

March 19, 1997

Ministry of Environment, Lands and Parks
Skeena Region

Smithers, British Columbia
V0J 2N0

Mr. Paul Giroux

Dear Mr. Giroux:

The following represents our final report for a Reconnaissance Survey of the Coppermine Lake; Watershed Code 460-5177-361.

Yours truly,

KLOHN-CRIPPEN CONSULTANTS LTD.

Richard Couture, R.P.Bio.
Project Manager

EXECUTIVE SUMMARY

Klohn-Crippen Consultants Ltd. was retained by the Fisheries Branch of the Ministry of Environment, Lands and Parks in Smithers, British Columbia, to conduct a reconnaissance survey of Coppermine Lake (Watershed Code - 460-5177-361) which lies within the Bulkley River watershed. This oligotrophic lake is located 29.2 km south east of Smithers near the top of Grouse Mountain. There is four wheel drive road access to the lake but the road is not mapped and its condition beyond the immediate area of the lake is unknown. Access to the lake for the present study was by helicopter. This lake was surveyed on September 14 and 15, 1996; previous surveys apparently do not exist.

Coppermine Lake has one inlet and one outlet. The inlet is only visible for 60 metres upstream of the lake after which, the channel disappears underground. The outlet channel meanders through meadows and a forested area before disappearing underground 312 metres downstream. The inlet and outlet do not possess good salmonid spawning or rearing habitat. The lake appears to be barren of fish as none of the fish sampling techniques employed for this inventory (gillnets, minnow traps, set line and electrofishing) produced catch results.

The maximum depth of Coppermine Lake is 14.3 metres, suggesting that the lake is quite deep for its size (surface area = 12.75 ha). At the time of sampling, dissolved oxygen levels remained above the minimum levels for salmonid embryos and larvae (>11 mg/L: Anon. 1996b) only in the first 4 meters. Dissolved oxygen concentrations were above that required for all other salmonid life stages (8 mg/L: Anon. 1996b) from 0 to 9 m, below which the dissolved oxygen concentration decreased rapidly to its lowest value of 5.9 mg/L at 13 m.

The large sampling effort applied to this lake, combined with the lack of any captured fish specimens, strongly suggests the lake is barren of fish. Moreover, fish were not observed jumping or swimming in the lake, further emphasizing their absence from the system.

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1. INTRODUCTION

Klohn-Crippen Consultants Ltd. was retained by the Fisheries Branch of the BC Ministry of Environment, Lands and Parks in Smithers to conduct a reconnaissance survey of Coppermine Lake within the Bulkley River watershed. The field survey was conducted on September 14 and 15, 1996 by G. Scarborough and J. Sterritt. The lake is located atop Grouse Mountain approximately 29.2 km southeast of Smithers (Figure 1). The lake has not been surveyed previously.

The purpose of this survey was to provide essential fish and fish habitat information required for resource planning and making management decisions for Coppermine Lake. Fish sampling was conducted by means of set lines, gillnets, and minnow traps set in the lake overnight. Electrofishing was conducted on the lake's inlet and outlet during the daytime only. All surveys (except the bathymetric survey) were conducted according to Anon. (1995a). The bathymetric survey of the lake utilized a Trimble Pro-XL GPS-data logger combined with a Meridata depth sounder. Following post-mission differential correction with base station data from Terrace British Columbia, the GPS data provided sub-meter positional accuracy from which individual depth soundings were plotted. The perimeter of the lake was also traced using the GPS system, thus providing accuracy in lake perimeter and surface area estimates.

Figure 1 Lake Location

2. DATA ON FILE

The following represents a directory of the specific components that can comprise a reconnaissance lake survey and also indicate the components that are completed in this survey.

Location	<u>√</u>	Winter Diss. O₂/Temp. Profiles	<u> </u>
Lake Morphometric Data	<u>√</u>	Netting record	<u>√</u>
Bench Mark	<u>√</u>	Lake Catch Summary	<u>√</u>
Terrain Features	<u>√</u>	Individual Fish Summary	<u>√</u>
Access	<u>√</u>	Fish Preserved	<u> </u>
Resorts and Campsites	<u>√</u>	Stomach Analysis	<u> </u>
Special Restrictions	<u>√</u>	Scale Reading	<u> </u>
Aquatic Plants	<u>√</u>	Location of Inventory Sites	<u>√</u>
Wildlife Observations	<u>√</u>	Appendices:	<u>√</u>
Summary of Rare or Endangered Species	<u>√</u>	I: Tributary Stream Data and Data Forms	<u>√</u>
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History of Previous Surveys	<u>√</u>	Bathymetric Map Reduction	<u> </u>
Water Chemistry Summary	<u>√</u>	Bathymetric Map	<u>√</u>
Dissolved O₂/Temp. Profiles	<u>√</u>		

3. SURVEY AND ANALYTICAL METHODS

3.1 Bathymetry

The bathymetric survey utilized a Trimble Pro-XL GPS datalogger unit coupled to a Meridata digital depth sounder. The datalogger was programmed to record position (NAD 83), once every second and depth and position every three seconds. The GPS antenna was attached to one end of a length of plywood (4' x 1/2' x 36') and the depth sounder transponder was attached to the other end. This plywood was then fixed to the boat's transom with a C-clamp and an angular wedge placed between the transom and plywood such that the plywood, antenna and transponder were oriented perpendicular to the water surface. The antenna was positioned approximately 1 m above the water while the transponder was positioned immediately below the surface.

Due to the inherent error in GPS signals, post-mission processing of the field GPS data was necessary to achieve the sub-meter accuracy required to plot bathymetric data. Post-mission differential correction was achieved with the P-Finder software package (Trimble Corp.) by matching the field GPS data with British Columbia Active Control System (BCACS) 1-second network base station data from the Maps BC base station in Terrace, British Columbia. A base station very close to the actual field GPS unit would provide the most accurate post-mission differential correction but Terrace was close enough (<500 km) to still provide sub-meter accuracy (*pers. comm.* Amin Kassam, September 9, 1996).

The first task during a bathymetric survey was to trace the perimeter of the study lake. This was achieved by placing the outboard motor in shallow drive (to avoid collisions with rocks and logs) and driving around the perimeter while maintaining a constant distance from shore for the entire perimeter trace. A distance of 4 metres was usually sufficient to avoid collisions and still allow a detailed trace of the perimeter. Following differential correction and analysis of the perimeter trace data, the perimeter was expanded by 4 metres to delineate the actual lake perimeter and not just the boat's path.

Following the perimeter trace, the lake's longest axis (e-line) was traced to illuminate the general depth trends and then transects were made across the shorter axis in directions generally perpendicular to the e-line. These shorter transects were conducted such that the depth sounder was allowed to track depths from shore to opposite shore. Additional depth data were obtained through excursions into small bays along the shoreline. The coordinates for these bathymetric data were then differentially corrected and analyzed along with the corrected perimeter data to generate bathymetric contours via the AdCADD® Civil/Survey software package. The resulting bathymetric map was then examined and adjustments to contours were made as necessary. Bathymetric statistics

(volume, area at 6 metre contour, etc.) were also generated from the AdCADD® Civil/Survey software package.

3.2 Stream Surveys

Inlet and Outlet stream surveys were conducted according to Resource Inventory Committee (RIC) standards (Anon. 1995a). Wherever possible, 500 metres of stream was surveyed. Alternatively, when this was not possible due to the presence of an impossible barrier or other lake, the stream was surveyed up to this habitat feature. At a section of the stream possessing representative habitat, an area no less than 9 bank-full widths long was surveyed and the mandatory fields of the DFO/MoELP stream card were completed. Wherever possible, electrofishing of at least 100 m² of fish habitat was also conducted. Photographs of stream habitat and views from the upstream and downstream limits of the survey site were also taken if they provided additional detail of the surrounding habitat.

3.3 Gillnetting

Mesh sizes of monofilament gillnets used in this study, in experimental order, were: 18, 38, 63 and 88 mm. Each gillnet panel measured 17.4 metres long by 2.8 metres deep and the panels were ganged together for a total net size of 69.6 metres by 2.8 metres representing a sample surface area of 194.9 m². Each gillnet gang was set with the 18 mm mesh closest to shore and mesh size increasing towards the lake's center.

The Resource Inventory Committee (RIC) standards for gillnetting require a gillnet with six panels of varying mesh sizes to be ganged together in a specific sequence (i.e., 25 mm, 76 mm, 51 mm, 89 mm, 38 mm and 64 mm). The gillnet dimensions used for this inventory did not exactly match the RIC standard. Gillnet mesh sizes increased in size in the order as stated above. The only difference with the RIC standard net design is the absence of the 54 mm and 76 mm panels. RIC standard nets were not used for this survey because the Lake and Stream Inventory manual was unavailable to Klohn-Crippen when this project was initiated. The gillnets used for this inventory have been used by Klohn-Crippen for many years and have produced consistently defensible catch results. For comparison purposes with RIC standard gillnets and where catch data permit, an analysis of the catch length distribution has been provided to highlight trends in the fish length data and the occurrence of any bias in the catch population. See results for this discussion.

