> <th>Min</th> <th>Max</th> <th>#</th> </tr> <tr> <td>Channel Width (m):</td> <td>1.09</td> <td>0.16</td> <td>1.470</td> <td>6</td> </tr> <tr> <td>Wetted Width (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Bankfull Depth (m):</td> <td>0.33</td> <td>0.3</td> <td>0.4</td> <td>3</td> </tr> </table>				Avg	Min	Max	#	Channel Width (m):	1.09	0.16	1.470	6	Wetted Width (m):	0.00	0	0	0	Bankfull Depth (m):	0.33	0.3	0.4	3	<table border="1"> <tr> <th>Avg</th> <th>Min</th> <th>Max</th> <th>#</th> </tr> <tr> <td>Gradient %:</td> <td>1.25</td> <td>1</td> <td>2</td> <td>4</td> </tr> <tr> <td>Pool Depth (m):</td> <td>0.00</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>				Avg	Min	Max	#	Gradient %:	1.25	1	2	4	Pool Depth (m):	0.00	0	0	0
Avg	Min	Max	#																																									
Channel Width (m):	1.09	0.16	1.470	6																																								
Wetted Width (m):	0.00	0	0	0																																								
Bankfull Depth (m):	0.33	0.3	0.4	3																																								
Avg	Min	Max	#																																									
Gradient %:	1.25	1	2	4																																								
Pool Depth (m):	0.00	0	0	0																																								
Dewatered: ☐		Trib.: ☐						Turbidity.: Turbid ☐ Low ☐ Moderate ☐ Clear ☐																																				
Stage: Low ☒																																												
Med ☐																																												
High ☐		Temp (C):		pH:		Conductivity:																																						
MORPHOLOGY																																												
Bed Material: Dominant: Gravels		D95 (cm): 20.00		Bars: Non ☒		Side ☐		Diagonal ☐		Mid-channel ☐ Span ☐																																		
Subdominant: Fines		D (cm): 4.00								Braid ☐																																		
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS		O1 B1 B2 B3 D1 D2 D3																																						
Coupling: Decoupled																																												
Confinement: Unconfined				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5																																								
Morphology: RP Riffle Pool																																												
COVER																																												
Total Cover: Abundant		Type: SWD LWD B U DP OV IV																																										
LWD: Few		Amount: T S N T N D T																																										
LWD Dist: Evenly Distributed		Location: P/S/O: ☒ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☒ ☐ ☐ ☐										FSZ: ☐																																
Right Bank: Shape: Sloping (g)		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐								Crown Closure																																		
Left Bank: Shape: Sloping (g)		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐								1-20%																																		
Right Bank: Rip.Veg: Deciduous		Stage: Pole-sapling stage																																										
Left Bank: Rip.Veg:		Stage: Pole-sapling stage				Instream Veg: None ☐ Algae ☐ Moss ☐ Vascular ☒																																						

FDIS Site Card

West Babine Study Area

Watershed Code: 480-439800-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # ILP # 5098 Site # 83

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Watershed Code: 480-439800-00000-00000-0000-000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 11083 Reach #: 1.0 Site #: 83
Field UTM (Z.E.N): .. Method: Site Lg: 100 Method: GE Access: B
GIS UTM (Z.E.N): 10.651039.6128800 Ref. Name:
Date: 2001/08/13 Time: 13:00 Agency: C172 Crew: JD/DT Fish Crd?: ☐ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	1.31	1.47	0.16	1.00	1.40	1.21					1.09
Wetted Width (m):	MS											0.00
Pool Depth (m):	MS											0.00

	Gadient %		Mtd	Avg
Method I:	1.0	2.0	C	1.25
Method II:	1.0	1.0	C	

Wb Depth: .4 .3 .3 Avg: 0.33 Method: MS Stage: L ☒ M ☐ H ☐ No Vis.Ch.: ☐ Intermittent: ☒ Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	S	N	T	N	D	T
Loc: P/S/O:	☒	☒	☐	☒	☐	☒	☒

LWD: F DIST: E

LB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: PS

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☐ V ☒

RB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: PS

WATER

EMS: Temp: Method: T4 Req #: Cond.: Method: S3
pH: Method: P2 Method: GE
Flood Signs: None Method: GE
Turb.: T ☐ M ☐ L ☐ C ☐

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 20.0 D (cm): 4.00 Morph: RP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	None
Spawning Habitat	Poor - low flows but gravel present
Rearing Habitat	Poor - ephemeral stream, shallow depths

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 7 F: 7	STD	U	upstream photo of dry channel
R: 7 F: 8	STD	D	downstream photo of dry channel

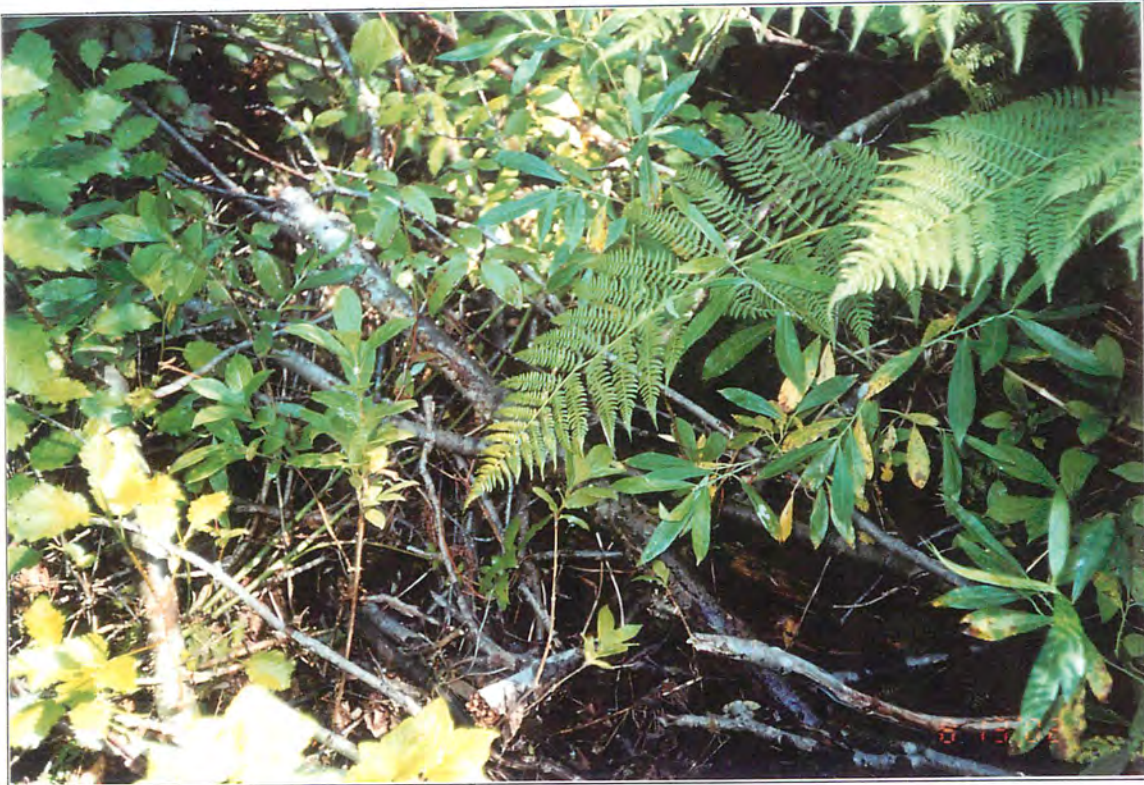
FDIS Site Card

West Babine Study Area

Watershed Code: 480-439800-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0			83

COMMENTS	
Section	Comments
CHANNEL	No barriers to upstream fish migration were identified
CHANNEL	S4 Stream



Site #83, upstream photo of dry channel.
Roll #7, Frame #7, Date: 2001/08/13



Site #83, downstream photo of dry channel.
Roll #7, Frame #8, Date: 2001/08/13

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # ILP Map # ILP #

1.0 093M.027 10163

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10163		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.650103.6129415				Sample Type: Random			
Length (km): .80		Coupling: Decoupled		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 6.5		Confinement: Occasionally Conf		Order: 1		Open water: Absent			
US Elev (m): 762		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 84		Field UTM ..		Agency: C172		Crew: DT/JD		Date: 2001/08/13	
Site Length (m): 100		GIS UTM 10.650808.6129490		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☒									
Dewatered: ☐ Tribs.: ☐									
Stage: Low ☒									
Med ☐									
High ☐									
Temp (C):		pH:		Conductivity:		Turbidity: Turbid ☐ Low ☐			
						Moderate ☐ Clear ☐			
MORPHOLOGY									
Bed Material: Dominant Fines		D95 (cm): 15.00		Bars: Non ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐					
Subdominant: Gravels		D (cm): 2.00							
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS		O1 B1 B2 B3 D1 D2 D3			
Coupling: Decoupled									
Confinement: Unconfined						C1 C2 C3 C4 C5 S1 S2 S3 S4 S5			
Morphology: RP Riffle Pool									
COVER									
Total Cover: Abundant									
LWD: None									
LWD Dist: Not Applicable									
		FSZ: ☐							
Right Bank: Shape: Overhang		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		Crown Closure					
Left Bank: Shape: Overhang		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		21-40%					
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest							
Left Bank: Rip.Veg:		Stage: Mature forest		Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☒					

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10163 Site 84

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: None
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000
ILP Map #: 093M.027 ILP #: 10163 NID Map #: 093M.027 NID #: 11084 Reach #: 1.0 Site #: 84
Field UTM (Z.E.N): .. Method: Site Lg: 100 Method: HC Access: B
GIS UTM (Z.E.N): 10.650808.6129490 Ref. Name:
Date: 2001/08/13 Time: 14:30 Agency: C172 Crew: DT/JD Fish Crd?: ☐ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	0.40	0.40	0.50	0.30	0.40	0.50					0.42
Wetted Width (m):	MS											0.00
Pool Depth (m):	MS											0.00

	Gadient %	Mtd	Avg
Method I:	2.0	1.0	C
Method II:	1.0	1.0	C

Wb Depth: .3 .3 .2 Avg: 0.27 Method: MS Stage: L ☒ M ☐ H ☐

No Vis.Ch.: ☐ Intermittent: ☒
Dw: ☐ Tribs.: ☐

COVER Total: A

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	T	N	S	N	D	T
Loc: P/S/O:	☒	☒	☐	☒	☐	☒	☒

CROWN CLOSURE
2 21-40%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☒

LWD: N DIST: NA

LB SHP: O

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

RB SHP: O

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

WATER

EMS: Req #: Method: T4 Method: S3
Temp: Cond.: Method: P2 Method: GE
pH: Turb.: T ☐ M ☐ L ☐ C ☐
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: F Subdom: G O1 B1 B2 B3 D1 D2 D3
D95: 15.0 D (cm): 2.00 Morph: RP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	No overwintering habitat.
Spawning Habitat	None - substrates are not suitable for spawning.
Rearing Habitat	None - ephemeral stream with no connectivity to fish bearing water. Channel is discontinuous.

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 7 F: 10	STD	U	upstream photo of dry channel
R: 7 F: 9	STD	D	downstream photo of dry channel

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	1.0	093M.027	10163	84

COMMENTS	
Section	Comments
CHANNEL	Discontinuous channel, heavily vegetated.
CHANNEL	S6 Stream



Site #84, upstream photo of dry channel.
Roll #7, Frame #10, Date: 2001/08/13



Site #84, downstream photo of dry channel.
Roll #7, Frame #9, Date: 2001/08/13

FDIS Reach/Site Summary

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000

3.0

STREAM REFERENCING									
Gazetted Name: WILLIAMS CREEK					Local Name:				
Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 3.0		UTM(Zone/East/North): 10.646283.6122944				Sample Type: Biased			
Length (km): 3.01		Coupling: Coupled		Magnitude: 22		BGC Zone: SBS			
Gradient (%): 5.1		Confinement: Confined		Order: 3		Open water: Absent			
US Elev (m): 1042		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 410		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/04	
Site Length (m): 1100		GIS UTM 10.646572.6123091		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Trib.: ☐		Channel Width (m):		4.02		3.700	
Stage: Low ☐				Wetted Width (m):		2.60		2	
Med ☒				Bankfull Depth (m):		0.87		0.8	
High ☐		Temp (C): 6		pH: 7.1		Conductivity: 60		Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 50.00		Bars: Non ☐ Side ☒ Diagonal ☐ Mid-channel ☐ Span ☐					
Subdominant: Gravels		D (cm): 30.00				Braid ☐			
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE		O1 B1 B2 B3 D1 D2 D3			
Coupling: Partially Coupled				INDICATORS		☐ ☐ ☐ ☐ ☐ ☐ ☐			
Confinement: Frequently Confined				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5		☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐			
Morphology: RP Riffle Pool									
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: S		D		T		N	
LWD Dist: Clumped		Location: P/S/O:		☒ ☐ ☐		☒ ☐ ☐		☒ ☐ ☐	
Right Bank: Shape: V - shape		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		Crown Closure		FSZ: ☐			
Left Bank: Shape: V - shape		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		21-40%					
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest		Instream Veg: None ☒ Algae ☐ Moss ☐ Vascular ☐					
Left Bank: Rip.Veg:		Stage: Mature forest							
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
410	EF	1	400	613 sec	600	DV	9	60	70

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach # 3.0 ILP Map # ILP # 5098 Site # 410

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: WILLIAMS CREEK Local Name: None
Watershed Code: 480-452300-13942-00000-0000-000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 40010 Reach #: 3.0 Site #: 410
Field UTM (Z.E.N): .. Method: Site Lg: 1100 Method: GE Access: V2
GIS UTM (Z.E.N): 10.646572.6123091 Ref. Name:
Date: 2001/07/04 Time: 15:30 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg	
Channel Width (m):	MS	4.10	4.30	4.20	4.00	3.80	3.70					4.02	Method I:	4.0	5.0	C	4.50
Wetted Width (m):	MS	2.70	2.80	2.10	2.00	2.90	3.10					2.60	Method II:	5.0	4.0	C	
Pool Depth (m):	MS	0.40	0.50	0.60	0.50	0.40	0.40					0.47					

Wb Depth: .9 .9 .8 Avg: 0.87 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	D	T	N	T	T	N
Loc: P/S/O:	☒	☒	☒	☐	☒	☒	☐

CROWN CLOSURE

2 21-40%

INSTREAM VEG: N ☒ A ☐ M ☐ V ☐

LWD: F DIST: C

LB SHP: V

Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

RB SHP: V

Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: M

STG: MF

WATER

EMS: Temp: 6 Method: T4 Req #: Cond.: 60 Method: S3
pH: 7.1 Method: P2 Method: GE
Flood Signs: rafted debris Method: GE
Turb.: T ☐ M ☐ L ☐ C ☒

MORPHOLOGY

Bed Material: Dominant: C Subdom: G O1 B1 B2 B3 D1 D2 D3
D95: 50.0 D (cm): 30.00 Morph: RP DISTURBANCE INDICATORS
Pattern: IR C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: N
Coupling: PC
Confinement: FC
FSZ: ☐ Bars: N ☐ SIDE ☒ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	Low - associated with pools
Rearing Habitat	Moderate - associated with cover, access, pools
Spawning Habitat	Moderate - associated with cover, perennial flows, substrates

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 10 F: 14	STD	U	upstream photo of typical habitat within Williams Creek
R: 10 F: 15	STD	D	downstream photo of typical habitat within Williams Creek

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

3.0

410

COMMENTS	
Section	Comments
CHANNEL	DV Captured

FDIS Fish Card

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

3.0

WATERBODY															
Gazetted Name: WILLIAMS CREEK										Local: None					
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0															
WS Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000															
Waterbody ID:				ILP Map #:				ILP #:		Reach #:		3 -			
Project ID: 5098				Lake/Stream: S				Lake From Date:							
Fish Permit #:		145086K		Date: 2001/07/04		To: 2001/07/04		Agency: C172		Crew: JH/JA		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
410	093M.027	40010				GPU EF 1	6	60	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
410	EF	1	1	2001/07/04	15:30	2001/07/04	16:50								
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
410	EF	1	1	O	613	400.0	3.0	600	J	5	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
410	EF	1	1	DV	J	1+	9	60	70	R					
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment
								Str/Smpl#	Age		Str/Smpl#				
410	EF	1	1	DV	60		U	U							
410	EF	1	1	DV	60		U	U							
410	EF	1	1	DV	65		U	U							
410	EF	1	1	DV	70		U	U							
410	EF	1	1	DV	60		U	U							
410	EF	1	1	DV	65		U	U							
410	EF	1	1	DV	70		U	U							
410	EF	1	1	DV	60		U	U							
410	EF	1	1	DV	65		U	U							



Site #410, upstream photo of typical habitat within Williams Creek.
Roll #10, Frame #14, Date: 2001/07/04



Site #410, downstream photo of typical habitat within Williams Creek.
Roll #10, Frame #15, Date: 2001/07/04

FDIS Reach/Site Summary

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000

1.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.645886.6123827				Sample Type: Biased			
Length (km): 1.01		Coupling: Partially Couple		Magnitude: 2		BGC Zone: SBS			
Gradient (%): 3.6		Confinement: Occasionally Conf		Order: 2		Open water: Absent			
US Elev (m): 1068		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 411		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/04	
Site Length (m): 100		GIS UTM 10.646223.6123062		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes: ☐		#					
Stage: Low ☐		Channel Width (m): 1.40		1.3		1.5		6	
Med ☒		Wetted Width (m): 1.23		1.100		1.4		6	
High ☐		Bankfull Depth (m): 0.67		0.6		0.7		3	
Temp (C): 7		pH: 7.1		Conductivity: 60					
						Turbidity: Turbid ☐		Low ☐	
						Moderate ☐		Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 18.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Fines		D (cm): 7.00				Mid-channel ☐		Span ☐	
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Occasionally Confine						D1		D2	
Morphology: RP Riffle Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: D		S		N		N	
LWD Dist: Clumped		Location: P/S/O: ☒		☒		☐		☐	
		☐		☐		☐		☐	
Right Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Shrubs		Stage: Shrub/herb stage		Instream Veg: None ☐		Algae ☐		Moss ☐	
Left Bank: Rip.Veg:		Stage: Shrub/herb stage		Vascular ☒					
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
411	EF	1	100	120 sec	600	DV	3	55	60

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000

Reach # 1.0 ILP Map # ILP # 411 Site

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: None
Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 40011 Reach #: 1.0 Site #: 411
Field UTM (Z.E.N): ... Method: Site Lg: 100 Method: GE Access: V2
GIS UTM (Z.E.N): 10.646223.6123062 Ref. Name:
Date: 2001/07/04 Time: 16:55 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg
Channel Width (m):	MS	1.40	1.30	1.40	1.50	1.50	1.30					1.40
Wetted Width (m):	MS	1.20	1.10	1.20	1.40	1.30	1.20					1.23
Pool Depth (m):	MS	0.40	0.30	0.40	0.30	0.20	0.20					0.30

	Gadient %	Mtd	Avg
Method I:	4.0 4.0	C	4.00
Method II:	5.0 3.0	C	

Wb Depth: .6 .7 .7 Avg: 0.67 Method: MS Stage: L ☐ M ☒ H ☐

No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	D	S	N	N	N	T	T
Loc: P/S/O:	☒	☒	☐	☐	☐	☒	☒

CROWN CLOSURE
1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☐ V ☒

LWD: F DIST: C

LB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

RB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: SHR

WATER

EMS: Req #: 60
Temp: 7 Method: T4 Cond.: 60 Method: S3
pH: 7.1 Method: P2 Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: C Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 18.0 D (cm): 7.00 Morph: RP
Pattern: IR DISTURBANCE INDICATORS
Islands: N C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Coupling: DC
Confinement: OC
FSZ: ☐ Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
OverWinter Habitat	None
Rearing Habitat	Moderate - associated with flows, cover, access
Spawning Habitat	Low - limited by substrates, high fine content

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 10 F: 16	STD	D	downstream photo of typical habitat within stream
R: 10 F: 17	STD	U	upstream photo of typical habitat within stream

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0			411

COMMENTS	
Section	Comments
CHANNEL	DV Captured

FDIS Fish Card

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000

1.0

WATERBODY																
Gazetted Name:										Local: None						
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0																
WS Code: 480-452300-13942-48843-0000-0000-000-000-000-000-000																
Waterbody ID:					ILP Map #:			ILP #:		Reach #:		1 -				
Project ID: 5098					Lake/Stream: S			Lake From Date:								
Fish Permit #: 145086K				Date: 2001/07/04		To: 2001/07/04		Agency: C172		Crew: JH/JA		Resample: ☐				
SITE / METHOD																
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment						
411	093M.027	40011				GPU EF 1	7	60	C							
A. GEAR SETTINGS																
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment									
411	EF	1	2001/07/01	16:55	2001/07/01	17:30										
C. ELECTROFISHER SPECIFICATIONS																
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model					
411	EF	1	1	O	120	100.0	1.5	600	J	7	SMITH ROOT	12B				
FISH SUMMARY																
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment							
411	EF	1	1	DV	J	1+	3	55	60	R						
INDIVIDUAL FISH DATA																
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment	
								Str/Smpl#	Age		Str/Smpl#					
411	EF	1	1	DV	60		U	U								
411	EF	1	1	DV	55		U	U								
411	EF	1	1	DV	55		U	U								



Site #411, downstream photo of typical habitat within stream.
Roll #10, Frame #16, Date: 2001/07/04



Site #411, upstream photo of typical habitat within stream.
Roll #10, Frame #17, Date: 2001/07/04

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

5.0

STREAM REFERENCING									
Gazetted Name: WILLIAMS CREEK					Local Name:				
Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 5.0		UTM(Zone/East/North): 10.643610.6123182				Sample Type: Biased			
Length (km): 1.80		Coupling: Coupled		Magnitude: 10		BGC Zone: SBS			
Gradient (%): 6.1		Confinement: Occasionally Conf		Order: 2		Open water: Absent			
US Elev (m): 1210		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 413		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/05	
Site Length (m): 300		GIS UTM 10.643943.6123107		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 5.57		4.300		7.1	
Stage: Low ☐				Wetted Width (m): 4.53		3.400		7	
Med ☒				Bankfull Depth (m): 0.80		0.6		1	
High ☐		Temp (C): 4		pH: 6.7		Conductivity: 20			
								Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 20.00		Bars: Non ☒		Side ☐		Diagonal ☐	
Subdominant: Gravels		D (cm): 5.00				Mid-channel ☐		Span ☐	
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Occasionally Confine						D1		D2	
Morphology: CP Cascade Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		D		T		T	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☒		☒	
Right Bank: Shape: V - shape		Texture: Fines ☐		Gravel ☒		Cobble ☐		Boulder ☐	
Left Bank: Shape: V - shape		Texture: Fines ☐		Gravel ☒		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest		Instream Veg: None ☒		Algae ☐		Moss ☐	
Left Bank: Rip.Veg:		Stage: Mature forest				Vascular ☐			
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
413	EF	1	300	372 sec	700	DV	7	55	80

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000

Reach # 5.0 ILP Map # ILP # Site 413

PROJECT														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098				
Stream Name (gaz.): BABINE RIVER														
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000														
WATERSHED														
Gazetted Name: WILLIAMS CREEK										Local Name: None				
Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000														
ILP Map#:		ILP #:		NID Map #: 093M.027			NID #: 40013		Reach #: 5.0		Site #: 413			
Field UTM (Z.E.N): ..				Method:			Site Lg: 300		Method: HC		Access: V2			
GIS UTM (Z.E.N): 10.643943.6123107							Ref. Name:							
Date: 2001/07/05			Time: 11:00		Agency: C172		Crew: JH/JA		Fish Crd?: ☒		Incomplete: ☐			
CHANNEL														
										Gadient %		Mtd		Avg
Channel Width (m):		Mtd	width	width	width	width	width	width	width	width	width	width	Avg	
Wetted Width (m):		MS	4.80	5.00	6.30	7.10	5.90	4.30					5.57	
Pool Depth (m):		MS	4.80	4.00	4.00	7.00	4.00	3.40					4.53	
		MS	0.30	0.23	0.50	0.40	0.30	0.60					0.39	
Wb Depth:		.6	1.0	.8	Avg: 0.80			Method: MS		Stage: L ☐ M ☒ H ☐		No Vis.Ch.: ☐ Intermittent: ☐		
												Dw: ☐ Tribs.: ☐		
COVER														
Type:		SWD	LWD	B	U	DP	OV	IV						
Amount:		T	D	T	T	S	T	N						
Loc: P/S/O:		☒	☒	☒	☒	☒	☒	☒						
LWD: F					DIST: E									
LB SHP: V														
Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐														
RIP: M														
STG: MF														
CROWN CLOSURE														
1 1-20%														
INSTREAM VEG: N ☒ A ☐ M ☐ V ☐														
RB SHP: V														
Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐														
RIP: M														
STG: MF														
WATER														
EMS:					Method: T4					Req #:				
Temp: 4					Method: P2					Cond.: 20				
pH: 6.7					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒				
Flood Signs: rafted debris										Method: S3				
										Method: GE				
MORPHOLOGY														
Bed Material:		Dominant: C		Subdom: G		Morph: CP								
D95: 20.0		D (cm): 5.00												
Pattern: IR														
Islands: N														
Coupling: DC														
Confinement: OC														
FSZ: ☐														
								DISTURBANCE INDICATORS						
								O1 B1 B2 B3 D1 D2 D3						
								☐ ☐ ☐ ☐ ☐ ☒ ☒						
								C1 C2 C3 C4 C5 S1 S2 S3 S4 S5						
								☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐						
								Bars: N ☒ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR ☐						
HABITAT QUALITY														
Name		Comments												
OverWinter Habitat		Deep pools and moderate flow												
Rearing Habitat		Moderate rearing habitat-associated with cover, flows and access												
Spawning Habitat		Moderate spawning habitat-associated with gravels and flow												
PHOTOS														
Photo		Foc Lg		Dir		Comments								
R:	10	F:	18	STD		U		upstream photo typical of stream and surrounding riparian vegetation						
R:	10	F:	19	STD		D		downstream photo of habitat within stream						

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
5.0			413

COMMENTS	
Section	Comments
CHANNEL	DV captured. This site also covers the bottom of Reach 6
CHANNEL	S2 Stream

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

5.0

WATERBODY															
Gazetted Name: WILLIAMS CREEK										Local: None					
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-0															
WS Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000															
Waterbody ID:				ILP Map #:				ILP #:		Reach #:		5 -			
Project ID: 5098				Lake/Stream: S				Lake From Date:							
Fish Permit #:		145086K		Date: 2001/07/05		To: 2001/07/05		Agency: C172		Crew: JH/JA		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
413	093M.027	40013				GPU EF 1	4	20	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
413	EF 1	1	2001/07/05	11:00	2001/07/05	12:30									
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
413	EF 1	1	O	372	300.0	5.0	700	J	7	SMITH ROOT	12B				
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
413	EF 1	1	DV	J	1+	7	55 80	R							
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment
								Str/Smpl#	Age		Str/Smpl#				
413	EF 1	1	DV	80		U	U								
413	EF 1	1	DV	70		U	U								
413	EF 1	1	DV	65		U	U								
413	EF 1	1	DV	55		U	U								
413	EF 1	1	DV	65		U	U								
413	EF 1	1	DV	60		U	U								
413	EF 1	1	DV	60		U	U								



Site #413, upstream photo typical of stream and surrounding riparian vegetation.
Roll #10, Frame #18, Date: 2001/07/05



Site #413, downstream photo of habitat within stream.
Roll #10, Frame #19, Date: 2001/07/05

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10125

STREAM REFERENCING																																	
Gazetted Name:					Local Name:																												
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10125																										
REACH																																	
Reach #: 1.0		UTM(Zone/East/North): 10.644140.6123531				Sample Type: Biased																											
Length (km): .93		Coupling: Partially Couple		Magnitude: 1		BGC Zone: SBS																											
Gradient (%): 8.5		Confinement: Occasionally Conf		Order: 1		Open water: Absent																											
US Elev (m): 1181		Islands: NONE		Riparian Vegetation: Mixed C/D																													
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified																																	
SITE																																	
Site #: 414		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/05																									
Site Length (m): 200		GIS UTM 10.644573.6123567		Agency Name: Triton Environmental Consultants (Terrace)																													
CHANNEL																																	
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max																									
Dewatered: ☐ Tribs.: ☐				Avg		Min		Max																									
Stage: Low ☐		Channel Width (m): 0.98		0.600		1.600		6																									
Med ☒		Wetted Width (m): 0.86		0.600		1.100		6																									
High ☐		Bankfull Depth (m): 0.43		0.4		0.5		3																									
Temp (C): 8		pH: 6.5		Conductivity: 30		Turbidity: Turbid ☐ Low ☐		Moderate ☐ Clear ☒																									
MORPHOLOGY																																	
Bed Material: Dominant: Gravels		D95 (cm): 10.00		Bars: Non ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐		Braid ☐																											
Subdominant: Fines		D (cm): 1.00																															
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE INDICATORS																													
Coupling: Partially Coupled				O1 B1 B2 B3 D1 D2 D3																													
Confinement: Occasionally Confine				☐ ☐ ☐ ☐ ☐ ☒ ☐																													
Morphology: RP Riffle Pool				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5																													
				☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐																													
COVER																																	
Total Cover: Moderate		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Type:</td> <td>SWD</td> <td>LWD</td> <td>B</td> <td>U</td> <td>DP</td> <td>OV</td> <td>IV</td> </tr> <tr> <td>Amount:</td> <td>S</td> <td>D</td> <td>N</td> <td>T</td> <td>T</td> <td>T</td> <td>N</td> </tr> <tr> <td>Location: P/S/O:</td> <td>☒</td> <td>☒</td> <td>☐</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☐</td> </tr> </table>								Type:	SWD	LWD	B	U	DP	OV	IV	Amount:	S	D	N	T	T	T	N	Location: P/S/O:	☒	☒	☐	☒	☒	☒	☐
Type:	SWD	LWD	B	U	DP	OV	IV																										
Amount:	S	D	N	T	T	T	N																										
Location: P/S/O:	☒	☒	☐	☒	☒	☒	☐																										
LWD: Few		FSZ: ☐																															
LWD Dist: Evenly Distributed																																	
Right Bank: Shape: V - shape		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		Crown Closure																													
Left Bank: Shape: V - shape		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		1-20%																													
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest		Instream Veg: None ☒ Algae ☐ Moss ☐ Vascular ☐																													
Left Bank: Rip.Veg:		Stage: Mature forest																															
FISH																																	
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)																								
414	EF	1	200	190 sec	600	DV	5	60	75																								

West Babine Study Area

Reach #	ILP Map #	ILP #	Site
1.0	093M.027	10125	414

Triton Environmental Consultants Ltd.

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
1.0	093M.027	10125	414

COMMENTS	
Section	Comments
CHANNEL	DV captured

West Babine Study Area

000-000000-00000-00000-0000-0000-000-000-000-000-000-000-000

1.0

093M.027

10125

Triton Environmental Consultants Ltd.



