

**Reconnaissance (1:20 000) Fish and Fish Habitat Inventory
of the
Bulkley Forest T.S.A.**

**Tsezakwa Watershed
Working Unit # 5**

April 1998

Prepared for:
Pacific Inland Resources.

Prepared by:
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EXECUTIVE SUMMARY

Triton Environmental Consultants Ltd was retained by Pacific Inland Resources (PIR) in partnership with the Ministry of Environment, Lands and Parks (MELP) in Smithers to conduct reconnaissance level fish and fish habitat inventories in the Bulkley Forest District. This report summarizes the historical fisheries data collected by SKR Consultants Ltd and the field data collected by Triton survey crews in working unit 5. The historical fisheries data indicate that the following species are present in the study area

- coho (*Oncorhynchus kisutch*),
- pink (*O. gorbusha*),
- sockeye and kokanee (*O. nerka*),
- steel head and rainbow trout (*O. mykiss*),
- chinook (*O. tshawytscha*),
- cutthroat trout (*O. clarkii*),
- Dolly Varden (*Salvelinus malma*),
- bull trout ? (*S. confluentus*),
- lake trout (*S. namaycush*),
- prickly sculpin (*Cottus asper*),
- burbot (*Lota lota*),
- lake whitefish (*Prosopium coulteri*), ? (*Coregonus clupeaformis*)?
- pygmy whitefish (*P. coulteri*),
- longnose dace (*Rhinichthys cataractae*),
- largescale sucker (*Catostomus macrochelys*),
- white sucker (*C. commersoni*),
- northern squawfish (*Ptychocheilus oregonensis*),
- reidside shiner (*Richardsonius balteatus*),
- peamouth chub (*Mylocheilus caurinus*)

A total of 151 sites were sampled between July 25 and October 2 1996 and July 7 and September 20 1997. Fifteen sites were classified as "Not A Creek" due to the lack of a defined channel. Fish were captured by electrofishing at 22 sites and by monnow trapping at 1 site, the species sampled include rainbow trout, Dolly Varden, cutthroat trout, coho and an unidentified salmon species. A total of 79 sites were classified as S5 or S6, the basis for the non fish bearing status is summarized. The report also includes recommendations for resampling.

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

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Triton Environmental Consultants Ltd. would like to thank Mr. Alan Baxter of Pacific Inland Resources for his assistance throughout the planning and field phases of this project. The principal contract monitor was Mr Paul Giroux, B.C. Ministry of Environment, Lands and Parks, Smithers office. The quality assurance was conducted by Mr Ward Prystay and Mr Ryan Sherman. Triton Environmental Consultants Ltd. would also like to thank Mr Dave Reynard and Mr Steve Grey of Highland Helicopters.

LIST OF FIGURES

- Figure 1 Overview Map of the Bulkley Forest District
- Figure 2 Fish Histograms

LIST OF APPENDICES

Appendix 1	Hydrology
Appendix 2	Fish Data
Appendix 3	Photodocumentaiton)

1.0 INTRODUCTION

1.1 Background

Pacific Inland Resources retained Triton Environmental Ltd. (Triton) to conduct a reconnaissance level fish and fish habitat inventory in 14 watersheds located in the Bulkley Forest District. Existing information on fish distribution within the watersheds under investigation was collected by SKR Consultants LTD, in Smithers, B.C. Data from the provincial and federal government sources such as the Stream Information Summary System (SISS) and the evolving Fisheries Information Summary System (FISS) were researched for information. However, for the most part the streams that were investigated were 1st, 2nd, and 3rd order streams mapped at 1:20,000 scale, and these are not reported in the government databases.

This report summarizes the historical and field data collected in unit 5, which consists of the Tsezakwa watershed and the smaller Babine Lake tributaries in the Bulkley Forest District. The records indicate that the following species are found in the study area.