3.4 Limnological Investigations

Bathymetric investigations (Section 3.1) allowed Klohn-Crippen to estimate the lake's deepest point. The boat was anchored here and general observations on weather and surface conditions were noted. Lake water temperature and dissolved oxygen were

determined along a vertical profile at 1 metre intervals to the lake bottom and the resulting field data were examined to determine metalimnetic depth. Water samples were then extracted from the surface (0.5m) and from a depth below the metalimnion with a Van Dorn water sampler. Measurements of specific conductance and pH were also determined in the field at the two sample depths.

3.5 Water Chemistry

Water chemistry was determined in the field (e.g., temperature, pH, specific conductance) or by a laboratory from samples collected in the field. Water samples collected in the field were stored in properly labeled, clean plastic sample bottles. A glass jar was used to store water for NH₃ analysis. These samples were then stored in a cooler under ice and subsequently refrigerated overnight at 4°C until shipment to Vancouver the following day. When samples were collected on a Friday or Saturday, they were stored in a freezer (-10°C) until shipment the following Monday.

3.5.1 Alkalinity

Alkalinity was determined by the titration method outlined in Eaton et al. (1995).

3.5.2 Total Dissolved Solids

TDS was examined according to Eaton et al. (1995).

3.5.3 Ammonia (NH₃)

Ammonia was examined according to the Nessler method (Hach 1994).

3.5.4 Nitrate

Nitrate was examined according to the Nessler method (Hach 1994).

3.5.5 Total Phosphorus

Total phosphorus was examined through the ascorbic acid method using powder pillows. A method equivalent to USEPA method 365.2 and Standard Method 4500-P-E for wastewater (Hach 1994).

3.5.6 Total Dissolved Phosphorus

Total dissolved phosphorus was examined by the ascorbic acid method using powder pillows after first filtering the sample through a Whatman GFC filter (Hach 1994).

3.5.7 Chlorophyll *a*

The measurement of chlorophyll *a* followed APHA Standard Methods, 18th Edition, pages 10-17. Phytoplankton were extracted from the sample through a Whatman GFC filter prior to pigment extraction in aqueous acetone. The optical density of the extract is then determined by spectrophotometry.

3.5.8 Total Kjeldhal Nitrogen

The measurement of total nitrogen followed APHA Standard Methods, 18th Edition, pages 94-94 as well as the EPA-600/4-79-020 Method 351. The method basically involved conversion of all the solution's nitrogenous compounds into ammonia through acidification then distillation. Measurement was then made with an ammonia selective electrode.

3.5.9 Filterable Residue

Filterable residue was estimated by passing 25 ml of solution through a washed and weighed 0.45 µm filter. This filter was then washed again, dried and weighed with the amount of filterable residue equal to the difference in weight of the filter and the volume of sample used.

3.5.10 Metals (Sodium, Magnesium and Calcium)

Solution was filtered through 0.45 µm filter and then acidified with nitric acid, prior to analysis with ICPMS.

3.6 Biogeoclimatic zone

Biogeoclimatic zone was determined with PC-Arc Info by matching lake outflow coordinates with those on a digital map of British Columbia's biogeoclimatic zones.

3.7 Native Land Claim Area

The Native land claim area applicable to each lake was determined from up to date land claim area maps provided by the British Columbia Treaty Commission and, for the Gitksan Nation claim, from a map provided directly from the Gitksan First Nation.

3.8 Mining Claims

Existing mining claims were searched under the Mineral and Placer, No Staking Reserve document, BC Reg. 91/91, March 24, 1993: Amended by BC Reg. 119/95 on March 29, 1995.

4. LAKE GEOGRAPHICAL AND MANAGEMENT INFORMATION

The following represents a summary of the geographical and management information for Coppermine Lake.

Dates of Survey	September 13-14, 1996
Watershed Name:	Bulkley River Watershed
Watershed Code:	460-5177-361
Watershed Area:	380,000 m ²
Map Location:	29.2 km south east of Smithers near the peak of Grouse Mountain
Elevation:	1430.4 m ± 0.1 m (determined from corrected GPS data)
Latitude/Longitude:	lat. - 54° 34' 12.325", long. - 126° 42' 52.5"
U.T.M.:	9. 647181. 6047903
N.T.S. Map No.:	93L.10
TRIM Map No.:	93L.057
Biogeoclimatic Zone:	Engelmann Spruce - Subalpine Fir, Moist Cold
Forest Region:	Prince Rupert
Forest District:	Bulkley
Wildlife Management Unit:	6-8
LRMP Planning Unit:	6: Deep Creek (Anon. 1996c)
LRMP Management Zone:	Integrated Resource Management Zone <ul style="list-style-type: none">• A full range of resource values is recognized in this zone (see Anon. 1996c)• Equal consideration must be given to all values
LRMP Ecosystem Network:	Core Ecosystem
Native Land Claim Area:	Wet'suwet'en Nation, Carrier Sekani Tribal Council, Gitxsan Nation
Drainage:	Coppermine Lake > Unnamed Outlet > Thompson Creek > Bulkley River

4.1 Lake Morphometric Data

An investigation of Coppermine Lake's morphometry was conducted on September 14 and 15, 1996. Seven transects were conducted across the short axis of the lake and a single transect was made along the lake's long axis (the e-line). As the survey technique used here involved a GPS unit with post-mission differential correction allowing sub-meter positional accuracy, the standard method for bathymetric surveys was not followed in this study. This resulted in the lack of paper traces, transect calculation sheets and percentage distance along transect determinations (see Anonymous 1996a) so these required items are not summarized here. However, the survey transects for assessing bathymetry have been recorded and are depicted in Figure 2. The bathymetric map generated from these surveys is depicted in Figure 3.

The following bathymetric summary statistics for Coppermine Lake are:

Total surface area:	127,500 m ²
Surface area at 6m contour:	79,200 m ²
Shoreline perimeter:	1,850 m
Shoreline, islands:	30 m
Maximum depth:	14.3 m
Mean depth:	7.2 m
Lake drainage area:	380,000 m ²
Number of islands:	1
Secchi depth	4.8 m
Sounding device:	Meridata depth sounder

Figure 2 Bathymetric Survey Transects

Figure 3 Bathymetric Contours

Volume (by stratum and total):

Stratum	Volume (m ³)
0 - 2 m	233,760
2 - 4 m	201,036
4 - 6 m	173,914
6 - 8 m	160,277
8 - 10 m	104,342
10 - 12 m	34,178
12 - 14 m	11,981
14 m - max. depth	158
Total	919,646

4.2 Benchmark

The benchmark for Coppermine Lake was recorded as an iron spike driven 56.3 cm above the water into a small crevice in a rock at the water's edge near the southwest corner of the lake. The spike and the surrounding area were marked with fluorescent orange flagging tape (Plate 1) for easy re-location. The coordinates of the benchmark were recorded in the field by GPS as 9. 6477157. 6048020 (NAD83 UTM). The location of the benchmark in relation to Coppermine Lake is shown in Figure 4. Figure 5 depicts an air photo enlargement of Coppermine Lake and also indicates the location of the benchmark.

The high water mark for Coppermine Lake was determined at the benchmark's location as the top of a dominant white line on the surface of surrounding rocks. At the time of this survey, the high water mark was 15.2 cm above the water surface.

4.3 Terrain Features

4.3.1 Immediate Shoreline

Coppermine Lake is primarily forested with pine and spruce trees growing to the waters edge around the lake perimeter, except for a small area around the inflow where a treeless meadow exists. Due to the high elevation of this lake and its relative exposure, many of the trees are small and stunted with frequent rock outcroppings around the shoreline. Due to the small size of the surrounding trees, windfall and deadheads were rarely observed. The shoreline substrate consists of bare rock with some gravel which is mostly comprised of recently broken boulders and bedrock. Grasses and other littoral zone vegetation were not observed in Coppermine Lake. Plate 2 provides a panoramic view of the lake from a small hill located on the lake's south central shore. Several abandoned exploratory mine shafts were also observed on this hill, hence the lake's name.