Site #414, upstream photo of typical habitat within site.
Roll #10, Frame #20, Date: 2001/07/05



Site #414, downstream photo of typical habitat within site.
Roll #10, Frame #21, Date: 2001/07/05

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # ILP Map # ILP #
2.0 093M.027 10123

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10123		
REACH									
Reach #: 2.0		UTM(Zone/East/North): 10.643923.6124166				Sample Type: Biased			
Length (km): 1.13		Coupling: Coupled		Magnitude: 3		BGC Zone: SBS			
Gradient (%): 12.4		Confinement: Frequently Confin		Order: 2		Open water: Absent			
US Elev (m): 1261		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 415		Field UTM ...		Agency: C172		Crew: JH/JA		Date: 2001/07/05	
Site Length (m): 200		GIS UTM 10.644668.6123784		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 1.60		1		2.1	
Stage: Low ☐				Wetted Width (m): 1.56		1		1.8	
Med ☒				Bankfull Depth (m): 0.27		0.2		0.4	
High ☐									
Temp (C): 5		pH: 6.4		Conductivity: 30		Turbidity: Turbid ☐		Low ☐	
						Moderate ☐		Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 30.00		Bars: Non ☐		Side ☒		Diagonal ☐	
Subdominant: Gravels		D (cm): 4.00						Mid-channel ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS		O1		B1	
Coupling: Decoupled						B2		B3	
Confinement: Unconfined						D1		D2	
Morphology: RP Riffle Pool						D3			
						C1		C2	
						C3		C4	
						C5		S1	
						S2		S3	
						S4		S5	
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		D		T		T	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☒		☒	
		☒		☒		☒		☒	
Right Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest		Instream Veg: None ☒		Algae ☐		Moss ☐	
Left Bank: Rip.Veg:		Stage: Mature forest						Vascular ☐	
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
415	EF	1	200	165 sec	600	DV	5	60	75

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 2.0 ILP Map # 093M.027 ILP # 10123 Site 415

PROJECT																																																																														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																				
Stream Name (gaz.): BABINE RIVER																																																																														
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
WATERSHED																																																																														
Gazetted Name:										Local Name: None																																																																				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
ILP Map#: 093M.027			ILP #: 10123			NID Map #: 093M.027			NID #: 40015			Reach #: 2.0		Site #: 415																																																																
Field UTM (Z.E.N): ..					Method:					Site Lg: 200		Method: HC		Access: V2																																																																
GIS UTM (Z.E.N): 10.644668.6123784					Ref. Name:																																																																									
Date: 2001/07/05			Time: 13:20			Agency: C172			Crew: JH/JA			Fish Crd?: ☒		Incomplete: ☐																																																																
CHANNEL																																																																														
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Mtd</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Channel Width (m):</td> <td>MS</td> <td>1.60</td> <td>2.10</td> <td>1.80</td> <td>1.00</td> <td>1.50</td> <td>1.40</td> <td>1.80</td> <td></td> <td></td> <td></td> <td>1.60</td> </tr> <tr> <td>Wetted Width (m):</td> <td>MS</td> <td>1.60</td> <td>1.80</td> <td>1.80</td> <td>1.00</td> <td>1.50</td> <td>1.40</td> <td>1.80</td> <td></td> <td></td> <td></td> <td>1.56</td> </tr> <tr> <td>Pool Depth (m):</td> <td>MS</td> <td>0.30</td> <td>0.25</td> <td>0.35</td> <td>0.15</td> <td>0.20</td> <td>0.30</td> <td></td> <td></td> <td></td> <td></td> <td>0.26</td> </tr> </tbody> </table>													Mtd	width	width	width	width	width	width	width	width	width	width	Avg	Channel Width (m):	MS	1.60	2.10	1.80	1.00	1.50	1.40	1.80				1.60	Wetted Width (m):	MS	1.60	1.80	1.80	1.00	1.50	1.40	1.80				1.56	Pool Depth (m):	MS	0.30	0.25	0.35	0.15	0.20	0.30					0.26	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Gadient %</th> <th>Mtd</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Method I:</td> <td>12.0</td> <td>13.0</td> <td>C</td> </tr> <tr> <td>Method II:</td> <td>10.0</td> <td>8.0</td> <td>C</td> </tr> </tbody> </table>				Gadient %	Mtd	Avg	Method I:	12.0	13.0	C	Method II:	10.0	8.0	C
	Mtd	width	width	width	width	width	width	width	width	width	width	Avg																																																																		
Channel Width (m):	MS	1.60	2.10	1.80	1.00	1.50	1.40	1.80				1.60																																																																		
Wetted Width (m):	MS	1.60	1.80	1.80	1.00	1.50	1.40	1.80				1.56																																																																		
Pool Depth (m):	MS	0.30	0.25	0.35	0.15	0.20	0.30					0.26																																																																		
	Gadient %	Mtd	Avg																																																																											
Method I:	12.0	13.0	C																																																																											
Method II:	10.0	8.0	C																																																																											
Wb Depth:		.2	.2	.4	Avg: 0.27			Method: MS			Stage: L ☐ M ☒ H ☐																																																																			
COVER				Total: M																																																																										
Type:		SWD	LWD	B	U	DP	OV	IV	CROWN CLOSURE																																																																					
Amount:		T	D	T	T	D	T	N	1 1-20%																																																																					
Loc: P/S/O:		☒	☒	☒	☒	☒	☒	☐	INSTREAM VEG: N ☒ A ☐ M ☐ V ☐																																																																					
LWD: F				DIST: E				RB SHP: V																																																																						
LB SHP: V								Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐																																																																						
RIP: M								RIP: M																																																																						
STG: MF								STG: MF																																																																						
WATER																																																																														
EMS:					Method: T4					Req #:																																																																				
Temp: 5					Method: P2					Cond.: 30																																																																				
pH: 6.4					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒																																																																				
Flood Signs: None										Method: S3																																																																				
										Method: GE																																																																				
MORPHOLOGY																																																																														
Bed Material:		Dominant: C		Subdom: G		Morph: RP		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>O1</th> <th>B1</th> <th>B2</th> <th>B3</th> <th>D1</th> <th>D2</th> <th>D3</th> </tr> </thead> <tbody> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>							O1	B1	B2	B3	D1	D2	D3	☐	☐	☐	☐	☐	☐	☐																																																		
O1	B1	B2	B3	D1	D2	D3																																																																								
☐	☐	☐	☐	☐	☐	☐																																																																								
D95: 30.0		D (cm): 4.00						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>C1</th> <th>C2</th> <th>C3</th> <th>C4</th> <th>C5</th> <th>S1</th> <th>S2</th> <th>S3</th> <th>S4</th> <th>S5</th> </tr> </thead> <tbody> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>							C1	C2	C3	C4	C5	S1	S2	S3	S4	S5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																												
C1	C2	C3	C4	C5	S1	S2	S3	S4	S5																																																																					
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																																					
Pattern: SI								DISTURBANCE INDICATORS																																																																						
Islands: N																																																																														
Coupling: DC																																																																														
Confinement: UN																																																																														
FSZ: ☐								Bars: N ☐ SIDE ☒ DIAG ☐ MID ☐ SPAN ☐ BR ☐																																																																						
HABITAT QUALITY																																																																														
Name		Comments																																																																												
Spawning Habitat		Low - associated with substrates, limited by frequency of laminar/glide habitat																																																																												
Rearing Habitat		Moderate - associated with cover, flows and access																																																																												
OverWinter Habitat		Moderate - associated with pools and flows																																																																												
PHOTOS																																																																														
Photo		Foc Lg		Dir		Comments																																																																								
R: 10	F: 22	STD		U		upstream photo of typical habitat within site																																																																								
R: 10	F: 23	STD		D		downstream photo of typical habitat within site																																																																								

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000	Reach #	ILP Map #	ILP #	Site
	2.0	093M.027	10123	415

COMMENTS	
Section	Comments
CHANNEL	DV Captured

FDIS Fish Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 2.0 ILP Map # 093M.027 ILP # 10123

WATERBODY															
Gazetted Name:										Local: None					
Project Code: 480-000000-00000-00000-0000-000-000-000-000-000-0															
WS Code: 000-000000-00000-00000-0000-000-000-000-000-000-000															
Waterbody ID:										ILP Map #: 093M.027		ILP #: 10123		Reach #: 2 -	
Project ID: 5098										Lake/Stream: S		Lake From Date:			
Fish Permit #: 145086K				Date: 2001/07/05				To: 2001/07/05		Agency: C172		Crew: JH/JA		Resample: ☐	
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mtd			MTD/NO	Temp	Cond	Turbid	Comment					
415	093M.027	40015				GPU EF 1	5	30	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
415	EF	1	2001/07/05	13:50	2001/07/05	14:30									
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
415	EF	1	1	O	165	200.0	1.5	600	J	7	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
415	EF	1	1	DV	J	1+	5	60	75	R					
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic	Roll #	Frame#	Comment	
								Str/Smpl#//Age			Str/Smpl#				
415	EF	1	1	DV	60		U	U							
415	EF	1	1	DV	65		U	U							
415	EF	1	1	DV	75		U	U							
415	EF	1	1	DV	65		U	U							
415	EF	1	1	DV	60		U	U							



Site #415, upstream photo of typical habitat within site.
Roll #10, Frame #22, Date: 2001/07/05



Site #415, downstream photo of typical habitat within site.
Roll #10, Frame #23, Date: 2001/07/05

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # ILP Map # ILP #
1.0 093M.027 10124

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10124		
REACH									
Reach #: 1.0		UTM(Zone/East/North): 10.644626.6124521				Sample Type: Biased			
Length (km): .90		Coupling: Partially Couple		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 7.8		Confinement: Occasionally Conf		Order: 1		Open water: Absent			
US Elev (m): 1179		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 416		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/05	
Site Length (m): 300		GIS UTM 10.644831.6124003		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 1.39		0.800		1.75	
Stage: Low ☐				Wetted Width (m): 1.27		0.600		1.75	
Med ☒				Bankfull Depth (m): 0.17		0.1		0.2	
High ☐		Temp (C): 4		pH: 6.7		Conductivity: 70			
								Turbidity: Turbid ☐ Low ☐	
								Moderate ☐ Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Gravels		D95 (cm): 35.00		Bars: Non ☐		Side ☒		Diagonal ☐	
Subdominant: Cobble		D (cm): 4.00						Mid-channel ☐	
Channel Pattern: Irregular, Wandering		Islands: None		DISTURBANCE		O1		B1 B2 B3 D1 D2 D3	
Coupling: Decoupled				INDICATORS		☐		☐	
Confinement: Unconfined				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5		☐		☐	
Morphology: RP Riffle Pool						☐		☐	
COVER									
Total Cover: Moderate		Type: SWD LWD B U DP OV IV							
LWD: Few		Amount: T S N T S D N							
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☐		☒	
Right Bank: Shape: Undercut		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐						Crown Closure	
Left Bank: Shape: Undercut		Texture: Fines ☐ Gravel ☒ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐						1-20%	
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest							
Left Bank: Rip.Veg:		Stage: Mature forest		Instream Veg: None ☒ Algae ☐ Moss ☐ Vascular ☐					
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
416	EF	1	100	116 sec	600	DV	5	50	60

West Babine Study Area

Reach #	ILP Map #	ILP #	Site
1.0	093M.027	10124	416

Triton Environmental Consultants Ltd.

FDIS Site Card

West Babine Study Area

	Reach #	ILP Map #	ILP #	Site
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000	1.0	093M.027	10124	416

COMMENTS	
Section	Comments
CHANNEL	DV captured

West Babine Study Area

Reach #	ILP Map #	ILP #
1.0	093M.027	10124

Triton Environmental Consultants Ltd.



Site #416, upstream photo of typical habitat within site.
Roll #10, Frame #24, Date: 2001/07/05



Site #416, downstream photo of typical habitat within site.
Roll #10, Frame #25, Date: 2001/07/05

FDIS Site Card

West Babine Study Area

Watershed Code: 480-504200-67300-00000-00000-00000-00000-00000-00000

Reach # 1.0 ILP Map # ILP # Site 417

PROJECT																																																																														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																				
Stream Name (gaz.): BABINE RIVER																																																																														
Project Watershed Code: 480-000000-00000-00000-00000-00000-00000-00000-00000-00000																																																																														
WATERSHED																																																																														
Gazetted Name:										Local Name: None																																																																				
Watershed Code: 480-504200-67300-00000-00000-00000-00000-00000-00000-00000																																																																														
ILP Map#:		ILP #:		NID Map #: 093M.017		NID #: 40017		Reach #: 1.0		Site #: 417																																																																				
Field UTM (Z.E.N): ..				Method:		Site Lg: 200		Method: HC		Access: V2																																																																				
GIS UTM (Z.E.N): 10.647317.6113267						Ref. Name:																																																																								
Date: 2001/07/05			Time: 16:20		Agency: C172		Crew: JH/JA		Fish Crd?: ☒		Incomplete: ☐																																																																			
CHANNEL																																																																														
<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Mtd</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Channel Width (m):</td> <td>MS</td> <td>1.90</td> <td>1.60</td> <td>2.10</td> <td>2.00</td> <td>1.30</td> <td>1.60</td> <td>1.80</td> <td>1.70</td> <td>1.70</td> <td>1.70</td> <td>1.75</td> </tr> <tr> <td>Wetted Width (m):</td> <td>MS</td> <td>1.90</td> <td>1.80</td> <td>2.00</td> <td>2.20</td> <td>1.00</td> <td>1.50</td> <td>1.80</td> <td>1.70</td> <td></td> <td></td> <td>1.74</td> </tr> <tr> <td>Pool Depth (m):</td> <td>MS</td> <td>0.10</td> <td>0.20</td> <td>0.15</td> <td>0.12</td> <td>0.25</td> <td>0.22</td> <td>0.07</td> <td>0.10</td> <td></td> <td></td> <td>0.15</td> </tr> </tbody> </table>													Mtd	width	width	width	width	width	width	width	width	width	width	Avg	Channel Width (m):	MS	1.90	1.60	2.10	2.00	1.30	1.60	1.80	1.70	1.70	1.70	1.75	Wetted Width (m):	MS	1.90	1.80	2.00	2.20	1.00	1.50	1.80	1.70			1.74	Pool Depth (m):	MS	0.10	0.20	0.15	0.12	0.25	0.22	0.07	0.10			0.15	<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Gadient %</th> <th>Mtd</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Method I:</td> <td>10.0</td> <td>11.0</td> <td>C</td> </tr> <tr> <td>Method II:</td> <td>8.0</td> <td>10.0</td> <td>C</td> </tr> </tbody> </table>				Gadient %	Mtd	Avg	Method I:	10.0	11.0	C	Method II:	8.0	10.0	C
	Mtd	width	width	width	width	width	width	width	width	width	width	Avg																																																																		
Channel Width (m):	MS	1.90	1.60	2.10	2.00	1.30	1.60	1.80	1.70	1.70	1.70	1.75																																																																		
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Method I:	10.0	11.0	C																																																																											
Method II:	8.0	10.0	C																																																																											
Wb Depth:		.2	.4	.1	Avg: 0.23		Method: MS		Stage: L ☐ M ☒ H ☐		No Vis.Ch.: ☐ Intermittent: ☐ Dw: ☐ Tribs.: ☐																																																																			
COVER Total: M																																																																														
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Type:	SWD	LWD	B	U	DP	OV	IV																																																																							
Amount:	T	S	T	S	T	D	N																																																																							
Loc: P/S/O:	☒	☒	☒	☒	☒	☒	☐																																																																							
CROWN CLOSURE 1 1-20%																																																																														
INSTREAM VEG: N ☐ A ☐ M ☒ V ☐																																																																														
LWD: F DIST: E LB SHP: V Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: M STG: MF																																																																														
RB SHP: V Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: M STG: MF																																																																														
WATER																																																																														
EMS:					Method: T4					Req #:																																																																				
Temp: 8					Method: P2					Cond.: 30																																																																				
pH: 7.1					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒																																																																				
Flood Signs: None										Method: S3																																																																				
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Bed Material:		Dominant: G		Subdom: C		O1		B1		B2		B3		D1		D2		D3																																																												
D95: 25.0		D (cm): 3.00		Morph: RP		☐		☐		☐		☐		☐		☐		☐																																																												
Pattern: IR						C1		C2		C3		C4		C5		S1		S2																																																												
Islands: O						☐		☐		☐		☒		☐		☐		☐																																																												
Coupling: DC						☐		☐		☐		☐		☐		☐		☐																																																												
Confinement: OC						☐		☐		☐		☐		☐		☐		☐																																																												
FSZ: ☐						Bars: N ☒		SIDE ☐		DIAG ☐		MID ☐		SPAN ☐		BR ☐																																																														
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OverWinter Habitat		perennial flow and deep pools																																																																												
Rearing Habitat		High - deep pools, LWD, and undercut banks make for positive rearing																																																																												
Spawning Habitat		Low - low percentage of gravel																																																																												
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R:	11	F:	01	STD		U		upstream photo of typical habitat within site																																																																						
R:	11	F:	02	STD		D		downstream photo of typical habitat within site																																																																						

FDIS Site Card

West Babine Study Area

Watershed Code: 480-504200-67300-00000-00000-00000-00000-00000-00000

Reach #	ILP Map #	ILP #	Site
1.0			417

COMMENTS	
Section	Comments
CHANNEL	Spawning is limited by high fine content.
CHANNEL	Possible soft barrier downstream, only accessible for large fish.
CHANNEL	No mixed age classes were captured.
CHANNEL	Low densities of CT within site.
CHANNEL	CT captured.

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-504200-67300-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

1.0

WATERBODY															
Gazetted Name:										Local: None					
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0															
WS Code: 480-504200-67300-00000-0000-0000-000-000-000-000-000															
Waterbody ID:				ILP Map #:				ILP #:		Reach #: 1 -					
Project ID: 5098				Lake/Stream: S				Lake From Date:							
Fish Permit #:		145086K		Date: 2001/07/05		To: 2001/07/05		Agency: C172		Crew: JH/JA		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
417	093M.017	40017				GPU EF 1	8	30	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
417	EF	1	1	2001/07/05	16:28	2001/07/05	16:42								
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
417	EF	1	1	O	217	200.0	2.0	600	J	7	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)		FishAct	Comment					
417	EF	1	1	CT	J	2+	4	200	210	R					
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age Str/Smpl#/Age		Vch#	Genetic Str/Smpl#		Roll #	Frame#	Comment
417	EF	1	1	CT	200		U	U							
417	EF	1	1	CT	205		U	U							
417	EF	1	1	CT	205		U	U							
417	EF	1	1	CT	210		U	U							



Site #417, upstream photo of typical habitat within site.
Roll #11, Frame #01, Date: 2001/07/05



Site #417, downstream photo of typical habitat within site.
Roll #11, Frame #02, Date: 2001/07/05

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-504200-00000-00000-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

16.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-504200-00000-00000-0000-0000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 16.0		UTM(Zone/East/North): 10.646542.6113718				Sample Type: Biased			
Length (km): 1.05		Coupling: Decoupled		Magnitude: 7		BGC Zone: SBS			
Gradient (%): 1.3		Confinement: Occasionally Conf		Order: 2		Open water: Absent			
US Elev (m): 913		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 418		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/05	
Site Length (m): 200		GIS UTM 10.647111.6113293		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 1.93		1.600		2.200	
Stage: Low ☐				Wetted Width (m): 1.88		1.600		2.200	
Med ☒				Bankfull Depth (m): 0.27		0.2		0.3	
High ☐		Temp (C): 8		pH: 6.9		Conductivity: 40			
						Turbidity.: Turbid ☐		Low ☐	
								Moderate ☐	
								Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 20.00		Bars: Non ☐		Side ☒		Diagonal ☐	
Subdominant: Gravels		D (cm): 2.00				Mid-channel ☐		Span ☐	
Channel Pattern: Sinuous		Islands: None		DISTURBANCE INDICATORS		O1		B1	
Coupling: Decoupled						B2		B3	
Confinement: Unconfined						D1		D2	
Morphology: RP Riffle Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		S		N		T	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☐		☒	
		☒		☐		☒		☒	
Right Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Mixed C/D		Stage: Mature forest		Instream Veg: None ☒		Algae ☐		Moss ☐	
Left Bank: Rip.Veg:		Stage: Mature forest				Vascular ☐			
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
418	EF	1	200	304 sec	700	CT	6	200	220

West Babine Study Area

Reach #	ILP Map #	ILP #	Site
16.0			418

Triton Environmental Consultants Ltd.

FDIS Site Card

West Babine Study Area

Watershed Code: 480-504200-00000-00000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
16.0			418

COMMENTS	
Section	Comments
CHANNEL	Small obstructions downstream may limit some upstream access
CHANNEL	CT captured in low densities.

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-504200-00000-00000-0000-0000-000-000-000-000-000-000

Reach # 16.0
ILP Map #
ILP #

WATERBODY																
Gazetted Name:										Local: None						
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0																
WS Code: 480-504200-00000-00000-0000-0000-000-000-000-000-000																
Waterbody ID:										ILP Map #:		ILP #:		Reach #: 16 -		
Project ID: 5098										Lake/Stream: S		Lake From Date:				
Fish Permit #: 145086K				Date: 2001/07/05		To: 2001/07/05		Agency: C172		Crew: JH/JA		Resample: ☐				
SITE / METHOD																
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment						
418	093M.017	40018				GPU EF 1	8	40	C							
A. GEAR SETTINGS																
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment									
418	EF	1	2001/07/05	16:48	2001/07/05	17:30										
C. ELECTROFISHER SPECIFICATIONS																
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model					
418	EF	1	1	O	304	200.0	2.0	700	1	5	SMITH ROOT	12B				
FISH SUMMARY																
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment							
418	EF	1	1	CT	J	6	200 220	R								
INDIVIDUAL FISH DATA																
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic		Roll #	Frame#	Comment	
								Str/Smpl#	Age		Str/Smpl#					
418	EF	1	1	CT	220		U	U								
418	EF	1	1	CT	205		U	U								
418	EF	1	1	CT	205		U	U								
418	EF	1	1	CT	200		U	U								
418	EF	1	1	CT	205		U	U								
418	EF	1	1	CT	210		U	U								



Site #418, upstream photo of typical habitat within site.
Roll #11, Frame #03, Date: 2001/07/05



Site #418, downstream photo of typical habitat within site.
Roll #11, Frame #04, Date: 2001/07/05

West Babine Study Area

Reach #	ILP Map #	ILP #
---------	-----------	-------

4.0

Gazetted Name:	Local Name:
Watershed Code: 480-504200-67300-00000-0000-000-000-000-000-000	ILP Map #: ILP #:

Reach #: 4.0	UTM(Zone/East/North): 10.646584.6115999	Sample Type: Random
Length (km): 1.71	Coupling: Coupled	BGC Zone: SBS
Gradient (%): 6.8	Confinement: Frequently Confin	Order: 2
US Elev (m): 1039	Islands: NONE	Riparian Vegetation: Mixed C/D
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified		

Site #: 446	Field UTM ..	Agency: C172	Crew: JH/JA	Date: 2001/07/11
Site Length (m): 260	GIS UTM 10.647117.6114722	Agency Name: Triton Environmental Consultants (Terrace)		

No Vis.Ch.: ☐	Intermittent: ☐		Avg	Min	Max	#		Avg	Min	Max	#	
Dewatered: ☐	Tribs.: ☐		Channel Width (m):	2.00	1.8	2.200	6	Gradient %:	9.25	8	11	4
Stage: Low ☐			Wetted Width (m):	1.73	1.600	1.9	6	Pool Depth (m):	0.13	0.03	0.25	6
Med ☒			Bankfull Depth (m):	0.23	0.2	0.3	3					
High ☐	Temp (C): 5	pH: 6.9				Conductivity: 30		Turbidity: Turbid ☐		Low ☐		
								Moderate ☐		Clear ☒		

[illegible]

Total Cover: Moderate		Type:	SWD	LWD	B	U	DP	OV	IV	
LWD: Few		Amount:	T	T	N	S	T	D	N	
LWD Dist: Evenly Distributed		Location: P/S/O:	☒	☒	☐	☒	☒	☒	☐	FSZ: ☐
Right Bank:	Shape: Undercut	Texture: Fines ☒	Gravel ☐	Cobble ☐	Boulder ☐	Rock ☐	Manmade ☐	Crown Closure		
Left Bank:	Shape: Undercut	Texture: Fines ☒	Gravel ☐	Cobble ☐	Boulder ☐	Rock ☐	Manmade ☐	1-20%		
Right Bank:	Rip.Veg: Mixed C/D	Stage: Mature forest								
Left Bank:	Rip.Veg:	Stage: Mature forest								
		Instream Veg: None ☒		Algae ☐		Moss ☐		Vascular ☐		

Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
446	EF	1	300	299 sec	600	CT	2	120	125

FDIS Site Card

West Babine Study Area

Watershed Code: 480-504200-67300-00000-00000-00000-00000-00000-00000

Reach # 4.0 ILP Map # ILP # Site 446

PROJECT																																						
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																												
Stream Name (gaz.): BABINE RIVER																																						
Project Watershed Code: 480-000000-00000-00000-00000-00000-00000-00000-00000																																						
WATERSHED																																						
Gazetted Name:										Local Name: None																												
Watershed Code: 480-504200-67300-00000-00000-00000-00000-00000-00000-00000																																						
ILP Map#:			ILP #:			NID Map #: 093M.017			NID #: 40046			Reach #: 4.0		Site #: 446																								
Field UTM (Z.E.N.): ..					Method:					Site Lg: 260		Method: HC		Access: H																								
GIS UTM (Z.E.N.): 10.647117.6114722										Ref. Name:																												
Date: 2001/07/11			Time: 10:30			Agency: C172			Crew: JH/JA			Fish Crd?: ☒		Incomplete: ☐																								
CHANNEL																																						
										<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Gadient %</th> <th>Mtd</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Method I:</td> <td>11.0</td> <td>10.0</td> <td>C</td> <td>9.25</td> </tr> <tr> <td>Method II:</td> <td>8.0</td> <td>8.0</td> <td>C</td> <td></td> </tr> </tbody> </table>						Gadient %	Mtd	Avg	Method I:	11.0	10.0	C	9.25	Method II:	8.0	8.0	C											
	Gadient %	Mtd	Avg																																			
Method I:	11.0	10.0	C	9.25																																		
Method II:	8.0	8.0	C																																			
Channel Width (m):		MS	2.10	2.00	1.90	2.20	2.00	1.80							2.00																							
Wetted Width (m):		MS	1.80	1.60	1.80	1.70	1.90	1.60							1.73																							
Pool Depth (m):		MS	0.03	0.25	0.12	0.11	0.15	0.11							0.13																							
Wb Depth:		.3	.2	.2	Avg: 0.23			Method: MS			Stage: L ☐ M ☒ H ☐			No Vis.Ch.: ☐ Intermittent: ☐ Dw: ☐ Tribs.: ☐																								
COVER <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Type:</th> <th>SWD</th> <th>LWD</th> <th>B</th> <th>U</th> <th>DP</th> <th>OV</th> <th>IV</th> </tr> </thead> <tbody> <tr> <td>Amount:</td> <td>T</td> <td>T</td> <td>N</td> <td>S</td> <td>T</td> <td>D</td> <td>N</td> </tr> <tr> <td>Loc: P/S/O:</td> <td>☒</td> <td>☒</td> <td>☐</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☐</td> </tr> </tbody> </table> LWD: F DIST: E LB SHP: U Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: M STG: MF CROWN CLOSURE 1 1-20% INSTREAM VEG: N ☒ A ☐ M ☐ V ☐ RB SHP: U Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: M STG: MF															Type:	SWD	LWD	B	U	DP	OV	IV	Amount:	T	T	N	S	T	D	N	Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☐
Type:	SWD	LWD	B	U	DP	OV	IV																															
Amount:	T	T	N	S	T	D	N																															
Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☐																															
WATER																																						
EMS:					Method: T4					Req #:																												
Temp: 5					Method: P2					Cond.: 30																												
pH: 6.9					Method: GE					Turb.: T ☐ M ☐ L ☐ C ☒																												
Flood Signs: None										Method: S3																												
										Method: GE																												
MORPHOLOGY																																						
Bed Material:		Dominant: C		Subdom: G		D95: 15.0		D (cm): 2.00		Morph: RP		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>O1</th> <th>B1</th> <th>B2</th> <th>B3</th> <th>D1</th> <th>D2</th> <th>D3</th> </tr> </thead> <tbody> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>			O1	B1	B2	B3	D1	D2	D3	☐	☐	☐	☐	☐	☐	☐										
O1	B1	B2	B3	D1	D2	D3																																
☐	☐	☐	☐	☐	☐	☐																																
Pattern: IR		Islands: N		Coupling: DC		Confinement: UN		FSZ: ☐		DISTURBANCE INDICATORS		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>C1</th> <th>C2</th> <th>C3</th> <th>C4</th> <th>C5</th> <th>S1</th> <th>S2</th> <th>S3</th> <th>S4</th> <th>S5</th> </tr> </thead> <tbody> <tr> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>			C1	C2	C3	C4	C5	S1	S2	S3	S4	S5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
C1	C2	C3	C4	C5	S1	S2	S3	S4	S5																													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																													
Bars: N ☐ SIDE ☒ DIAG ☐ MID ☐ SPAN ☐ BR ☐																																						
HABITAT QUALITY																																						
Name		Comments																																				
Spawning Habitat		Moderate - associated with patches of clean gravel, limited by seasonal flow, gravel was observed on side of channel in low flow months.																																				
Rearing Habitat		Moderate - associated with undercut banks and overstream vegetation, limited by lack of deep pools																																				
OverWinter Habitat		Low - lacks deep pools, limited by flow																																				
PHOTOS																																						
Photo		Foc Lg		Dir		Comments																																
R:	12	F:	24	STD		U		upstream photo of cobble - gravel section																														
R:	12	F:	25	STD		D		downstream photo of cobble - gravel section																														

FDIS Site Card

West Babine Study Area

Watershed Code: 480-504200-67300-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

4.0

446

COMMENTS	
Section	Comments
CHANNEL	All sample sites within this system have had low densities of fish captured for electroshocking effort.
CHANNEL	Possible soft barrier downstream may limit recruitment to this system.
CHANNEL	Extremely low density for cutthroat.
CHANNEL	CT caught (120mm)
CHANNEL	Heavy overstream vegetation (alder and devil's club).

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-504200-67300-00000-0000-0000-000-000-000-000-000

Reach # 4.0
ILP Map #
ILP #

WATERBODY															
Gazetted Name:										Local: None					
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0															
WS Code: 480-504200-67300-00000-0000-0000-000-000-000-000-000															
Waterbody ID:										ILP Map #:		ILP #:		Reach #: 4 -	
Project ID: 5098										Lake/Stream: S		Lake From Date:			
Fish Permit #: 145086K				Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: JH/JA		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
446	093M.017	40046				GPU EF 1	5	30	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
446	EF	1	2001/07/11	10:30	2001/07/11	11:20									
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
446	EF	1	1	O	299	300.0	2.0	600	1	5	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
446	EF	1	1	CT	J	2+	2	120	125	R					
INDIVIDUAL FISH DATA															
Site#	MTD/NO	H/P	Species	Length	Weight	Sex	Mat	Age		Vch#	Genetic	Roll #	Frame#	Comment	
								Str/Smpl#/Age			Str/Smpl#				
446	EF	1	1	CT	120		U	U							
446	EF	1	1	CT	125		U	U							
COMMENTS															
Section				Comments											
WATERBODY				conductivity jumped around from 20 to 30											



Site #446, upstream photo of cobble - gravel section.
Roll #12, Frame #24, Date: 2001/07/11



Site #446, downstream photo of cobble - gravel section.
Roll #12, Frame #25, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

2.0 093M.017 10030

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.017		ILP #: 10030		
REACH									
Reach #: 2.0		UTM(Zone/East/North): 10.645875.6115348				Sample Type: Biased			
Length (km): 1.37		Coupling: Partially Couple		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 11.6		Confinement: Frequently Confin		Order: 1		Open water: Absent			
US Elev (m): 1086		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 447		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/11	
Site Length (m): 250		GIS UTM 10.646723.6114401		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max	
Dewatered: ☐		Tribes.: ☐		Channel Width (m): 1.04		0.7		1.3	
Stage: Low ☐				Wetted Width (m): 0.68		0.5		0.800	
Med ☒				Bankfull Depth (m): 0.23		0.2		0.3	
High ☐		Temp (C): 5		pH: 6.6		Conductivity: 30			
						Turbidity: Turbid ☐		Low ☐	
								Moderate ☐	
								Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Gravels		D95 (cm): 10.00		Bars: Non ☐		Side ☒		Diagonal ☐	
Subdominant: Fines		D (cm): 0.10						Mid-channel ☐	
Channel Pattern: Irregular, Wandering		Islands: Occasional		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Unconfined						D1		D2	
Morphology: RP Riffle Pool						S1		S2	
						S3		S4	
						S5			
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		T		N		S	
LWD Dist: Evenly Distributed		Location: P/S/O: ☒		☒		☐		☒	
		☐		☐		☐		☐	
Right Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Shrubs		Stage: Mature forest							
Left Bank: Rip.Veg:		Stage: Mature forest							
		Instream Veg: None ☐		Algae ☐		Moss ☒		Vascular ☐	
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
447	EF	1	300	380 sec	600	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 2.0 ILP Map # 093M.017 ILP # 10030 Site 447

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

Project Code: 5098

WATERSHED

Gazetted Name: Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000
ILP Map#: 093M.017 ILP #: 10030 NID Map #: 093M.017 NID #: 40047 Reach #: 2.0 Site #: 447
Field UTM (Z.E.N): .. Method: Site Lg: 250 Method: HC Access: H
GIS UTM (Z.E.N): 10.646723.6114401 Ref. Name:
Date: 2001/07/11 Time: 12:17 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %		Mtd	Avg
Channel Width (m):	MS	1.10	1.30	0.90	1.25	1.00	0.70					1.04	Method I:	10.0	8.0	C	8.25
Wetted Width (m):	MS	0.60	0.50	0.60	0.80	0.80	0.80					0.68	Method II:	8.0	7.0	C	
Pool Depth (m):	MS	0.02	0.05	0.05	0.08	0.11	0.06					0.06					

Wb Depth: .2 .3 .2 Avg: 0.23 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	T	N	S	T	D	T
Loc: P/S/O:	☒	☒	☐	☒	☒	☒	☒

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☐

LWD: F DIST: E

LB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: MF

RB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: MF

WATER

EMS: Temp: 5 Method: T4 Req #: Cond.: 30 Method: S3
pH: 6.6 Method: P2 Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE
Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
D95: 10.0 D (cm): 0.10 Morph: RP DISTURBANCE INDICATORS
Pattern: IR C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: O
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☐ SIDE ☒ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Spawning Habitat	Moderate - associated with side gravel bars, limited by flow
Rearing Habitat	Moderate - associated with undercut banks and overstream vegetation, limited by flow
OverWinter Habitat	Low - no deep pools limited by flow

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 13 F: 02 STD U			upstream photo taken of typical overstream cover within sample site
R: 13 F: 03 STD D			downstream photo taken of typical overstream cover within sample site

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
2.0	093M.017	10030	447

COMMENTS	
Section	Comments
CHANNEL	No Fish Caught
CHANNEL	Potential fish access
CHANNEL	No barriers observed in site

West Babine Study Area

Reach #	ILP Map #	ILP #
2.0	093M.017	10030

Triton Environmental Consultants Ltd.