- coho (*Oncorhynchus kisutch*),
- pink (*O. gorbusha*),
- sockeye and kokanee (*O. nerka*),
- steel head and rainbow trout (*O. mykiss*),
- chinook (*O. tshawytscha*),
- cutthroat trout (*O. clarkii*),
- Dolly Varden (*Salvelinus malma*),
- bull trout ? (*S. confluentus*),
- lake trout (*S. namaycush*),
- prickly sculpin (*Cottus asper*),
- burbot (*Lota lota*),
- lake whitefish (*Prosopium coulteri*), ? (*Coregonus chupeaformis*)?
- pygmy whitefish (*P. coulteri*),
- longnose dace (*Rhinichthys cataractae*),
- largescale sucker (*Catostomus macrochelys*),
- white sucker (*C. commersoni*),
- northern squawfish (*Ptychocheilus oregonensis*),
- redbelt shiner (*Richardsonius balteatus*),

peamouth chub (*Mylocheilus caurinus*)

A total of 145 sites were sampled between August 8 and September 30 1996. Fourteen sites were classified as "Not A Creek" due to the lack of a defined channel. Fish were captured at 22 sites and the species sampled include cutthroat trout, rainbow trout, coho and Dolly Varden. A total of 24 sites were classified as S5 or S6 and the basis for the non fish bearing status is summarized. Stream classification is now required under the Forest Practices Code (FPC) of British Columbia Act (Bill 40 - 1994) and the associated Operational Planning Regulation enacted in June 1995. One of the objectives of the FPC is to integrate fisheries and forestry resource management in areas proposed or approved for logging to ensure that fish habitat is protected. Stream classification is designed to identify the presence of sensitive fish habitat and species, and to assist in the determination of the appropriate riparian management areas in order to develop a responsible management strategy required for Operational Plans.

1.2 Objectives

In partnership with MELP and Repap Smithers, Forest Renewal BC (FRBC) is implementing fish and fish habitat inventories to provide information required for resource planning. Triton's goals were to describe fish distributions and habitat characteristics, and to provide stream classifications according to the Forest Practices Code. Fish and fish habitat operational inventories consist of:

- reconnaissance-level surveys aimed at characterizing fish habitat and distribution;
- identification of fish and fish habitat values that require special designation under the Forest Practices Code (e.g. sensitive areas); and
- new, reinterpreted, or augmented data to meet Forest Practices Code requirements for classification of areas (e.g. fish stream classification)

2.0 STUDY AREA

2.1 Location

The Bulkley Forest District is located in north-central British Columbia and contains several major tributaries to the Bulkley and Babine Rivers. The mapsheets that cover this working area are 93 M 007, 93 M 008, 93 M 018, 93 M 026, 93 M 027, 93 M 036 and 93 M 037. This working unit is approximately 410sq. km in size and comprises 5.2% of the study area. The streams inventoried include

- Tsezakwa Creek,
- Five Mile Creek,
- Heal Creek,
- Williams Creeks ,
- several unnamed tributaries to Babine Lake,
- a small number of unnamed tributaries to Kitsequecla Lake.

2.4 Fish Species Sampled

2.5 Access

Road and boat access exists for the lower reaches of the tributaries to Babine Lake. Helicopter access is required for the upper reaches reaches of the tributaries located in the north corner of the unit. In 1996 , approximately sites were accessed by helicopter, truck and boat

2.6 Resource Use

The dominant resource activity in the watersheds studied will be the proposed logging

3.0 METHODS

3.1 Physical

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

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

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

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

3.2 Biological

Triton obtained fish sampling permits from the appropriate DFO and MELP offices. Fish presence/absence was determined by electrofishing and/or minnow trapping and occasionally angling. Electrofishing was conducted at all sites where it was deemed necessary. That is, where fish presence had not been determined upstream or habitat characteristics were sufficiently different from other sites. A minimum area of approximately 100 m was sampled to ascertain fish presence. The effort, or shocking time and distance

shocked, was recorded for each sample site. A variety of electroshocker models were used in this study including :

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

The electroshockers were commonly set at 60HZ at 6MS, however adjustments were made where appropriate. Salt was not used at any of the sample sites. The fork length of each fish collected was then measured and, whenever necessary, voucher specimens were collected and stored in a 10% formaldehyde solution in plastic bags. These specimens were delivered to the Smithers office of BC Environment.

3.3 Stream Classification

The data collected from existing sources and during the field program were used to determine the riparian class as defined under the *Forest Practices Code*. **Table 1** provides the FPC definition of each riparian class.

Draft procedures are also outlined in the guidebook to determine the riparian management areas (RMA) for lakes (L1 - L4), wetlands (W1 - W5) and fisheries sensitive zones.