Figure 4 Location of Lake Inventory Sites

Figure 5 Air Photo Enlargement Showing Location of Benchmark

Plate 2 Panoramic view of Coppermine Lake taken from a small hill near the middle of the lake on the south shore

4.3.2 Surrounding Terrain

Coppermine Lake is situated near the peak of Grouse Mountain approximately 4.5 km east of Highway 16 and 29.2 km south-east of Smithers. This lake is one of three lakes in close proximity to each other on this mountain and as a result, each has a small drainage basin. The surrounding mountainside is forested primarily with coniferous trees with agriculture dominating the lower slopes. Cattle grazing also occurs along the slopes of Grouse Mountain almost to its peak where the lakes are situated. Logging was not apparent around the lake.

4.4 Stream Surveys

Streams were surveyed using standard Department of Fisheries and Oceans (DFO)/Ministry of Environment, Lands and Parks (MoELP) stream survey methodology as outlined in Anonymous (1995a). DFO/MoELP stream cards were filled out for each stream reach investigated. Xerox copies of these stream cards are included in Appendix I. Data from these stream cards were also entered into the DFO/MoELP stream survey digital data entry tool. Stream card summary reports from the digital data entry tool are also included in Appendix I.

Stream #1 (Watershed Code 460-?)

Stream #1 is the only inflow to Coppermine Lake (Plate 3). Only 60 m of this creek is visible above ground (Plate 4), above which the stream runs subsurface. After emerging above ground, the stream channel meanders through a treeless meadow. The channel substrates are dominated by fine sediments (90% of the bed material) and is very narrow (0.7 m mean channel width). Furthermore, the majority of habitat in this stream was comprised of undercut banks and overstream vegetation. Salmonid spawning and rearing habitat were not observed in this creek and electrofishing did not produce any fish specimens.

Stream #2 (Watershed Code 460-5177-361)

Stream #2 is the only outlet of Coppermine Lake. This creek originates at the lake's south end near an old cabin and meanders through a meadow with thick sedge cover for 130 metres after which it enters another meadow with fine grassy cover through which it meanders for 75 metres. From the end of this grassy meadow, the stream enters a forest area of similar low gradient where it becomes subterranean after 312 metres. The sample site was situated in the first 130 m because this section of the stream possessed the most suitable fish habitat of the three distinctly different channel sections. At the survey site, the average channel width was 1 metre, the substrate was dominated by large gravels and

Plate 1 View of benchmark and high water line

Plate 3 View of inlet to Coppermine Lake

small cobbles and most of the habitat cover was from overstream vegetation. Plates 5 and 6 show views from the upstream and downstream limits of the survey site respectively, while Plate 7 shows a view of the grassy meadow downstream of the survey site. Electrofishing did not produce any fish specimens.

Plate 4 View of upstream limit of Coppermine inlet site near groundwater source

Plate 5 View of Coppermine Lake from the helicopter

Plate 6 View of downstream limit of outlet survey site

Plate 7 View of upstream limit of outlet survey site

5. LAKE ACCESS AND AREA DEVELOPMENT

5.1 Access and Directions

An apparent four wheel drive road accesses this lake via its north end across from an old mine site. A gravel loading ramp was present on the northern shore at the terminus of the road. It is possible that ore samples from the mine site were ferried across the lake and transferred to vehicles at the loading ramp. The origin of this road is unknown as it is not indicated on available maps, therefore, access to the lake for the present study was via helicopter chartered from Smithers. To reduce the amount of ferrying time required to transport all the necessary gear to the lake, a nearest-point pickup was arranged with the helicopter pilot. This pick-up point was located in a farmers field 25 km south east of Smithers immediately off the east side of Highway 16. The pick-up location was a 35 minute drive from Smithers and a 10 minute helicopter trip following Highway 16 southeast from Smithers. From the pick-up location, Coppermine Lake is a 15 minute flight east climbing the north west slope of Grouse Mountain. Plate 4 provides an aerial view of Coppermine Lake from the helicopter.

5.2 Road Type and Conditions

Highway 16 is paved for 24.5 km from Smithers to the turnoff for the farmer's field. A 500 m long smooth gravel road connects Highway 16 with the farmer's field.

5.3 Restrictions

Permission was obtained from the farmer before utilizing the field.

5.4 Resorts and Campsites

None are known.

5.5 Mining Claims

Due to close proximity of Coppermine and North Lakes, our search for existing mining claims lumped these two lakes together into the same watershed. The document search indicated that Coppermine Lake is near two mineral claims (no placer) numbered CR01-343137 and CR02-343138.

5.6 Timber Harvests

None is known.

5.7 Waste Permits

None is known. (Remington and Lough 1995).

5.8 Water Licenses

The only known water license near Coppermine Lake is a license (No. 092088) to withdraw water from the Bulkley River at a location approximately 1 km upstream from the confluence of the Bulkley River and Deep Creek (Remington and Lough 1995).

6. FLORA AND FAUNA

6.1 Aquatic Plants

Other than scattered hydrophyllic grasses, aquatic plants were not observed in Coppermine Lake.

6.2 Aquatic Invertebrates

Aquatic invertebrates were very abundant in Coppermine Lake and not only were invertebrates exceptionally high in number but they also appeared to be very large for their type. Specific taxa noted in Coppermine Lake included the macrocristacea (*Amphipoda sp.*), beetles (*Coleoptera sp.*) and dobsonflies (*Megaloptera sp.*)

6.3 Wildlife Observations

Wildlife were not directly observed on or around Coppermine Lake. Wildlife grazing or browsing (deer) was also not evident near the perimeter of Coppermine Lake or in the surrounding meadows which suggests the absence of any grazing mammals. No beaver activity was noted near the lake.

6.4 Summary of Rare and Endangered Species

No rare or endangered species were encountered in or around Coppermine Lake.

7. FISH POPULATION SAMPLING

7.1 Total Fish Catch Summary

Fish were not captured at any of the sampling sites in Coppermine Lake, including the stream electrofishing sites.

7.2 Netting Record

Mesh sizes of monofilament gillnet-gang nets used in this study, in experimental order, were: 18, 38, 63 and 88 mm. Each gillnet panel measured 17.4 metres long by 2.8 metres deep and the panels were ganged together for a total net size of 69.6 metres by 2.8 metres representing a sample surface area of 194.9 m². Each gillnet gang was set with the 18 mm mesh closest to shore and mesh size increasing towards the lake's center.

Table 1 Gillnet Summary

Site No.	Net Type	Date Set	Time Set	Date Lifted	Time Lifted	Soak Time (hr)	Depths (m)		CPUE
							Shallow	Deep	
1	floating	96/9/14	18:20	96/9/15	9:00	14:40	0-2	0-2	0.0
2	sinking	96/9/14	18:35	96/9/15	9:30	14:55	0-2	5-7	0.0

Notes:

- See Figure 4 for location of gillnet sample sites.
- CPUE = #fish/100 m²/12 hr period.

7.3 Minnow Trap Record

Standard gee type minnow traps were used in this study. Each trap was baited with a small piece of salted roe that was suspended by a length of line near the trap's center. The traps were then attached to the shoreline with a long piece of line and the shoreline area was marked with flagging tape for easy location upon retrieval.

Table 2 Minnow Trap Summary

Site No.	Gee Trap No.	Date Set	Time Set	Depth (m)	Substrate	Date Lifted	Time Lifted	Soak Time	CPUE
3	1	1996/9/14	17:40	0.5	Rock	1996/9/15	8:30	14:50	0.0
4	2	1996/9/14	17:50	0.5	Rock	1996/9/15	8:32	14:42	0.0
5	3	1996/9/14	17:58	0.5	Rock, LWD	1996/9/15	8:35	14:37	0.0
6	4	1996/9/14	18:02	0.5	Rock, LWD	1996/9/15	8:45	14:43	0.0

Notes:

- See Figure 4 for location of minnow trap sample sites.
- LWD - Large Woody Debris.
- CPUE = #fish/trap/12 hr period.

7.4 Set Line Record

The set line used here consisted of a 30 lb monofilament center line with 1 m long 30 lb monofilament leaders extending outwards from this center line at 1 m intervals. Barbed hooks were fixed to the end of each leader and baited with small pieces of salted roe. The set line was weighted with a rock, then lowered to the bottom, after which the line was pulled taught and fixed to a float at the surface.

Table 3 Set Line Summary

Site No.	Date Set	Time Set	Depth (m)	Substrate	Date Lifted	Time Lifted	Soak Time	CPUE
7	1996/9/14	18:45	0-6	Unknown	1996/9/15	9:40	14:55	0.0

Notes:

- See Figure 4 for location of set line sample site.
- Roe was still intact on all hooks upon retrieval of set line.
- CPUE = #fish/line/12 hr period.

7.5 Electrofishing Record

Electrofishing was conducted in both the inlet and outlet of Coppermine Lake. The inlet channel was negligible, however, and only extended for 60 m, so electrofishing here was minimal (70 seconds). The outlet channel was also negligible and electrofishing here was conducted for a total of only 116 seconds.