Site #447, upstream photo taken of typical overstream cover within sample site.
Roll #13, Frame #02, Date: 2001/07/11



Site #447, downstream photo taken of typical overstream cover within sample site.
Roll #13, Frame #03, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000

Reach # ILP Map # ILP #
7.0

STREAM REFERENCING									
Gazetted Name: WILLIAMS CREEK					Local Name:				
Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 7.0		UTM(Zone/East/North): 10.642182.6125103				Sample Type: Random			
Length (km): 1.29		Coupling: Partially Couple		Magnitude: 4		BGC Zone: SBS			
Gradient (%): 3.3		Confinement: Occasionally Conf		Order: 2		Open water: Absent			
US Elev (m): 1395		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 448		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/11	
Site Length (m): 250		GIS UTM 10.642641.6124155		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max	
Dewatered: ☐ Tribs.: ☐				Avg		Min		Max	
Stage: Low ☐		Channel Width (m): 2.28		2.1		2.5		6	
Med ☐		Wetted Width (m): 2.07		1.8		2.3		6	
High ☒		Bankfull Depth (m): 0.43		0.2		0.8		3	
Temp (C): 5		pH: 6.6		Conductivity: 30					
				Turbidity: Turbid ☐		Low ☐			
						Moderate ☐		Clear ☒	
MORPHOLOGY									
Bed Material: Dominant: Boulders		D95 (cm): 100.00		Bars: Non ☐		Side ☐		Diagonal ☒	
Subdominant: Cobble		D (cm): 3.00						Mid-channel ☐	
Channel Pattern: Sinuous		Islands: Occasional		DISTURBANCE		O1		B1	
Coupling: Partially Coupled				INDICATORS		B2		B3	
Confinement: Occasionally Confine						D1		D2	
Morphology: CP Cascade Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		S		S		T	
LWD Dist: Clumped		Location: P/S/O: ☒		☒		☒		☒	
		☒		☒		☒		☒	
Right Bank: Shape: Sloping (g)		Texture: Fines ☐		Gravel ☒		Cobble ☐		Boulder ☐	
Left Bank: Shape: Sloping (g)		Texture: Fines ☐		Gravel ☒		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Deciduous		Stage: Mature forest		Instream Veg: None ☐		Algae ☐		Moss ☒	
Left Bank: Rip.Veg:		Stage: Mature forest						Vascular ☐	
FEATURES									
NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)
093M.027	40548	F	4.0	GE		HC	R: 13 F: 06 L:	#:	10.642726.6123
Comments: barrier to fish									
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
448	EF	1	250	275 sec	600	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach # 7.0 ILP Map # ILP # Site 448

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: WILLIAMS CREEK Local Name: None
Watershed Code: 480-452300-13942-00000-0000-000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 40048 Reach #: 7.0 Site #: 448
Field UTM (Z.E.N): .. Method: Site Lg: 250 Method: HC Access: H
GIS UTM (Z.E.N): 10.642641.6124155 Ref. Name:
Date: 2001/07/11 Time: 13:40 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg	
Channel Width (m):	MS	2.40	2.10	2.50	2.20	2.20	2.30					2.28	Method I:	20.0	10.0	C	13.75
Wetted Width (m):	MS	2.10	2.10	2.30	2.20	1.80	1.90					2.07	Method II:	12.0	13.0	C	
Pool Depth (m):	MS	0.40	0.60	0.10	0.43	0.25	0.32					0.35					

Wb Depth: .8 .3 .2 Avg: 0.43 Method: MS Stage: L ☐ M ☐ H ☒ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	S	S	T	D	T	T
Loc: P/S/O:	☒	☒	☒	☒	☒	☒	☒

LWD: F DIST: C

LB SHP: S

Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: MF

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☐

RB SHP: S

Texture: F ☐ G ☒ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: MF

WATER

EMS: Req #: Cond.: 30 Method: S3
Temp: 5 Method: T4
pH: 6.6 Method: P2
Flood Signs: rafted debris Method: GE
Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE

MORPHOLOGY

Bed Material: Dominant: B Subdom: C O1 B1 B2 B3 D1 D2 D3
D95: 100.0 D (cm): 3.00 Morph: CP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: O
Coupling: PC
Confinement: OC
FSZ: ☐ Bars: N ☐ SIDE ☐ DIAG ☒ MID ☐ SPAN ☐ BR ☐

FEATURES

NID Map	NID	Type	Hgt	Method	Lg	Method	Photo	AirPhoto	UTM (Z/E/N)	Method
093M.027	40548	F	4.0	GE		HC	R: 13 F: 06 L: #:		10.642726.6123864	GIS

Comments: barrier to fish

HABITAT QUALITY

Name	Comments
Spawning Habitat	Low - associated with low amounts of clear gravel patches, limited by access and lack of adult resting
Rearing Habitat	Moderate - associated with deep pools and boulders, limited by access and rapid type habitat
OverWinter Habitat	Moderate - associated with deep pools, perennial flow, limited by access

FDIS Site Card

West Babine Study Area

Reach # ILP Map # ILP # Site
7.0 448

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

PHOTOS						
Photo			Foc Lg	Dir	Comments	
R:	13	F:	04	STD	U	upstream photo taken of typical habitat within site
R:	13	F:	05	STD	D	downstream photo taken of typical habitat within site
R:	13	F:	06	STD	U	upstream photo of 4m Falls
COMMENTS						
Section			Comments			
CHANNEL			Falls downstream at top of Reach #6			
CHANNEL			Extensive electroshocking efforts in mainstem immediately upstream of Falls			
CHANNEL			No Fish Caught upstream of 4m Falls			

FDIS Fish Card

West Babine Study Area

Watershed Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000

Reach # 7.0
ILP Map #
ILP #

WATERBODY													
Gazetted Name: WILLIAMS CREEK						Local: None							
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0													
WS Code: 480-452300-13942-00000-0000-0000-000-000-000-000-000													
Waterbody ID:				ILP Map #:				ILP #:		Reach #: 7 -			
Project ID: 5098				Lake/Stream: S				Lake From Date:					
Fish Permit #: 145086K			Date: 2001/07/11			To: 2001/07/11			Agency: C172		Crew: JH/JA		Resample: ☐
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment			
448	093M.027	40048				GPU EF 1	5	30	C				
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
448	EF	1	1	2001/07/11	13:40	2001/07/11	14:20						
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
448	EF	1	1	O	275	250.0	2.0	600	1	5	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
448	EF	1	1	NFC		0							



Site #448, upstream photo taken of typical habitat within site.
Roll #13, Frame #04, Date: 2001/07/11



Site #448, downstream photo taken of typical habitat within site.
Roll #13, Frame #05, Date: 2001/07/11



Site #448, upstream photo of 4m Falls.
Roll #13, Frame #06, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #
4.0

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000					ILP Map #:		ILP #:		
REACH									
Reach #: 4.0		UTM(Zone/East/North): 10.643145.6127119				Sample Type: Biased			
Length (km): .53		Coupling: Coupled		Magnitude: 2		BGC Zone: SBS			
Gradient (%): 9.8		Confinement: Frequently Confin		Order: 2		Open water: Absent			
US Elev (m): 1312		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 449		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/11	
Site Length (m): 200		GIS UTM 10.643403.6127039		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐				Avg		Min		Max	
Dewatered: ☐ Tribes.: ☐									
Stage: Low ☐		Channel Width (m): 2.28		2.1		2.400		6	
Med ☒		Wetted Width (m): 2.00		1.600		2.400		6	
High ☐		Bankfull Depth (m): 0.43		0.1		1		3	
Temp (C): 5		pH: 7.0		Conductivity: 40					
				Avg		Min		Max	
				Gradient %: 14.50		10		17	
				Pool Depth (m): 0.32		0.16		0.5	
				Turbidity: Turbid ☐		Low ☐			
				Moderate ☐		Clear ☒			
MORPHOLOGY									
Bed Material: Dominant: Cobble		D95 (cm): 80.00		Bars: Non ☐		Side ☐		Diagonal ☒	
Subdominant: Gravels		D (cm): 2.00						Mid-channel ☐	
Channel Pattern: Irregular, Wandering		Islands: Occasional		DISTURBANCE		O1		B1	
Coupling: Decoupled				INDICATORS		B2		B3	
Confinement: Unconfined						D1		D2	
Morphology: CP Cascade Pool						D3			
				C1		C2		C3	
				C4		C5		S1	
				S2		S3		S4	
				S5					
COVER									
Total Cover: Moderate		Type: SWD		LWD		B		U	
LWD: Few		Amount: T		S		T		S	
LWD Dist: Clumped		Location: P/S/O: ☒		☒		☒		☒	
		☒		☒		☒		☒	
Right Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Left Bank: Shape: Sloping (g)		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐	
Right Bank: Rip.Veg: Deciduous		Stage: Mature forest							
Left Bank: Rip.Veg:		Stage: Mature forest							
		Instream Veg: None ☐		Algae ☐		Moss ☒		Vascular ☒	
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
449	EF	1	470	400 sec	600	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach # 4.0 ILP Map # ILP # Site 449

PROJECT																																																																													
Project Name: Babine River Fish Inventory - 2001																																																																													
Stream Name (gaz.): BABINE RIVER										Project Code: 5098																																																																			
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000																																																																													
WATERSHED																																																																													
Gazetted Name:										Local Name: None																																																																			
Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000																																																																													
ILP Map#:		ILP #:		NID Map #: 093M.027		NID #: 40049		Reach #: 4.0		Site #: 449																																																																			
Field UTM (Z.E.N): ..				Method:		Site Lg: 200		Method: HC		Access: H																																																																			
GIS UTM (Z.E.N): 10.643403.6127039				Ref. Name:																																																																									
Date: 2001/07/11		Time: 14:50		Agency: C172		Crew: JH/JA		Fish Crd?: ☒		Incomplete: ☐																																																																			
CHANNEL																																																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Mtd</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>width</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Channel Width (m):</td> <td>MS</td> <td>2.10</td> <td>2.30</td> <td>2.10</td> <td>2.40</td> <td>2.40</td> <td>2.40</td> <td></td> <td></td> <td></td> <td></td> <td>2.28</td> </tr> <tr> <td>Wetted Width (m):</td> <td>MS</td> <td>1.90</td> <td>2.40</td> <td>2.30</td> <td>1.60</td> <td>1.60</td> <td>2.20</td> <td></td> <td></td> <td></td> <td></td> <td>2.00</td> </tr> <tr> <td>Pool Depth (m):</td> <td>MS</td> <td>0.28</td> <td>0.19</td> <td>0.50</td> <td>0.40</td> <td>0.40</td> <td>0.16</td> <td></td> <td></td> <td></td> <td></td> <td>0.32</td> </tr> </tbody> </table>													Mtd	width	width	width	width	width	width	width	width	width	width	Avg	Channel Width (m):	MS	2.10	2.30	2.10	2.40	2.40	2.40					2.28	Wetted Width (m):	MS	1.90	2.40	2.30	1.60	1.60	2.20					2.00	Pool Depth (m):	MS	0.28	0.19	0.50	0.40	0.40	0.16					0.32	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Gadient %</th> <th>Mtd</th> <th>Avg</th> </tr> </thead> <tbody> <tr> <td>Method I:</td> <td>15.0 17.0</td> <td>C</td> <td>14.50</td> </tr> <tr> <td>Method II:</td> <td>10.0 16.0</td> <td>C</td> <td></td> </tr> </tbody> </table>			Gadient %	Mtd	Avg	Method I:	15.0 17.0	C	14.50	Method II:	10.0 16.0	C	
	Mtd	width	width	width	width	width	width	width	width	width	width	Avg																																																																	
Channel Width (m):	MS	2.10	2.30	2.10	2.40	2.40	2.40					2.28																																																																	
Wetted Width (m):	MS	1.90	2.40	2.30	1.60	1.60	2.20					2.00																																																																	
Pool Depth (m):	MS	0.28	0.19	0.50	0.40	0.40	0.16					0.32																																																																	
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Method I:	15.0 17.0	C	14.50																																																																										
Method II:	10.0 16.0	C																																																																											
Wb Depth: .1 .2 1.0		Avg: 0.43		Method: MS		Stage: L ☐ M ☒ H ☐		No Vis.Ch.: ☐ Intermittent: ☐		Dw: ☐ Tribs.: ☐																																																																			
COVER Total: M <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Type:</th> <th>SWD</th> <th>LWD</th> <th>B</th> <th>U</th> <th>DP</th> <th>OV</th> <th>IV</th> </tr> </thead> <tbody> <tr> <td>Amount:</td> <td>T</td> <td>S</td> <td>T</td> <td>S</td> <td>D</td> <td>T</td> <td>T</td> </tr> <tr> <td>Loc: P/S/O:</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> <td>☒</td> </tr> </tbody> </table> LWD: F DIST: C LB SHP: S Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: D STG: MF CROWN CLOSURE 1 1-20% INSTREAM VEG: N ☐ A ☐ M ☒ V ☒ RB SHP: S Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐ RIP: D STG: MF														Type:	SWD	LWD	B	U	DP	OV	IV	Amount:	T	S	T	S	D	T	T	Loc: P/S/O:	☒	☒	☒	☒	☒	☒	☒																																								
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WATER																																																																													
EMS:				Req #:																																																																									
Temp: 5				Method: T4				Cond.: 40				Method: S3																																																																	
pH: 7.0				Method: P2				Turb.: T ☐ M ☐ L ☐ C ☒				Method: GE																																																																	
Flood Signs: None				Method: GE																																																																									
MORPHOLOGY																																																																													
Bed Material: Dominant: C				Subdom: G				O1 B1 B2 B3 D1 D2 D3																																																																					
D95: 80.0 D (cm): 2.00				Morph: CP				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																																		
Pattern: IR				DISTURBANCE INDICATORS				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5																																																																					
Islands: O								<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐																																																				
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FSZ: ☐				Bars: N ☐ SIDE ☐ DIAG ☒ MID ☐ SPAN ☐ BR ☐																																																																									
HABITAT QUALITY																																																																													
Name		Comments																																																																											
Spawning Habitat		Moderate - associated with clean patches of gravel throughout site, moderate adult resting																																																																											
Rearing Habitat		Moderate - associated with deep pools and undercut banks																																																																											
OverWinter Habitat		Moderate - associated with moderate deep pools and perennial flow																																																																											
PHOTOS																																																																													
Photo		Foc Lg		Dir		Comments																																																																							
R:	13	F:	07	STD		U		upstream photo of typical insects within site																																																																					
R:	13	F:	08	STD		D		downstream photo of habitat within site																																																																					

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
4.0			449

COMMENTS	
Section	Comments
CHANNEL	Downstream gradient barrier blocks upstream fish access
CHANNEL	No Fish Captured with extensive electroshocking effort

FDIS Fish Card

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

4.0

WATERBODY												
Gazetted Name:						Local: None						
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0												
WS Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000												
Waterbody ID:				ILP Map #:			ILP #:		Reach #:		4 -	
Project ID: 5098				Lake/Stream: S			Lake From Date:					
Fish Permit #: 145086K			Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: JH/JA		Resample: ☐	
SITE / METHOD												
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment		
449	093M.027	40049				GPU EF 1	5	40	C			
A. GEAR SETTINGS												
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment					
449	EF	1	2001/07/11	14:50	2001/07/11	15:25						
C. ELECTROFISHER SPECIFICATIONS												
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model	
449	EF	1	1	O	400	470.0	2.2	600	1	5	SMITH ROOT	12B
FISH SUMMARY												
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment			
449	EF	1	1	NFC		0						



Site #449, upstream photo of typical insects within site.
Roll #13, Frame #07, Date: 2001/07/11



Site #449, downstream photo of habitat within site.
Roll #13, Frame #08, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach # ILP Map # ILP #

3.0

STREAM REFERENCING											
Gazetted Name:						Local Name:					
Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000						ILP Map #:			ILP #:		
REACH											
Reach #: 3.0		UTM(Zone/East/North): 10.643632.6127077				Sample Type: Random					
Length (km): .62		Coupling: Coupled		Magnitude: 2		BGC Zone: SBS					
Gradient (%): 21.6		Confinement: Confined		Order: 2		Open water: Absent					
US Elev (m): 1260		Islands: NONE		Riparian Vegetation: Mixed C/D							
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified											
SITE											
Site #: 450		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/11			
Site Length (m): 150		GIS UTM 10.643779.6127129		Agency Name: Triton Environmental Consultants (Terrace)							
CHANNEL											
No Vis.Ch.: ☐		Intermittent: ☐		Avg		Min		Max		#	
Dewatered: ☐		Tribes.: ☐		Channel Width (m):		2.40		2.1		2.6 6	
Stage: Low ☐				Wetted Width (m):		2.08		1.9		2.3 6	
Med ☒				Bankfull Depth (m):		0.60		0.4		0.9 3	
High ☐		Temp (C): 5		pH: 6.8		Conductivity: 30					
								Turbidity: Turbid ☐		Low ☐	
								Moderate ☐		Clear ☒	
MORPHOLOGY											
Bed Material: Dominant: Cobble		D95 (cm): 80.00		Bars: Non ☐		Side ☐		Diagonal ☒		Mid-channel ☐ Span ☐	
Subdominant: Gravels		D (cm): 40.00								Braid ☐	
Channel Pattern: Sinuous		Islands: Occasional		DISTURBANCE		O1		B1		B2 B3 D1 D2 D3	
Coupling: Decoupled				INDICATORS		☐		☐		☐	
Confinement: Unconfined				C1 C2 C3 C4 C5 S1 S2 S3 S4 S5		☐		☐		☐	
Morphology: CP Cascade Pool						☐		☐		☐	
COVER											
Total Cover: Moderate		Type: SWD LWD B U DP OV IV									
LWD: Few		Amount: T S S S D T T									
LWD Dist: Clumped		Location: P/S/O: ☒		☒		☒		☒		☒	
Right Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐		Rock ☐ Manmade ☐	
Left Bank: Shape: V - shape		Texture: Fines ☒		Gravel ☐		Cobble ☐		Boulder ☐		Rock ☐ Manmade ☐	
Right Bank: Rip.Veg: Deciduous		Stage: Mature forest								Crown Closure 1-20%	
Left Bank: Rip.Veg:		Stage: Mature forest								Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☐	
FISH											
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)		
450	EF	1	150	159 sec	700	NFC	0				

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach # 3.0 ILP Map # ILP # Site 450

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER Project Code: 5098
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000

WATERSHED

Gazetted Name: Local Name: None
Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000
ILP Map#: ILP #: NID Map #: 093M.027 NID #: 40050 Reach #: 3.0 Site #: 450
Field UTM (Z.E.N): .. Method: Site Lg: 150 Method: HC Access: H
GIS UTM (Z.E.N): 10.643779.6127129 Ref. Name:
Date: 2001/07/11 Time: 15:45 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %		Mtd	Avg
Channel Width (m):	MS	2.40	2.60	2.10	2.30	2.50	2.50					2.40	Method I:	25.0	26.0	C	23.50
Wetted Width (m):	MS	2.00	1.90	2.10	2.00	2.20	2.30					2.08	Method II:	21.0	22.0	C	
Pool Depth (m):	MS	0.60	0.40	0.30	0.30	0.28	0.10					0.33					

Wb Depth: .4 .5 .9 Avg: 0.60 Method: MS Stage: L ☐ M ☒ H ☐ No Vis.Ch.: ☐ Intermittent: ☐
Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	T	S	S	S	D	T	T
Loc: P/S/O:	☒	☒	☒	☒	☒	☒	☒

LWD: F DIST: C

LB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: MF

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☐

RB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: D

STG: MF

WATER

EMS: Req #: 30
Temp: 5 Cond.: 30 Method: S3
pH: 6.8 Method: P2 Method: GE
Flood Signs: None Method: GE
Method: T4
Method: P2
Method: GE
Turb.: T ☐ M ☐ L ☐ C ☒

MORPHOLOGY

Bed Material: Dominant: C Subdom: G O1 B1 B2 B3 D1 D2 D3
D95: 80.0 D (cm): 40.0 Morph: CP DISTURBANCE INDICATORS
Pattern: SI C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
Islands: O
Coupling: DC
Confinement: UN
FSZ: ☐ Bars: N ☐ SIDE ☐ DIAG ☒ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Spawning Habitat	Moderate - associated with moderate clean patches of gravel, limited by steep gradient
Rearing Habitat	Moderate - associated with deep pools, LWD and boulders, limited by steep gradient
OverWinter Habitat	Moderate - associated with deep pools and perennial flow, limited by steep gradient

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 13 F: 09	STD	U	upstream photo of cascades typical within sample site
R: 13 F: 10	STD	D	downstream photo of cascades typical within sample site

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

3.0

450

COMMENTS	
Section	Comments
CHANNEL	High gradients block upstream access
CHANNEL	No Fish Captured upstream of gradient section with electroshocking effort
CHANNEL	Steep gradient, 23% - 150m approx.

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-430700-21000-72100-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

3.0

WATERBODY													
Gazetted Name:										Local: None			
Project Code: 480-000000-00000-00000-0000-000-000-000-000-0													
WS Code: 480-430700-21000-72100-0000-0000-000-000-000-000-000													
Waterbody ID:				ILP Map #:				ILP #:		Reach #: 3 -			
Project ID: 5098				Lake/Stream: S				Lake From Date:					
Fish Permit #: 145086K			Date: 2001/07/11			To: 2001/07/11			Agency: C172		Crew: JH/JA		Resample: ☐
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment			
450	093M.027	40050				GPU EF 1	5	30	C				
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
450	EF	1	2001/07/11	15:30	2001/07/11	15:50							
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
450	EF	1	1	O	159	150.0	2.4	700	I	5	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
450	EF	1	1	NFC		0							



Site #450, upstream photo of cascades typical within sample site.
Roll #13, Frame #09, Date: 2001/07/11



Site #450, downstream photo of cascades typical within sample site.
Roll #13, Frame #10, Date: 2001/07/11

West Babine Study Area

12.0

12.0

Gazetted Name:	Local Name:
Watershed Code: 480-430700-21000-00000-0000-000-000-000-000-000-000	ILP Map #: ILP #:

Reach #: 12.0	UTM(Zone/East/North): 10.651452.6127446	Sample Type: Random
Length (km): .44	Coupling: Coupled	Magnitude: 1
Gradient (%): 18.9	Confinement: Confined	Order: 1
US Elev (m): 1168	Islands: NONE	Riparian Vegetation: Mixed C/D
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified		
BGC Zone: SBS Open water: Absent		

Site #: 451	Field UTM ..	Agency: C172	Crew: JH/JA	Date: 2001/07/11
Site Length (m): 100	GIS UTM 10.644477.6127266	Agency Name: Triton Environmental Consultants (Terrace)		

No Vis.Ch.: ☐	Intermittent: ☐		Avg	Min	Max	#			Avg	Min	Max	#
Dewatered: ☐	Tribs.: ☐	Channel Width (m):	0.74	0.600	0.810	6		Gradient %:	21.00	20	22	4
Stage: Low ☒ Med ☐ High ☐		Wetted Width (m):	0.54	0.400	0.75	6		Pool Depth (m):	0.14	0.08	0.25	6
		Bankfull Depth (m):	0.23	0.1	0.4	3						
	Temp (C): 5	pH: 6.8				Conductivity: 40		Turbidity.: Turbid ☐ Low ☐			Moderate ☐	Clear ☐

[illegible]

Total Cover: Moderate		Type:	SWD	LWD	B	U	DP	OV	IV	FSZ: ☐
LWD: Few		Amount:	S	S	N	S	N	D	T	
LWD Dist: Evenly Distributed		Location: P/S/O:	☒ ☐ ☐	☒ ☐ ☐	☐ ☐ ☐	☒ ☐ ☐	☐ ☐ ☐	☒ ☐ ☐	☒ ☐ ☐	
Right Bank:	Shape: Sloping (g	Texture: Fines ☒	Gravel ☐	Cobble ☐	Boulder ☐	Rock ☐	Manmade ☐	Crown Closure		1-20%
Left Bank:	Shape: V - shape	Texture: Fines ☒	Gravel ☐	Cobble ☐	Boulder ☐	Rock ☐	Manmade ☐			
Right Bank:	Rip.Veg: Shrubs	Stage: Mature forest								
Left Bank:	Rip.Veg:	Stage: Mature forest							Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☐	

Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
451	EF	1	150	160 sec	600	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-00000-00000-00000-00000-00000-000

Reach # 12.0 ILP Map # ILP # Site 451

PROJECT

Project Name: Babine River Fish Inventory - 2001
 Stream Name (gaz.): BABINE RIVER
 Project Watershed Code: 480-000000-00000-00000-00000-00000-00000-00000-000
 Project Code: 5098

WATERSHED

Gazetted Name: Local Name: None
 Watershed Code: 480-430700-21000-00000-00000-00000-00000-00000-00000-000
 ILP Map#: ILP #: NID Map #: 093M.027 NID #: 40051 Reach #: 12.0 Site #: 451
 Field UTM (Z.E.N): .. Method: Site Lg: 100 Method: HC Access: H
 GIS UTM (Z.E.N): 10.644477.6127266 Ref. Name:
 Date: 2001/07/11 Time: 17:00 Agency: C172 Crew: JH/JA Fish Crd?: ☒ Incomplete: ☐

CHANNEL

	Mtd	width	width	width	width	width	width	width	width	width	width	Avg		Gadient %	Mtd	Avg
Channel Width (m):	MS	0.80	0.75	0.60	0.73	0.76	0.81					0.74	Method I:	21.0	20.0	C 21.00
Wetted Width (m):	MS	0.60	0.60	0.40	0.41	0.50	0.75					0.54	Method II:	22.0	21.0	C
Pool Depth (m):	MS	0.25	0.15	0.10	0.08	0.12	0.12					0.14				

Wb Depth: .1 .4 .2 Avg: 0.23 Method: MS Stage: L ☒ M ☐ H ☐ No Vis.Ch.: ☐ Intermittent: ☐ Dw: ☐ Tribs.: ☐

COVER Total: M

Type:	SWD	LWD	B	U	DP	OV	IV
Amount:	S	S	N	S	N	D	T
Loc: P/S/O:	☒	☒	☐	☒	☐	☒	☒

LWD: F DIST: E

LB SHP: V

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: MF

CROWN CLOSURE

1 1-20%

INSTREAM VEG: N ☐ A ☐ M ☒ V ☐

RB SHP: S

Texture: F ☒ G ☐ C ☐ B ☐ R ☐ A ☐

RIP: S

STG: MF

WATER

EMS: Req #: Cond.: 40 Method: S3
 Temp: 5 Method: T4 Turb.: T ☐ M ☐ L ☐ C ☒ Method: GE
 pH: 6.8 Method: P2
 Flood Signs: None Method: GE

MORPHOLOGY

Bed Material: Dominant: G Subdom: F O1 B1 B2 B3 D1 D2 D3
 D95: 24.0 D (cm): 1.00 Morph: CP DISTURBANCE INDICATORS
 Pattern: IR C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
 Islands: O
 Coupling: DC
 Confinement: UN
 FSZ: ☐ Bars: N ☐ SIDE ☒ DIAG ☐ MID ☐ SPAN ☐ BR ☐

HABITAT QUALITY

Name	Comments
Spawning Habitat	None - limited by seasonal flow and steep gradient, fines
Rearing Habitat	None - limited by seasonal flow and steep gradient
OverWinter Habitat	None - no deep pools, seasonal flow and steep gradient

PHOTOS

Photo	Foc Lg	Dir	Comments
R: 13 F: 11 STD	U		upstream photo of steep gradient section
R: 13 F: 12 STD	D		downstream photo of typical habitat found within site

FDIS Site Card

West Babine Study Area

Watershed Code: 480-430700-21000-00000-0000-0000-000-000-000-000-000

Reach #

ILP Map #

ILP #

Site

12.0

451

COMMENTS	
Section	Comments
CHANNEL	Highly ephemeral flows, low habitat complexity, predominance of fine and organic substrates, high gradient
CHANNEL	No Fish Captured
CHANNEL	Flows into cutblock

FDIS Fish Card

West Babine Study Area

Watershed Code:

480-430700-21000-00000-00000-0000-000-000-000-000

Reach #

12.0

ILP Map #

ILP #

WATERBODY												
Gazetted Name:										Local: None		
Project Code: 480-000000-00000-00000-00000-000-000-000-000-0												
WS Code: 480-430700-21000-00000-00000-000-000-000-000-000												
Waterbody ID:				ILP Map #:				ILP #:		Reach #: 12 -		
Project ID: 5098				Lake/Stream: S				Lake From Date:				
Fish Permit #:		145086K		Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: JH/JA		Resample: ☐
SITE / METHOD												
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment		
451	093M.027	40051				GPU EF 1	5	40	C			
A. GEAR SETTINGS												
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment					
451	EF	1	1	2001/07/11	17:00	2001/07/11	17:20					
C. ELECTROFISHER SPECIFICATIONS												
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model	
451	EF	1	1	O	160	150.0	0.7	600	I	5	SMITH ROOT	12B
FISH SUMMARY												
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment			
451	EF	1	1	NFC		0						



Site #451, upstream photo of steep gradient section.
Roll #13, Frame #11, Date: 2001/07/11



Site #451, downstream photo of typical habitat found within site.
Roll #13, Frame #12, Date: 2001/07/11

FDIS Reach/Site Summary

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000

Reach # 3.0 ILP Map # 093M.027 ILP # 10155

STREAM REFERENCING									
Gazetted Name:					Local Name:				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000					ILP Map #: 093M.027		ILP #: 10155		
REACH									
Reach #: 3.0		UTM(Zone/East/North): 10.642067.6128128				Sample Type: Random			
Length (km): .92		Coupling: Coupled		Magnitude: 1		BGC Zone: SBS			
Gradient (%): 23.0		Confinement: Confined		Order: 1		Open water: Absent			
US Elev (m): 1413		Islands: NONE		Riparian Vegetation: Mixed C/D					
Bars: None ☒ Side ☐ Diagonal ☐ Mid-channel ☐ Span ☐ Braid ☐ Landuse: Not Specified									
SITE									
Site #: 452		Field UTM ..		Agency: C172		Crew: JH/JA		Date: 2001/07/12	
Site Length (m): 250		GIS UTM 10.642608.6128497		Agency Name: Triton Environmental Consultants (Terrace)					
CHANNEL									
No Vis.Ch.: ☐ Intermittent: ☐									
Dewatered: ☐ Tribs.: ☐									
Stage: Low ☐		Avg		Min		Max		#	
Med ☒		Channel Width (m): 0.83		0.75		0.930		6	
High ☐		Wetted Width (m): 0.74		0.65		0.800		6	
Temp (C): 6		Bankfull Depth (m): 0.17		0.1		0.3		3	
pH: 6.6		Conductivity: 40							
		Turbidity: Turbid ☐ Low ☐							
		Moderate ☐ Clear ☒							
MORPHOLOGY									
Bed Material: Dominant: Gravels		D95 (cm): 31.00		Bars: Non ☐ Side ☒ Diagonal ☐ Mid-channel ☐ Span ☐					
Subdominant: Cobble		D (cm): 1.00							
Channel Pattern: Sinuous		Islands: Occasional		DISTURBANCE		O1 B1 B2 B3 D1 D2 D3			
Coupling: Decoupled				INDICATORS		☐ ☐ ☐ ☐ ☐ ☐ ☐			
Confinement: Unconfined						C1 C2 C3 C4 C5 S1 S2 S3 S4 S5			
Morphology: RP Riffle Pool						☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐			
COVER									
Total Cover: Moderate		Type: SWD LWD B U DP OV IV							
LWD: Few		Amount: S S N D T T T							
LWD Dist: Evenly Distributed		Location: P/S/O: ☒ ☐ ☐ ☒ ☐ ☐ ☒ ☐ ☐ ☒ ☐ ☐		FSZ: ☐					
Right Bank: Shape: Undercut		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐		Crown Closure 1-20%					
Left Bank: Shape: Undercut		Texture: Fines ☒ Gravel ☐ Cobble ☐ Boulder ☐ Rock ☐ Manmade ☐							
Right Bank: Rip.Veg: Deciduous		Stage: Mature forest							
Left Bank: Rip.Veg:		Stage: Mature forest		Instream Veg: None ☐ Algae ☐ Moss ☒ Vascular ☐					
FISH									
Site Number	Capture Method	Number of Events	Length fished (m)	Total Time	Voltage	Species	Total Fish	Minimum Length (mm)	Maximum Length (mm)
452	EF	1	200	120 sec	600	NFC	0		

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 3.0 ILP Map # 093M.027 ILP # 10155 Site 452

PROJECT																																																																														
Project Name: Babine River Fish Inventory - 2001										Project Code: 5098																																																																				
Stream Name (gaz.): BABINE RIVER																																																																														
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
WATERSHED																																																																														
Gazetted Name:										Local Name: None																																																																				
Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000																																																																														
ILP Map#: 093M.027			ILP #: 10155			NID Map #: 093M.027			NID #: 40052			Reach #: 3.0		Site #: 452																																																																
Field UTM (Z.E.N): ..					Method:					Site Lg: 250		Method: HC		Access: H																																																																
GIS UTM (Z.E.N): 10.642608.6128497										Ref. Name:																																																																				
Date: 2001/07/12			Time: 08:30			Agency: C172			Crew: JH/JA			Fish Crd?: ☒		Incomplete: ☐																																																																
CHANNEL																																																																														
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Bed Material:			Dominant: G			Subdom: C			O1 B1 B2 B3 D1 D2 D3																																																																					
D95: 31.0			D (cm): 1.00			Morph: RP			DISTURBANCE INDICATORS																																																																					
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Islands: O																																																																														
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HABITAT QUALITY																																																																														
Name					Comments																																																																									
Spawning Habitat					Moderate - associated with moderate clean gravel patches, limited by steep gradient and seasonal flow																																																																									
Rearing Habitat					Low - associated with undercut banks, limited by steep gradient																																																																									
OverWinter Habitat					Low - associated with no deep pools, limited by steep gradient																																																																									
PHOTOS																																																																														
Photo		Foc Lg		Dir		Comments																																																																								
R:	13	F:	13	STD		U		upstream photo of riffle/pools typical throughout sample site																																																																						
R:	13	F:	14	STD		D		downstream photo of riffle/pools typical throughout sample site																																																																						

FDIS Site Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach #	ILP Map #	ILP #	Site
3.0	093M.027	10155	452

COMMENTS	
Section	Comments
CHANNEL	Stream has been traversed by PIR staff
CHANNEL	No Fish Captured
CHANNEL	21-28% gradients
CHANNEL	Stream follows block boundary

FDIS Fish Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000

Reach # 3.0 ILP Map # 093M.027 ILP # 10155

WATERBODY															
Gazetted Name:										Local: None					
Project Code: 480-000000-00000-00000-0000-0000-000-000-000-000-0															
WS Code: 000-000000-00000-00000-0000-0000-000-000-000-000-000															
Waterbody ID:										ILP Map #: 093M.027		ILP #: 10155		Reach #: 3 -	
Project ID: 5098										Lake/Stream: S		Lake From Date:			
Fish Permit #: 145086K				Date: 2001/07/12		To: 2001/07/12		Agency: C172		Crew: JH/JA		Resample: ☐			
SITE / METHOD															
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO	Temp	Cond	Turbid	Comment					
452	093M.027	40052				GPU EF 1	6	40	C						
A. GEAR SETTINGS															
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment								
452	EF	1	2001/07/12	08:30	2001/07/12	09:10									
C. ELECTROFISHER SPECIFICATIONS															
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model				
452	EF	1	1	O	120	200.0	0.9	600	I	5	SMITH ROOT	12B			
FISH SUMMARY															
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment						
452	EF	1	1	NFC		0									