A stream survey card and photograph(s) are presented for each sampling site following the order in which they are listed in the summary table. The stream survey data, for each site, is an electronic duplication of the stream survey forms completed in the field and provides additional information used by the field crew to designate a stream as non-fish bearing.

An S5 or S6 classification was based on electrofishing results, substrate composition, stream gradient, general fish habitat characteristics and location of barriers that may preclude fish use in the area. The absence of fish during sampling did not rule out an S1 to S4 designation. At sites where no fish were collected but there was no reason to conclude that fish would not use the segment of creek, the reach was classified as fish bearing and given the appropriate S1 to S4 classification. Additional sampling, at different times of the year, would be required to confirm that fish do not utilize a stream reach before an S5 or S6 final designation would be accepted. The rationale for S5 and S6 designations was summarized in conjunction with recommended sites for further sampling.

A stream survey card and photograph(s) are presented for each sampling site. They are arranged in the report by field crew and then by TRIM sheet. The stream survey data, for each site, is an electronic

65
duplication of the stream survey forms completed in the field and provides additional information used by the field crew to designate a stream as fish or non-fish bearing

An S5 or S6 classification was based on electrofishing results, substrate composition, stream gradient, general fish habitat characteristics and location of barriers that may preclude fish use in the area. The absence of fish during sampling did not rule out an S1 to S4 designation. Typically, at sites where no fish were collected but suitable habitat was available, the reach was classified as fish bearing and given the appropriate S1 to S4 classification. Additional sampling, at different times of the year, would be required to confirm that fish do not utilize a stream reach before a final S5 or S6 final designation would be accepted

The use of 1:20,000 scale TRIM maps meant that some of the first order (headwater) streams marked on the map were not necessarily stream channels. Under the FPC's Operational Planning Regulation (June 1995) a stream is defined as:

“... a watercourse, having an alluvial sediment bed, formed when water flows on a perennial or intermittent basis between continuous definable banks;”

During the field classification, crews would define a watercourse as "not a creek" if there were no alluvial sediments and no continuous, definable banks. Watercourses that had a substrate that consisted entirely of organic material were not considered to have an alluvial sediment bed.

4.0 Physical Characteristics

4.1 Stream Flow

The hydrological records were reviewed from existing sources, namely Water Survey of Canada (WSC) records. An estimate of daily flows (m^3/s) was based on Water Survey of Canada Daily maxima, minima, and maximum instantaneous flows were also summarized from existing records if available. Mean annual discharge (m^3/s) was calculated from existing hydrological records.

4.2 Water Quality

As agreed with the Contract Monitor, water samples were not collected for chemical analyses. The pH and conductivity were collected at a representative number of reaches. Conductivity was measured with a handheld LaMotte TDSTestr 3™ conductivity meter. The acceptable values of conductivity for electroshocking purposes must exceed $30 \mu\text{S}$. The pH at each site was measured with a handheld LaMotte pHTestr 2™ pH meter. Turbidity was determined subjectively and it was stipulated by the ministry representative during the quality assurance phase of the project in 1996 that the depth of the deepest pool would be the default value in the database when the water was clear to the bottom. Thereafter, it was agreed that the description "clear to bottom" would suffice and turbidity was measured only where the water was not clear to the streambed.

Water temperatures during field sampling ranged between X and X°C. Table 2 summarizes the temperature, pH and conductivity measures collected during the course of this inventory. The average water temperature was X°C. The pH values ranged from X to X, with an average pH of X. The conductivity ranged from X to X ($\mu\text{mhos}/\text{cm}$) with an average value of X.

tab.1

5.0 RESULTS AND DISCUSSION

tab.2

5.0 RESULTS AND DISCUSSION

The survey took place between July 25 and October 2 1996 and July 7 and September 20 1997. A total of X sites were sampled and only X sites were classified as "Not a creek" due to a lack of defined channel. The flow stages at the time of sampling ranged from dry to high. The summary information for all sites is listed in Table 4. Includes histograms of the fish species sampled during the study. Only species which had frequencies greater than 20 were included as a histogram with few fish is not informative.

5.1 Babine River and Babine Lake (480-0000-000) (93 M 007, 93 M 008) (93 M 017, 93 M 018) (93 M 026, 93 M 027, 93 M 028) (93 M 036, 93 M 037).