7.6 Fisheries Management Concerns

Since fish were not captured in this lake despite the large sampling effort, it can only be assumed that this lake is barren of fish. Therefore, there are no fisheries management concerns at this time.

7.7 History of Previous Surveys

Previous surveys do not appear to have been conducted on Coppermine Lake.

8. FIELD CONDITIONS AND WATER CHEMISTRY

The following is a summary of the limnological investigations of Coppermine Lake.

Date: September 15, 1996 **Time:** 13:00
Limnology Station: LS1 **Maximum Depth:** 14.3 m
Seam Site: e223694 **Water Sampler Used:** Van Dorn
Laboratories Used

- 1) Elemental Research Inc.: #309-267 West Esplanade, North Vancouver, British Columbia, V7M 1A5.
- 2) Klohn-Crippen environmental laboratory
- 3) Chlorophyll *a* and Total Kjeldahl Nitrogen were measured by the CAEAL certified laboratory: Analytical Services Laboratories Ltd., 1988 Triumph St., Vancouver, British Columbia, V5L 1K5.

8.1 Field Conditions

The limnology of Coppermine Lake was investigated on a warm sunny day. Table 4 summarizes the field conditions at the time of this limnological survey.

Table 4 Field Conditions

Parameter Measured	Result	Method Used
Wind Velocity (m/s)	0-5 km/h	Estimation
Wind Direction	not constant	Observation
Air Temperature (°C)	9.0	Glass thermometer
Cloud Cover (%)	5%	Observation
Surface Condition	smooth	Observation
Water Colour	clear	Observation
Water Clarity (m)	4.8	Secchi Disk

8.2 Water Chemistry

Water samples were removed from Coppermine Lake at depths of 0.5 metres and 10 metres. The latter depth appeared to be in the hypolimnion. Table 5 presents the water chemistry findings from the two sample depths while Table 6 presents a summary of the water nutrient data from the two sample depths. Appendix II contains laboratory summary reports of the water quality analysis for Coppermine Lake.

Table 5 Water Chemistry Summary

Parameter Measured	Result (0.5 m)	Result (10 m)	Method Used
Dissolved Oxygen (mg/L)	11.7	0.9	YSI model 57 O ₂ meter
Water Temperature (°C)	9.8	6.4	YSI model 57 O ₂ meter
pH (field)	7.7	7.7	Oakpon pH tester-2
Specific Conductance (µS/cm)	60	70	Oakpon TDS tester
Filterable Residue(mg/L)	<1	<1	See Section 3
Dissolved Sodium (ppb)	660	660	See Section 3
Dissolved Magnesium (ppb)	973	1020	See Section 3
Calcium (ppb)	11300	12900	See Section 3
Alkalinity (mg/L)	54.54	52.29	See Section 3
TDS (mg/L)	37.5	37.88	See Section 3

8.3 Water Nutrient Summary

Table 6 Summary of Available Phosphorus and Nitrogen

Parameter Measured	Result (0.5 m)	Result (10 m)	Method Used
NH ₃ (mg/L)	0.13	0.16	See Section 3
Total Dissolved Phosphorus (ppm)	0.02	0.07	See Section 3
Total Phosphorus (ppm)	0.03	0.08	See Section 3
Total Kjeldahl Nitrogen (ppm)	0.219	0.358	See Section 3
Nitrate Nitrogen (ppm)	0.18	0.18	See Section 3
N:P Ratio	6	2.25	Average = 4.13

Notes:

- N:P ratio determined as:
$$\frac{\text{Total Kjeldahl Nitrogen}}{\text{Total Phosphorus}}$$

The total phosphorus data suggest that Coppermine Lake can be classified as meso-eutrophic suggesting that it is quite productive (Wetzel 1983). However, the N:P ratio suggests that phytoplankton in this lake are not limited by phosphorus (N:P<15) so perhaps phosphorus is not the most appropriate variable for classifying this lake. The most appropriate lake classification will require further investigation.

8.4 Oxygen and Temperature Data

Dissolved oxygen concentrations and temperature were determined at 1 m intervals from a vertical profile below the limnological station in Coppermine Lake (Figure 4) on September 15, 1996. The dissolved oxygen concentration data suggest that Coppermine Lake possessed a distinct and steep oxycline and an anoxic hypolimnion at the time of this survey. The temperature data suggest that the lake had a very deep thermocline at the time of this survey with a maximum temperature of only 9.8°C and a minimum

temperature of 5.9°C. Table 7 summarizes the dissolved oxygen concentration and temperature for Coppermine Lake while Figure 6 displays the data.

Table 7 Dissolved Oxygen Concentration and Temperature Data.

Depth (m)	Dissolved Oxygen (ppm)	Temperature (°C)
0	11.7	9.8
1	11.3	9.8
2	11.3	9.8
3	11.3	9.7
4	9.9	9.6
5	9.5	9.6
6	9.5	9.6
7	9.6	9.6
8	8.9	9.5
9	4.4	9.1
10	1.1	7.4
11	0.9	6.4
12	1.0	6.2
13	0.9	5.9

Figure 6 Temperature and Dissolved Oxygen Concentration Profiles

9. SUMMARY AND RECOMMENDATIONS

Coppermine Lake is located 29.2 km southeast of Smithers near the top of Grouse Mountain. An abandoned mine is situated on the side of a small hill on the lake's southern shore. A small camp also exists at the lakes western end but, like the mine site, this camp has also been abandoned. There appears to be road access to this lake but the road is not indicated on available maps and its condition beyond the immediate area of the lake is unknown. The lake has one inlet and one outlet but neither presents good salmonid spawning habitat. The inlet and outlet flow above ground for 60 metres and 312 metres, respectively, after which both streams become subterranean. Since fish were not captured despite the large fish sampling effort applied, it is likely that this lake is barren of fish. Perhaps the anoxic hypolimnion produces fish kill conditions following spring/fall turnover which has prevented fish from colonizing this lake. Wildlife were not observed on or around the lake but aquatic invertebrates were abundant and appeared large for their taxa. Limnological investigations indicated that the lake has a deep metalimnion and dissolved oxygen levels suitable for salmonids (>8 mg/L: Anon. 1996b) exist down to 8 metres depth, after which they quickly decline to a low of 0.9 mg/L at the lake's bottom.

Since this lake appears to be barren of fish and human use could be limited by access, there are no immediate management concerns for Coppermine Lake. However, the condition of the observed roads should be evaluated to assess the availability of access and therefore recreation potential.

Richard Couture, R.P.Bio.
Project Manager

Greg Scarborough, B.Sc.
Aquatic Ecologist

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APPENDIX I

Stream Card Survey Information, Fish Collection Data Form and Lake Biophysical Data Form

Lake Biophysical Data Form

Date (yy/mm/dd): 1996/9/14-15

Crew: GS/JS

Site ID

Watershed Code: 460-5177-361
 Gazetted Name: Coppermine Lake
 FW Region: Prince Rupert
 Management Unit: 6-8

Sequence No.: n/a
 Alias: Coppermine Lake
 UTM (Zone, Easting, Northing): 9.647181.6047903
 NTS Map No.: 93L.13

Biophysical

Biogeo Zone: Engelmann Spruce-Subalpine Fir
 Benchmark (Y/N) Y
 Benchmark details: iron spike

Biogeo Zone No.: PR.114
 Elevation (m): 1430.4

Nutrient Status

SEAM No.: e223694
 Secchi depth (m): 4.8
 Other samples taken: water (0.5 m and 10 m)

Limno Station No.:	1(0.5 m)	1(10 m)	
H2S (mg/l)	n/a	n/a	
H2S comments	n/a	n/a	
TDS method	n/a	n/a	
TEMP method	n/a	n/a	
Alkalinity	54.54	52.9	

Field Conditions

Wind velocity (km/h): 0-5 Wind direction: not constant Air temp. (c): 9
 Cloud cover (/10 O.C.): 5 Surface conditions: calm Water colour: clear

Development

MOF rec sites (Y/N) N Resort cmpsts (Y/N) N Residences (Y/N) N
 MOF campsites (Y/N) N Resots (Y/N) N Co. Rec facilities N
 Parks cmpgrds (Y/N) N Resort cabins (Y/N) N

Recreation

ROS N Biophys features: N Biophys subfeat.: N

Inlets/Outlets see Stream Survey Card for mandatory fields

Biological

Fish Card attached (Y/N) N Fish Man. Com. Y
 Wildlife: Y Reptiles: N
 Aquatic Birds: Y Invertebrates: Y
 Amphibians: N Aquatic Plants: Y

Comments:

APPENDIX II

Water Chemistry Analysis

APPENDIX III

Photograph Directory

Photo Survey Form 1 - Equipment Details

Survey Start Date: 13/09/1996
Survey end Date: 27/09/1996

Agency: Klohn-Crippen
Crew: GS/JS or GS/JC

Camera # 1

Make and Model: Ricoh LX-33W date	Lenses: A
Format: 35 mm film	

Camera # 2

Make and Model: Fuji Disposable	Lenses: A
Format: 35 mm film	

Lenses

Focal Length (mm)
A - fixed

Roll and/or Batch Details

Roll #	Camera #	Output Medium	Film Type	ISO
1	1	neg, print	colour	400
2	1	neg, print	colour	400
3	2	neg, print	colour	400
4	1	neg, print	colour	400
5	1	neg, print	colour	400
6	1	neg, print	colour	400
7	1	neg, print	colour	400
8	1	neg, print	colour	400

Date	Roll	Negative	Counter	NTS Map Sheet	Watershed Code	Description	Photodocumentation Form 1 Direction	Photodocumentation Form 2 Reach	Site	Picture Type	UTM Zone	Efield	Nfield	Ecorrect	Ncorrect	Crew	Focal Length	Scale
12/09/1996	1	4	4	93L10	460-7449-858	Gee Trap #1 in North L, note the lack of aquatic vegetation	NW			L						GS/JS	St	n/a
14/09/1996	1	5	5	93L10	460-7449-858	View west over the Bulkley Valley taken from above North L	W			WS						GS/JS	St	n/a
14/09/1996	1	6	6	93L10	460-7449-858	Panoramic of the south end of North L taken from the helicopter				L						GS/JS	Wd	n/a
14/09/1996	1	7	7	93L10	460-7449-858	North L Inlet looking upstream from the L	W	1		Ch	9			677930	6048686	GS/JS	St	n/a
14/09/1996	1	8	8	93L10	460-7449-858	Marsh located 110m upstream of North L Inlet	Up	1		Ch						GS/JS	St	n/a
14/09/1996	1	9	9	93L10	460-7449-858	Looking S from outlet of L that drains into North L (190m upstream from North L)	S	1		Ch						GS/JS	St	n/a
14/09/1996	1	10	10	93L10	460-7449-858	Looking upstream from downstream limit of North L Inlet site	Up	1	1	Ch						GS/JS	St	Folding ruler hanging in tree
14/09/1996	1	11	11	93L10	460-7449-858	Old cabin near North L outlet				O	9			647794	6049278	GS/JS	St	n/a
14/09/1996	1	12	12	93L10	460-7449-858	Example of the falls that cover the North L Outlet (falls are 1.2 m high, 140 m downstream from outlet)	Up	1		Ch						GS/JS	St	Folding ruler placed near top of falls
14/09/1996	1	13	13	93L10	460-7449-858	looking down chute section of North L outlet	Dn	1	1	Ch						GS/JS	St	n/a
12/09/1996	1	14	14	93L10	460-7449-858	90 cm high falls 90 m downstream from North L outlet	Up	1	1	Ch						GS/JS	St	Folding ruler
14/09/1996	1	16	16	93L10	460-7449-858	Just upstream of falls in #14: Bottom end of North L Outflow site	Up	1	1	Ch						GS/JS	St	n/a
14/09/1996	1	17	17	93L10	460-7449-858	Upstream limit of North L outflow site	Dn	1	1	Ch						GS/JS	St	n/a
14/09/1996	1	18	18	93L10	460-7449-858	North L outlet taken from L	E			L,Ch	9			647794	6049278	GS/JS	St	n/a
14/09/1996	1	19	19	93L10	460-7449-858	Panoramic (#1) of north end of North L	S			L						GS/JS	Wd	n/a
14/09/1996	1	20	20	93L10	460-7449-858	Panoramic (#2) of north end of North L	S			L						GS/JS	Wd	n/a
14/09/1996	1	21	21	93L10	460-7449-858	Panoramic (#3) of north end of North L	S			L						GS/JS	Wd	n/a
14/09/1996	1	22	22	93L10	460-7449-858	Panoramic (#1) of south end of North L	N			L						GS/JS	Wd	n/a
14/09/1996	1	23	23	93L10	460-7449-858	Panoramic (#2) of south end of North L	N			L						GS/JS	Wd	n/a
14/09/1996	1	24	24	93L10	460-7449-858	Panoramic (#3) of south end of North L	N			L						GS/JS	Wd	n/a
14/09/1996	1	25	25	93L10	460-7449-858	Panoramic (#4) of south end of North L	N			L						GS/JS	Wd	n/a
14/09/1996	1	26	26	93L10	460-7449-858	Benchmark in North L (note aquatic vegetation)	E			L	9			647878	6048791	GS/JS	St	n/a
14/09/1996	1	27	27	93L10	460-7449-858	Aerial view of North L from helicopter	W			WS						GS/JS	St	n/a
14/09/1996	1	28	28	93L10	460-7449-858	Aerial view of North L from helicopter	E			WS						GS/JS	St	n/a
14/09/1996	1	30	30	93L10	460-5177-361	Zodiac in Coppermine L on shore near old mine entrance	N			L						GS/JS	St	10'2" Zodiac
14/09/1996	1	31	31	93L10	460-5177-361	Panoramic (#1, E to W) of Coppermine L taken from mine site	NE			L						GS/JS	Wd	n/a
14/09/1996	1	32	32	93L10	460-5177-361	Panoramic (#2, E to W) of Coppermine L taken from mine site	N			L						GS/JS	Wd	n/a
14/09/1996	1	34	34	93L10	460-5177-361	Panoramic (#4, E to W) of Coppermine L taken from mine site	NW			L						GS/JS	Wd	n/a
14/09/1996	1	35	35	93L10	460-5177-361	Panoramic (#5, E to W) of Coppermine L taken from mine site	W			L						GS/JS	Wd	n/a
14/09/1996	1	35	35	93L10	460-5177-361	Old cabin near the outlet of Coppermine L	NW			WS						GS/JS	St	n/a
14/09/1996	1	37	37	93L10	460-5177-361	Sunset over Coppermine L	W			L						GS/JS	St	n/a
15/09/1996	2	0	1	93L10	460-5177-361	Coppermine inflow from the edge of Coppermine L	Up	1		Ch						GS/JS		
15/09/1996	2	1	2	93L10	460-5177-361	Benchmark in Coppermine L	W			L	9			647157	6048020	GS/JS	St	n/a