Site #452, upstream photo of riffle/pools typical throughout sample site.
 Roll #13, Frame #13, Date: 2001/07/12



Site #452, downstream photo of riffle/pools typical throughout sample site.
 Roll #13, Frame #14, Date: 2001/07/12

FDIS Reach Card

West Babine Study Area

Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000

Reach # 1.0 ILP Map # 093M.027 ILP # 10119

PROJECT									
Project Name: Babine River Fish Inventory - 2001					Project Code: 5098				
Stream Name (gaz.): BABINE RIVER									
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000-000									
WATERSHED									
Reach Watershed Code: 000-000000-00000-00000-0000-000-000-000-000-000-000									
ILP Map #: 093M.027		ILP #: 10119		Reach #: 1.0		NID Map #: 093M.027		NID #: 10168	
Air Photos			Names			UTM(Zone/East/North/Method)			
LINE: SRS30C6299			Gaz.:			10.646727.6124907			
#: 82			Local:			Sample Type: R Wetland: ☐			
SURVEY INFO									
Date: 2001/02/01			Agency: C172			Crew: SH			
ATTRIBUTES									
Length (km): .74		Gradient: 6.08		Setting: VF		DISTURBANCE O1 B1 B2 B3 D1 D2 D3			
DS Elev.: 972		Order: 2		Open water: A		INDICATORS ☐ ☐ ☐ ☐ ☐ ☐ ☐			
US Elev: 1017		Magnitude: 2		Confinement: OC		C1 C2 C3 C4 C5 S1 S2 S3 S4 S5			
		BGC Zone: SBS		Coupling: DC		☐ ☐ ☐ ☐ ☐ ☐ ☐			
Valley Flat: B		C/D: C		Islands: N					
Active Floodplain Visible: ☐		Est. Width:		Bars: ☒ N ☐ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR					
Channel Pattern: SI				Mass Movement: L		Exposed/Eroded: NS			
				Riparian Veg.: M		Landuse: NS			

MAPS		
Map Type	Map #	Year
TRIM	093M.027	

West Babine Study Area

000-000000-00000-00000-0000-0000-000-000-000-000-000-000

ILP #

10119

Lake From Date:

Resample:

FDIS Reach Card

West Babine Study Area

Watershed Code: 480-504200-00000-00000-0000-000-000-000-000-000

Reach # 19.0
ILP Map #
ILP #

PROJECT

Project Name: Babine River Fish Inventory - 2001
Stream Name (gaz.): BABINE RIVER
Project Watershed Code: 480-000000-00000-00000-0000-000-000-000-000-000

Project Code: 5098

WATERSHED

Reach Watershed Code: 480-504200-00000-00000-0000-000-000-000-000-000
ILP Map #: ILP #: Reach #: 19.0 NID Map #: 093M.017 NID #: 10435
Air Photos Names UTM(Zone/East/North/Method)
LINE: SRS30C6244 Gaz.: 10.645563.6114676 GIS
#: 119 Local: Sample Type: B Wetland: ☐

SURVEY INFO

Date: 2001/02/01 Agency: C172 Crew: SH

ATTRIBUTES

Length (km): .99 Gradient: 10.61 Setting: VW DISTURBANCE O1 B1 B2 B3 D1 D2 D3
DS Elev.: 944 Order: 2 Open water: A INDICATORS ☐ ☐ ☐ ☐ ☐ ☐ ☐
US Elev: 1049 Magnitude: 2 Confinement: FC C1 C2 C3 C4 C5 S1 S2 S3 S4 S5
BGC Zone: SBS Coupling: CO ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Valley Flat: N C/D: Islands: N
Active Floodplain Visible: ☐ Est. Width: Bars: ☒ N ☐ SIDE ☐ DIAG ☐ MID ☐ SPAN ☐ BR
Channel Pattern: SI Mass Movement: H Exposed/Eroded: NS
Riparian Veg.: M Landuse: NS

MAPS

Map Type	Map #	Year
TRIM	093M.017	

FDIS Fish Card

West Babine Study Area

Reach # ILP Map # ILP #

Watershed Code: 480-504200-00000-00000-0000-000-000-000-000-000-000

19.0

WATERBODY													
Gazetted Name:										Local: None			
Project Code: 480-000000-00000-00000-0000-000-000-000-000-000-0													
WS Code: 480-504200-00000-00000-0000-000-000-000-000-000-000													
Waterbody ID:					ILP Map #:					ILP #:		Reach #: 19 -	
Project ID: 5098					Lake/Stream: S					Lake From Date:			
Fish Permit #:		145086K		Date: 2001/07/11		To: 2001/07/11		Agency: C172		Crew: JH/JA		Resample: ☐	
SITE / METHOD													
Site#	NID Map	NID #	UTM:Zone/East/North/Mthd			MTD/NO		Temp	Cond	Turbid	Comment		
947	093M.017	90047				GPU	EF	1	5	30	C		
A. GEAR SETTINGS													
Site#	MTD/NO	H/P	Date In	Time In	Date Out	Time Out	Comment						
947	EF	1	1	2001/07/11	13:00	2001/07/11	13:35						
C. ELECTROFISHER SPECIFICATIONS													
Site#	MTD/NO	H/P	Encl	Sec	Length	Width	Voltage	Frequency	Pulse	Make	Model		
947	EF	1	1	O	250	100.0	2.0	600	I	5	SMITH ROOT	12B	
FISH SUMMARY													
Site#	MTD/NO	H/P	Species	Stage	Age	Total #	Lgth (Min/Max)	FishAct	Comment				
947	EF	1	1	NFC		0							
COMMENTS													
Section			Comments										
WATERBODY			Low densities downstream likely limit access										
WATERBODY			Stream was RECCIED 3x with no barriers observed										

APPENDIX II

Phase Completion Reports

Phase I-III Completion Report
Phase IV Completion Report
Phase V-VI Completion Report

PROJECT PHASE COMPLETION REPORT - PHASE I-III

FRBC Multi-Year Agreement Number: 0000102
MELP Project Number: SCI_C172_010_2001
FRBC Activity Number: 716432
FDIS Project Code: 5098
Project Name: Reconnaissance (1:20,000 scale) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds
Project Type: 1:20,000 Scale Reconnaissance
Report Date: April 15, 2001
Proponent: Skeena Cellulose Inc.
 Pacific Inland Resources Ltd.
 Triton Environmental Consultants Ltd.
Company/Agency: Triton Environmental Consultants Ltd.
Contact Person: Jason Harris
Contact Phone: (250) 635-1494
Contact E-Mail: jharris@triton-env.com
MELP Project Monitor: Paul Giroux
FRBC Coordinator: Todd Mahon
 Jay Baker

Table 1. List of Deliverables Submitted (Phase I)

Deliverable Product	Received	Approved (QA)
Bibliography (hardcopy and digital)		
List of Contacts (hardcopy and digital)		
Interim Maps with; • watershed boundaries • waterbodies with ILP's or watershed codes • reach breaks with NIDS • lakes with NIDS • proposed sample sites		
Reach tables (digital FDIS)		
Project Plan (hardcopy and digital)		
Lake tables (digital FDIS)		
Phase completion report (hardcopy and digital)		

Table 2. Activity Log (Phase I-III)

Date	Activity	Time Spent
Jan 10-Apr 15	Assign ILP's, delineate watershed boundaries	220 h
Jan 10-Apr 15	Completing Reach Tables and Quality Control	50 h
Jan 10-Apr 15	Completing Interim Maps and Quality Control	22.5 h
Jan 10-Apr 15	Lakes planning and lakes information tables	20.5 h
Jan 10-Apr 15	Completing Basin Classification, Reach Breaks, Lakes Classification and Quality Control	266.5 h
Jan 10-Apr 15	Create contact list, bibliography, etc.	84 h
Jan 10-Apr 15	Project Plan development	71 h
Jan 10-Apr 15	Interim Maps/Sample Site Locations	98 h

Summary of Work Completed

A meeting was conducted with Todd Mahon (contract monitor) to obtain information regarding the project specifications and project area.

A background data review was conducted to establish existing information within the Nicheyskwa, West Babine, Nilkitkwa and Harold Price watersheds. These reports were obtained from the Ministry of Environment Land and Parks (MELP) office in Smithers, the Bulkley Forest District office in Smithers, Skeena Cellulose in Smithers, Pacific Inland Resources in Smithers, various consultants and the BC Conservation Data Centre. A bibliography listing these reports was completed.

In the process of data collection and compilation consultants and government agencies were contacted. A list of contacts made during this process was completed.

FISS maps were reviewed and compared with the data collected during the background review. Information that was not included on the FISS maps, as well as new information gathered in Phase 4, will be transcribed to a corresponding 1:50,000 scale National Topographic Scale (NTS) map at Phase 5.

The project area boundaries were delineated on TRIM maps and all streams, wetlands and lakes were assigned, waterbody identifiers or ILP's. Watershed codes and ILP's were assigned using Arcview and FDIS.

Twenty-five working TRIM map sheets are being used for the project.

Detailed map and air photo analysis was conducted in order to identify and classify sub-basins within the study area; to determine reach breaks; and to determine individual reach characteristics for all watercourses, lakes and wetlands. The delineation of sub-basins was based on stream order and hierarchy within the watershed.

All connected wetlands were identified and added to the interim maps. Wetlands with defined or partly defined channels, which convey flow, were included in the stream portion of the sampling plan. While wetlands without defined channels, or those with extensive ponding were included in the lake portion of the sampling plan.

All watercourses within the study area were divided into reaches and physical features affecting fish habitat suitability (including gradient, confinement, channel pattern and riparian vegetation) were identified.

All lakes within the study area were assigned to lake groups.

The focus of Phase 3 was to develop the detailed sampling plan and produce the planning report. The number of sample sites proposed and a brief rationale for sample site selection is provided in the project plan.

Planning for the field-sampling portion of this project followed a balanced approach between MELP requirements and licensee (PIR and SCI) operational needs. Initial sample site selection was undertaken using the FDIS random generator. Further discretionary sites were added to the initial randomly generated sampling sites. Discretionary 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; and
- licensee operational needs.

Revisions to the stream sampling plan (increased number of site, alternate site locations) will be revised at the beginning of Phase 4, which is scheduled to commence in the summer of 2001.

Table 3. Project Area Statistics

Inventory Area	Nichyeskwa	West Babine	Nilkittkwa	Harold Price
Project Area (Ha)	34704.24 ha	23088.63 ha	40229.91 ha	31285.38 ha
Number of TRIM maps	8	7	11	9
Largest watershed (stream) order	5	4	5	6
Number of 3rd order basins	35	8	26	17
Km of streams	712.85 kms	371.97 kms	668.03 kms	588.13 kms
Number of stream reaches	923	409	823	659
Number of lakes	13	14	18	14

Table 4. Sample Site Summary

Inventory Area	Nichyeskwa	West Babine	Nilkittkwa	Harold Price
Number of Reaches	923	409	823	659
Number of Reaches <30%	812	403	745	444
Number of Reaches <20%	735	392	641	346
Number of Reaches to be Sampled	56	36	35	32
Number of Reaches Previously Sampled	92	72	137	83
Percent of Inventory Reaches Previously Sampled	10%	18%	17%	13%
Percent of Inventory Reaches Sampled (Total)	16%	26%	21%	17%

Progress and Problems Summary

Phase I-III was completed as scheduled. Watershed codes were assigned to a significant portion of the streams within each watershed. Searching through the watershed atlas was time consuming and much slower than using ILP's for stream delineation. The use of watershed codes will allow easier access to data management and possibly increase turnaround time for watershed code assignment from MELP.

Detailed reach planning was not conducted during the planning phases, as it is anticipated (based on previous experience) that several reaches will be moved during pre-field meetings with the licensee, ministry representatives and during the sampling program. We anticipate several changes to the sampling plan, and as discussed with Paul Giroux these changes will significantly alter the original sample site selection. Detailed reach planning forms will be completed during phase 5 and will be submitted as a deliverable for this phase.

No lakes were specifically selected for sampling, therefore no detailed lakes forms were completed. After discussions with Paul Giroux, lakes to be sampled will be selected after the conclusion of the stream sampling program. Lakes sampling will then focus on attaining information that will be of value to both MELP (watershed wide fish distribution) and the licensee (headwater lakes which support fish in ephemeral systems).

Next Phase Project Plans and Constraints

FISS updates will be provided with Phase V of the project as opposed to Phase III. At that time new information gathered from the field can be incorporated into FISS.

Phase IV (field) is scheduled to commence in the summer of 2001.

Summary of Phase 1-3 Costs

Professional Fees	\$34,797.00
Disbursements	\$1,702.00

Costs as per original budget

Contract Monitor Acceptance

Report Submitted By: Jason Harris	Date: April 15, 2001
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 4

- **MELP Project Number:** PIR_C172_010_2002
- **Contract Name:** Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds (Bulkley Forest District)
- **FRBC Project Number:** 01FRBC14
- **FRBC Region:** Skeena-Bulkley Region
- **MELP Region:** Skeena 06
- **FDIS Project Code:** 5098
- **Forest District:** Bulkley Forest District
- **Project Type:** 1:20 000 Reconnaissance
- **Report Date:** February 1, 2001
- **Proponent:** Pacific Inland Resources Ltd.
- **Company/Agency:** Triton Environmental Consultants Ltd.
- **Contact Person:** Jason Harris
- **Contact Phone:** (250) 635-1494
- **Contact E-Mail:** jharris@triton-env.com
- **MELP Project Monitor:** Matt Jessop
- **FRBC Coordinator:** Jay Baker
- **Proponent QA Monitor:** Chris Schell

List of Deliverables Submitted

<u>Deliverable Product</u>	<u>Received</u>	<u>Approved</u>
Site Cards	Delivered as attachment to Final Report	
Fish Collection Forms/Individual Fish Data Forms	Delivered as attachment to Final Report	
Additional Sampling Table	Delivered as attachment to Final Report	
Phase Completion Report		
Phase 2 Quality Assurance	Delivered as attachment to Final Report	

At Matt Jessop's request, some of the above listed items will be delivered at project completion (as attachments to the final report or appendices).

Activity Log

<u>Date</u>	<u>Activity</u>
July 3, 2001 – August 13, 2001	Gear up, travel, fieldwork and gear down for stream inventory in the Bulkley Forest District.

Summary of Work Completed

Total number of stream reaches sampled: 149

Summary of Phase Costs

Professional Fees	\$21,464.00
Disbursements	\$28,065.00

Progress and Problems Summary

Phase 4 was completed as scheduled. Sampling during late summer periods allowed crews to assess habitat during low flow conditions and gave a good representation of stream habitats throughout the year.

Identification of obstructions/barriers was critical to describing and assessing fisheries distribution within the sampled watersheds. Field crews tried to identify obstructions/barriers while on site, by either using a helicopter recce of the stream or by strategically moving sample sites while still in the field.

Field crews were in constant contact with Paul Giroux (Fisheries Inventory Specialist) and Jay Baker (FRBC contract monitor) when the originally proposed plan needed modifications. Modifications of the original plan were used to provide additional fisheries information for the working area.

Next Phase Project Plans and Constraints

The project will now proceed with data compilation and reporting.

Contract Monitor Acceptance

Report Submitted By: Jason Harris	Date: October 15, 2001
Phase Completion Approved:	Date:
Comments:	

PROJECT PHASE COMPLETION REPORT

PHASE 5/6

- **MELP Project Number:** PIR_C172_010_2002
- **Contract Name:** Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds (Bulkley Forest District)
- **FRBC Project Number:** 01FRBC14
- **FRBC Region:** Skeena-Bulkley Region
- **MELP Region:** Skeena 06
- **FDIS Project Code:** 5098
- **Forest District:** Bulkley Forest District
- **Project Type:** 1:20 000 Reconnaissance
- **Report Date:** February 1, 2002
- **Proponent:** Pacific Inland Resources Ltd.
- **Company/Agency:** Triton Environmental Consultants Ltd.
- **Contact Person:** Jason Harris
- **Contact Phone:** (250) 635-1494
- **Contact E-Mail:** jharris@triton-env.com
- **MELP Project Monitor:** Matt Jessop
- **FRBC Coordinator:** Jay Baker
- **Proponent QA Monitor:** Chris Schell

List of Deliverables Submitted

<u>Deliverable Product</u>	<u>Received</u>	<u>Approved (QA)</u>
FDIS Site Cards (in watershed reports)		
FDIS Fish Collection Forms (in watershed reports)		
FDIS Database (as attachment)		
Planning Document (as attachment)		
Field Notes (as attachment)		
Fish Ageing Structures (as attachment)		
Photodocumentation (as attachment)		
Digital Data (as attachment)		
FISS update data (as attachment)		
Final Reports (hardcopy and digital)		
Project Overview Map		
Interpretive Maps		
Project Maps		

Activity Log

<u>Date</u>	<u>Activity</u>	<u>Time Spent</u>
October - November 2001	site card entry	
November - December 2001	fish collection form entry	
November - December 2001	photo development/scanning/printing	
November - December 2001	watershed reporting	
January - February 2002	mapping project/interpretive/overview	

Summary of Work Completed

Total number of stream reaches processed: 149

Summary of Phase I-III Costs

Professional Fees	\$34,610.00
Disbursements	\$1,702.00

Summary of Phase IV Costs

Professional Fees	\$21,464.00
Disbursements	\$28,065.00

Summary of Phase V Costs

Professional Fees	\$15,181.00
Disbursements	\$1,380.00

Summary of Phase VI Costs

Professional Fees	\$41,581.00
Disbursements	\$6,017.00

Progress and Problems Summary

The reporting and mapping procedures followed those outlined in the *Reconnaissance (1:20,000) Inventory Standards* and includes additional data not otherwise required. The digitally produced maps include all information as per RIC standards and the contract. These maps include: watershed codes; ILP's; stream names; waterbody identifiers; stream networks; reach breaks; fish sampling/site card locations; fisheries sensitive zones; fish species; and features.

All data entered into FDIS was audited using MELP's QA/QC tool prior to inclusion into the watershed reports.

Next Phase Project Plans and Constraints

Nid to UTM conversions will be completed post QA/QC.

Triton will complete digital mapping QA internally after QA/QC has been completed.

Contract Monitor Acceptance

Report Submitted By: Jason Harris	Date: January 15, 2002
Phase Completion Approved:	Date:
Comments:	

October 15, 2000

Todd Mahon, Wildfor Consultants
FRBC Coordinator, Skeena Cellulose Inc., Carnaby Operations
#10 North Boundary Rd.
South Hazelton, B.C., V0J 2R0

Re: Stage 1 QA on phases 1-3 pre-field planning for fish and fish habitat inventory within selected tributaries within the Babine and Suskwa River watersheds.

Todd:

The stage 1 quality assurance (QA) review of the 1:20k stream inventory program conducted by Triton Environmental Consultants Ltd. for SCI Carnaby has been completed. Resources Inventory Committee standard QA forms were filled-out during the audit and are included with this letter. These forms list objectives that were met and comments pertaining to any problems that were identified during the QA review.

The list of deliverables, the list of contacts, and the list of references were essentially complete. ILPs tables were all fine though I noted a few, very minor tributaries that were missed during ILP designation. These are listed on the last page of this package. The stream and lake checks found only one minor error.

The sampling plan was based on FDIS random samples plus a number of bias samples placed strategically to determine the upstream limits of fish distribution. Historical information was used extensively in sampling planning. Though sampling rates for many of the project areas are below RIC standards, when historical samples are included in the calculation, overall sampling rates increase to acceptable levels under RIC and regional guidelines. As historical information is a fundamental part of this project, it is important that it is dealt with appropriately. I have reviewed similar Triton projects (Telkwa- 2000, for PIR) and have made comments with respect to dealing with historical data during phases 5-6. I would ask Triton to review my comments during the completion of this project.

Overall, this project has no significant errors and has passed QA. If you have any questions regarding the information presented in this memo or in the QA forms, please contact me by e-mail (schell@bulkley.net) or by telephone (250-847-0180).

Sincerely,

Chris Schell
QA/QC Monitor
Fish and Fish Habitat Inventory

cc. Jason Harris, Triton Environmental Consulting Ltd., Smithers, BC

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
FRBC project number: 000102 MELP project number: SCI-C172-010-2001
Submitted by: Triton Environmental Consultants Ltd
QA review by: Chris Schell Review date: April, 2001

FORM 1A DELIVERABLE CHECKLIST FOR PRE-FIELD – PAGE 1 OF 1

Check to ensure that a pre-field project planning report was received with all the associated deliverable products.

Deliverable	Hardcopy	Digital	Comments
1. Cover page	Y	Y	
2. List of digital products	Y	Y	
3. Overview map	Y	Y	
4. FISS map	-	-	To be submitted with phase 5-6
5. Existing data review			
• list of references	Y	Y	
• list of contacts	Y	Y	
• new FISS information summary and products	-	-	To be submitted with phase 5-6
6. ILP data*			
• ILP data sheets	n	Y	
• ILP maps	Y	n	
• ILP information sent to ministry	Y	Y	
7. Interim maps*	Y	-	
8. FDIS database	-	Y	
9. Sampling design sheets	Y	Y	
10. Aerial video record (optional)	na	na	
11. Project plan	Y	Y	

Approved: **Y**

Comments:

Recommended actions:

* If ILP maps and ILP data sheets have been sent to the ministry for processing, ILPs must be shown on the interim maps to allow QA to proceed.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
FRBC project number: 000102 MELP project number: SCI-C172-010-2001
Submitted by: Triton Environmental Consultants Ltd
QA review by: Chris Schell Review date: April, 2001

FORM 1B**EXISTING DATA REVIEW – PAGE 1 OF 1**

Deliverable	Deliverable check	Acceptable Y/N	Comments
List of contacts	Is list of contacts provided in acceptable format?	Y	
	Have all relevant contacts for the project area in question been pursued?	Y	
	• If NO, report known important contacts not provided on list.		
Bibliography	Is bibliography provided in acceptable format?	Y	
	Does the bibliography adequately cover the information known to be available for the project area in question?	Y	
	• If NO, report known available information that was not provided in bibliography.		
FISS information	Has FISS update information been provided for new sources of fisheries information that were not referenced in FISS as required in the contract:	N	To be submitted during phase 5-6
	• FISS forms		
	• clean NTS maps		
	• a copy of each new source provided		
	• a reference to each new source provided		
	• If NO, report required information not provided.		

Approved: Y

Comments:

Recommended actions:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1D COMBINED CHECK OF STREAM REACH DATA – PAGE 1 OF 4

List of reaches checked (FDIS /maps/air photos) 1-6: Harold Price, 7-10: Nichyeskwa

	1	2	3	4	5	6	7	8	9	10
NID	10681	10110	10446	10334	10316	10346	10494	10602	10536	10093
Map	93m.016	93m.025	93m.026	93m.026	93m.026	93m.026	93m.046	93m.046	93m.046	93m.056

For all reaches	1	2	3	4	5	6	7	8	9	10	Comments
Watershed code or ILP # and ILP map #											
ILP sheet, FDIS, ILP (or interim) map all match											
NID # and NID map # or UTM (optional, but no errors allowed; do not include in marking scheme)											
TRIM map number											
Reach number											
Reach break location											
Reach map symbol											
Map status											
Order											
Upstream/Downstream elevation											
Length											
Pattern											
Confinement											
AN/BR											
Basin type											
Total errors	0	0	0	0	0	0	0	0	0	0	
Shaded cell errors											
Features	1	2	3	4	5	6	7	8	9	10	Comments
NID and NID map number											
Map symbol											
Total errors											
Shaded cell errors											

Note: Any error identified in a shaded cell constitutes a failure.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
FRBC project number: 000102 MELP project number: SCI-C172-010-2001
Submitted by: Triton Environmental Consultants Ltd
QA review by: Chris Schell Review date: April, 2001

FORM 1D**CONTINUED – PAGE 2 OF 4**

Reaches to be field sampled	1	2	3	4	5	6	7	8	9	10	Comments
BCG zone											
Setting											
Open water											
Coupling											
Valley flat											
Active floodplain											
Islands											
Bars											
Disturbance indicators											
Mass movement											
Riparian vegetation											
Exposed/Eroded											
Land use											
Total errors											

Comments:**Recommended actions:**

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1D COMBINED CHECK OF STREAM REACH DATA – PAGE 3 OF 4

List of reaches checked (FDIS /maps/air photos) 1-6: Nichyeskwa, 7-10: West Babine

	1	2	3	4	5	6	7	8	9	10
NID	10264	10113	10777	10395	10669	10745	10491	10287	10194	10115
Map #	93m.057	93m.056	93m.047	93m.045	93m.046	93m.046	93m.018	93m.027	93m.027	93m.027

For all reaches	1	2	3	4	5	6	7	8	9	10	Comments
Watershed code or ILP # and ILP map #											
ILP sheet, FDIS, ILP (or interim) map all match											
NID # and NID map # or UTM (optional, but no errors allowed; do not include in marking scheme)											
TRIM map number											
Reach number											
Reach break location											
Reach map symbol											
Map status											
Order											
Upstream/Downstream elevation											
Length											
Pattern											
Confinement	?										
AN/BR											
Basin type											
Total errors	0	0	0	0	0	0	0	0	0	0	
Shaded cell errors											
Features	1	2	3	4	5	6	7	8	9	10	Comments
NID and NID map number											
Map symbol											
Total errors											
Shaded cell errors											

Note: Any error identified in a shaded cell constitutes a failure.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa

FRBC project number: 000102 MELP project number: SCI-C172-010-2001

Submitted by: Triton Environmental Consultants Ltd

QA review by: Chris Schell Review date: April, 2001

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Badine and Sukwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

Submitted by: Triton Environmental Consultants Ltd

Submitted by: TRON LINDENBERG
QA review by: Chris Schell Review date: April, 2001

CONTINUED – PAGE 4 OF 4

[illegible]

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1D COMBINED CHECK OF STREAM REACH DATA – PAGE 3 OF 4

List of reaches checked (FDIS /maps/air photos) 1-4: West Babine, 5-10: Nilkitkwa

	1	2	3	4	5	6	7	8	9	10
NID	10095	10184	10370	10448	10576	10652	10395	10191	10804	10712
Map #	93m.027	93m.027	93m.017	93m.017	93m.037	93m.037	93m.048	93m.058	93m.038	93m.037

For all reaches	1	2	3	4	5	6	7	8	9	10	Comments
Watershed code or ILP # and ILP map #											
ILP sheet, FDIS, ILP (or interim) map all match											
NID # and NID map # or UTM (optional, but no errors allowed; do not include in marking scheme)											
TRIM map number											
Reach number											
Reach break location											
Reach map symbol											
Map status											
Order					X						FDIS says 1, maps shows 2
Upstream/Downstream elevation											
Length											
Pattern											
Confinement	?										
AN/BR											
Basin type											
Total errors	0	0	0	0	1	0	0	0	0	0	
Shaded cell errors											
Features	1	2	3	4	5	6	7	8	9	10	Comments
NID and NID map number											
Map symbol											
Total errors											
Shaded cell errors											

Note: Any error identified in a shaded cell constitutes a failure.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1D CONTINUED – PAGE 4 OF 4

Reaches to be field sampled	1	2	3	4	5	6	7	8	9	10	Comments
BCG zone											
Setting											
Open water											
Coupling											
Valley flat											
Active floodplain											
Islands											
Bars											
Disturbance indicators											
Mass movement											
Riparian vegetation											
Exposed/Eroded											
Land use											
Total errors											

QA Summary

	All reaches		Features		Sampled reaches	
Number of reaches sampled	30		0		27	
Number of marks (N reaches sampled × attributes)	N×15	450	N×2		N×13	351
Maximum errors acceptable (12% of marks)	54		na		42	
Number of errors found	1		-		-	
Is the number of errors acceptable (Y/N)	Y		-		-	
Number of errors in zero-tolerance attributes	0		-		-	

Approved: **Y**

Comments:

Reaches to be sampled did not have a reach form completed during phase 1-3. I will check reach cards of sampled reaches during phase 5-6 checks.

Recommended actions:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1E

COMBINED CHECK OF PRE-FIELD LAKE INFORMATION – PAGE 1 OF 1

	1	2	3	4	5	6	7	8	9	10
ILP # or WBID	ILP 20041	ILP 30007	02022 BABR	ILP 10739	01947 BABR	00485 BABR	ILP 20033	ILP 20025	00046 BULK	00096 BULK
Reach #	6	1	9	2	4	7	2	2	8	2
Map #	93m.038	93m.038	93m.048	93m.046	93m.057	93m.017	93m.027	93m.027	93m.025	93m.025

Attribute	1	2	3	4	5	6	7	8	9	10	Comments
Official name											
Alias or local name											
WSC and waterbody identifier "or"											
ILP number and ILP map number											
NID # and NID map #											
Reach number											
Basin type											
Group											
Class (P/S)											
Genesis											
Surface area											
Magnitude											
Biogeoclimatic zone											
Wetland											
Total errors for each lake											

QA Summary

	Lakes	
Number of lakes sampled	10	
Number of marks (N lakes sampled x attributes)	N×13	130
Maximum errors acceptable (12% of marks)	15.6	
Number of errors found	0	
Is the number of errors acceptable (Y/N)	Y	
Number of errors in zero-tolerance attributes	0	

Approved: Y
 Comments:
 Recommended actions :

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
 FRBC project number: 000102 MELP project number: SCI-C172-010-2001
 Submitted by: Triton Environmental Consultants Ltd
 QA review by: Chris Schell Review date: April, 2001

FORM 1G

STREAM SAMPLING DESIGN – PAGE 1 OF 1

	Acceptable (Y/N)	Comment
Is the inventory watershed based (i.e., entire watershed)?	Y	
Are random reaches selected for sampling based on the FDIS statistical sampling design?	Y	
For low gradient or small/medium sized streams, is the sample size of reaches ≥ 8 ?	Y	Including the information from previously sampled reaches.
For higher gradient (20–30%) or large sized streams, is the minimum sample size 2 and maximum 25?	Y	Not for large size streams, but these have already be sampled.
Are discretionary reach samples included?		
• above or below barriers	Y	
• adjacent to identified cutblocks	?	
• major inlets and outlets to secondary lakes	na	
• of inlets and outlets to primary lakes	na	
• to achieve connectivity within sub-basins for fish distribution and identification of upstream limits.	Y	with the extensive information already available from historical data
Are proposed reach sample sites shown on TRIM maps with solid and dashed green lines?	Y	
Are planning tables complete with gear and voucher requirements indicated?	N	
Does the distribution of sample sites adequately represent all basin types and basin connectivities.	Y	Yes, when combined with historical data.
Is the overall sampling rate (sample number vs total number of reaches) acceptable?	Y	Yes, when combined with historical data.
Does the sample design adequately cover the requirements for a reconnaissance inventory?	Y	

Note: Any error identified in a shaded cell constitutes a failure.

Approved: - Y
 Comments:

Recommended actions:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
FRBC project number: 000102 MELP project number: SCI-C172-010-2001
Submitted by: Triton Environmental Consultants Ltd
QA review by: Chris Schell Review date: April, 2001

FORM 1H**LAKES SAMPLING DESIGN – PAGE 1 OF 1**

	Acceptable (Y/N)	Comment
Is the lakes planning table complete and accurate (including classification of lakes as primary, secondary or not sampled)?	Y	
Will all identified primary lakes be sampled?	NA	No lakes sampling planned.
Is there at least one lake from each lake group identified that will be sampled?		
Will at least 20% of all identified secondary lakes be sampled?		
Is justification provided for those lakes that will not be sampled?		
Are lakes proposed for sampling outlined on TRIM maps with solid and dashed green lines?		
Are planning tables complete with gear and voucher requirements indicated?		
Does the sample design adequately cover the requirements for a reconnaissance inventory? If no, the sampling design is rejected.		

Approved: Y

Comments:

No lake sampling is planned.

Recommended actions:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name:

FRBC project number: 000102

MELP project number: SCI-C172-010-2001

Submitted by:

Triton Environmental Consultants Ltd

QA review by:

Chris Schell Review date: April, 2001

FORM 11

PROJECT PLAN – PAGE 1 OF 1

	Acceptable (Y/N)	Comment
Does the project plan cover field inventory procedures?	Y	
Does the project plan cover data compilation?	Y	
Does the plan cover reporting requirements?	Y	
Does the plan include proposed staff for field phase?	Y	
Has existing data been considered and used in the project plan?	Y	extensively
Have sampling intentions of relevant WRP projects or other inventory project requirements been incorporated into the plan to avoid duplication?	Y	
Has the plan integrated the sampling of lake and stream habitats, in particular, with any aerial over flights and sampling of lake tributaries?	Y	
Have requirements for effective sampling methods in relation to stream reach and lake types been addressed?	Y	
Have requirements for biological and water samples been properly considered?	na	
• water sampling particularly in primary lakes	Y	
• fish voucher specimens	Y	
• other samples.	Y	
Does and should the plan incorporate any special fish species level inventory needs on a provincial or regional scale?	Y	
Are budget and schedule adequate to complete the project as planned?	na	
If the answer to any of the above is no, is this going to have an impact on the inventory project? If so, the project plan is rejected.	Y	Project plan passes

Approved: Y

Comments:

Recommended actions:

Have a nice day.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: SCI Carnaby F&FHI 2000-2001 – Tributaries in the Babine and Suskwa
FRBC project number: 000102 **MELP project number:** SCI-C172-010-2001
Submitted by: Triton Environmental Consultants Ltd
QA review by: Chris Schell **Review date:** April, 2001

- missing ILP - a small tributary flowing into –62500-76400 (93m.055)
- missing ILP - a small tributary flowing into –422000-5900 R6 (93m.026)
- missing ILP - a small tributary flowing into –5900-81400 R2 (93m.026)

September 14, 2001

Jay Baker, Silvicon Services Inc.
FRBC Co-ordinator, Pacific Inland Resources Ltd.
PO Box 3130
Smithers, BC, V0J 2N0

Jay:

The stage 2 quality assurance (QA) audits of the 1:20k stream inventory field data collection performed by Triton Environmental Consulting Ltd. has been completed. Resources Inventory Committee standard QA forms were completed during the audit and are included with this letter. The forms list objectives that were met and comments pertaining to any problems that were identified during the QA evaluation.