5.1.1 Sensitive Habitats and Barriers

This unit contains the tributaries to the northwest side of Babine Lake and the tributaries to the west side of the Babine River, between Babine and Nilkitkwa Lakes. Approximately 32km of Babine Lake occur in this unit as do 45 tributaries. Forty four tributaries were sampled in this area with 10 sites identified as "Not a Creek".

5.1.2 Fish Summary Tables and Stream Classification

The historical records are extensive for this unit. The following species have been recorded in Babine Lake

- sockeye,
- coho,
- pink, chinook,
- cutthroat,
- rainbow trout,
- steelhead, Dolly Varden,
- kokanee,
- lake trout,
- lake whitefish,
- mountain whitefish,
- burbot,
- prickly sculpin,
- red side shiner,
- pygmy whitefish,
- largescale sucker,

- longnose sucker,
- northern squawfish,
- longnose dace,
- white sucker

Twelve sites were sampled for fish in this area and fish were caught and/or visually observed at six. The species sampled include coho, cutthroat and rainbow trout.

The Babine River was not sampled in this study but is an S1 sized stream, the tributaries surveyed in this study ranged in size from S2 to S6.

INSERT CARDS/PHOTOS

5.2 Tsezakwa Creek (480-4220) (93 M 036, 93 M 037)

5.2.1 Sensitive Habitats and Barriers

The mainstem of Tsezakwa Creek is 21 km in length and is fed by 27 tributaries. It flows south from the steep headwater region of four, then east through a low gradient, unconfined area in reach three. A number of wetlands, which have been identified as fisheries sensitive zones, are associated with the channel in reach three. The channel flows east in reach two, which undergoes a gradual increase in confinement, that persists through to reach one, which has low gradient, two large side channels and some extensive braiding at the mouth. The Tsezakwa Creek system was sampled in 39 locations, including three different mainstem sites.

5.2.2 Fish Summary Tables and Stream Classification

Sockeye, coho, pink, Dolly Varden and rainbow trout have been recorded at the mouth of Tsezakwa Creek. Coho and Dolly varden have also been sampled 3.3 km upstream from the mouth. Twenty five sites were sampled for fish in this area and fish were caught at only two, P122 and T9. Coho and Dolly Varden were caught in reach one at T9 and Dolly Varden and rainbow trout were caught in reach two at P122. Fish distribution appears to be limited by the 10 m and 2 m falls and 4 m cascade barriers occurring in reach two. No fish were caught above these barriers, however excellent spawning and rearing habitat was noted in at least five of the surveyed tributaries flowing into reach three. All of the sites above the barriers on Tsezakwa Creek have been classified as non fish bearing as no evidence of a resident population was found in any of the streams.

The mainstem was sampled in reaches one, two and three. In one and two Tsezakwa Creek was classified as S2 based on channel widths of 18.8 m and 18.0 m and the presence of fish in the sampling areas. The mainstem was classified as an S5 in reach three, based on an average channel width of 3.0 m and no evidence of a resident population.

Many of the upper reaches of the tributaries have steep gradient and can be classified as non fish bearing. Two of the tributaries sampled in reach three were classified as S5, but the majority of the streams sampled in the reach were classified as SX.

INSERT UPPER SHEDIN SITE CARDS/PHOTOS

5.3 Heal Creek (480-4307-000) (93 M 027)

5.3.1 Sensitive Habitats and Barriers

Heal Creek is 12.9 km in length and is fed by seven tributaries. It flows east in reach six from a headwater lake, that is surrounded by wetlands. It continues to move east in reach five, which is somewhat confined and has moderate gradient. A trend toward decreased gradient and confinement begins in reach four and continues through reach three. In reach two the confinement increases again for a brief period but lessens in reach one as the creek flows east into Babine Lake. The Heal Creek watershed was sampled at 11 locations, including the mainstem.

5.3.2 Fish Summary Tables and Stream Classification

There are records for coho, Dolly Varden, kokanee, rainbow trout, lamprey, burbot and prickly sculpin at the railway crossing just upstream of the mouth of Heal Creek. Eight sites were sampled and fish were captured and/or visually observed at four. The species sampled include Dolly Varden, rainbow trout and bull trout.

Heal Creek was sampled in reaches one through four. It was classified as an S2 in reach one based on an average channel width of 8.2 m and the presence of Dolly Varden and bull trout in the sampling area. In reaches two through four, it was classified as an S3, based on an average channel width of 2.3 m and the presence of bull trout in the survey site.