Date	Roll	Negative	Counter	NTS Map Sheet	Watershed Code	Description	Photodocumentation Direction	Photo Reach	Form2 Site	Picture Type	UTM Zone	Efield	Nfield	Ecorrect	Ncorrect	Crew	Focal Length	Scale
15/09/1996	2	2	3	93L10	460-5177-361	Coppermine L outflow taken from the lake, note the structure in background	n/a			L, Ch	9	647181	6047903			GS/JS	St	n/a
15/09/1996	2	3	4	93L10	460-5177-361	Upstream limit of Coppermine outflow stream site	Dn	1	1	Ch	9					GS/JS	St	n/a
15/09/1996	2	4	5	93L10	460-5177-361	Downstream limit of Coppermine L outlet	Up	1	1	Ch	9					GS/JS	St	n/a
15/09/1996	2	5	6	93L10	460-5177-361	Meadow below the downstream limit of Coppermine L outlet site	Dn	1		Ch	9					GS/JS	St	n/a
15/09/1996	2	6	7	93L10	460-5177-361	Coppermine L from helicopter	E			WS	9					GS/JS	St	n/a
15/09/1996	2	7	8	93L10	460-5177-361	North L form helicopter	N			WS	9					GS/JS	St	n/a
15/09/1996	2	8	9	n/a	n/a	Access (helicopter) to Ceber L from Smithers along Toboggan Creek	W			O	9					GS/JS	St	n/a
15/09/1996	2	9	10	n/a	n/a	Toboggan Glacier from helicopter	S			O	9					GS/JS	St	n/a
15/09/1996	2	10	11	93L13	n/a	Shoreline area where gee trap #2 was placed in Ceber L	NW			L	9					GS/JS	St	n/a
15/09/1996	2	11	12	93L13	n/a	Shoreline area where gee trap #3 was placed in Ceber L	NE			L	9					GS/JS	St	n/a
15/09/1996	2	13	13	93L13	n/a	Tree fall to which gee trap #4 was attached in Ceber L	E			L	9					GS/JS	St	n/a
15/09/1996	2	15	15	93L13	n/a	Shoreline area where gee trap #1 was placed in Ceber L. Note the aquatic vegetation	E			L	9					GS/JS	St	n/a
16/09/1996	2	17	17	93L13	n/a	Ceber L from helicopter (south end)	W			WS	9					GS/JS	St	n/a
16/09/1996	2	16	16	93L13	n/a	Ceber L from helicopter (north end)	NW			WS	9					GS/JS	St	n/a
15/09/1996	2	18	18	93L10	n/a	Rainbow trout mortality from gillnet in Ceber L	n/a			Fi	9					GS/JS	St	10 L pail near fish's head
16/09/1996	2	19	19	93L13	n/a	Greg releasing rainbow that remained alive in gillnet in Ceber L	n/a			Fi	9					GS/JS	St	Person
16/09/1996	2	20	20	93L10	n/a	Example of invertebrate (copepods) size found in Ceber L (also in North L and Coppermine L)	n/a			O	9					GS/JS	St	persons hand
16/09/1996	2	21	21	93L13	n/a	Ceber L outlet taken from lakeshore	S			L, Ch	9			589191	6077763	GS/JS	St	person and boat
16/09/1996	2	22	22	93L13	n/a	80 cm falls in Ceber L outlet, 60 m from lake	Up	1		Ch	9					GS/JS	St	folding ruler
16/09/1996	2	23	23	93L13	n/a	Habitat and vegetation at Ceber outlet sample site. Note the abundant tree fall	Up	1	1	Ch	9					GS/JS	St	n/a
16/09/1996	2	24	24	93L13	n/a	1.8 m chute in Ceber outflow 100 m from outlet	Up	1		Ch	9					GS/JS	St	field book with scale in inches
16/09/1996	2	25	25	93L10	n/a	Downstream limit of Ceber L outlet site	Up	1	1	Ch	9					GS/JS	St	n/a
16/09/1996	2	26	26	93L13	n/a	Upstream limit of Ceber L outlet site. Note the extensive cover	Dn	1	1	Ch	9					GS/JS	St	n/a
16/09/1996	2	27	27	93L13	n/a	Ceber L inlet from the shoreline	E, Up	1		L, Ch	9			582282	6078000	GS/JS	St	n/a
16/09/1996	2	28	28	93L13	n/a	Benchmark in tree near Ceber L (note flagging tape)	N			L	9	588883	6077755			GS/JS	St	n/a
16/09/1996	2	29	29	93L13	n/a	Jack Mould L from helicopter. Note access rode in foreground and background	N			WS	9					GS/JS	St	n/a
16/09/1996	2	30	30	93L13	n/a	Jack Mould L inlet taken from the boat. Note beaver dam in background	E			L, Ch	9					GS/JS	St	n/a
16/09/1996	2	31	31	93L13	n/a	Beaver dam in Jack Mould outlet, seperates lake from channel	W, Up	1		L, Ch	9					GS/JS	St	n/a
16/09/1996	2	32	32	93L13	n/a	1.2 m high beaver dam at Jack Mould L outlet	W, Up	1		L, Ch	9					GS/JS	St	note book with scale in inches

Date	Roll	Negative	Counter	NTS Map Sheet	Watershed Code	Description	Photodocumentation Platform Direction	Form 2 Reach	Site	Picture Type	UTM Zone	Efield	Nfield	Ecorrect	Ncorrect	Crew	Focal Length	Scale
16/09/1996	2	33	33	93L13	n/a	1.2 m high beaver dam in Jack Mould L outlet	W			L, Ch	9					GS/JS	St	n/a
16/09/1996	2	35	35	103I16	440-6382-012	Mulwain Creek from helicopter, also represents access to Mulwain L	NW			WS	9					GS/JS	St	n/a
16/09/1996	2	36	36	103I16	n/a	Mulwain L from helicopter	n/a			WS	9					GS/JS	St	n/a
17/09/1996	3	0	1	103I16	n/a	Moose near Mulwain L inlet	E			O	9					GS/JS	St	n/a
17/09/1996	3	1	2	103I16	n/a	Moose near Mulwain L inlet	E			O	9					GS/JS	St	n/a
17/09/1996	3	2	3	103I16	n/a	Jamie under zodiac seeking protection from the rain	NW			L, O	9					GS/JS	St	10'6" boat & person
17/09/1996	3	3	4	103I16	n/a	Benchmark in Mulwain L	SE			L	9					GS/JS	St	n/a
17/09/1996	3	4	5	103I16	n/a	Unsurveyed inflow into Mulwain L	Up			L, Ch	9					GS/JS	St	n/a
17/09/1996	3	5	6	103I16	440-6382-012	Small 0.7 m falls in Mulwain L inlet	Up	1		Ch	9					GS/JS	St	note book with scale in inches
17/09/1996	3	6	7	103I16	440-6382-012	Downstream limit of Mulwain L outlet sample site	Up	1	1	Ch	9					GS/JS	St	30 m tape
17/09/1996	3	7	8	103I16	440-6382-012	Upstream limit of Mulwain L outlet sample site	Dn	1	1	Ch	9					GS/JS	St	n/a
17/09/1996	3	8	9	103I16	440-6382-012	Example of a ground water pool discharging into Mulwain L outlet. Pool was 0.7 m above main channel	Dn	1		Ch	9					GS/JS	St	notebook with scale in inches
17/09/1996	3	9	10	103I16	440-6382-012	Large meadow at 500m mark of Mulwain L outlet	Dn	1		Ch	9					GS/JS	St	n/a
17/09/1996	3	10	11	103I16	440-6382-012	Example of meandering outlet of Mulwain L	Up	1		Ch	9					GS/JS	St	n/a
17/09/1996	3	12	13	103I16	440-6382-012	Small 100m x 30m lake immediately downstream of Mulwain L	Dn	1		Ch	9					GS/JS	St	n/a
17/09/1996	3	11	12	103I13	440-6382-012	Area where large tributary empties into Mulwain L outlet	Dn	1		Ch	9					GS/JS	St	n/a
1006/9/17	3	13	14	103I16	n/a	Mulwain L outlet taken from stream section	Up, N	1		L, Ch	9					GS/JS	St	boat in background
17/09/1996	3	14	15	103I16	n/a	Downstream limit of Mulwain L inlet sampling site	Up	1	1	Ch	9					GS/JS	St	notebook with scale in inches
17/09/1996	3	15	16	103I16	n/a	Upstream limit of Mulwain L inlet sample site	Dn	1	1	Ch	9					GS/JS	St	rain jacket and 30m tape
17/09/1996	3	16	17	103I16	n/a	End of Mulwain L Inlet at a groundwater pool	Up	1		Ch	9					GS/JS	St	n/a
17/09/1996	3	17	18	103I16	n/a	Example of how Mulwain L inlet meanders through meadow	Up	1		Ch	9					GS/JS	St	20x13 cm field chemistry case placed in grass
17/09/1996	3	18	19	103I16	n/a	Mulwain L inlet taken from edge of lake	Up	1		Ch	9					GS/JS	St	n/a
17/09/1996	3	19	20	103I16	n/a	Gee trap #5 in Mulwain L	E			L	9					GS/JS	St	n/a
17/09/1996	3	24	24	103I16	n/a	Mulwain L from helicopter	NW			WS	9					GS/JS	St	n/a
18/09/1996	4	3	3	93L13	n/a	Old beaver dam across outlet of Bud L (doesn't hold water)	Dn	1		Ch	9			586644	6078191	GS/JS	St	n/a
18/09/1996	4	4	4	93L13	n/a	Second old beaver dam across Bud L outlet (doesn't hold water)	Up	1		Ch	9					GS/JS	St	30m tape coil
18/09/1996	4	5	5	93L13	n/a	Example of how Bud L outlet flows through a meadow area immediately downstream of outlet	Up	1	1	Ch	9					GS/JS	St	person (6')
18/09/1996	4	6	6	93L13	n/a	2 m high chute/falls in Bud L outlet	Up	1	1	Ch	9					GS/JS	St	Person (6')
18/09/1996	4	7	7	93L13	n/a	Looking upstream from 500 m mark on Bud L outlet	Up	1		Ch	9					GS/JS	St	Person (6')
18/09/1996	4	8	8	93L13	n/a	Upstream limit of Bud L outlet sample site	Dn	1	1	Ch	9					GS/JS	St	n/a
18/09/1996	4	9	9	93L13	n/a	Downstream limit of Bud L outlet sample site	Dn	1	1	Ch	9					GS/JS	St	n/a
18/09/1996	4	10	10	93L13	n/a	GS electrofishing in Bud L outlet	Up	1	1	Ch	9					GS/JS	St	Person (6'1")