All crews passed the stage 2 QA audit with no comments. All demonstrated a proficient knowledge of how to collect and record data for the site card and fish collection form to full RIC standards. Fish collection effort and technique was also to standards and safety measures were maintained.

This letter concludes the stage 2 QA audit and reporting. If you have any questions regarding the information presented in this letter or in the QA forms please contact me by e-mail (schell@bulkley.net) or by telephone (250-847-0180).

Sincerely,

Chris Schell
Quality Assurance Monitor Fish and Fish Habitat Inventory

cc. Jason Harris, Triton Environmental Consulting Ltd., Terrace, BC

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: Pacific Inland Resources Ltd. 1:20k Aquatic Inventory – 2001

FRBC project number: _____ MELP project number: _____

Contractor: Triton Environmental Consulting Ltd.

Field audit by: Chris Schell Site identifier: na Field audit date: August, 2001

FORM 2A**FIELD AUDIT: CREW INFORMATION, PERMITS AND SAFETY****Crew information**

Crew members' names	Listed in contract or plan	Area of expertise (bio, geo, other)	First aid		Electrofishing	
			Level 1	Transportation	Crew member	Crew leader
Jason Harris	Y	Bio – tech	Y	Y		Y
Jason Dore	Y	Bio – tech	Y	Y		Y
Jesse Anaka	Y	Bio – tech	Y	Y		Y
David Taft	Y	Bio – tech	Y	Y		Y

QA comments about crew and/or certifications:

Permits and safety equipment

Group	Item	Acceptable		Specify problem
		Y	N	
Permits	MELP fish collection permit	Y		
	DFO fish collection permit	Y		
Safety plan	Safety plan in place	Y		
	Is safety plan followed	Y		

QA comments about permits and safety:

Note: If any obvious WCB regulations are contravened, the QA team must immediately inform the responsible contract manager and the ministry representative.

Field Audit Confirmation

Field audit leader: Chris Schell For field crew: All

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: Pacific Inland Resources Ltd. 1:20k Aquatic Inventory – 2001
 FRBC project number: _____ MELP project number: _____
 Contractor: Triton Environmental Consulting Ltd.
 Field audit by: Chris Schell Site identifier: na Field audit date: August, 2000

FORM 2B

FIELD AUDIT FOR STREAM SURVEYS: SITE CARD PROCEDURES CHECK – PAGE 1 OF 2

Materials present in field	Y	N	Notes
Site cards	Y		
Field reference materials	Y		
Field maps	Y		

List equipment used	Calibrated (Y/N)	Proper use (Y/N)	Notes
pH – electronic meter	Y	Y	
Conductivity – electronic meter	Y	Y	
Temperature – alcohol therm.	Y	Y	

Group	Item	Acceptable		Notes
		Tech.	Data	
Site selection	Representative site	Y	Y	
Reference	Stream name (Gaz)	Y	Y	
	Alias	Y	Y	
	WSD code or	Y	Y	
	ILP # and ILP map #	Y	Y	
	Map NID and NID map #	Y	Y	
	Field UTM (and method)	Y	Y	
	Reach number	Y	Y	
	Site number	Y	Y	
	Site length (and method)	Y	Y	
	Access	Y	Y	
	Date, time	Y	Y	
	Agency	Y	Y	
	Crew	Y	Y	
	Fish form	Y	Y	
Channel	Equipment	Y	Y	
	Channel widths	Y	Y	
	Wetted widths	Y	Y	

Notes:

Notes:

Field Audit Confirmation:

Field audit leader: Chris Schell For field crew: ALL

Group	Item	Acceptable		Note
		Tech.	Data	
Channel (continued)	Residual pool depth	Y	Y	
	Bankfull depth	Y	Y	
	Gradient	Y	Y	
	Stage	Y	Y	
	NVC; Dry/Int; DW; Tribs	Y	Y	
Cover	Total cover	Y	Y	
	Cover elements			
	• amount	Y	Y	
	• location	Y	Y	
	Crown closure	Y	Y	
	Large woody debris	Y	Y	
	• function	Y	Y	
	• distribution	Y	Y	
	Instream vegetation	Y	Y	
	Left and right bank shape	Y	Y	
	Texture	Y	Y	
	Riparian vegetation	Y	Y	
	Stage	Y	Y	
Morphology	Flood signs	Y	Y	
	Bed material	Y	Y	
	D95	Y	Y	
	D	Y	Y	
	Morphology	Y	Y	
	Disturbance indicators	Y	Y	
	Channel pattern	Y	Y	

Group	Item	Acceptable		Notes
		Tech.	Data	
Morphology (cont.)	Islands	Y	Y	
	Bars	Y	Y	
	Coupling	Y	Y	
	Confinement	Y	Y	
Water	Equipment	Y	Y	
	Temperature	Y	Y	
	pH	Y	Y	
	Conductivity	Y	Y	
	Turbidity	Y	Y	
Features	NID map #, NID	Y	Y	
	Type	Y	Y	
	Height, length	Y	Y	
	Photo	Y	Y	
Habitat quality	Keywords	Y	Y	
	Relevant comments	Y	Y	
	FSZ	Y	Y	
Photodocu- mentation	Roll #	Y	Y	
	Photo #	Y	Y	
	Focal length	Y	Y	
	Direction	Y	Y	
	NID #, NID map #	Y	Y	
	UTM and method	Y	Y	
Wildlife	Group	Y	Y	
	Relevant comment	Y	Y	

Notes:

Notes:

Field Audit Confirmation:

Field audit leader: Chris Schell For field crew: ALL

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: Pacific Inland Resources Ltd., 1:20k Aquatic Inventory – 2001

FRBC project number: _____ MELP project number: _____

Contractor: Triton Environmental Consulting Ltd.

Field audit by: Chris Schell Site identifier: na Field audit date: August, 2001

FORM 2D

FIELD AUDIT: FISH COLLECTION CHECK – PAGE 1 OF 3

Materials present in field	Y	N	Notes
Fish collection forms	Y		
Individual fish data forms	Y		
Field data reference	Y		
Field key to freshwater fishes of BC	Y		
Approved electroshocker	Y		
Ancillary fish capture equipment (buckets, dip nets, stop net)	Y		
Measuring board/ruler	Y		
Weigh scale	Y		
Fish samples (e.g., scale envelopes, tissue vials)	Y		
Voucher containers, preservative, labels	Y		

Sampling technique		Acceptable		Notes
		Y	N	
Lakes	Number and duration of gill nets set	na		
	Number and duration of minnow traps set	na		
	Other	na		
Streams	Site selection and length	Y		
	Number and duration of minnow traps set	Y		
	Other			
Electrofisher function	Tilt/safety switch	Y		
	Main power switch	Y		
	Anode deadman's switch	Y		
	Quick release harness	Y		
	Anode clean	Y		
Electrofishing techniques	Safe operation and signals	Y		
	Site coverage – all habitats	Y		
	Effective fish capture	Y		
	Impact on fish	Y		
Fish handling	Impacts on fish	Y		

Notes:

Notes:

Field Audit Confirmation:

Field audit leader: Chris Schell For field crew: All

Sampling technique		Acceptable		Notes
		Y	N	
Fish identification	Correct identification	Y		
	Correct use of fish key	Y		
	Unidentified fish procedure	Y		
Fish samples	Age sampling, labeling	na		
	Voucher storage, labeling	na		

Group Item		Acceptable		Notes
		Tech.	Data	
Header	Name	Y	Y	
	Stream/Lake/Wetland	Y	Y	
	Watershed code or ILP	Y	Y	
	Waterbody ID	Y	Y	
	ILP map #	Y	Y	
	Project ID	Y	Y	
	Reach #	Y	Y	
	MELP fish permit #	Y	Y	
	Date start, end	Y	Y	
	Agency, crew	Y	Y	
	Resample	Y	Y	
Site/Method	Site #	Y	Y	
	NID map #, NID #	Y	Y	
	Site UTM	Y	Y	
	Method, method no.	Y	Y	
	Temp, cond., turbidity	Y	Y	

Notes:

Group Item		Acceptable		Notes
		Tech.	Data	
Fish summary	Site #	Y	Y	
	Method, method no.	Y	Y	
	Haul/Pass (H/P)	Y	Y	
	Species, stage, total #	Y	Y	
	Min. length	Y	Y	
	Fish activity	Y	Y	
Gear specifications	Site #	Y	Y	
	Method, method no.	Y	Y	
	Haul	Y	Y	
	Date, time in	Y	Y	
	Date, time out	Y	Y	
	Net type, length & depth	Y	Y	
	Mesh size	Y	Y	
Electrofisher specifications	Set, habitat	Y	Y	
	Site #	Y	Y	
	Method, method no.	Y	Y	
	Pass	Y	Y	
	Time in, time out	Y	Y	
	EF sec.	Y	Y	
	Length, width	Y	Y	
	Enclosure	Y	Y	
	Voltage, freq., pulse	Y	Y	
	Make, model	Y	Y	
Individual fish data	Fish collection form #	Y	Y	
	Site #	Y	Y	

Notes:

Field Audit Confirmation:

Field audit leader: Chris Schell For field crew: All

Group	Item	Acceptable		Notes
		Tech.	Data	
Individual fish data continued	Method, method no.	Y	Y	
	Haul/Pass	Y	Y	
	Species	Y	Y	
	Length	Y	Y	
	Weight	na	na	
	Sex	na	na	
	Maturity	na	na	
	Age structure	na	na	
	Age sample #	na	na	
	Age	na	na	
	Voucher	na	na	
	Genetic structure	na	na	
	Genetic sample #	na	na	
	Photos	na	na	
	Number of fish sampled	na	na	

Notes:

Notes:

Field Audit Confirmation:

Field audit leader: Chris Schell For field crew: All

March 4, 2002

Jay Baker, Sylvicon Services
FRBC Co-ordinator, Pacific Inland Resources Ltd.
PO Box 3130,
Smithers, BC, VOJ 1N0

Jay,

The stage 3 quality assurance (QA) review of the final deliverables for the 1:20k stream inventory sampling program performed by Triton Environmental Consulting Ltd. for Pacific Inland Resources Ltd. has been completed. Resources Inventory Committee standard QA forms were completed during the audit and are included with this letter.

The list of deliverables check found everything present. The check of all the digital QA's found only one error worth comment, which is noted on the QA form. The card/FDIS/map check found vanishing few typological errors and no systematic problems. I noted a few very minor issues while checking the reports, which are otherwise fine. The FISS update deliverables and photodocumentation package was complete and to standards.

The maps were generally to standards and complete. They show a large amount of historical information, but some of this is confusing. The most obvious problems are for symbols pointing to streams that are not on the TRIM coverage. Some of these have comments explaining that they point to non-TRIM streams, but many do not, and they need it. Another problem is with symbols that have coding for inferred fish species. These create a confusing situation on the map; a historical symbol showing what appears to be fish presence, pointing to a stream coded as confirmed non-fish bearing. One answer may be to show in the legend that these are inferred fish species only, but this may still create confusion with users who are not very familiar with fish inventory. I feel a better answer may be to replace all historical inferred fish codes with NFC.

I would ask Triton to respond to each of my comments, and once we have agreed how each issue is going to be addressed, I can give QA approval to this project. If you have any questions regarding the information presented in this memo or in the QA forms please contact me by e-mail (schell@bulkley.net) or by telephone (250-847-0180).

Sincerely,

Chris Schell

cc. Jason Harris, Triton Environmental Consultants Ltd., Triton, BC

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3A DATA COMPILATION AND REPORTING DELIVERABLES FOR QA – PAGE 1 OF 1

	Deliverable	Hardcopy	Digital	Comments
Watershed reporting	Watershed report	Y	Y	
	Appendices			
	I. FDIS summary and photographs	na	Y	
	II. Hardcopy maps	Y	Y	
	Attachments			
	I. Pre-field planning document	Y	Y	
	II. Field notes and forms	Y	na	
	III. Fish aging structures	na	na	
	IV. Fish samples and vouchers	na	na	
	V. Photodocumentation	Y	Y	
	VI. Digital data	Y	Y	
	VII. FISS update data	Y	na	
	VIII. Aerial photography	na	na	
Individual lake reporting (for each lake)	Lake report			No lake reporting.
	Appendices			
	I. Lake survey form			
	II. Water chemistry data			
	III. Fish collection forms			
	IV. Tributary summary			
	V. Photographs			
	VI. Bathymetric map			
	Attachments			
	I. Photodocumentation			
	II. Digital data			
	III. FISS update data			
	IV. Phase completion reports			
	V. Field notes and forms			
	VI. Aerial photography			
	VII. Fish ageing structures			
	VIII. Fish samples and vouchers			

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3B DIGITAL DATA CHECKING – PAGE 1 OF 1

For each FDIS file provided:

FDIS filename:

	Acceptable		Comments
	Y	N	
Conversions done:			
• ILP to WSC	Y		Not completed, but not expected.
• NID-UTM	Y		completed
• Update bathymetry	na	na	
FDIS QA report attached			
• Acceptable error report	Y		see comment below

For each FDIS file and digital map file set:

ARCView fish QA tool

	Filename	Acceptable		Comments
		Y	N	
Digital map files				
• Metadata table	various	Y		
• Map attributes table	various	Y		
FDIS data check				
• Sequential reach numbering:		Y		
• Point locations on TRIM streams:		Y		only historical operational sites on unmaped streams and lakes failed this test
Copy of ARCView fish QA tool error report attached				
• Acceptable error report		Y		

One error report worth considering, Triton marked D3 or S3 disturbance indicator, but did not mark the LWD jam or sediment wedge as a feature, even though the feature must be there because it was the reason for the disturbance indicator. Triton's comment "Ground truth data is different than planning data." does not address the error as there is no planning data involved in this error.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 1 OF 6

1-6 West Babine, 7-10 Nilkitkwa

	1	2	3	4	5	6	7	8	9	10
Site #	60	66	410	415	448	452	10	45	166	430
NID map #	93M.027	93M.027	93M.027	93M.027	93M.027	93M.027	93M.037	93M.058	93M.037	93M.058
NID #	20060	20066	40010	40015	40048	40052	10010	20045	10166	40030

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2							X				
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribs	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2											
Channel - morpho- logy	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3											
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo- documen- tation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:									X				1

Comments:

7) two typos 2.3 instead of 2.6

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 3 OF 6

1-2 Nilkitkwa, 3-9 Harold Price, 10 Nichyeskwa

	1	2	3	4	5	6	7	8	9	10
Site #	436	458	13	47	50	54	72	437	441	2
NID map #	93M.058	93M.037	93M.016	93M.025	93M.025	93M.016	93M.026	93M.025	93M.026	93M.046
NID #	40036	40058	10013	20047	20050	10054	10072	40037	40041	10002

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2											
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribs	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2											
Channel - morpho logy	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3				X							
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo- documen- tation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:						1							1

Comments:

4) Disturbance indicators present on the card and in FDIS are missing from the site summary symbol on the map.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 5 OF 6

	1	2	3	4	5	6	7	8	9	10
Site #	7	19	25	38	402	419	422	30	26	9
NID map #	93M.046	93M.055	93M.056	93M.057	93M.046	93M.056	93M.056	93M.046	93M.056	93M.047
NID #	10007	30019	10025	10038	40002	40019	40022	10030	10026	10009

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2											
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribs	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2			X								
Channel - morpho- logy	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3											
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo- documen- tation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:					X								1

Summary of stream site information check:Number of marks (# cards * 52): 1560Maximum number of errors acceptable (5%): 52Number of errors found: 3

Is the number of errors acceptable: Yes

Comments:

3) card has lightly, FDIS has clear turbidity

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP – PAGE 1 OF 6

1-6 West Babine, 7-10 Nilkitkwa

	1	2	3	4	5	6	7	8	9	10
Site #	60	66	410	415	448	452	10	45	166	430
NID map #	93M.027	93M.027	93M.027	93M.027	93M.027	93M.027	93M.037	93M.058	93M.037	93M.058
NID #	20060	20066	40010	40015	40048	40052	10010	20045	10166	40030

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4									X		
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	1	0	1

Comments:

9) typo – 50 on the card, 5 in FDIS

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP,— PAGE 3 OF 6

1-2 Nilkitkwa, 3-9 Harold Price, 10 Nichyeskwn

	1	2	3	4	5	6	7	8	9	10
Site #	436	458	13	47	50	54	72	437	441	2
NID map #	93M.058	93M.037	93M.016	93M.025	93M.025	93M.016	93M.026	93M.025	93M.026	93M.046
NID #	40036	40058	10013	20047	20050	10054	10072	40037	40041	10002

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4											
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	0	0	

Comments:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP, - PAGE 5 OF 6

	1	2	3	4	5	6	7	8	9	10
Site #	7	19	25	38	402	419	422	30	26	9
NID map #	93M.046	93M.055	93M.056	93M.057	93M.046	93M.056	93M.056	93M.046	93M.056	93M.047
NID #	10007	30019	10025	10038	40002	40019	40022	10030	10026	10009

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4											
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	0	0	

Number of marks (# cards * 36): 720Number of errors found: 1Maximum number of errors acceptable (5%): 36

Is the number of errors acceptable: Yes

Comments:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3F

CONSISTENCY CHECK: INDIVIDUAL FISH DATA CARD, FDIS – PAGE 1 OF 1

	1	2	3	4	5	6	7	8	9	10
Site #	60	410	415	10	47	50	54	72	437	9
NID map #	93M.027	93M.027	93M.027	93M.037	93M.025	93M.025	93M.016	93M.026	93M.025	93M.047
NID #	20060	40010	40015	10010	20047	20050	10054	10072	40037	10009

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) individual fish data cards and 2) FDIS, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Individual fish data	Site #	1, 2											
	Method, method no.	1, 2											
	Haul/Pass	1, 2											
	Species	1, 2											
	Length	1, 2											
	Weight	1, 2											
	Sex	1, 2											
	Maturity	1, 2											
	Age structure	1, 2											
	Age sample #	1, 2											
	Age	1, 2											
	Voucher	1, 2			X								
	Genetic structure	1, 2											
	Genetic sample #	1, 2											
	Photos	1, 2											

Number of marks (# cards * 15): 150
 Number of errors found: 1

Maximum number of errors acceptable (5%): 7
 Is the number of errors acceptable: Y

Comments:

3) individual fish voucher marked on card, but not entered into FDIS.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3K

WATERSHED REPORT – PAGE 1 OF 4

Report section	Attribute	Accept. (Y/N)	Notes
Title page	Proper title	N	1
	Watershed code below title	Y	
	Prepared for...	Y	
	Prepared by...	Y	
	Signature of R.P.Bio	Y	
Reference information	Project reference information	N	2
	Watershed information	Y	
	Sampling design summary	Y	
	Contractor information	Y	
Disclaimer	Standard wording disclaimer	Y	
Acknowledgements		Y	
Table of contents	Page numbering correct	Y	
	Report outline follows standard	Y	
Lists	List of Tables	Y	
	List of Figures	Y	
	List of Attachments	Y	
	List of Appendices	Y	

Report section	Attribute	Accept. (Y/N)	Notes
Introduction			
Project scope, objectives	1:20 000, 1:5000, lakes, etc.	Y	
Location	Description	Y	
Overview map	8.5 × 11" or 11 × 17"	Y	
	Outline of study area	Y	
	Inset map showing relation to BC	Y	
	Sample site locations	Y	
	1:20 000 map grid	Y	
	Major communities	Y	
	TRIM/FC aquatic features	na	
Access	Description	Y	
Resource Information	First Nations	Y	
	Land use, logging, recreation, etc.	Y	
	Impacts and uses by wildlife	Y	
	Existing water quality data	Y	
	Previous fish presence	Y	
Methods	Reference to RECCE standards	Y	
	Reference to project plan	Y	
	Deviations from RIC standards	Y	
	Deviations from project plan	Y	
	List of sampling equipment used	Y	

Notes:

- 1) Don't use *study areas* to describe project areas, use watersheds
- 2) Tenure # ?

Report section	Attribute	Accept. (Y/N)	Notes
Results and Discussion			
Logistics	Problems encountered	Y	
	Weather	Y	
	Access	Y	
	Water levels	Y	
	How was it addressed	Y	
	How did it impact the results	Y	

Stream Report Format

Report section	Attribute	Accept. (Y/N)	Notes
Summary of sub-basin biophysical information	Table defining each sub-drainage	Y	
	Sub-drainages not sampled but included in the planning document	Y	
	Previous sampling reference	Y	
Habitat and fish distribution	Characteristics of fish habitats	Y	
	Pattern of fish distribution	Y	
	Location of significant fish pop.s	Y	
	Lakes treated as a reach of the stream	Y	
	Upstream limits of fish presence	Y	
	Obstructions influencing fish	Y	
	Table of all barriers present	Y	

Stream Report Format – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Fish age, size and life history	Summary of life stages, life history, etc.	Y	
	Length-frequency histograms	Y	
	Histograms have the same x-axis	Y	
	Table: Summary of length-at-age.	na	
	Data presented by species	Y	
	Data presented by sub-drainage	na	
	Age classes appear correct	na	
Significant features and fisheries observations	Fish and fish habitat		
	Critical habitats	Y	
	Special populations	Y	
	Wild stocks	Y	
	Rare stocks or species	Y	
	High value sport fishing	Y	
	NO management recommend.	Y	
	Habitat protection concerns		
	Fisheries sensitive zones	Y	
	Fish above 20% gradients	Y	
	Restoration opportunities	Y	
	Problem culverts	Y	
	Unstable slopes	Y	
Fish bearing status	Brief narrative section	N	1
	Table: Summary of fish bearing reaches...	Y	

Notes:

1) NCD is a FPCode term, not just a forest industry term.

Stream Report Format – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Fish bearing status (cont.)	Table: Summary of non-fish bearing reaches	Y	
	Table: Follow-up sampling required	Y	
References	All sources in report listed	Y	
	According to CBE style manual	Y	

Stream Report Appendices

Report section	Attribute	Accept. (Y/N)	Notes
Appendix I. FDIS summary and photographs	In ascending order by WSC	Y	
	Grouped by site	Y	
	FDIS reach card printouts	Y	
	FDIS site card printouts	Y	
	Fish data collection form	Y	
	Photos (min. 1, max. 4)	Y	
	All photos entered in FDIS	Y	
	Explanatory photo captions	Y	
	Photos in colour (final only)	Y	
Appendix II. Hardcopy maps – General	“E” size plots	Y	
	Folded in pocket in report	N	
	UTM projection	Y	
	1:20 000 map grid	Y	
	1:20 000 scale	Y	
	Complete title box	Y	
	Complete legend box	Y	1
	Source information box	Y	

Notes:

1) the second code in the historical sample symbol is not identified.
See last page for more mapping comments.

Stream Report Appendices – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Appendix II. Hardcopy maps – General (cont.)	Inset map box	Y	
	Fish species box	Y	
	100 m contour lines	Y	
	WSCs or ILPs for all sampled streams	Y	
	WSCs or ILPs for all 3 rd order or higher streams	Y	
	WSCs or ILPs for every other 1 st and 2 nd order stream	Y	
	WBIDs for all lakes	Y	
	Sample site locations	Y	
Project map	All site data symbols attached to sites	Y	
	Lake summary symbols	Y	
	Reach data symbols on all reaches <30% gradient and all reaches containing sites	Y	
	Features, obstructions, etc.	Y	
	Reach breaks and numbers	Y	
Interpretive map	Reach summary symbols for all reaches in the project area	Y	
	Features, obstructions	Y	
	Fish distribution limits	Y	
	Stream class	Y	

Stream Report Attachments

Report section	Attribute	Accept. (Y/N)	Notes
Attachment I. Planning document	Budget breakdown by phase	na	
	Project sampling design	Y	
	Process of site selection	Y	
	Reach table	Y	
	Lake table	Y	
	Random sample table	Y	
	References, contacts list	Y	
Attachment II. Field notes	Field book or facsimile	Y	
	Site cards	Y	
	Fish collection forms	Y	
	Individual fish data forms	Y	
	Field working maps	na	
Attachment III. Fish ageing structures	Actual ageing structures	na	
	Labelled photocopies	na	
	Annuli identified with red	na	
	Age data are correct	na	
Attachment IV. Voucher, DNA samples	Table: Vouchers collected	N	
	Table: DNA collected	N	
Attachment V. Photodocumentation	Table: Photo summary report	Y	
	Colour thumbnail reference	Y	
	Photo CD	Y	
	CD Image #s match digital	Y	
	Negatives in plastic sleeves	Y	
	Negatives labelled	Y	

Notes:

1) negatives are not entered into FDIS

Report section	Attribute	Accept. (Y/N)	Notes
Attachment V. Photodocumentation (cont.)	Negative #s match digital	N	1
	Prints in plastic sleeves	Y	
	Prints labelled	Y	
Attachment VI. Digital data	Budget breakdown by phase	na	
	Project sampling design	Y	
	References, contacts list	Y	
	Table of vouchers collected	Y	in FDIS
	Table of DNA collected	Y	in FDIS
	Photo summary report	Y	in FDIS
	Report tables, figures	Y	
	Report text	Y	
	FDISDAT.MDB	Y	
	Mapping files (plot files)	Y	
	Mapping files (metadata and map features files)	Y	
Attachment VII. FISS update data	FISS data forms and maps	Y	
	Copies of reference material	Y	
	Data on forms match FDIS	Y	
Attachment VIII. Aerial photography	Purchased aerial photos	na	
	Aerial video tape	na	

93M.046 480-370100-23000 why are reaches 2&3 solid red?

93M.056 335200-55500 why are reach 6&7 solid red?

Either the significance of the brackets and stars in the historical sample site symbol needs to be in the legend, or this site needs to be changed or removed to avoid confusion.

93M.046 – contradictory historical sites showing DV in what is now a solid blue stream (R1 of –29400-36900).

- historical sites on Nichyeskwa Creek are missing S-Classes
- R3 of –29400-57200 is also a problem (no inferred brackets around DV??)
- R2 of 10117 is also a problem

93M.047 – (480-341600) historical symbol stating RB captured, but stream is coded FB-inferred.

93M.055 – R2—60300-40100 (DV) on a solid blue stream

R2-10375 historical symbol says NVC but the stream is solid blue instead of purple

93M.056 – a number of historical symbols shoeing (DV) in solid blue streams

93M.057 – 10320, 10319, 10318 three steams with no sample sites but they're all solid purple.

- upstream of site 38, a (DV) on a solid blue stream

93M.017 – R1, 10037, historical site off of a TRIM stream line with no comment.

- a number of (DV) in solid blue streams

93M.027 – 480-430700 R11, shouldn't read extend to the cascades, not just to the site?

- lots of hisorical sites claiming (DV) in solid blue streams, and historical sites off of TRIM
- 480-456200 R2, shouldn't this be solid blue?

93M.037 - - lots of hisorical sites claiming (DV) in solid blue streams, and historical sites off of TRIM

93M.048 – 10184, -34100-62500 why are these creeks NVC with no sites on them?

- -378200-42500 historical NVC site but creek is dashed red

93M.058 –378200-64300 R 5 and tribs. Why are these creeks NVC with no sample sites?

March 4, 2002

Jay Baker, Sylvicon Services
FRBC Co-ordinator, Pacific Inland Resources Ltd.
PO Box 3130,
Smithers, BC, VOJ 1N0

Jay,

The stage 3 quality assurance (QA) review of the final deliverables for the 1:20k stream inventory sampling program performed by Triton Environmental Consulting Ltd. for Pacific Inland Resources Ltd. has been completed. Resources Inventory Committee standard QA forms were completed during the audit and are included with this letter.

The list of deliverables check found everything present. The check of all the digital QA's found only one error worth comment, which is noted on the QA form. The card/FDIS/map check found vanishing few typological errors and no systematic problems. I noted a few very minor issues while checking the reports, which are otherwise fine. The FISS update deliverables and photodocumentation package was complete and to standards.

The maps were generally to standards and complete. They show a large amount of historical information, but some of this is confusing. The most obvious problems are for symbols pointing to streams that are not on the TRIM coverage. Some of these have comments explaining that they point to non-TRIM streams, but many do not, and they need it. Another problem is with symbols that have coding for inferred fish species. These create a confusing situation on the map; a historical symbol showing what appears to be fish presence, pointing to a stream coded as confirmed non-fish bearing. One answer may be to show in the legend that these are inferred fish species only, but this may still create confusion with users who are not very familiar with fish inventory. I feel a better answer may be to replace all historical inferred fish codes with NFC.

I would ask Triton to respond to each of my comments, and once we have agreed how each issue is going to be addressed, I can give QA approval to this project. If you have any questions regarding the information presented in this memo or in the QA forms please contact me by e-mail (schell@bulkley.net) or by telephone (250-847-0180).

Sincerely,

Chris Schell

cc. Jason Harris, Triton Environmental Consultants Ltd., Triton, BC

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3A

DATA COMPILATION AND REPORTING DELIVERABLES FOR QA – PAGE 1 OF 1

	Deliverable	Hardcopy	Digital	Comments
Watershed reporting	Watershed report	Y	Y	
	Appendices			
	I. FDIS summary and photographs	na	Y	
	II. Hardcopy maps	Y	Y	
	Attachments			
	I. Pre-field planning document	Y	Y	
	II. Field notes and forms	Y	na	
	III. Fish aging structures	na	na	
	IV. Fish samples and vouchers	na	na	
	V. Photodocumentation	Y	Y	
	VI. Digital data	Y	Y	
	VII. FISS update data	Y	na	
	VIII. Aerial photography	na	na	
Individual lake reporting (for each lake)	Lake report			No lake reporting.
	Appendices			
	I. Lake survey form			
	II. Water chemistry data			
	III. Fish collection forms			
	IV. Tributary summary			
	V. Photographs			
	VI. Bathymetric map			
	Attachments			
	I. Photodocumentation			
	II. Digital data			
	III. FISS update data			
	IV. Phase completion reports			
	V. Field notes and forms			
	VI. Aerial photography			
	VII. Fish ageing structures			
	VIII. Fish samples and vouchers			

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3B DIGITAL DATA CHECKING – PAGE 1 OF 1

For each FDIS file provided:

FDIS filename:

	Acceptable		Comments
	Y	N	
Conversions done:			
• ILP to WSC	Y		Not completed, but not expected.
• NID-UTM	Y		completed
• Update bathymetry	na	na	
FDIS QA report attached			
• Acceptable error report	Y		see comment below

For each FDIS file and digital map file set:

ARCView fish QA tool

	Filename	Acceptable		Comments
		Y	N	
Digital map files				
• Metadata table	various	Y		
• Map attributes table	various	Y		
FDIS data check				
• Sequential reach numbering:		Y		
• Point locations on TRIM streams:		Y		only historical operational sites on unmaped streams and lakes failed this test
Copy of ARCView fish QA tool error report attached				
• Acceptable error report		Y		

One error report worth considering, Triton marked D3 or S3 disturbance indicator, but did not mark the LWD jam or sediment wedge as a feature, even though the feature must be there because it was the reason for the disturbance indicator. Triton's comment "Ground truth data is different than planning data." does not address the error as there is no planning data involved in this error. Comment in FDIS QA has been changed. No feature was recorded in the field.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 1 OF 6

1-6 West Babine, 7-10 Nilkitkwa

	1	2	3	4	5	6	7	8	9	10
Site #	60	66	410	415	448	452	10	45	166	430
NID map #	93M.027	93M.027	93M.027	93M.027	93M.027	93M.027	93M.037	93M.058	93M.037	93M.058
NID #	20060	20066	40010	40015	40048	40052	10010	20045	10166	40030

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2							X				
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribs	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2											
Channel - morpho logy	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3											
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo- documen- tation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:									X				1

Comments:7) two typos 2.3 instead of 2.6 Corrected

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 3 OF 6

1-2 Nilkitkwa, 3-9 Harold Price, 10 Nichyeskwa

	1	2	3	4	5	6	7	8	9	10
Site #	436	458	13	47	50	54	72	437	441	2
NID map #	93M.058	93M.037	93M.016	93M.025	93M.025	93M.016	93M.026	93M.025	93M.026	93M.046
NID #	40036	40058	10013	20047	20050	10054	10072	40037	40041	10002

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2											
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribs	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2											
Channel - morphology	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3				X							
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo-documentation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:						1							1

Comments:

4) Disturbance indicators present on the card and in FDIS are missing from the site summary symbol on the map.
Corrected.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
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FORM 3C

CONSISTENCY CHECK: STREAM CARDS, FDIS, PROJECT, INTERPRETIVE MAPS – PAGE 5 OF 6

	1	2	3	4	5	6	7	8	9	10
Site #	7	19	25	38	402	419	422	30	26	9
NID map #	93M.046	93M.055	93M.056	93M.057	93M.046	93M.056	93M.056	93M.046	93M.056	93M.047
NID #	10007	30019	10025	10038	40002	40019	40022	10030	10026	10009

Record errors below with an 'x.' An error occurs if there is any inconsistency among: 1) field site cards, 2) FDIS, 3) project maps and 4) interpretive maps, as specified for each attribute.