The majority of the tributaries sampled in 1996 were classified as S3. The breakdown is as follows: one S2, five S3 and one S4.

INSERT CARDS/PHOTOS

5.4 Williams Creek (460-4523-000) (93 M 027)

5.4.1 Sensitive Habitats and Barriers

The Williams Creek mainstem is 15.1 km in length and is fed by 12 tributaries. It flows southeast from the headwaters of reach three, from a low gradient area with a number of small lakes and wetlands. It then flows east in reach two, where it is occasionally confined and moves through an area of typically moderate gradient. These features remain fairly consistent through reach one, which flows east and northeast into the Babine River. Reach one is crossed twice by roads approximately 3.8 and 4.0 km from the mouth. This system was sampled in five different areas.

5.4.2 Fish Summary Tables and Stream Classification

Sockeye, coho, Dolly Varden, kokanee and rainbow trout have been historically noted at the mouth of Williams Creek and prickly sculpin, coho and kokanee have been recorded near the mouth of Five Mile Creek, a major tributary to Williams Creek.

Williams Creek was sampled in reach one and was classified as S2 based on an average channel width of 6.1 m and the presence of Dolly Varden and rainbow trout in the sampling area.

The tributaries sampled in this study ranged in classification from S2 to S6, the breakdown is as follows: one S2, one S3, one S4 and one S6.

INSERT /PHOTOS

5.5 Five Mile Creek (460-4523-061) (93 M 027)

5.5.1 Sensitive Habitats and Barriers

Five Mile Creek, a tributary to Williams Creek, is 10.3 km in length and is fed by 10 tributaries. It flows east from moderately steep headwaters in reach four, then southeast in reach three which has low gradient and is largely unconfined. Reach two consists of a large lake approximately 700m wide and 1000m long. Reach one flows east and southeast into Williams Creek and is occasionally confined. This stream was sampled at two separate locations.

5.5.2 Fish Summary Tables and Stream Classification

The historical information indicates that Dolly Varden and rainbow trout have been captured in the unnamed lake associated with the creek. Dolly Varden were captured by electrofishing at both sites.

Five Mile Creek was classified as an S3 in reach three based on an average channel width of 1.9 m and the presence of Dolly Varden at the sample site.

One tributary to Five Mile Creek was sampled in 1996 and was classified as an S3, based on an average channel width of 3.3 m and the presence of Dolly Varden in the sampling area.

INSERT /PHOTOS

5.6 Unnamed Tributary to Babine Lake (480-4746-000) **(93 M 017, 93 M 026, 93 M 027)**

5.6.1 Sensitive Habitats and Barriers

This unnamed tributary to Babine Lake is 23 km in length and is fed by 20 tributaries. It flows north from a high elevation, low gradient area with a number of small lakes in reach eight then flows east in reach seven, has low gradient and is unconfined. The confinement increases steadily in reach six which terminates in a 20 m falls. Reach five consists of a set of four 10 m falls, flowing southeast. Reaches three and four are quite confined and have moderate gradient. The break between reaches three and four consists of a 4m cascade. The confinement lessens in reach three and then increases in reach two where the stream flows south through a low gradient area in which wetlands are in direct association with the channel. Reach one flows southeast into Babine Lake, has low gradient and is unconfined. Sample sites req'd mention also the trin with the lake, T134 previously assoc with next section.

5.6.2 Fish Summary Tables and Stream Classification

Spawning sockeye have been historically noted in reach one. Fifteen sites were electrofished and no fish were caught.

The tributary was classified as an S2 in reach three based on an average channel width of 9.2 m and the presence of fish habitat in the sampling area. This classification remains a consistent through reach six. The mainstem was also sampled in the headwaters and was classified as S3 based on an average channel width of 1.8 m and the presence of fish habitat.

The tributaries to this stream range in size from S6 to S3, with S3 being the typical stream class assigned to the tributaries.

INSERT /PHOTOS

5.7 Unnamed Tributary to Babine Lake (480-4888-000) (93 M 017, 93 M 018,

5.7.1 Sensitive Habitats and Barriers

This tributary to Babine Lake is 14.3 km in length and is fed by 14 tributaries. It flows southwest and south from the headwaters, of reach four which have low gradient, are unconfined and have a number of wetlands in direct contact with the channel. Reach three flows east and southeast and demonstrates an increased confinement as it moves downstream. The confinement lessens abruptly in reach two which has generally low gradient. Reach two also has a large wetland flanking the channel. The break between reaches two and one is a 5m cascade. Reach one is slightly confined and flows east into unnamed tributary 480-4746. This stream was sampled at 11 locations.