Date	Roll	Negative	Counter	NTS Map Sheet	Watershed Code	Description	Photodocumentation Platform	Direction	Form 2 Reach	Site	Picture Type	UTM Zone	Efield	Nfield	Ecorrect	Ncorrect	Crew	Focal Length	Scale
18/09/1996	4	11	11	93L13	n/a	Possible inlet to Bud L, no water or channel visible though		Up, XS			Ch	9					GS/JS	St	n/a
18/09/1996	4	12	12	93L13	n/a	Gee trap #1 in Bud L		S			L	9					GS/JS	St	Gee trap
18/09/1996	4	13	13	93L13	n/a	Gee trap # 3 in Bud L		NW			L	9					GS/JS	St	n/a
18/09/1996	4	14	14	93L13	n/a	Second possible inlet to Bud L. No water or channel visible		Up, S			L, Ch	9					GS/JS	St	n/a
18/09/1996	4	15	15	93L13	n/a	Shoreline area where gee trap # 5 was placed in Bud L		E			L	9					GS/JS	St	n/a
18/09/1996	4	16	16	93L13	n/a	Benchmark in Bud L. Note old high water marks		SW			L	9					GS/JS	St	n/a
19/09/1996	4	17	17	93L13	n/a	Gee trap # 5 in Bud L		E			L	9					GS/JS	St	n/a
19/09/1996	4	18	18	93L13	n/a	Gee trap # 4 in Bud L		N			L	9					GS/JS	St	Gee trap
19/09/1996	4	19	19	93L13	n/a	Shoreline area of Bud L where gee trap #2 was placed		W			L	9					GS/JS	St	n/a
19/09/1996	4	21	21	93L13	n/a	Example of invertebrates in Bud L		n/a			O	9					GS/JS	St	Note book with scale in inches
19/09/1996	4	22	22	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
19/09/1996	4	23	23	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
19/09/1996	4	24	24	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
19/09/1996	4	25	25	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
19/09/1996	4	26	26	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
19/09/1996	4	27	27	93M3	n/a	Netalzul Meadow L from the helicopter		n/a			WS	9					GS/JC	St	n/a
21/09/1996	4	28	28	93M3	n/a	Netalzul Meadow L from helicopter					WS	9					GS/JC	St	n/a
21/09/1996	4	29	29	93M3	n/a	Helicopter landing area and Netalzul Meadow inlet		Up, E			L, Ch	9					GS/JC	St	n/a
21/09/1996	4	30	30	93M3	n/a	Example of fish caught in gillnets		n/a			Fi	9					GS/JC	St	Zodiac pontoon
21/09/1996	4	31	31	93M3	n/a	Tadpoles and invertebrates captured in gee trap # 1 in Netalzul Meadow L		n/a			Fi	9					GS/JC	St	Zodiac pontoon
21/09/1996	4	32	32	93M6	n/a	Netalzul L form N end, zodiac in foreground		S			L	9					GS/JC	St	10'6" zodiac
22/09/1996	4	34	34	93M6	n/a	Netalzul L from helicopter, approached from SE end		NW			WS	9					GS/JC	St	n/a
22/09/1996	4	35	35	93M6	n/a	Netalzul L from helicopter, approached from SE end		NW			WS	9					GS/JC	St	n/a
22/09/1996	4	36	36	93M6	n/a	Netalzul L from helicopter, view of N end of lake		NW			WS	9					GS/JC	St	n/a
22/09/1996	5	1	1	93M6	n/a	Gee trap #1 in Netalzul L		N			L	9					GS/JC	St	n/a
22/09/1996	5	2	2	93M6	n/a	Example of large lake trout captured in Netalzul L gillnets		n/a			Fi	9					GS/JC	St	n/a
22/09/1996	5	3	3	93M6	n/a	Example of abundant tree-fall in Netalzul L		n/a			L	9					GS/JC	St	n/a
22/09/1996	5	4	4	93M6	n/a	Netalzul L inflow. Note abundant cover		Up	1		Ch	9					GS/JC	St	n/a
22/09/1996	5	5	5	93M6	n/a	Upstream limit of Netalzul L inflow sample site		Dn	1	1	Ch	9					GS/JC	St	n/a
22/09/1996	5	6	6	93M6	n/a	Downstream limit of Netalzul L inflow sample site		Up	1	1	Ch	9					GS/JC	St	n/a
22/09/1996	5	7	7	93M6	n/a	Panoramic (#1) looking N from lake's S end		N			L	9					GS/JC	St	n/a
22/09/1996	5	8	8	93M6	n/a	Panoramic (#2) looking N from lake's S end		N			L	9					GS/JC	St	n/a
22/09/1996	5	9	9	93M6	n/a	Panoramic (#3) looking N from lake's S end		N			L	9					GS/JC	St	10'6" zodiac

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22/09/1996	5	10	10	93M6	n/a	Netalzul L outflow from lake's edge	S		1		L, Ch	9			624878	6128369	GS/JC	St	n/a
22/09/1996	5	11	11	93M6	n/a	Example of habitat in Netalzul L outlet	Bd		1	1	Ch	9					GS/JC	St	n/a
22/09/1996	5	12	12	93M6	n/a	lake downstream from Netalzul L	Dn		1		Ch, L	9					GS/JC	St	n/a
22/09/1996	5	13	13	93M6	n/a	Downstream limit of Netalzul lake outlet sample site	Up		1	1	Ch	9					GS/JC	St	note book
22/09/1996	5	14	14	93M6	n/a	Upstream limit of Netalzul L outflow sample site	Dn		1	1	Ch	9					GS/JC	St	notebook
22/09/1996	5	15	15	93M6	n/a	Benchmark in Netalzul lake	NE				L	9					GS/JC	St	n/a
23/09/1996	5	16	16	93M3	n/a	Helicopter access to Camp L	SW				WS	9					GS/JC	St	n/a
23/09/1996	5	17	17	93M3	n/a	Camp L from helicopter	NE				WS	9					GS/JC	Wd	n/a
23/09/1996	5	18	18	93M3	n/a	Gee trap #1 in Camp L	n/a				L	9					GS/JC	St	Side of zodiac
23/09/1996	5	19	19	93M3	n/a	Shoreline area near which gee trap #2 is placed	SW				L	9					GS/JC	St	n/a
23/09/1996	5	20	20	93M3	n/a	Tree fall where gee trap #3 is placed in Camp L	n/a				L	9					GS/JC	St	Side of zodiac
23/09/1996	5	21	21	93M3	n/a	Tree fall where gee trap #4 was placed in Camp L	n/a				L	9					GS/JC	St	n/a
23/09/1996	5	22	22	93M3	n/a	LOD where gee trap #5 was placed in Camp L	n/a				L	9					GS/JC	St	n/a
23/09/1996	5	23	23	93M3	n/a	Panoramic (#1)of Camp L from N end	NW				L	9					GS/JC	Wd	n/a
23/09/1996	5	24	24	93M3	n/a	Panoramic (#2)of Camp L from N end	NW				L	9					GS/JC	Wd	n/a
23/09/1996	5	25	25	93M3	n/a	Panoramic (#3)of Camp L from N end	W				L	9					GS/JC	Wd	n/a
23/09/1996	5	26	26	93M3	n/a	Panoramic (#4)of Camp L from N end	W				L	9					GS/JC	Wd	n/a
23/09/1996	5	27	27	93M3	n/a	Panoramic (#5)of Camp L from N end	SW				L	9					GS/JC	Wd	n/a
23/09/1996	5	28	28	93M3	n/a	Panoramic (#6)of Camp L from N end	SW				L	9					GS/JC	Wd	n/a
23/09/1996	5	29	29	93M3	n/a	Panoramic (#7)of Camp L from N end	S				L	9					GS/JC	Wd	n/a
23/09/1996	5	30	30	93M3	n/a	Dock for the hunting camp on Camp L	NE				L	9					GS/JC	St	n/a
23/09/1996	5	31	31	93M3	n/a	Road crossing on Camp L outlet, also bottom of sample site	Bd		1	1	Ch	9					GS/JC	St	n/a
23/09/1996	5	32	32	93M3	n/a	Upstream limit of Camp lake outlet sample site	Dn		1	1	Ch	9					GS/JC	St	n/a
23/09/1996	5	33	33	93M3	n/a	Black wolf shot the previous night at hunting camp	n/a				O	9					GS/JC	St	n/a
23/09/1996	5	34	34	93M3	n/a	Benchmark on Camp lake	NE				L	9	626275	6122305			GS/JC	St	n/a
23/09/1996	5	35	35	93M3	n/a	Camp L inlet taken from shoreline	NW				L, Ch	9	626275	6122305			GS/JC	St	n/a
23/09/1996	5	36	36	93M3	n/a	Camp L outlet taken from boat	S				L, Ch	9					GS/JC	St	n/a
23/09/1996	6	1	1	93M7	480-4026	Young bear swimming across Clota L	W				L	9					GS/JC	St	n/a
23/09/1996	6	2	2	93M7	480-4026	Young bear swimming across Clota L	W				L	9					GS/JC	St	n/a
24/09/1996	6	3	3	93M10		Twin L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	4	4	93M10		Twin L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	5	5	93M7	480-4026	Clota L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	6	6	93M7	480-4026	Clota L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	7	7	93M7	480-4026	Clota L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	8	8	93M7	480-4026	Clota L from floatplane	S				WS	9					GS/JC	Wd	n/a
24/09/1996	6	9	9	93M7	480-4026	Floatplane leaving Clota L	S				L	9					GS/JC	St	n/a
24/09/1996	6	10	10	93M7	480-4026	Shoreline area where gee trap #1 was placed in Clota L	W				L	9					GS/JC	St	n/a
24/09/1996	6	11	11	93M7	480-4026	Shoreline area where gee trap #2 was placed in Clota L	W				L	9					GS/JC	St	n/a
24/09/1996	6	12	12	93M7	480-4026	Shoreline area where gee trap #3 was placed in Clota L	W				L	9					GS/JC	St	n/a
24/09/1996	6	13	13	93M7	480-4026	Shoreline area where gee trap #4 was placed in Clota L	SE				L	9					GS/JC	St	n/a
24/09/1996	6	14	14	93M7	480-4026	Shoreline area where gee trap #5 was placed in Clota L	E				L	9					GS/JC	St	n/a
24/09/1996	6	15	15	93M7	480-4026	Panoramic (#1) showing marshy section between main and secondary basins of Clota L	SE				L	9					GS/JC	Wd	n/a