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Stream name	1, 2, 3, 4											
	Watershed code or ILP map # and ILP #	1, 2, 3, 4											
	NID map # and NID #	1, 2											
	Reach #	1, 2, 3, 4											
	Site #	1, 2, 3, 4											
	Site length	1, 2											
	Access	1, 2											
	Survey date	1, 2, 3, 4											
	Agency conducting survey	1, 2, 3, 4											
	Time of survey	1, 2											
	Crew conducting survey	1, 2											
	Fish form completed	1, 2											
Channel	Channel width	1, 2, 3, 4											
	Wetted width	1, 2											
	Residual pool depth	1, 2											
	Gradient	1, 2, 3, 4											
	Bankfull depth	1, 2											
	Stage	1, 2											
	No Vis. Ch., DW, and Dry/Int.	1, 2, 3, 4											
	Tribes	1, 2, 3, 4											
Cover	Total cover	1, 2											
	Cover elements	1, 2											
	Functional LWD (amount, distribution)	1, 2											
	Crown closure	1, 2											
	Instream vegetation	1, 2											
	Bank shape, texture, riparian vegetation	1, 2											

Card section	Attribute	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Water	EMS #	1, 2, 3, 4											
	Temperature, pH	1, 2											
	Water chemistry requisition #	1, 2											
	Conductivity, turbidity	1, 2			X								
Channel - morpho- logy	Flood signs	1, 2											
	Bed material	1, 2, 3											
	D95, D	1, 2											
	Morphology	1, 2, 3											
	Disturbance indicators	1, 2, 3											
	Pattern	1, 2, 3											
	Islands, bars, coupling	1, 2											
	Confinement	1, 2, 3											
Features	NID map # and NID #	1, 2											
	Type, height/length	1, 2, 3, 4											
	Photo, comments	1, 2, 3, 4											
	UTM	1, 2											
Habitat quality	General comments	1, 2											
	Fisheries sensitive zones	1, 2											
Photo- documen- tation	Roll #	1, 2											
	Frame #	1, 2											
	Focal length	1, 2											
	Direction	1, 2											
	Comments	1, 2											
Wildlife	Group	1, 2											
	Observations	1, 2											
Comments	General comments	1, 2											
Total errors:					X								1

Summary of stream site information check:

Number of marks (# cards * 52): 1560

Maximum number of errors acceptable (5%): 52

Number of errors found: 3

Is the number of errors acceptable: Yes

Comments:3) card has lightly, FDIS has clear turbidity Corrected.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP – PAGE 1 OF 6

1-6 West Babine, 7-10 Nilkitkwa

	1	2	3	4	5	6	7	8	9	10
Site #	60	66	410	415	448	452	10	45	166	430
NID map #	93M.027	93M.027	93M.027	93M.027	93M.027	93M.027	93M.037	93M.058	93M.037	93M.058
NID #	20060	20066	40010	40015	40048	40052	10010	20045	10166	40030

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4									X		
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	1	0	1

Comments:

9) typo – 50 on the card, 5 in FDIS Corrected.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP,— PAGE 3 OF 6

1-2 Nilkitkwa, 3-9 Harold Price, 10 Nicheyskwn

	1	2	3	4	5	6	7	8	9	10
Site #	436	458	13	47	50	54	72	437	441	2
NID map #	93M.058	93M.037	93M.016	93M.025	93M.025	93M.016	93M.026	93M.025	93M.026	93M.046
NID #	40036	40058	10013	20047	20050	10054	10072	40037	40041	10002

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4											
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	0	0	

Comments:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3E

CONSISTENCY CHECK: FISH COLLECTION FORM, FDIS, PROJECT MAP, INTERPRETIVE MAP,— PAGE 5 OF 6

	1	2	3	4	5	6	7	8	9	10
Site #	7	19	25	38	402	419	422	30	26	9
NID map #	93M.046	93M.055	93M.056	93M.057	93M.046	93M.056	93M.056	93M.046	93M.056	93M.047
NID #	10007	30019	10025	10038	40002	40019	40022	10030	10026	10009

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) fish collection forms, 2) FDIS, 3) project maps, and 4) interpretive maps, and/or 5) lake outline maps, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Header	Name	1, 2, 3, 4, 5											
	Stream/Lake/Wetland	1, 2, 3											
	Watershed code or ILP	1, 2, 3, 4, 5											
	Waterbody ID	1, 2, 5											
	ILP map #	1, 2											
	Reach #	1, 2, 3, 4, 5											
	MELP fish permit #	1, 2											
	Date start, end	1, 2											
	Agency, crew	1, 2											
	Resample	1, 2											
Site/Method	Site #	1, 2, 3, 4, 5											
	NID map #, NID #	1, 2											
	Site UTM	1, 2											
	Method, method no.	1, 2											
	Temp, turbidity	1, 2											
	Conductivity	1, 2, 3, 4											
Fish summary	Method, method no.	1, 2											
	Haul/Pass (H/P)	1, 2											
	Species	1, 2, 3, 4											
	Stage, total #	1, 2											
	Min. length	1, 2											
	Fish activity	1, 2											

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Gear specifications	Method, method no.	1, 2											
	Haul	1, 2											
	Date, time in/out	1, 2											
	Net type, lgth, dpth	1, 2											
	Mesh size	1, 2											
	Set, habitat	1, 2											
Electrofisher specifications	Method, method no.	1, 2											
	Pass	1, 2											
	Time in, time out	1, 2											
	EF sec.	1, 2											
	Length, width	1, 2											
	Enclosure	1, 2											
	Voltage, freq., pulse	1, 2											
	Make, model	1, 2											
Total:			0	0	0	0	0	0	0	0	0	0	

Number of marks (# cards * 36): 720Number of errors found: 1Maximum number of errors acceptable (5%): 36

Is the number of errors acceptable: Yes

Comments:

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3F

CONSISTENCY CHECK: INDIVIDUAL FISH DATA CARD, FDIS – PAGE 1 OF 1

	1	2	3	4	5	6	7	8	9	10
Site #	60	410	415	10	47	50	54	72	437	9
NID map #	93M.027	93M.027	93M.027	93M.037	93M.025	93M.025	93M.016	93M.026	93M.025	93M.047
NID #	20060	40010	40015	10010	20047	20050	10054	10072	40037	10009

Record errors below with an 'x'. An error occurs if there is inconsistency among 1) individual fish data cards and 2) FDIS, as specified for each attribute.

Group	Item	Where to check	1	2	3	4	5	6	7	8	9	10	Error locations
Individual fish data	Site #	1, 2											
	Method, method no.	1, 2											
	Haul/Pass	1, 2											
	Species	1, 2											
	Length	1, 2											
	Weight	1, 2											
	Sex	1, 2											
	Maturity	1, 2											
	Age structure	1, 2											
	Age sample #	1, 2											
	Age	1, 2											
	Voucher	1, 2			X								
	Genetic structure	1, 2											
	Genetic sample #	1, 2											
	Photos	1, 2											

Number of marks (# cards * 15): 150
 Number of errors found: 1

Maximum number of errors acceptable (5%): 7
 Is the number of errors acceptable: Y

Comments:

3) individual fish voucher marked on card, but not entered into FDIS. Corrected. No voucher on card or in database.

FISH INVENTORY QUALITY ASSURANCE CHECK FORM

Project name: PIR's Reconnaissance Fish and Fish Habitat Inventory Program, 2001-2002
FRBC project number: 01FRBC14 **MELP project number:** PIR-C172-010-2002
Contractor: Triton Environmental Consultants Ltd.
QA review by: Chris Schell **Review date:** February, 2002

FORM 3K

WATERSHED REPORT – PAGE 1 OF 4

Report section	Attribute	Accept. (Y/N)	Notes
Title page	Proper title	N	1
	Watershed code below title	Y	
	Prepared for...	Y	
	Prepared by...	Y	
	Signature of R.P.Bio	Y	
Reference information	Project reference information	N	2
	Watershed information	Y	
	Sampling design summary	Y	
	Contractor information	Y	
Disclaimer	Standard wording disclaimer	Y	
Acknowledgements		Y	
Table of contents	Page numbering correct	Y	
	Report outline follows standard	Y	
Lists	List of Tables	Y	
	List of Figures	Y	
	List of Attachments	Y	
	List of Appendices	Y	

Report section	Attribute	Accept. (Y/N)	Notes
Introduction			
Project scope, objectives	1:20 000, 1:5000, lakes, etc.	Y	
Location	Description	Y	
Overview map	8.5 × 11" or 11 × 17"	Y	
	Outline of study area	Y	
	Inset map showing relation to BC	Y	
	Sample site locations	Y	
	1:20 000 map grid	Y	
	Major communities	Y	
	TRIM/FC aquatic features	na	
Access	Description	Y	
Resource Information	First Nations	Y	
	Land use, logging, recreation, etc.	Y	
	Impacts and uses by wildlife	Y	
	Existing water quality data	Y	
	Previous fish presence	Y	
Methods	Reference to RECCE standards	Y	
	Reference to project plan	Y	
	Deviations from RIC standards	Y	
	Deviations from project plan	Y	
	List of sampling equipment used	Y	

Notes:

- 1) Don't use *study areas* to describe project areas, use watersheds Changed on all.
- 2) Tenure # Added to all?

Report section	Attribute	Accept. (Y/N)	Notes
Results and Discussion			
Logistics	Problems encountered	Y	
	Weather	Y	
	Access	Y	
	Water levels	Y	
	How was it addressed	Y	
	How did it impact the results	Y	

Stream Report Format

Report section	Attribute	Accept. (Y/N)	Notes
Summary of sub-basin biophysical information	Table defining each sub-drainage	Y	
	Sub-drainages not sampled but included in the planning document	Y	
	Previous sampling reference	Y	
Habitat and fish distribution	Characteristics of fish habitats	Y	
	Pattern of fish distribution	Y	
	Location of significant fish pop.s	Y	
	Lakes treated as a reach of the stream	Y	
	Upstream limits of fish presence	Y	
	Obstructions influencing fish	Y	
	Table of all barriers present	Y	

Stream Report Format – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Fish age, size and life history	Summary of life stages, life history, etc.	Y	
	Length-frequency histograms	Y	
	Histograms have the same x-axis	Y	
	Table: Summary of length-at-age.	na	
	Data presented by species	Y	
	Data presented by sub-drainage	na	
	Age classes appear correct	na	
Significant features and fisheries observations	Fish and fish habitat		
	Critical habitats	Y	
	Special populations	Y	
	Wild stocks	Y	
	Rare stocks or species	Y	
	High value sport fishing	Y	
	NO management recommend.	Y	
	Habitat protection concerns		
	Fisheries sensitive zones	Y	
	Fish above 20% gradients	Y	
	Restoration opportunities	Y	
	Problem culverts	Y	
	Unstable slopes	Y	
Fish bearing status	Brief narrative section	N	1
	Table: Summary of fish bearing reaches...	Y	

Notes:

1) NCD is a FPCode term, not just a forest industry term. Addressed and corrected in all areas.

Stream Report Format – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Fish bearing status (cont.)	Table: Summary of non-fish bearing reaches	Y	
	Table: Follow-up sampling required	Y	
References	All sources in report listed	Y	
	According to CBE style manual	Y	

Stream Report Appendices

Report section	Attribute	Accept. (Y/N)	Notes
Appendix I. FDIS summary and photographs	In ascending order by WSC	Y	
	Grouped by site	Y	
	FDIS reach card printouts	Y	
	FDIS site card printouts	Y	
	Fish data collection form	Y	
	Photos (min. 1, max. 4)	Y	
	All photos entered in FDIS	Y	
	Explanatory photo captions	Y	
	Photos in colour (final only)	Y	
Appendix II. Hardcopy maps – General	“E” size plots	Y	
	Folded in pocket in report	N	
	UTM projection	Y	
	1:20 000 map grid	Y	
	1:20 000 scale	Y	
	Complete title box	Y	
	Complete legend box	Y	1
	Source information box	Y	

Notes:

1) the second code in the historical sample symbol is not identified. Corrected
See last page for more mapping comments.

Stream Report Appendices – cont.

Report section	Attribute	Accept. (Y/N)	Notes
Appendix II. Hardcopy maps – General (cont.)	Inset map box	Y	
	Fish species box	Y	
	100 m contour lines	Y	
	WSCs or ILPs for all sampled streams	Y	
	WSCs or ILPs for all 3 rd order or higher streams	Y	
	WSCs or ILPs for every other 1 st and 2 nd order stream	Y	
	WBIDs for all lakes	Y	
	Sample site locations	Y	
Project map	All site data symbols attached to sites	Y	
	Lake summary symbols	Y	
	Reach data symbols on all reaches <30% gradient and all reaches containing sites	Y	
	Features, obstructions, etc.	Y	
	Reach breaks and numbers	Y	
Interpretive map	Reach summary symbols for all reaches in the project area	Y	
	Features, obstructions	Y	
	Fish distribution limits	Y	
	Stream class	Y	

Stream Report Attachments

Report section	Attribute	Accept. (Y/N)	Notes
Attachment I. Planning document	Budget breakdown by phase	na	
	Project sampling design	Y	
	Process of site selection	Y	
	Reach table	Y	
	Lake table	Y	
	Random sample table	Y	
	References, contacts list	Y	
Attachment II. Field notes	Field book or facsimile	Y	
	Site cards	Y	
	Fish collection forms	Y	
	Individual fish data forms	Y	
	Field working maps	na	
Attachment III. Fish ageing structures	Actual ageing structures	na	
	Labelled photocopies	na	
	Annuli identified with red	na	
	Age data are correct	na	
Attachment IV. Voucher, DNA samples	Table: Vouchers collected	N	
	Table: DNA collected	N	
Attachment V. Photodocumentation	Table: Photo summary report	Y	
	Colour thumbnail reference	Y	
	Photo CD	Y	
	CD Image #s match digital	Y	
	Negatives in plastic sleeves	Y	
	Negatives labelled	Y	

Notes:

1) negatives are not entered into FDIS Corrected for all areas.

Report section	Attribute	Accept. (Y/N)	Notes
Attachment V. Photodocumentation (cont.)	Negative #s match digital	N	1
	Prints in plastic sleeves	Y	
	Prints labelled	Y	
Attachment VI. Digital data	Budget breakdown by phase	na	
	Project sampling design	Y	
	References, contacts list	Y	
	Table of vouchers collected	Y	in FDIS
	Table of DNA collected	Y	in FDIS
	Photo summary report	Y	in FDIS
	Report tables, figures	Y	
	Report text	Y	
	FDISDAT.MDB	Y	
	Mapping files (plot files)	Y	
	Mapping files (metadata and map features files)	Y	
Attachment VII. FISS update data	FISS data forms and maps	Y	
	Copies of reference material	Y	
	Data on forms match FDIS	Y	
Attachment VIII. Aerial photography	Purchased aerial photos	na	
	Aerial video tape	na	

93M.046 480-370100-23000 why are reaches 2&3 solid red? No barriers observed between fish capture and upstream reach.
93M.056 335200-55500 why are reach 6&7 solid red? No barriers observed during recce flight between d/s fish and u/s lake.

Either the significance of the brackets and stars in the historical sample site symbol needs to be in the legend, or this site needs to be changed or removed to avoid confusion.

93M.046 – contradictory historical sites showing DV in what is now a solid blue stream (R1 of -29400-36900). Changed to NFC.
- historical sites on Nichyeskwa Creek are missing S-Classes No stream class provided with Hist. data.
- R3 of -29400-57200 is also a problem (no inferred brackets around DV??) Changed to NFC.
- R2 of 10117 is also a problem Changed to NFC.

93M.047 – (480-341600) historical symbol stating RB captured, but stream is coded FB-inferred. Changed to FB.

93M.055 – R2—60300-40100 (DV) on a solid blue stream Changed to NFC.
R2-10375 historical symbol says NVC but the stream is solid blue instead of purple Recommendation appreciated.

93M.056 – a number of historical symbols shoeing (DV) in solid blue streams Changed to NFC.

93M.057 – 10320, 10319, 10318 three steams with no sample sites but they're all solid purple. Added Hist. ref.
- upstream of site 38, a (DV) on a solid blue stream Changed to NFC.

93M.017 – R1, 10037, historical site off of a TRIM stream line with no comment. Added comment.
- a number of (DV) in solid blue streams Changed to NFC.

93M.027 – 480-430700 R11, shouldn't read extend to the cascades, not just to the site? Changed.
- lots of hisorical sites claiming (DV) in solid blue streams, and historical sites off of TRIM Changed to NFC.
- 480-456200 R2, shouldn't this be solid blue? Stream could potentially flow down adjacent trib.

93M.037 - - lots of hisorical sites claiming (DV) in solid blue streams, and historical sites off of TRIM Changed to NFC and added 'off TRIM comment'.

93M.048 – 10184, -34100-62500 why are these creeks NVC with no sites on them? Added Hist. ref.
- -378200-42500 historical NVC site but creek is dashed red Potential NCD/FSZ.

93M.058 -378200-64300 R 5 and trib. Why are these creeks NVC with no sample sites? Added Hist. ref.

Added (RB) Suspected fish species present to legend.

March 11, 2002

Reference: 3201.03/WPT-1242

Chris Schell Consulting Ltd.

PO Box 4695,
Smithers, BC,
V0J 2N0

Attention: Chris Schell

Dear Sir:

Re: Fish Inventory Draft Submissions for the Reconnaissance (1:20,000 scale) Fish and Fish Habitat Inventory within PIR's Babine and Suskwa Planning Areas.

Please find enclosed draft deliverables for the Reconnaissance (1:20,000 scale) Fish and Fish Habitat Inventory within PIR's Babine and Suskwa Planning Areas. As outlined in the General Services Agreement for FRBC Stream Inventories the following draft deliverables are included:

Draft Report

Appendix I	Reach Cards/Site Cards/Fish Collection Forms and Photographs
Appendix II	Phase Completion Reports
Appendix III	Quality Assurance Forms and Correspondence
Appendix IV	Phase I-III Project Plan (with attachments)
Appendix V	Project/Interpretive Maps

Attachment I	Planning Document Triton Environmental Consultants Ltd., April 2001. Phase I-III Pre-field Project Planning Report Reconnaissance (1:20,000) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds. Prepared for Skeena Cellulose Inc.
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Attachment II	Field Notes Site Cards/Fish Collection Forms
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Attachment III Photodocumentation
Photo Summary Report
Photo CD
Prints in Plastic Sleeves
Negatives in Plastic Sleeves

Attachment IV Digital Data
Watershed Report Files
FDIS Files
Mapping Files

Attachment V FISS Update Data
FISS Update Forms
FISS Update Maps

Should you have any questions or require additional information, please contact me.

Yours truly,
Triton Environmental Consultants Ltd.

Jason Harris
Project Manager

From: "Jessop, Matthew SRM:EX" <Mathew.Jessop@gems4.gov.bc.ca>
To: "Jason Harris" <JHarris@triton-env.com>
Date: 2/19/02 11:33AM
Subject: Bulkley TSA Non-fish bearing status reports

Hello Jason,

This message indicates my approval of the Non-Fish Bearing Status Reports for Fish and Fish Habitat Inventory work done by Triton Environmental Consultants Ltd in the Harold Price, Nichyeskwa, Nilkitkwa and West Babine watersheds in the Bulkley Forest District during the 2001/2002 field season.

Thank you, Matt.

Matthew Jessop
Fisheries Inventory Specialist
Ministry of Sustainable Resource Management
Skeena Region
Bag 5000, Smithers, BC, V0J 2N0
Phone: (250) 847-7538
Fax: (250) 847-7217
Mathew.Jessop@gems4.gov.bc.ca
<http://srmwww.gov.bc.ca/ske/fshinv/>

CC: "Larden, Troy WLAP:EX" <Troy.Larden@gems1.gov.bc.ca>

March 12, 2002

Jay Baker, Sylvicon Services
FRBC Co-ordinator, Pacific Inland Resources Ltd.
PO Box 3130,
Smithers, BC, VOJ 1N0

**RE: Triton's response to stage 3 (phase 5-6) QA review of reconnaissance (1:20k)
fish and fish habitat inventory for Pacific Inland Resources Ltd.**

Jay,

I have completed my review of Triton's reply to my QA. They have responded to each of my comments, points by point. At this point in time all outstanding issues have been addressed. This letter is to inform you that this project has passed QA review.

Sincerely,

Chris Schell MSc, RPBio

cc. Jason Harris, Triton Environmental Consultants Ltd., Triton, BC

APPENDIX IV

Phase I-III Project Plan (with Attachments)

Phase I-III Completion Report
Bibliography
Contact List
FDIS Reach Sampling Summary
Sample Site Selection
Digital Data

**PHASES I-III
PRE-FIELD PROJECT PLANNING
REPORT
Reconnaissance (1:20,000) Fish and
Fish Habitat Inventory in selected
tributaries within the Babine and
Suskwa River watersheds**

**Babine River WSC 480-310670 - 480-518400
Suskwa River WSC 460-081700-43900 - 460-081700-43900-50400**

Prepared for:

**Skeena Cellulose Inc.
Carnaby Operations
#10 North Boundary Rd.
South Hazelton, B.C.
VOJ 2R0**

April 2001

Prepared by:



**#300-4546 Park Avenue
Terrace, BC V8G 1V4
Tel: (250) 635 1494 Fax: (250) 635-1495**

March 31, 2001

Reference: 3200WP#T-1125

Chris Schell Consultants Ltd.
PO Box 2695
Smithers BC, V0J 2N0

Attention: Chris Schell

Dear Mr. Schell:

Re: Reconnaissance (1:20,000) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds Phase I-III Deliverables

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

The attached report is organized as follows:

Phase I-III Pre-Field Project Planning Report

Appendix I:	Project Phase Completion Report - Phase I-III
Appendix II:	Bibliography
Appendix III:	List of Key Contacts and Information Sources
Appendix IV:	West Babine Reach Sampling Summary Report (with sample selection)
Appendix V:	Nilkitkwa Reach Sampling Summary Report (with sample selection)
Appendix VI:	Harold Price Reach Sampling Summary Report (with sample selection)
Appendix VII:	Nichyeskwa Reach Sampling Summary Report (with sample selection)

Phase I-III Interim Maps (tube)

Phase I-III Digital Deliverables (CD)

Should you have any questions or comments please do not hesitate to contact me at (250) 635-1494.

Yours truly,

Triton Environmental Consultants Ltd.

Jason Harris

enclos.

PHASE I - III PRE-FIELD PROJECT PLANNING REPORT

Reconnaissance (1:20,000) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds

FRBC Multi-Year Agreement Number: 0000102
MELP Project number: SCI_C172_010_2001
FRBC Activity Number: 716432
FDIS Project Code: 5098
Project Name: Reconnaissance (1:20,000) Fish and Fish
Habitat Inventory in selected tributaries
within the Babine and Suskwa River
watersheds
Project Type: 1:20,000 Reconnaissance
Report Date: April 15, 2001
Proponent: Skeena Cellulose Inc.
Pacific Inland Resources Ltd.
Company/Agency: Triton Environmental Consultants Ltd.
Contact Person: Jason Harris
Contact Phone: (250) 635-1494
Contact E-Mail: jharris@triton-env.com
Ministry Representative: Paul Giroux
FRBC Coordinator Todd Mahon
Jay Baker

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LIST OF DIGITAL PRODUCTS

List of References	pir_sci_bibliography_2001.doc
List of Contacts	pir_sci_contacts_2001.doc
Project Planning Report	pir_sci_project_plan_2001.doc
Phase Completion Report	pir_sci_phase_comp_123_2001.doc

West Babine Digital Data

West Babine Stream ILP Data Sheet	west_babine_stream_ilp.dbf
West Babine Lake ILP Data Sheet	west_babine_lake_ilp.dbf
West Babine Wetland ILP Data Sheet	west_babine_wetland_ilp.dbf
West Babine FDIS	FDISDAT.mdb
West Babine Overview Map	west_babine.pdf

Nilkitkwa Digital Data

Nilkitkwa Stream ILP Data Sheet	nilkitkwa_stream_ilp.dbf
Nilkitkwa Lake ILP Data Sheet	nilkitkwa_lake_ilp.dbf
Nilkitkwa Wetland ILP Data Sheet	nilkitkwa_wetland.dbf
Nilkitkwa FDIS	FDISDAT.mdb
Nilkitkwa Overview Map	nilkitkwa.pdf

Harold Price Digital Data

Harold Price Stream ILP Data Sheet	harold_price_stream_ilp.dbf
Harold Price Lake ILP Data Sheet	harold_price_lake_ilp.dbf
Harold Price Wetland ILP Data Sheet	harold_price_wetland_ilp.dbf
Harold Price FDIS	FDISDAT.mdb
Harold Price Overview Map	harold_price.pdf

Nichyeskwa Digital Data

Nichyeskwa Stream ILP Data Sheet	nichyeskwa_stream_ilp.dbf
Nichyeskwa Lake ILP Data Sheet	nichyeskwa_lake_ilp.dbf
Nichyeskwa Wetland ILP Data Sheet	nichyeskwa_wetland_ilp.dbf
Nichyeskwa FDIS	FDISDAT.mdb
Nichyeskwa Overview Map	nichyeskwa.pdf

LIST OF APPENDICES

- Appendix I:** Project Phase Completion Report - Phase I-III
- Appendix II:** Bibliography
- Appendix III:** List of Key Contacts and Information Sources
- Appendix IV:** West Babine Reach Sampling Summary Report
(with sample selection)
- Appendix V:** Nilkitkwa Reach Sampling Summary Report
(with sample selection)
- Appendix VI:** Harold Price Reach Sampling Summary Report
(with sample selection)
- Appendix VII:** Nichyeskwa Reach Sampling Summary Report
(with sample selection)

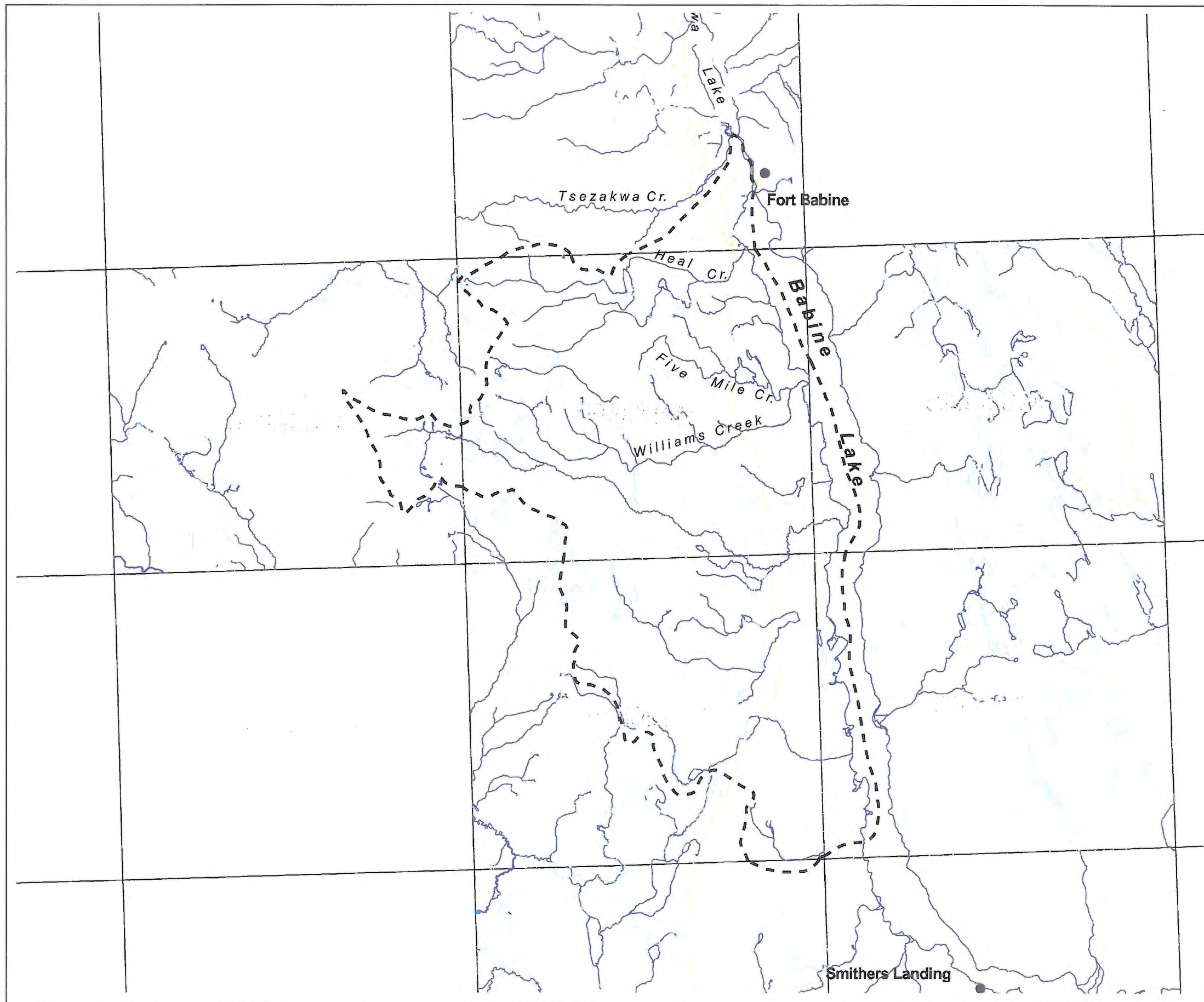
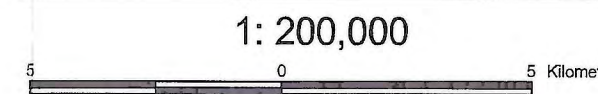
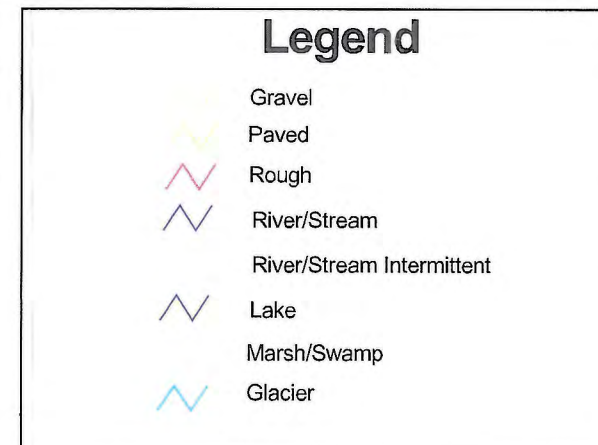
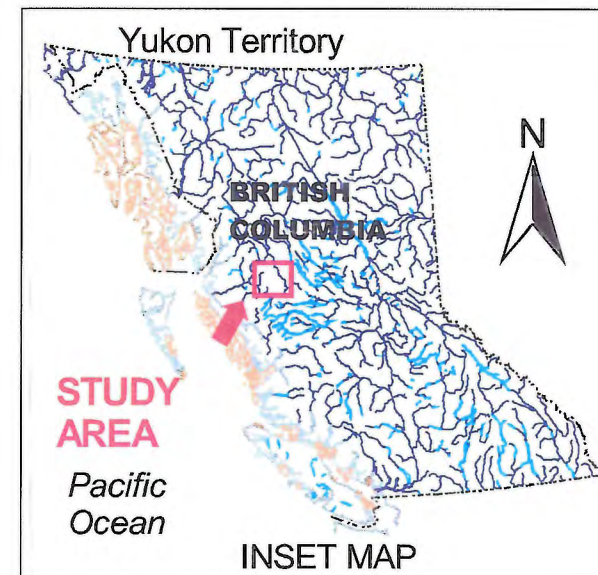


FIGURE 1
West Babine
Inventory Area
Overview Map
WSC 480-000000-



Source: 1:20,000 TRIM Projection: UTM

Date: April 1, 2001
 Created by: EL



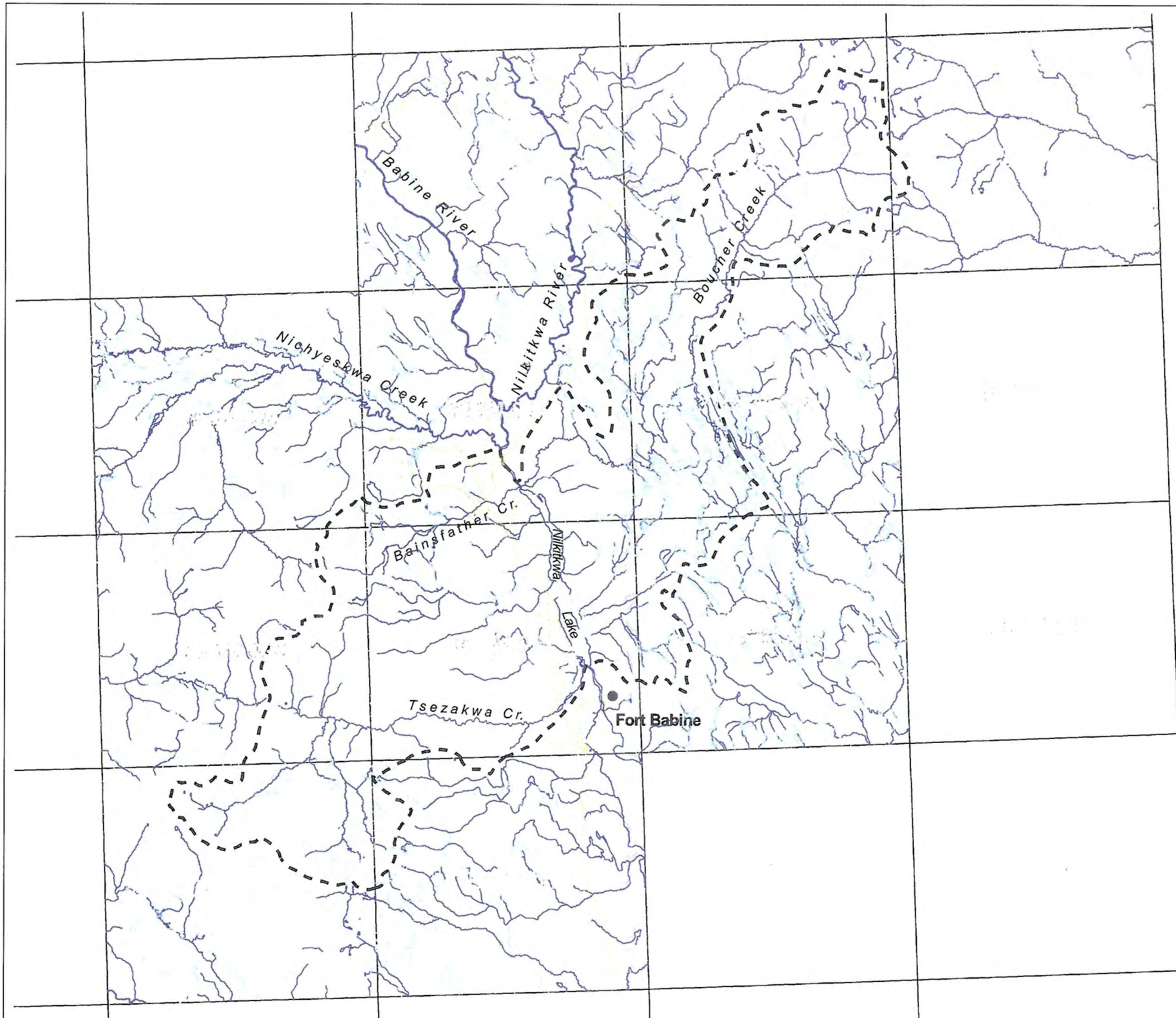
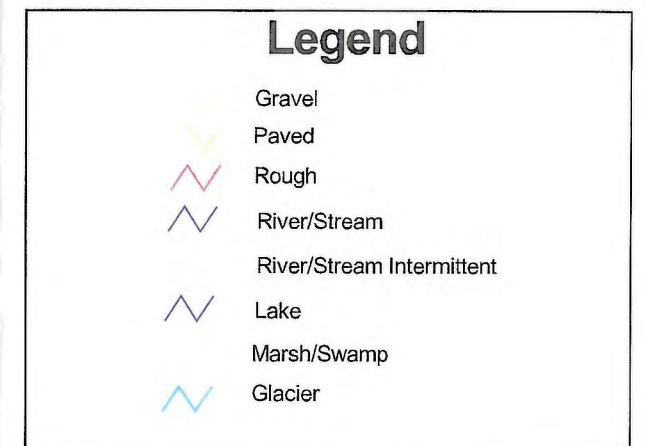
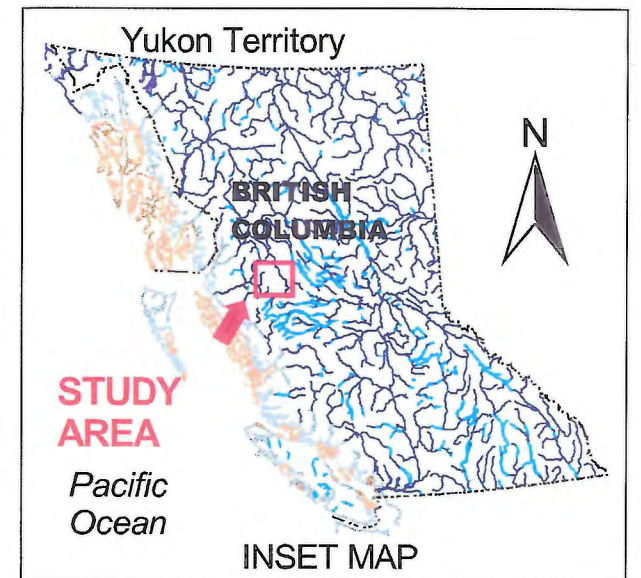


FIGURE 2
Nilkitkwa
Inventory Area
Overview Map
WSC 480-000000-



1: 200,000

5 0 5 10 Kilometers

Source: 1:20,000 TRIM Projection: UTM

Date: April 1, 2001
 Created by: EL

TRITON
 ENVIRONMENTAL TECHNOLOGIES LTD.