5.7.2 Fish Summary Tables and Stream Classification

No historical records exist for this body of water. Seven sites were electrofished and rainbow trout were captured at site P 96.

The mainstem was classified as an S2 in reach one, based on an average channel width of 6.0 m and the presence of rainbow trout in the sampling area.

INSERT CARDS/PHOTOS

5.8 Unnamed Tributary to Babine Lake (480-5042-000) (93 M 017, 93 M 018)

5.8.1 Sensitive Habitats and Barriers

This stream is 15.7 km in length and is fed by 6 tributaries. It flows southeast from moderately steep headwaters in reach seven, then south in reach six, which is characterized by low gradient and has a number of large wetlands on the main channel. Reach five consists of a lake that is 555 m long and 278 m wide. Reach four is unconfined, has low gradient and flows northeast into an unnamed lake, 934 m long and roughly 315 m wide. This lake is reach three. Reach two flows southeast and is somewhat confined. This confinement lessens further in reach one which flows east into Babine Lake. This tributary was sampled in eight different locations.

5.8.2 Fish Summary Tables and Stream Classification

Rainbow trout have been recorded at the mouth and 3 km upstream of the mouth of this tributary. Six sites were sampled for fish in 1996 and fish were caught in three. Cutthroat and Dolly Varden were the species sampled. Dolly Varden and cutthroat were captured in reach two, while cutthroat were captured in reach four.

This tributary was sampled in reaches one, two, four, six and seven. It was classified as an S2 in reach one and four, based on average channel widths of 6.3 m and 6.4 m and the presence of fish at the sample sites. In reach two, it was classified as an S3 based on a 4.5 m channel width and the confirmation of fish presence in the surveyed area. Reaches six and seven were classified as S3 based on average channel widths of 3.5, 2.2 m and the presence of fish habitat in the sampling areas. The majority of the tributaries to this creek are S4 sized streams.

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5.9 Unnamed Tributary to Babine Lake (480-5184-000) (93 M 007, 93 M 017, 93 M 018)

5.9.1 Sensitive Habitats and Barriers

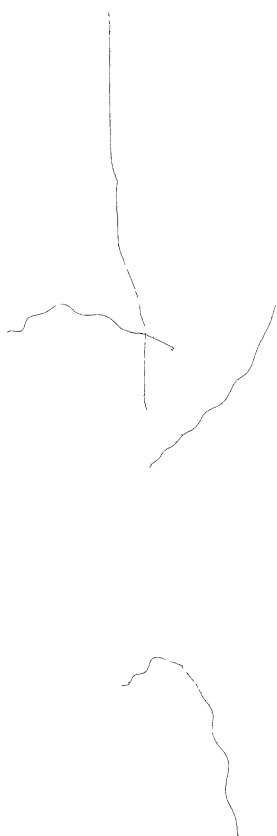
This stream is 4.2 km in length and is fed by three tributaries. It drains a small lake in the headwaters and flows southeast in reach two. This reach is somewhat confined and has moderate gradient. In reach one the confinement and gradient decrease steadily as the creek flows east into Babine Lake. This stream was sampled once, in reach one.

5.9.2 Fish Summary Tables and Stream Classification

The historical records indicate the presence of Dolly Varden at the mouth of this stream. In this study, rainbow trout were caught by electrofishing in reach one, at site J176.

This creek was classified as an S3, based on an average channel width of 2.3 m and the presence of rainbow trout in the sampling area. This classification is likely consistent through most of reach two. None of the tributaries to this stream were sampled in 1996, however they would be classified as S4 as no apparent barriers to fish access, to these tributaries, appear on the TRIM sheets.

INSERT CARDS/PHOTOS



5.10 Fish Age, Growth and Other Observations

5.11 Rare and Endangered Species Summary

No rare or endangered species were observed in this working unit

5.12 Wildlife Observations

5.13 Recommendations for Follow Up Sampling

A number of the sites in this working unit were classified as fish bearing despite the fact that no fish were caught in the sampling areas. Typically, these sites had suitable fish habitat and/or no observed barriers to fish migration. Additionally, a some sites were **dry at the time of sampling**. (check) A list sites for which future sampling is recommended is provided in Table 6

6.0 CONCLUSION AND RECOMMENDATIONS

The Riparian Management Areas (RMA) around streams, lakes and wetlands consist of a riparian management zone, the width which is determined by the presence of fish species and channel width. The retention of streamside vegetation is required to protect water quality, stabilize stream banks, regulate water temperature, and supply woody debris to the stream channel. The RMA can consist of both a management zone and of a reserve zone. Timber harvesting is not permitted within the reserve zone of the RMA and there are recommended management practices for the management zone.

Table 1 summarizes the specified Riparian Management Area (RMA) which is adjacent to the stream. The RMA extends from the top of the stream bank to the slope distance specified in the table.

The recommended management practices for these classifications are as follows:

S1, S2 and S3 Streams (fish-bearing)

The RMA adjacent to these creeks contain a reserve zone and management zone whose objective is to reduce the risk of windthrow to the reserve zone and provide opportunities for meeting wildlife tree objectives.

tab.5

S4 Streams (fish-bearing)

S4 streams have a management zone of 30 m and do not have a reserve zone, with the exception of a 10 m reserve zone required in the interior where the risk of windthrow is considered low. The management objectives are to reduce the risk of windthrow to the reserve zone and retain all high valued wildlife trees contained in the reserve zone.

S5 and S6 Streams (non fish-bearing)

S5 and S6 streams do not have a reserve zone. The management zone should maintain wildlife habitat, provide a source of large woody debris and root networks for bank stability, and shading for stream temperature control.

Gullies or "Not a creek"

It is also noted that several waterways shown on the maps were classified as "not a creek" as they did not meet the definition of a stream. A stream is a watercourse formed when water flows between continuous definable banks. These drainages are usually gullies and will need to be included in the gully assessment procedure.

Gullies are defined in the Forest Practices Code by channel dimensions. A gully channel has:

- greater than 25% overall stream gradient from the fan apex to the top of the headwall, and
- from the fan apex to the top of the headwall, at least one stream reach greater than 100 m long, with
 - ≥ 40 % sidewall slope
 - ≥ 20 % channel gradient
 - ≥ 3 m gully height.

A stream channel must have both of these attributes to be defined as a gully. The majority of field observations were of transport zones which is often a confined, V-notch ravine. The sediment transported from gullies can have detrimental effects on fish habitat in downstream channels. Gully management goals should maintain channel stability and the natural rates of erosion and transport of sediment and debris.

7.0 REFERENCES

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2.4.5 Unit 5: Tsezakwa.

This working unit is approximately 410sq. km in size and comprises 5.2% of the study area. It consists of all the tributaries within the Bulkley forest district that are west of Babine Lake, including Tsezakwa Creek. Fish sampling has been carried out in the Babine River and many of the inlets that are a part of the Tsezakwa working unit. Fisheries information was found for Tsezakwa Creek, Heal Creek, Five Mile Creek, and 4 unnamed tributaries (480-4746, 480-4888, 480-5042, 480 5184). Only the lower reaches of the unnamed tributaries have been sampled. The extent of the fish distribution in these streams is unknown***. Species that have been identified in this working unit include

- coho (*O. kisutch*),
- pink (*O. gorbusha*),
- sockeye and kokanee (*O. nerka*),
- steel head and rainbow trout (*O. mykiss*),

- chinook (*O. tshawytscha*),
- cutthroat trout (*O. clarkii*),
- Dolly Varden (*S. malma*),
- bull trout ? (*S. confluentus*),
- lake trout (*S. namaycush*),
- prickly sculpin (*C. asper*),
- burbot (*L. lota*),
- lake whitefish (*P. coulteri*), ? (*Coregonus clupeaformis*)?
- pygmy whitefish (*P. coulteri*),
- longnose dace (*Rhinichthys cataractae*),
- largescale sucker (*C. macrochelys*),
- white sucker (*C. commersoni*),
- northern squawfish (*P. oregonensis*),
- redbside shiner (*R. balteatus*),
- peamouth chub (*Mylocheilus caurinus*).

Road and boat access exists for the lower reaches of the tributaries to Babine Lake. Helicopter access is required for the upper reaches of the tributaries located in the north corner of the unit