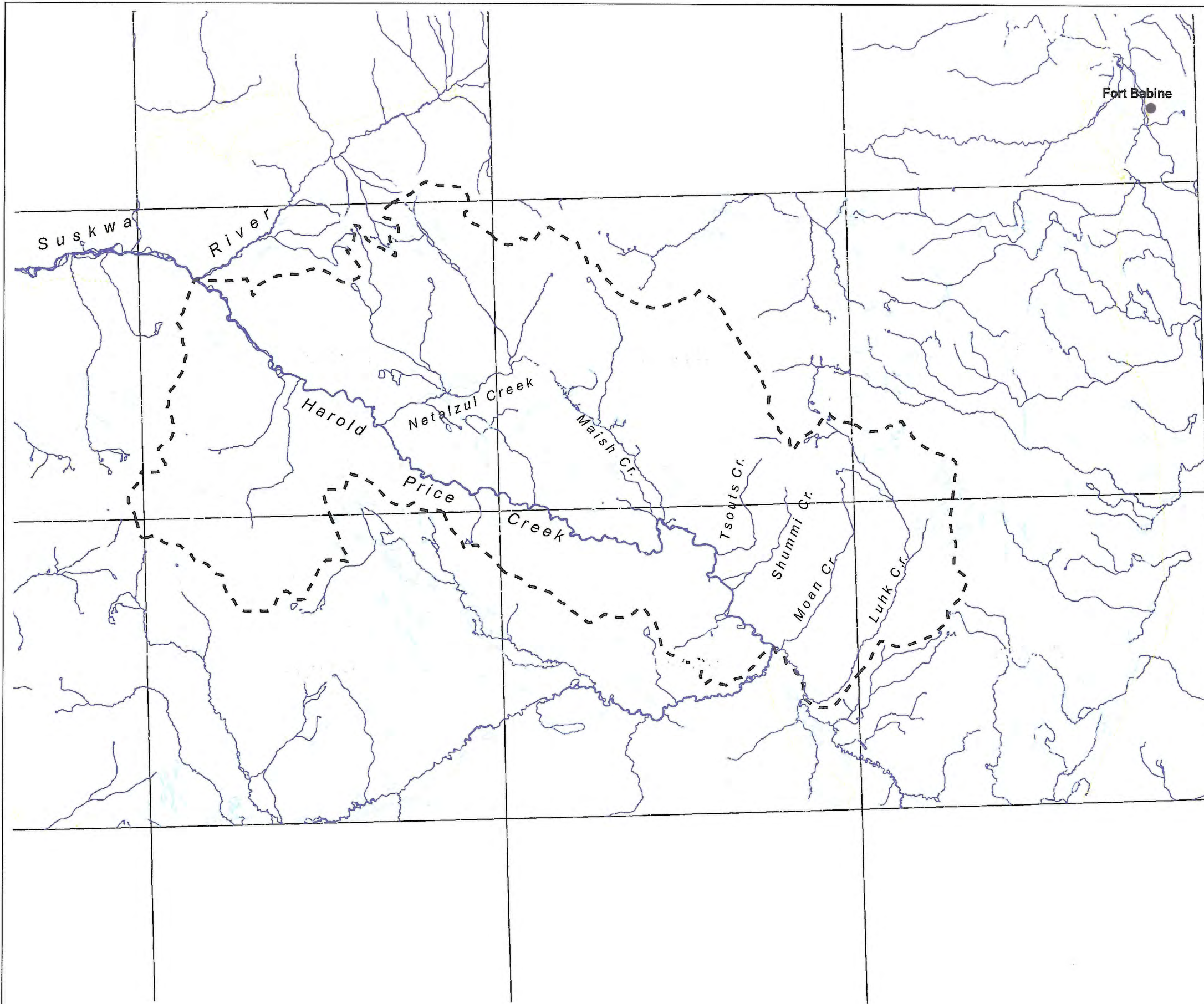
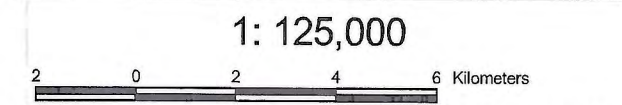
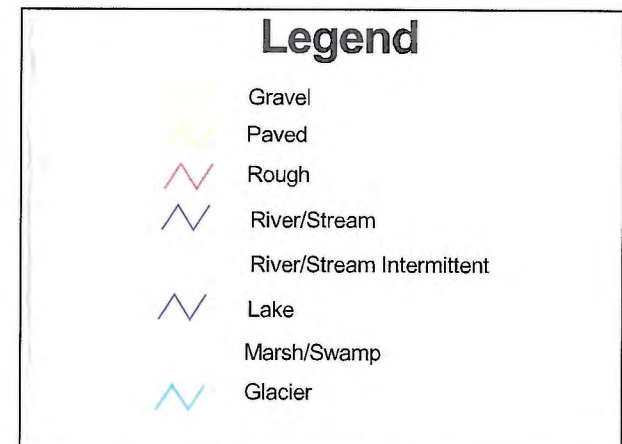
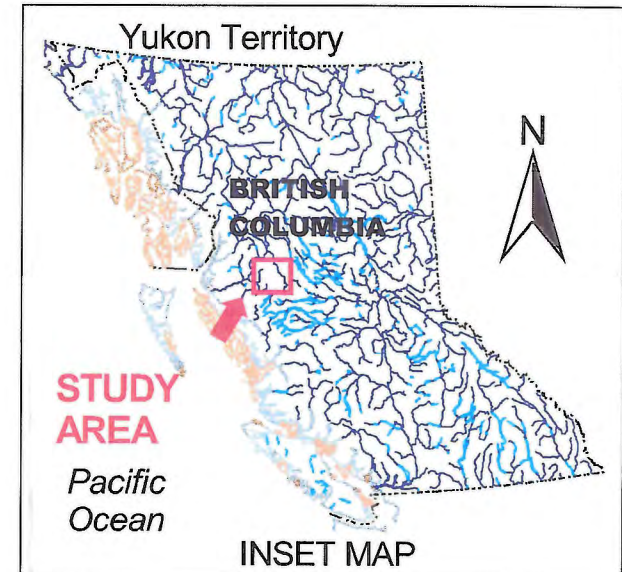


FIGURE 3
Harold Price
Inventory Area
Overview Map
WSC 460-081700-43900-

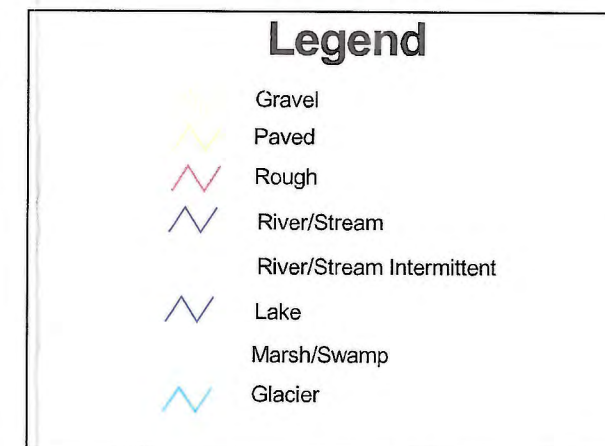
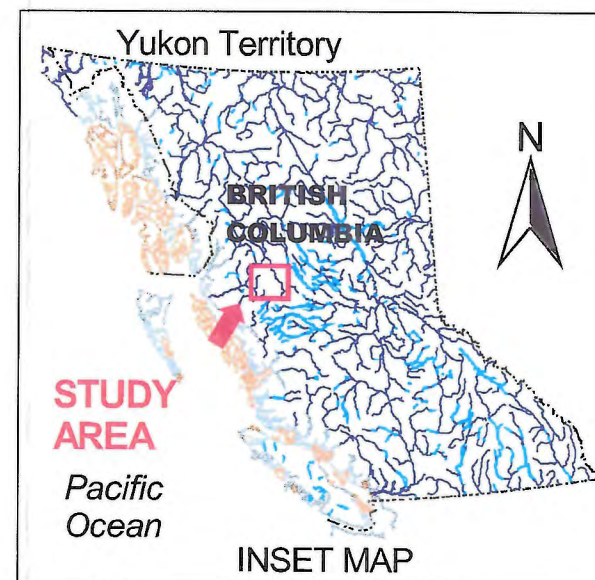
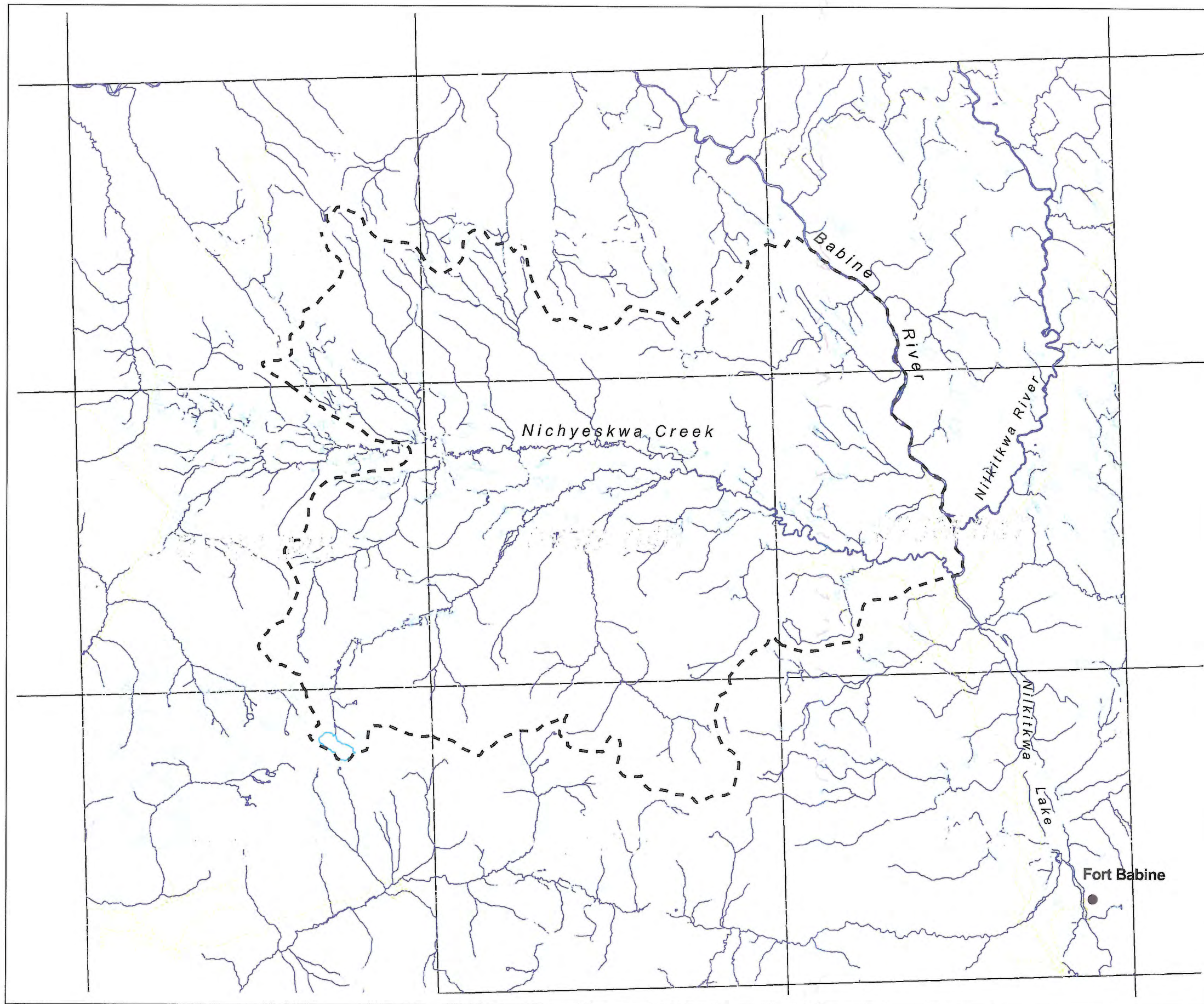


Source: 1:20,000 TRIM Projection: UTM

Date: April 1, 2001
 Created by: EL



FIGURE 4
Nichyeskwa
Inventory Area
Overview Map
WSC 480-370100-



1: 150,000

5 0 5 Kilometers

Source: 1:20,000 TRIM Projection: UTM

Date: April 1, 2001
 Created by: EL



1.0 INTRODUCTION

Triton Environmental Consultants Ltd. was retained by Skeena Cellulose Inc., Smithers (SCI) and Pacific Inland Resources Ltd., Smithers (PIR) in partnership with Forest Renewal British Columbia (FRBC) and Ministry of Environment Lands and Parks (MELP) to conduct a reconnaissance level fish and fish inventory in selected tributaries within the Babine and Suskwa River watersheds. This report summarizes work completed in Phases I-III and outlines the project plan for Phases IV-VI.

1.1 Summary of Work Completed

A summary of work completed for each phase is outlined in the attached Phase Completion Report (Appendix I). This summary includes:

- contractor information;
- list of deliverables submitted;
- activity log;
- summary of work completed;
- summary of phase costs;
- progress and problems summary; and
- next phase project plans and constraints.

2.0 STUDY AREA AND ACCESS

The Babine and Suskwa River study areas are located around the village of Fort Babine. The West Babine study area includes all tributaries located along the west shore of Babine Lake between WSC 480-430700 and WSC 480-518400. The Nilkitkwa study area includes the Boucher watershed (WSC 480-378200) as well as all tributaries between WSC 480-372500 and WSC 480-413200 flowing into Nilkitkwa Lake. The Harold Price study area includes all tributaries to Harold Price Creek from Luhk Creek (WSC 460-081700-43900-50400) to the Harold Price/Suskwa River confluence. The Nichyeskwa study area includes all tributaries in the lower Nichyeskwa Creek watershed from WSC 480-370100-60500 to the Babine River confluence.

2.1 List of Trim Maps

The 1:20,000 TRIM sheets covering this project area include:

West Babine Working Area

93M.007	93M.017	93M.018	93M.026	93M.027	93M.028
93M.037					

Nilkitkwa Working Area

93M.026	93M.027	93M.036	93M.037	93M.038	93M.046
93M.047	93M.048	93M.057	93M.058	93M.059	

Harold Price Working Area

93M.014	93M.015	93M.016	93M.017	93M.024	93M.025
93M.026	93M.027	93M.035			

Nichyeskwa Working Area

93M.035	93M.036	93M.045	93M.046	93M.047	93M.055
93M.056	93M.057				

2.2 Working areas and major Sub-basins within the project area

The sub-basins to be sampled in the project area include:

West Babine Working Area

Five Mile Creek	(WSC 480-452300)
Heal Creek	(WSC 480-430700)
Unnamed tributaries to Babine Lake	(WSC 480-548800 – WSC 480-627900)
Williams Creek	(WSC 480-452300-13942)

Nilkitkwa Working Area

Bairnsfather Creek	(WSC 480-378100)
Boucher Creek	(WSC 480-378200)
Tsezakwa Creek	(WSC 480-422000)

Harold Price Working Area

Camp Creek	(WSC 460-081700-43900-23800)
Harold Price Creek	(WSC 460-081700-43900)
Luhk Creek	(WSC 460-081700-43900-50400)
Maish Creek	(WSC 460-081700-43900-33900)
Moan Creek	(WSC 460-081700-43900-46600)
Netalzul Creek	(WSC 460-081700-43900-13700)
Paask Creek	(WSC 460-081700-43900-33900-0770)
Shummi Creek	(WSC 460-081700-43900-39700)
Tsouts Creek	(WSC 460-081700-43900-37500)

Nichyeskwa Working Area

Nichyeskwa Creek

(WSC 480-370100 – WSC 480-370100-60500)

2.3 Access

Road access is fairly extensive throughout the West Babine working area, and also in the lower reaches of the Harold Price and Nichyeskwa working areas. Several roads are located throughout the Nilkitkwa working area with the exception of upper Boucher Creek. The upper reaches of many of the sub-basins will be accessed by helicopter where road networks are not present.

3.0 BACKGROUND REVIEW

An extensive background review was completed for the project area. Data sources reviewed include:

- consultants reports;
- SCI planning and stream class information;
- PIR planning and stream class information;
- previous inventory data;
- FISS data base and maps; and
- DFO/MELP Fish Habitat Inventory and Information Program (FHIIP or SISS) catalogue for Sub-district 4D Smithers (Volume 2) Bulkley.

A complete list of references and contacts used during the background review is provided in Appendix I. The background review indicated that the following species are present within project area:

- coho salmon (*Oncorhynchus kisutch*);
- pink salmon (*O. gorbuscha*);
- chinook salmon (*O. tshawytscha*);
- kokanee/sockeye salmon (*O. nerka*);
- steelhead/rainbow trout (*O. mykiss*);
- cutthroat trout (*O. clarki*);
- Dolly Varden char/Bull Trout (*Salvelinus malma*);
- lake trout (*S. namaycush*);
- largescale sucker (*Catostomus macrocheilus*);
- longnose sucker (*C. columbianus*);
- white sucker (*C. commersoni*);
- northern pikeminnow (*Ptychocheilus oregonensis*);
- peamouth chub (*Mylocheilus caurinus*);
- reidside shiner (*Richardsonius balteatus*);
- longnose dace (*Rhinichthys cataractae*);
- mountain whitefish (*Prosopium williamsoni*);

- pygmy whitefish (*P. coulteri*);
- lake whitefish (*Coregonus clupeaformis*);
- burbot (*Lota lota*);
- prickly sculpin (*Cottus asper*);
- lamprey (*Lampetra macrostoma*); and
- Arctic lamprey (*L. japonica*).

4.0 DEVIATION FROM RIC STANDARDS

4.1 Planning Phases

Sample site selection was based on satisfying the types of stream reaches identified in the Sample Size Summary table (as generated by the FDIS random generated planning tool).

Prior sampling, fish presence and historical features have been added to the planning maps and the FDIS database. These sites were used to modify the sampling plan and avoid redundancy in sampling efforts.

As discussed with Paul Giroux, all sites located in Special Management Zones and Full Protection Areas (shaded gray in contract) will be eliminated from the plan. Random sites downstream of confirmed fish and upstream of End of Fish Use (EFU) will be removed or relocated (as discretionary sites) to support further fish distribution information.

Discretionary site selection focused on obtaining comprehensive fish distribution data from the major sub-basins within the study area. Discretionary sites were selected to achieve connectivity within sub-basins and identify upstream limits for fish distribution. Major inlets of primary and secondary lakes, as well as reaches that may contain barriers were potential candidates for discretionary sites. Forest development planning and the operational needs of the licensee were also considered when selecting sites.

Randomly selected reaches are shown on the interim maps with a green highlighter and green label dots. Randomly selected reaches that have been moved are shown with a green highlighter that has been crossed out (no label dot). Discretionary sites are shown with a green dashed line and red label dot. Label dots were used to allow for easier identification of sites.

FISS data will be compiled, edited and submitted at the completion of phase 6. FISS updates will include existing information found during the data search and new site information captured during the field inventory.

Detailed reach planning was not conducted during the planning phases, as it is anticipated (based on previous experience) that several reaches will be moved during pre-field meetings with the licensee, ministry representatives and during the sampling program. We anticipate several changes to the sampling plan, and as discussed with Paul Giroux,

SCI and PIR these changes will significantly alter the original sample site selection. Detailed reach planning forms will be completed during phase 5 and will be submitted as a deliverable for phase 6.

5.0 PROJECT PLAN

5.1 Phase 4: Field Data Collection (Streams)

Following is an outline of our approach to the fieldwork, 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.

5.1.1 Pre-Field Preparation

Pre-field preparations will entail both office activities and logistics planning in co-ordination with members of the project team, the Implementation Contractor, SCI and PIR. Fish collection permits will be obtained from the Ministry of Environment, Lands and Parks (MELP) and the Department of Fisheries and Oceans (DFO) prior to commencement of field activities.

Pre-field preparations will include a crew talk and pre-field training. During the crew talk, safety issues and procedures will be reviewed. All staff will be required to complete pre-field training to review standards and procedures. Crew members who are not involved in the planning phases will be informed about project specific logistics and requirements. The crew talk and pre-field training will provide a means to ensure that all inventory cards are completed in a standardized manner by all crews and that crews are aware of QA/QC requirements.

5.1.2 Equipment

Triton possesses the majority of field equipment necessary to complete the project. Rental vehicles (4X4 trucks) and hand held radios will be secured prior to the commencement of Phase 4 (Field work).

Each crew will be equipped with a Smith-Root Model 12A backpack electrofisher and other standard field gear (Abney level, hip chain, tape measure, VHF radio, first aid kit, etc.).

5.1.3 Field Assessment

Two person field crews will conduct fieldwork. Crew mobilization will take place using a variety of methods depending on the access available in each watershed. In watersheds where road access is available, crews will drive to the sample sites. In watersheds where road access is unavailable crews will be transported by helicopter to the sample sites.

Field crews will be supplied with forest cover maps, TRIM planning maps and aerial photographs to assist in locating and accessing reaches of interest. Reaches will be largely accessed using compass bearings, hip chains and GPS units. Fluorescent pink flagging tape labeled with TECL (Triton Environmental Consultants Ltd.) will be used to mark the surveyed section of stream.

5.1.4 Fish Species Sampling

Fish sampling efforts will focus on reaches of <20% gradient (>20% at the FRBC Co-ordinator, Regional Inventory Specialist and Project Manager's discretion (i.e. suspected bull trout, regionally significant species presence)) and will follow the procedures outlined in the *Reconnaissance Fish and Fish Habitat Inventory: Standards and Procedures* (May, 1998) and the *Forest Practice Code's* Fish Stream Identification Guidebook. A minimum 100 m of stream length or a length equal to 10 bankfull widths (whichever is greater) will be sampled in each reach identified for sampling. 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 may be utilized by fish.

The presence, relative abundance and diversity of fish species will generally be evaluated through electroshocking at least 100 linear meters of stream length. In areas where return visits are practical, minnow traps baited with salmon roe will be set and allowed to remain for a 24-hour period. This sampling method will be used to supplement electroshocking data, or in areas that are not suited to electroshocking (deep pools, wetlands, and active spawning areas). Other sampling methods, such as snorkeling, beach seining, and angling may be used where necessary, or where requested by the Project Monitor.

All fish sampling data will be recorded on 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.

5.1.5 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:

- site length
- stream gradient
- 6 individual channel and wetted 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)
- 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.

5.1.6 Water Quality

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.

5.1.7 Wildlife Observations

Wildlife observations will be noted and specific details recorded. Amphibians, aquatic invertebrates and macrophytes will be described and identified to Order or Family (where practical). 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.

5.1.8 Photographic Documentation

Photographs will be taken, recorded and presented as per the *RIC Guide to Photodocumentation* (March, 1996). Photographs will be taken of each sample site (including upstream and downstream perspectives), of each feature identified and of representative or unidentifiable fish species. Photographs will be documented on Site Cards and Fish Collection Forms.

5.1.9 Inventory Area Specific Sampling

Through completion of Phases 1-3 we have identified specific reaches to sample in each working area. Sample sizes are outlined in Table 1.

Table 1. Sample Site Summary by Inventory Area.

Inventory Area	West Babine	Nilkitkwa	Harold Price	Nichyeskwa
No. of Reaches	409	823	659	923
No. of Reaches <30%	403	745	444	812
No. of Reaches <20%	392	641	346	735
No. of Sites	36	35	32	56
No. of Historical Sites	72	137	83	92
% of Reaches Previously Sampled	18%	17%	13%	10%
% of Reaches Sampled (Total)	26%	21%	17%	16%

The criterion for sample site selection was discussed with MELP's Fisheries Inventory Specialist, Mr. Paul Giroux. In order to achieve Reconnaissance (1:20,000) Fish and Fish Habitat Inventory objectives discretionary sites were selected using the following criteria:

- where it is necessary to determine fish presence within a sub-basin;
- to address Local Area Agreements and fisheries distribution within the project area;
- inlets and outlets of lakes where it is necessary to determine fish presence within a sub-basin;
- lower order reaches that are likely to delineate the upper limits of fish distribution;
- within or adjacent to proposed cutblocks;
- above and below potential barriers; and
- around the 20% gradient break.

5.1.10 Non Fish Bearing Reaches

The fish bearing status of streams may be directly supported by sampling data or indirectly inferred based on fish captures in associated reaches, or habitat quality and the occurrence or lack of barriers to fish passage. Should a barrier be located, sampling will focus on covering perennial and non-perennial habitat types above that barrier. Sampling in perennial habitats will follow the Guidelines for Local Area Agreement Preparation-Skeena Region (version 2). This will include sampling perennial habitats above barriers

with adequate intensities, stream order u/s of barrier x 2 = number of required sites. This intensity should allow field crews to cover all spawning, rearing and overwintering habitat types within that particular stream. Minnow traps and small gill nets will be set overnight in possible overwintering wetlands and where practical, primary or secondary lakes sampling methods will be conducted. If no perennial habitats are present within a stream and a barrier is located (no connectivity, cascades, falls etc.) sampling intensity of stream order u/s of barrier = number of required sites.

Identification of barriers in the field is critical to describing and assessing fisheries distribution within a particular watershed or stream. Field crews will try to identify these barriers while on site, by either using a helicopter recce of the stream or by strategically moving sample sites while still in the field. Field crews will be in constant contact with Paul Giroux should the proposed plan need modifications or altering. At the end of each field day crews will meet to discuss data and color code interpretive maps. This color coding of maps will allow field crews to identify unanswered questions regarding distribution and make proper changes while still in the field.

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

5.1.11 Lakes Sampling

Lakes have not been specifically selected for sampling. After discussions with Paul Giroux (Regional Fisheries Inventory Specialist), SCI and PIR, lakes to be sampled will be selected after the conclusion of the stream-sampling program. Lakes sampling will then focus on attaining information that will be of value to both MELP (watershed wide fish distribution) and the licensee (headwater lakes which support fish).

Should lake sampling be required the following plan will be used.

5.2 Lakes Plan

5.2.1 Phase 4: Field Data Collection

Following is an outline of our approach to the fieldwork, 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 for primary and secondary lake inventories.

5.2.2 Pre-Field Preparation

Pre-field preparations will entail both office activities and logistical planning. Fish collection permits will be obtained from MELP and DFO as part of pre-field planning.

5.2.3 Equipment

Triton possesses most of the field equipment necessary to complete a lake project. A rental vehicle (4X4 truck) and programmable VHF hand held radios will be secured prior to the commencement of field work. Additional lakes sampling equipment is owned by Triton including, Zodiacs and outboard motors, Van Dorn bottles, depth sounders, electroshockers and cameras.

5.2.4 Field Assessment

A 2-person field crew will conduct fieldwork for lakes. Crew mobilization will take place using a variety of methods, which will maximize the efficiency of the field program depending on specific access available at each lake. For lakes with road access, the field crew will utilize a 4X4-crew cab pickup truck. For sites in which road access is unavailable the field crew will be mobilized by helicopter.

The field crew will be equipped with a Smith-Root Model 12A backpack electrofisher, gill nets, minnow traps and other standard field gear (zodiac and motor, clinometer, hip chain, tape measure, Van Dorn bottle, VHF radio, first aid kit, etc.). Utilizing a combination of these methodologies will ensure that field efficiency is maximized and the project target is attained.

5.2.5 Fish Species Sampling: Primary Lakes

Multi-panel floating and sinking gill nets will be the principal fish sampling method utilized in primary lakes, along with minnow traps and angling. Gill nets (floating and sinking) to be used will follow specifications for standard nets used in reconnaissance level lake inventories in B.C. Gill nets will be set with the smallest mesh size at the shallow end of the net set and secured to a point on shore. Gill nets and minnow traps will be allowed to fish overnight for a minimum period of 8 hours. Gill nets will be set in the evening and monitored for approximately 30 - 45 minutes for an indication of catch success. Professional judgment will be applied to reduce the netting effort if early indications of net catch suggest excessive fish mortality will result from a standard two net or overnight set. The depth sounder will be operated while setting gill nets to provide a record of bottom substrates and the presence of submerged logs or snags.

Baited (boraxed salmon roe) minnow traps will be set around the perimeter of the lake within shallow shoal areas. Water depths at trap sites will be between 0.3 m and 1.5 m and the trap entrances will be placed parallel to shore or submerged cover. Styrofoam

floats will be attached to the traps with a 1.5 m length of string. Minnow traps will be allowed to fish overnight for a minimum of 8 hours.

Inlet and outlet streams will be sampled using an electroshocker to determine fish species presence and relative abundance.

5.2.6 Fish Species Sampling: Secondary Lakes

Secondary lakes are intended to be quick (1 day) surveys of fish species presence or absence. Gill nets will be set initially upon arrival to a lake and allowed to fish while the field crew completes their limnological sampling and other tasks. Minnow traps will also be set for the day during secondary lake surveys. Fish sampling in streams will not be conducted for secondary lakes unless downstream or upstream reaches are sampled during the concurrent stream inventory.

5.2.7 Fish Species Sampling: General

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;
- life stage;
- wet weight (in grams);
- 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.

Non-lethal aging structures will be removed from a subsample of fish captured in lakes (generally 30 of each species) to determine the age of cohorts present in the lake. Aquatic insects, invertebrates and amphibians will be identified, enumerated and released. Unidentified invertebrates will be retained and preserved in buffered 10% formalin.

A reach description will be completed for one reach of the major inlet and outlet streams to each primary lake 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:

- site length
- stream gradient
- 6 individual channel and wetted 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)
- 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.

For secondary lakes a visual survey of each inlet and outlet will be conducted to determine the presence of potential habitats that are important to fish.

For all inlet and outlet reaches with non-fish bearing classification a written explanation supporting the classification will be submitted. 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.

5.2.8 Lake Habitat Descriptions

Bathymetric soundings will be conducted using a Lowrance X-16 electronic depth sounder. The transducer will be mounted on the transom of a 3 m Achilles inflatable boat powered by a short-leg 9.9 hp Johnson outboard. This combination of boat and motor will allow transects to be conducted in water as shallow as .30 m in depth, resulting in accurate estimates of distance at transect start and end points. Depths within shoal areas and weed beds will be measured with a measuring pole.

An E-line transect will be performed along the main (long) axis of the lake to determine the maximum depth in the main basin of the lake. Upon completion of the e-line transect, a shoreline perimeter cruise will be conducted to record lakeshore features, surrounding terrain, vegetation and aquatic plant descriptions.

Full bathymetric surveys will only be required on primary lakes. Transects will be conducted in a straight line, perpendicular to the shoreline and towards an easily identifiable feature on the opposite shoreline (i.e. point, snag etc.). A constant speed will be maintained for the duration of each transect (~1 m/sec). Speed will be estimated using a floating object tossed in the water ahead and to one side of the boat and timed as it passes beside the boat from bow to stern. Echograms will be marked with a single solid line to represent the start of each transect and double solid lines to indicate end points. Measurement of lake surface area and drainage area will be determined using a Placom KP-90N digital planimeter.

5.2.9 Water Quality

Triton field crews will sample water quality parameters in the field at each limnology station. EMS numbers will be acquired from MELP prior to the commencement of fieldwork in primary lakes. Parameters will be measured in the field in order to reduce laboratory costs and shipping and receiving requirements. On primary lakes, water samples will be sent to a certified laboratory for analysis. Parameters analyzed will follow the Lake and Stream Inventory manual and will be discussed on a case by case basis with the Regional Fisheries Inventory Specialist.

Specifically, Triton proposes to measure field air and water temperature using standard field thermometers, pH and conductivity using hand held meters, and turbidity using visual estimates.

Lake limnological sampling will also include a dissolved oxygen/temperature profile, to be completed with a YSI DO probe. A secchi depth measurement to be taken at the deepest point within the lake. Conductivity and pH will be measured from just below the surface and above the lake bottom. Water samples within the lake will be collected with a Van Dorn bottle.

5.2.10 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 lake survey form with emphasis placed on species considered rare, endangered or threatened as defined by the Conservation Data Center.

5.2.11 Photographic Documentation

Triton will make extensive use of photography throughout the project. For lakes, a series of panoramic pictures will be taken from the geographic center of the lake. Pictures will also be taken which highlight geographic features, surrounding country and aquatic vegetation. Other photographs taken on lakes will include evidence of recreational use, wildlife features and fish species (if captured).

Photographs will be documented on lake survey form and Triton's photodocumentation form. The photos will be presented in the report in a manner that meets RIC standards.

6.0 PHASE 5 – DATA COMPILATION

The office portion of Phase 5 will entail entering hardcopy field notes and field forms into requisite electronic database forms including lake forms, 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 will be developed, captioned and coupled with lake forms and site cards where applicable. Additional photographs will be indexed in referenced binders with photodocumentation cards and negatives. Bathymetric and lake outline mapping will be completed during Phase 5.

7.0 PHASE 6 - REPORTING AND MAPPING

The final report will follow the outline provided in the Reconnaissance (1:20,000) Inventory Standards and will include data analyses, fisheries values, stream and riparian classifications and management recommendations. This report will contain fish bearing and non fish bearing classification reports and a table supporting each will include sampling methods (and effort), habitat conditions, barriers to fish passage and water quality parameters.

For all reaches with a 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 site descriptions provided in the final report. The discussion will focus on sampling methods utilized during the field program, water quality parameters including conductivity, turbidity and recommendations.

All final map work will be produced using GIS software program. Maps produced digitally will include all information as per the requirements outlined in the Reconnaissance (1:20,000) Inventory Standards. The hybridized project/interpretative maps will include: watershed codes (ILP's); stream names; waterbody identifiers; reach breaks; fish sampling sites; fish species; features; stream classification; annotated fish distribution and historical data. Overview maps will accompany the final reports and will show sampling site locations.

7.1 Existing Data

Existing data (i.e. Tsezakwa Inventory 1997/98) will be incorporated into the report where applicable and for ease of reference. The results from previous sampling will be used to establish fish presence and distribution throughout the watershed and to facilitate and/or confirm stream Riparian Management Area classifications.

Historical inventory data will be annotated on the inventory maps and will be linked via a unique site number to the original report.

8.0 PROJECT TIMELINES

Completion of Phase I to III Activities	March 31, 2001
Completion of Phase IV Activities	October 31, 2001
Completion of Phase IV Deliverables	January 15, 2002
Completion of Draft Phase V and VI Deliverables	March 31, 2002

9.0 PROPOSED STAFF

Project Director	Dave Gordon
Project Manager	Jason Harris
GIS Coordinator	Dave Warburton
GIS Technician	Lori Logan
Crew Supervisor	Jason Dorey
Crew Member	Edward Lem
Crew Member	Shawn Geisbrecht
Crew Member	Dave Taft

10.0 EQUIPMENT LIST

Fish Collection/Crew

1 electrofisher
1 large battery
1 small battery
1 charger
2 anode poles
2 cathodes
3 pairs of linesman gloves
Fish Collection Permit
1 small net
measuring board
recovery bucket
10 minnow traps
bait
4 bottle of alcohol
voucher jars
Fish Collection Methods and Procedures
1 bottle of clove oil
scale envelopes
DNA vials
razorblade knife
ziplock bags
fishing license

Field Gear/Crew

2 compass		first aid kit		hip chain	bug dope
2 clino		2 wool blankets		string	2 scale rules
2 field books		waders		flagging tape	metric thermometer
site cards		wading boots		1 axe	pH meter
fish forms		aquaseal		file	conductivity meter
individual fish data		color film		caulks	two way radio
duksbak		waterproof camera		caulk wrench	radio frequencies

Misc

RIC inventory standards
contract
fish identification key
project contact list
winch
jack-all
tire iron
spare tire
shovel
axe
Swede saw
rope
tarps
planning maps
timesheets
expense claim forms
daytimers
1 flashlight

11.0 CONTINGENCY PLAN

It is critical that sampling be approached strategically, rather than (or in addition to) strictly site based. Crews will work from the approved plan, but if modifications to the plan lead to an increased knowledge of fish distribution (within the watershed) changes to the plan will be made. In cases where sampling could not be conducted, or where conditions for sampling were unfavorable, the field crews will make a number of assumptions in selecting new sites.

The following criteria will be considered when adding or moving sites:

- the establishment of fish presence within a catchment or basin (the intent here is not to chase EFU in every tributary);
- the identification of upstream limits of fish distribution;
- the investigation of barriers to fish passage; and
- the investigation of potential overwintering habitat. The identification and confirmation of barriers to fish passage have significant implications, where entire portions of sub-basins could be confirmed as non-fish bearing, pending the sampling of any potential overwintering habitats upstream of the barrier.

Strategic selection and professional judgement to relocate sites within the watershed will allow maximum sampling efficiency and it will also allow crews to assess barriers and fisheries values throughout the watershed.

APPENDIX I

Project Phase Completion Report – Phase I-III

PROJECT PHASE COMPLETION REPORT - PHASE I-III

FRBC Multi-Year Agreement Number: 0000102
MELP Project Number: SCI_C172_010_2001
FRBC Activity Number: 716432
FDIS Project Code: 5098
Project Name: Reconnaissance (1:20,000 scale) Fish and Fish Habitat Inventory in selected tributaries within the Babine and Suskwa River watersheds
Project Type: 1:20,000 Scale Reconnaissance
Report Date: April 15, 2001
Proponent: Skeena Cellulose Inc.
 Pacific Inland Resources Ltd.
 Triton Environmental Consultants Ltd.
Company/Agency: Triton Environmental Consultants Ltd.
Contact Person: Jason Harris
Contact Phone: (250) 635-1494
Contact E-Mail: jharris@triton-env.com
MELP Project Monitor: Paul Giroux
FRBC Coordinator: Todd Mahon
 Jay Baker

Table 1. List of Deliverables Submitted (Phase I)

Deliverable Product	Received	Approved (QA)
Bibliography (hardcopy and digital)		
List of Contacts (hardcopy and digital)		
Interim Maps with; • watershed boundaries • waterbodies with ILP's or watershed codes • reach breaks with NIDS • lakes with NIDS • proposed sample sites		
Reach tables (digital FDIS)		
Project Plan (hardcopy and digital)		
Lake tables (digital FDIS)		
Phase completion report (hardcopy and digital)		

Table 2. Activity Log (Phase I-III)

Date	Activity	Time Spent
Jan 10-Apr 15	Assign ILP's, delineate watershed boundaries	220 h
Jan 10-Apr 15	Completing Reach Tables and Quality Control	50 h
Jan 10-Apr 15	Completing Interim Maps and Quality Control	22.5 h
Jan 10-Apr 15	Lakes planning and lakes information tables	20.5 h
Jan 10-Apr 15	Completing Basin Classification, Reach Breaks, Lakes Classification and Quality Control	266.5 h
Jan 10-Apr 15	Create contact list, bibliography, etc.	84 h
Jan 10-Apr 15	Project Plan development	71 h
Jan 10-Apr 15	Interim Maps/Sample Site Locations	98 h

Summary of Work Completed

A meeting was conducted with Todd Mahon (contract monitor) to obtain information regarding the project specifications and project area.

A background data review was conducted to establish existing information within the Nichyeskwa, West Babine, Nilkitkwa and Harold Price watersheds. These reports were obtained from the Ministry of Environment Land and Parks (MELP) office in Smithers, the Bulkley Forest District office in Smithers, Skeena Cellulose in Smithers, Pacific Inland Resources in Smithers, various consultants and the BC Conservation Data Centre. A bibliography listing these reports was completed.

In the process of data collection and compilation consultants and government agencies were contacted. A list of contacts made during this process was completed.

FISS maps were reviewed and compared with the data collected during the background review. Information that was not included on the FISS maps, as well as new information gathered in Phase 4, will be transcribed to a corresponding 1:50,000 scale National Topographic Scale (NTS) map at Phase 5.

The project area boundaries were delineated on TRIM maps and all streams, wetlands and lakes were assigned, waterbody identifiers or ILP's. Watershed codes and ILP's were assigned using Arcview and FDIS.

Twenty-five working TRIM map sheets are being used for the project.

Detailed map and air photo analysis was conducted in order to identify and classify sub-basins within the study area; to determine reach breaks; and to determine individual reach characteristics for all watercourses, lakes and wetlands. The delineation of sub-basins was based on stream order and hierarchy within the watershed.

All connected wetlands were identified and added to the interim maps. Wetlands with defined or partly defined channels, which convey flow, were included in the stream portion of the sampling plan. While wetlands without defined channels, or those with extensive ponding were included in the lake portion of the sampling plan.

All watercourses within the study area were divided into reaches and physical features affecting fish habitat suitability (including gradient, confinement, channel pattern and riparian vegetation) were identified.

All lakes within the study area were assigned to lake groups.

The focus of Phase 3 was to develop the detailed sampling plan and produce the planning report. The number of sample sites proposed and a brief rational for sample site selection is provided in the project plan.

Planning for the field-sampling portion of this project followed a balanced approach between MELP requirements and licensee (PIR and SCI) operational needs. Initial sample site selection was undertaken using the FDIS random generator. Further discretionary sites were added to the initial randomly generated sampling sites. Discretionary 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; and
- licensee operational needs.

Revisions to the stream sampling plan (increased number of site, alternate site locations) will be revised at the beginning of Phase 4, which is scheduled to commence in the summer of 2001.

Table 3. Project Area Statistics

Inventory Area	Nichyeskwa	West Babine	Nilkitkwa	Harold Price
Project Area (Ha)	34704.24 ha	23088.63 ha	40229.91 ha	31285.38 ha
Number of TRIM maps	8	7	11	9
Largest watershed (stream) order	5	4	5	6
Number of 3rd order basins	35	8	26	17
Km of streams	712.85 kms	371.97 kms	668.03 kms	588.13 kms
Number of stream reaches	923	409	823	659
Number of lakes	13	14	18	14

Table 4. Sample Site Summary

Inventory Area	Nichyeskwa	West Babine	Nilkitkwa	Harold Price
Number of Reaches	923	409	823	659
Number of Reaches <30%	812	403	745	444
Number of Reaches <20%	735	392	641	346
Number of Reaches to be Sampled	56	36	35	32
Number of Reaches Previously Sampled	92	72	137	83
Percent of Inventory Reaches Previously Sampled	10%	18%	17%	13%
Percent of Inventory Reaches Sampled (Total)	16%	26%	21%	17%

Progress and Problems Summary

Phase I-III was completed as scheduled. Watershed codes were assigned to a significant portion of the streams within each watershed. Searching through the watershed atlas was time consuming and much slower than using ILP's for stream delineation. The use of watershed codes will allow easier access to data management and possibly increase turnaround time for watershed code assignment from MELP.

Detailed reach planning was not conducted during the planning phases, as it is anticipated (based on previous experience) that several reaches will be moved during pre-field meetings with the licensee, ministry representatives and during the sampling program. We anticipate several changes to the sampling plan, and as discussed with Paul Giroux these changes will significantly alter the original sample site selection. Detailed reach planning forms will be completed during phase 5 and will be submitted as a deliverable for this phase.

No lakes were specifically selected for sampling, therefore no detailed lakes forms were completed. After discussions with Paul Giroux, lakes to be sampled will be selected after the conclusion of the stream sampling program. Lakes sampling will then focus on attaining information that will be of value to both MELP (watershed wide fish distribution) and the licensee (headwater lakes which support fish in ephemeral systems).

Next Phase Project Plans and Constraints

FISS updates will be provided with Phase V of the project as opposed to Phase III. At that time new information gathered from the field can be incorporated into FISS.

Phase IV (field) is scheduled to commence in the summer of 2001.

Summary of Phase 1-3 Costs

Professional Fees \$34,797.00
Disbursements \$1,702.00

Costs as per original budget

Contract Monitor Acceptance

Report Submitted By: Jason Harris	Date: April 15, 2001
Phase Completion Approved:	Date:
Comments:	

APPENDIX II

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Triton Environmental Consultants Ltd. (1998). Reconnaissance Level Fish and Fish Habitat Inventory in the Bulkley T.S.A. (Working Unit #6 – Blunt).

APPENDIX III

List of Key Contacts and Information Sources

List of Key Contacts and Information Sources for Pacific Inland Resources Stream Inventory Project

Name	Company/Agency	Title	Contact Numbers	Date	Comments
Alan Baxter	Pacific Inland Resources Ltd.	Operations Assistant	(250) 847-2656	Ongoing	- guidance throughout project - requested relevant PIR fisheries info.
Jay Baker	Silvicon Services Inc.	FRBC Co-ordinator	(250) 847-3680 p (250) 847-2530 f	Ongoing	guidance throughout project
Todd Mahon	Skeena Cellulose Inc.	FRBC Co-ordinator	(250) 846-5449	Ongoing	- guidance throughout project - requested relevant SCI fisheries info.
Paul Giroux	MELP (Smithers)	Regional Inventory Specialist	(250) 847-7294 p (250) 847-7591 f	Ongoing	guidance throughout project
Sig Hatlevik	MELP (Smithers)	Fisheries Technician	(250) 847-7291	Ongoing	requested info. regarding project area
Dana Atagi	MELP (Smithers)	Fisheries Biologist	(250) 847-7290	Ongoing	requested info. regarding project area
Ron Tetreau	MELP (Smithers)	Fisheries Technician	(250) 847-7294	Ongoing	requested info. regarding project area
Gord Wolfe	MELP (Smithers)	Fisheries Technician	(250) 847-7290	Ongoing	requested info. regarding project area
Jeff Lough	MELP (Smithers)	Restoration Technician	(250) 847-7757	Ongoing	requested info. regarding WRP reports and current projects within study area
Scott Northrup	DFO (Nanaimo)	Habitat Biologist	(250) 756-7275	Ongoing	contacted for info. regarding completed inventories within the study area
Regina Saimoto	SKR Environmental Consultants Ltd.	Biologist	(250) 847-4674	Ongoing	requested info. pertaining to work completed in the study area
Jim Trask	Triton Environmental Consultants Ltd. (Prince George)	Consultant	(250) 562-9155	Ongoing	- requested info. pertaining to work completed in the study area - guidance throughout project
James Cuell	MELP (Smithers)	Forest Ecosystem Specialist	(250) 847-6330	Ongoing	requested info. regarding project area
Chris Schell	Consultant	Fisheries Biologist	(250) 847-0180	Ongoing	- RIC Inventory expert - guidance throughout project
Dave Bustard	Consultant	Fisheries Biologist	(250) 847-2963	Ongoing	familiar with fisheries resources throughout the study area
Lindsay	Maps BC (Victoria)	Mapping Technician	(250) 387-3022 f		flight lines/aerial photographs
Jan	Nanaimo Maps and Charts		(250) 754-2313		trim map request

List of Key Contacts and Information Sources for Pacific Inland Resources Stream Inventory Project

Name	Company/Agency	Title	Contact Numbers	Date	Comments
Beth Rogers	BC Data Conservation Center	Data Manager	(250) 356-0928		• data search
Adam Lewis	Triton Environmental Consultants Ltd. (Richmond)	Operations Manager	(604) 279-2093	Ongoing	• familiar with fisheries resources throughout the study area (Bulkley Inventory)
Steve Jennings	Triton Environmental Consultants Ltd. (Terrace)	Biologist	(250) 635-1494	Ongoing	• familiar with fisheries resources throughout the study area (1-5,000 Inventory)
Eamon Miyagi	Triton Environmental Consultants Ltd. (Richmond)	Senior Fisheries Technician	(604) 279-2093	Ongoing	• familiar with fisheries resources throughout the study area (Bulkley Inventory)
Dave Warburton	Triton Environmental Consultants Ltd. (Prince George)	GIS Co-ordinator	(250) 562-9155	Ongoing	• requested existing inventory maps and databases
Karla Graf	Triton Environmental Consultants Ltd. (Richmond)	Data Co-ordinator	(604) 279-2093	Ongoing	• familiar with fisheries resources throughout the study area (Bulkley Inventory)
Dave Taft	Triton Environmental Consultants Ltd. (Terrace)	Local Legend	(250) 635-1494	Ongoing	• familiar with fisheries and wildlife resources throughout the study area
Pierce Clegg	Babine Norlakes Lodge	Fishing Guide	(250) 847-6160	Ongoing	• familiar with fish and wildlife resources throughout the study area
Ralph Kozman	Silvicon Services Inc.	Fisheries Biologist	(250) 847-3680	Ongoing	• guidance throughout project
Lynn Miers	MELP (Victoria)	Data Administrator	(250) 387-9564	Ongoing	• FDIS database request and ongoing support
Sean Cheesman	MELP (Victoria)	GIS Technicians	(250) 387-2579	Ongoing	• WSC submission and RIC requirements
Tom Pendray	DFO (Smithers)	District Habitat Officer	(250) 847-4723	Ongoing	• Familiarity with study area
Brenda Donas	DFO (Smithers)	Community Advisor	(250) 847-5298	Ongoing	• Familiarity with study area
Bonnie	Pacific Inland Resources Ltd.	GIS Tech	(250) 847-2656	Ongoing	• requested info. pertaining to core eco-system and wildlife management areas

APPENDIX IV

**West Babine Reach Sampling Summary Report
(with sample selection)**

SAMPLE_TYPE	WSHD_CODE	ILP	REACH_ID	NID	NID_MAP
R	000-000000-00000-0000	10141	1.0	10236 093M.027	
R	480-439800-00000-0000		1.0	10119 093M.027	
R	000-000000-00000-0000	10143	1.0	10134 093M.027	
R	000-000000-00000-0000	10159	1.0	10115 093M.027	
R	480-452300-13942-0000		7.0	10150 093M.027	
R	000-000000-00000-0000	10155	3.0	10109 093M.027	
R	480-430700-44400-0000		6.0	10106 093M.027	
R	480-430700-44400-0000		4.0	10104 093M.027	
R	000-000000-00000-0000	10038	1.0	10375 093M.017	
R	000-000000-00000-0000	10123	1.0	10194 093M.027	
R	000-000000-00000-0000	10163	1.0	10118 093M.027	
R	000-000000-00000-0000	10138	1.0	10229 093M.027	
R	000-000000-00000-0000	10119	1.0	10168 093M.027	
R	480-456200-00000-0000		2.0	10239 093M.027	
R	480-430700-21000-7210		3.0	10095 093M.027	
R	000-000000-00000-0000	10162	4.0	10254 093M.027	
R	000-000000-00000-0000	10161	2.0	10257 093M.027	
R	000-000000-00000-0000	10017	1.0	10343 093M.017	
R	480-430700-21000-0000		12.0	10081 093M.027	
R	000-000000-00000-0000	10008	1.0	10416 093M.017	
R	480-504200-00000-0000		18.0	10434 093M.017	
R	480-504200-67300-0000		4.0	10448 093M.017	
R	000-000000-00000-0000	10009	1.0	10487 093M.018	
R	000-000000-00000-0000	10006	1.0	10491 093M.018	
R	000-000000-00000-0000	10130	1.0	10208 093M.027	
B	480-430700-21000-7210		4.0	10096 093M.027	
B	480-430700-76500-0000		1.0	10111 093M.027	
B	480-452300-13942-0000		3.0	10146 093M.027	
B	480-452300-13942-0000		6.0	10149 093M.027	
B	480-452300-13942-3207		6.0	10164 093M.027	
B	480-430700-00000-0000		12.0	10067 093M.027	
B	480-452300-13942-3871		1.0	10184 093M.027	
B	480-452300-13942-4884		1.0	10187 093M.027	
B	480-464400-00000-0000		6.0	10248 093M.027	
B	480-488800-10300-0000		7.0	10370 093M.017	
B	480-452300-13942-3207		7.0	10165 093M.027	



GRADIENT	FORM	SIZE								
		SMALL			MEDIUM			LARGE		
		Total	Sample	Actual	Total	Sample	Actual	Total	Sample	Actual
1 ≤4	ST/SI	77	11	4	79	11	3	5	2	0
	IM/ME	1	1	1	9	2	2	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
2 >4 and ≤8	ST/SI	89	12	8	41	10	7	1	1	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
3 >8 and ≤20	ST/SI	72	11	6	18	4	5	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
4 >20 and ≤30	ST/SI	9	2	1	2	2	2	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
5 >30	ST/SI	6	0	0	0	0	0	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0

Reach Total: 409 Sample Total: 69 Sample % 16.9 Actual Total: 39 Actual %: 9.5

Group 1

Group 2

Group 3

Group 4



Appendix V

Nilkitkwa Reach Sampling Summary Report (with sample selection)



GRADIENT	FORM	SIZE								
		SMALL			MEDIUM			LARGE		
		Total	Sample	Actual	Total	Sample	Actual	Total	Sample	Actual
1 ≤4	ST/SI	134	13	5	72	11	2	20	2	0
	IM/ME	16	4	1	18	4	1	7	2	0
	AN/BR	0	0	0	1	1	1	4	2	2
2 >4 and ≤8	ST/SI	88	12	4	46	10	7	2	2	0
	IM/ME	1	1	1	2	2	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
3 >8 and ≤20	ST/SI	160	13	4	70	11	6	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
4 >20 and ≤30	ST/SI	83	8	2	21	2	2	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
5 >30	ST/SI	72	0	0	6	0	0	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0

Reach Total: 823 Sample Total: 100 Sample % 12.2 Actual Total: 38 Actual %: 4.6

Group 1 Group 2 Group 3 Group 4



SAMPLE_TYP	WSHD_CODE	ILP	REACH_ID	NID	NID_MAP
B	480-378200-70400-0		1.0	10052 093M.058	
B	480-422000-15000-0		2.0	10712 093M.037	
B	480-378200-64300-0		5.0	10019 093M.058	
B	480-378200-00000-0		16.0	10034 093M.058	
B	000-000000-00000-0	10314	1.0	10084 093M.058	
B	480-378200-80600-1		2.0	10165 093M.058	
B	480-378200-85300-0		1.0	10092 093M.058	
B	480-378200-85300-0		2.0	10093 093M.058	
R	480-372500-00000-0		4.0	10275 093M.047	
R	480-409700-30400-0		3.0	10806 093M.038	
R	480-409700-30400-0		1.0	10804 093M.038	
R	000-000000-00000-0	10007	1.0	10792 093M.038	
R	000-000000-00000-0	10064	1.0	10759 093M.037	
R	480-422000-15000-0		1.0	10711 093M.037	
R	000-000000-00000-0	10033	1.0	10649 093M.037	
R	000-000000-00000-0	10034	1.0	10650 093M.037	
R	000-000000-00000-0	10223	1.0	10290 093M.047	
R	480-378200-00800-0		2.0	10325 093M.047	
R	480-410600-20800-0		1.0	10681 093M.037	
R	000-000000-00000-0	10035	1.0	10652 093M.037	
R	480-422000-20000-0		1.0	10714 093M.037	
R	000-000000-00000-0	10225	1.0	10293 093M.047	
R	000-000000-00000-0	10227	1.0	10300 093M.047	
R	000-000000-00000-0	10006	1.0	10576 093M.037	
R	480-378200-00800-0		1.0	10324 093M.047	
R	000-000000-00000-0	10292	1.0	10191 093M.058	
R	000-000000-00000-0	10200	2.0	10395 093M.048	
R	480-378200-26700-0		12.0	10005 093M.058	
R	000-000000-00000-0	10240	1.0	10006 093M.058	
R	000-000000-00000-0	10244	1.0	10023 093M.058	
R	480-378200-70400-0		3.0	10054 093M.058	
R	000-000000-00000-0	10261	1.0	10065 093M.058	
R	000-000000-00000-0	10317	1.0	10090 093M.058	
R	480-378200-85800-0		2.0	10115 093M.058	
R	000-000000-00000-0	10214	1.0	10314 093M.047	

APPENDIX VI

Harold Price Reach Sampling Summary Report (with sample selection)



GRADIEN	FORM	SIZE								
		SMALL			MEDIUM			LARGE		
		Total	Sample	Actual	Total	Sampl	Actual	Total	Sample	Actual
1 ≤4	ST/SI	29	7	1	22	5	1	10	2	0
	IM/ME	1	1	0	4	2	1	5	2	0
	AN/BR	0	0	0	0	0	0	0	0	0
2 >4 and ≤8	ST/SI	44	10	3	29	7	3	4	2	0
	IM/ME	2	2	1	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
3 >8 and ≤20	ST/SI	130	13	9	62	11	8	3	2	0
	IM/ME	1	1	1	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
4 >20 and ≤30	ST/SI	77	7	1	21	2	3	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
5 >30	ST/SI	199	0	0	16	0	0	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0

Reach Total: 659 Sample Total: 76 Sample % 11.5 Actual Total: 32 Actual %: 4.9

Group 1 Group 2 Group 3 Group 4



SAMPLE_TYPE	WSHD_CODE	ILP	REACH_ID	NID	NID_MAP
B	460-081700-43900-13700-2030-552		1.0	10119 093M.025	
B	460-081700-43900-13700-4730-000		2.0	10334 093M.026	
B	460-081700-43900-07500-0000-000		3.0	10177 093M.025	
B	000-000000-00000-00000-0000-000	10005	1.0	10681 093M.016	
B	460-081700-43900-33900-0770-000		3.0	10363 093M.026	
B	460-081700-43900-13700-2030-141		3.0	10105 093M.025	
B	460-081700-43900-13700-2030-000		5.0	10100 093M.025	
B	000-000000-00000-00000-0000-000	10106	2.0	10441 093M.026	
B	460-081700-43900-13700-2030-000		4.0	10099 093M.025	
B	460-081700-43900-07500-4820-000		1.0	10191 093M.025	
B	460-081700-43900-46600-0000-000		2.0	10678 093M.016	
R	460-081700-43900-13700-0000-000		13.0	10000 093M.035	
R	460-081700-43900-07500-4820-334		2.0	10201 093M.025	
R	460-081700-43900-13700-3750-000		1.0	10135 093M.025	
R	460-081700-43900-13700-3750-000		2.0	10136 093M.025	
R	460-081700-43900-23800-0000-000		4.0	10301 093M.026	
R	460-081700-43900-23800-0000-000		6.0	10303 093M.026	
R	460-081700-43900-23800-3200-000		2.0	10316 093M.026	
R	460-081700-43900-33900-3700-000		3.0	10383 093M.026	
R	000-000000-00000-00000-0000-000	10105	4.0	10438 093M.026	
R	460-081700-43900-33900-3700-595		1.0	10404 093M.026	
R	460-081700-43900-33900-6160-000		2.0	10446 093M.026	
R	460-081700-43900-33900-6160-000		4.0	10448 093M.026	
R	460-081700-43900-37500-0000-000		2.0	10661 093M.016	
R	000-000000-00000-00000-0000-000	10007	1.0	10687 093M.016	
R	000-000000-00000-00000-0000-000	10113	1.0	10470 093M.026	
R	000-000000-00000-00000-0000-000	10011	2.0	10675 093M.016	
R	000-000000-00000-00000-0000-000	10119	2.0	10308 093M.026	
R	000-000000-00000-00000-0000-000	10018	3.0	10350 093M.026	
R	000-000000-00000-00000-0000-000	10037	3.0	10346 093M.026	
R	000-000000-00000-00000-0000-000	10162	3.0	10110 093M.025	
R	460-081700-43900-33700-0000-000		4.0	10347 093M.026	

APPENDIX VII

**Nichyeskwa Reach Sampling Summary Report
(with sample selection)**



SIZE

SMALL

MEDIUM

LARGE

GRADIEN	FORM	Total	Sample	Actual	Total	Sampl	Actual	Total	Sample	Actual
1 ≤4	ST/SI	155	13	4	97	12	11	6	2	0
	IM/ME	18	4	1	19	4	1	9	2	0
	AN/BR	0	0	0	5	2	2	3	2	0
2 >4 and ≤8	ST/SI	137	13	4	45	10	11	7	2	1
	IM/ME	7	2	1	0	0	0	0	0	0
	AN/BR	0	0	0	1	1	1	1	1	1
3 >8 and ≤20	ST/SI	153	13	3	71	11	13	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	1	1	1	0	0	0
4 >20 and ≤30	ST/SI	59	5	0	18	2	4	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0
5 >30	ST/SI	106	0	0	5	0	0	0	0	0
	IM/ME	0	0	0	0	0	0	0	0	0
	AN/BR	0	0	0	0	0	0	0	0	0

Reach Total: 923 Sample Total: 102 Sample % 11.1 Actual Total: 59 Actual %: 6.4

Group 1

Group 2

Group 3

Group 4



SAMPLE_TYP	WSHD_CODE	ILP	REACH_ID	NID	NID_MAP
B	480-370100-39500-0		2.0	10155 093M.056	
B	480-370100-29400-5		1.0	10669 093M.046	
B	480-370100-29400-3		7.0	10631 093M.046	
B	480-370100-29400-0		2.0	10617 093M.046	
B	000-000000-00000-0	10146	2.0	10523 093M.046	
B	000-000000-00000-0	10086	4.0	10508 093M.046	
B	480-370100-29400-0		8.0	10395 093M.045	
B	480-370100-60300-4		1.0	10026 093M.055	
B	000-000000-00000-0	10161	2.0	10536 093M.046	
B	480-335200-55500-7		5.0	10128 093M.056	
B	480-335200-55500-7		4.0	10127 093M.056	
B	480-351200-29000-0		5.0	10887 093M.047	
B	480-356800-00000-0		1.0	10849 093M.047	
B	480-310670-00000-0		2.0	10265 093M.057	
B	480-310670-00000-0		1.0	10264 093M.057	
B	480-370100-60300-4		2.0	10027 093M.055	
B	480-370100-29400-5		3.0	11111 093M.036	
B	480-370100-62500-0		1.0	10290 093M.045	
B	480-370100-29400-0		11.0	10398 093M.045	
B	480-370100-60300-0		4.0	10014 093M.055	
B	000-000000-00000-0	10309	1.0	10100 093M.056	
B	480-370100-62500-3		3.0	10295 093M.045	
B	480-370100-29400-0		13.0	11014 093M.035	
B	480-370100-57600-0		6.0	10309 093M.045	
R	480-356800-29125-0		1.0	10852 093M.047	
R	480-370100-39500-0		3.0	10156 093M.056	
R	480-370100-57600-1		7.0	10335 093M.045	
R	480-370100-39500-0		3.0	10151 093M.056	
R	480-370100-39500-0		4.0	10157 093M.056	
R	480-351200-00000-0		3.0	10861 093M.047	
R	480-370100-08000-3		3.0	10788 093M.047	
R	480-370100-08000-0		4.0	10784 093M.047	
R	480-370100-01100-0		1.0	10777 093M.047	
R	480-370100-60300-0		5.0	10015 093M.055	
R	480-370100-60300-7		3.0	10040 093M.055	
R	480-321200-00000-0		1.0	10251 093M.057	
R	480-351200-42400-0		6.0	10871 093M.047	
R	480-370100-60300-8		1.0	10044 093M.055	
R	480-370100-29400-5		1.0	11110 093M.036	
R	480-370100-29400-0		9.0	10396 093M.045	
R	480-370100-29400-0		1.0	11134 093M.036	
R	480-370100-57600-1		2.0	10330 093M.045	
R	480-370100-60300-0		2.0	10282 093M.045	
R	000-000000-00000-0	10307	2.0	10093 093M.056	
R	000-000000-00000-0	10121	2.0	10651 093M.046	
R	000-000000-00000-0	10161	4.0	10174 093M.056	
R	000-000000-00000-0	10103	1.0	10602 093M.046	

SAMPLE_TYP	WSHD_CODE	ILP	REACH_ID	NID	NID_MAP
R	480-370100-29400-3		5.0	10629093M.046	
R	480-370100-57600-1		4.0	10332093M.045	
R	480-335200-36200-0		1.0	10235093M.057	
R	000-000000-00000-0	10143	1.0	10515093M.046	
R	000-000000-00000-0	10087	1.0	10512093M.046	
R	480-370100-62500-6		1.0	10067093M.055	
R	000-000000-00000-0	10085	3.0	10494093M.046	
R	480-370100-39500-5		2.0	10185093M.056	
R	000-000000-00000-0	10309	2.0	10101093M.056	

APPENDIX V

Project/Interpretive Maps

(map tube submitted with copy of report)