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24/09/1996	6	16	16	93M7	480-4026	Panoramic (#2) showing marshy section between main and secondary basins of Clota L		SE				L	9					GS/JC	Wd	n/a
24/09/1996	6	17	17	93M7	480-4026	Extensive marshy area surrounding Clota L inlet		N				L	9					GS/JC	St	n/a
24/09/1996	6	18	18	93M7	480-4026	Beaver dam at Clota L outlet		N	1			L, Ch	9	651187	6139961			GS/JC	St	notebook
24/09/1996	6	19	19	93M7	n/a	Upstream limit of Clota L outlet sample site		Dn	1	1		Ch	9					GS/JC	St	n/a
24/09/1996	6	20	20	93M7	n/a	Downstream limit of Clota L outlet sample site		Up	1	1		Ch	9					GS/JC	St	n/a
24/09/1996	6	21	21	93M7	n/a	Substrate of Clota L outlet sample site		Bd	1	1		Ch	9					GS/JC	St	Electrofisher backpack
24/09/1996	6	22	22	93M7	480-4026	Benchmark in Clota L		E				L	9	651606	6140218			GS/JC	St	n/a
24/09/1996	6	23	23	93M7	480-4026	Panoramic (#1) of Clota L from S end going E to W		SE				L	9					GS/JC	St	n/a
24/09/1996	6	24	24	93M7	480-4026	Panoramic (#2) of Clota L from S end going E to W		S				L	9					GS/JC	St	n/a
24/09/1996	6	25	25	93M7	480-4026	Panoramic (#3) of Clota L from S end going E to W		SW				L	9					GS/JC	St	n/a
24/09/1996	6	26	26	93M7	480-4026	Example of water lilies that are found throughout N, S, and W shores of Clota L		n/a				L	9					GS/JC	St	notebook with scale in inches
24/09/1996	6	27	27	93M7	480-4026	Panoramic (#1) of Clota L from N end going W to E		NW				L	9					GS/JC	St	Equipment on zodiac
24/09/1996	6	28	28	93M7	480-4026	Panoramic (#2) of Clota L from N end going W to E		NW				L	9					GS/JC	St	Equipment on zodiac
24/09/1996	6	29	29	93M7	480-4026	Panoramic (#3) of Clota L from N end going W to E		N				L	9					GS/JC	St	n/a
24/09/1996	6	30	30	93M7	480-4026	Panoramic (#4) of Clota L from N end going W to E		NE				L	9					GS/JC	St	n/a
24/09/1996	6	31	31	93M7	480-4026	Panoramic (#5) of Clota L from N end going W to E		NE				L	9					GS/JC	St	n/a
24/09/1996	6	32	32	93M7	480-4026	Example of tree fall and macrophyte habitat along shoreline of Clota L		W				L	9					GS/JC	St	n/a
24/09/1996	6	33	33	93M7	480-4026	GS on top of beaver lodge at N end of Clota L		W				L	9					GS/JC	St	n/a
25/09/1996	6	34	34	93M10	n/a	Gee trap #2 in Twin L		E				L	9					GS/JC	St	Gee trap
25/09/1996	6	35	35	93M10	n/a	Habitat in which gee trap #3 was placed in Twin L		n/a				L	9					GS/JC	St	n/a
25/09/1996	6	36	36	93M10	n/a	Gee trap #4 in Twin L		S				L	9					GS/JC	St	Gee trap
25/09/1996	6	37	37	93M10	n/a	Gee trap #5 in Twin L		n/a				L	9					GS/JC	St	Bow of zodiac
25/09/1996	7	1	1	93M10	n/a	Example of the number of fish caught in Twin L gillnets		n/a				L	9					GS/JC	St	Side of zodiac
25/09/1996	7	2	2	93M10	n/a	Only accessible site on Twin L inlet		Dn	1	1		Ch	9					GS/JC	St	n/a
25/09/1996	7	3	3	93M10	n/a	Only accessible site on Twin L inlet		Up	1	1		Ch	9					GS/JC	St	n/a
25/09/1996	7	4	4	93M10	n/a	Twin L inlet from lake shore: inaccessible		Dn, W	1			Ch, L	9	640730	6154528			GS/JC	St	n/a
25/09/1996	7	5	5	93M10	n/a	Panoramic (#1) of Twin L from S end		NE				L	9					GS/JC	St	n/a
25/09/1996	7	6	6	93M10	n/a	Panoramic (#2) of Twin L from S end		N				L	9					GS/JC	St	n/a
25/09/1996	7	7	7	93M10	n/a	Panoramic (#3) of Twin L from S end		N				L	9					GS/JC	St	n/a
25/09/1996	7	8	8	93M10	n/a	Panoramic (#4) of Twin L from S end		NW				L	9					GS/JC	St	n/a
25/09/1996	7	9	9	93M10	n/a	Panoramic (#5) of Twin L from S end		W				L	9					GS/JC	St	n/a
25/09/1996	7	10	10	93M10	n/a	Twin L outlet from boat		SE	1			L	9	640837	6154539			GS/JC	St	
25/09/1996	7	11	11	93M10	n/a	Panoramic (#1) of Twin L from N end going W to S		W				L	9					GS/JC	St	n/a
25/09/1996	7	12	12	93M10	n/a	Panoramic (#2) of Twin L from N end going W to S		W				L	9					GS/JC	St	n/a
25/09/1996	7	13	13	93M10	n/a	Panoramic (#3) of Twin L from N end going W to S		SW				L	9					GS/JC	St	n/a
25/09/1996	7	14	14	93M10	n/a	Panoramic (#4) of Twin L from N end going W to S		S				L	9					GS/JC	St	n/a

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25/09/1996	7	15	15	93M10	n/a	Panoramic (#5) of Twin L from N end going W to S	S			L	9					GS/JC	St	n/a
25/09/1996	7	16	16	93M7	n/a	Moose on shoreline of Boucher L. Note abundant macrophytes	E			L	9					GS/JC	St	n/a
26/09/1996	7	17	17	93M7	n/a	N end of Boucher L from helicopter	n/a			WS	9					GS/JC	St	n/a
26/09/1996	7	18	18	93M7	n/a	Boucher L from helicopter. Note old lake in top right corner	S			WS	9					GS/JC	St	n/a
26/09/1996	7	19	19	93M7	n/a	Looking NW from center of lake showing aquatic plant coverage	NW			L	9					GS/JC	St	n/a
26/09/1996	7	20	20	93M7	n/a	Habitat in which gee trap #1 was placed in Boucher L	n/a			L	9					GS/JC	St	n/a
26/09/1996	7	21	21	93M7	n/a	Habitat in which gee trap #2 was placed in Boucher L	n/a			L	9					GS/JC	St	bow of zodiac, gee trap
26/09/1996	7	22	22	93M7	n/a	Habitat in which gee trap #3 was placed in Boucher L	n/a			L	9					GS/JC	St	Gee trap
26/09/1996	7	23	23	93M7	n/a	Habitat in which gee trap #4 was placed in Boucher L	n/a			L	9					GS/JC	St	n/a
26/09/1996	7	25	25	93M7	n/a	Habitat in which gee trap #6 was placed in Boucher L	n/a			L	9					GS/JC	St	n/a
26/09/1996	7	26	26	93M7	n/a	Inlet to Boucher L. Note the 2 beaver dams	E			L, Ch	9			653205	6147248	GS/JC	St	n/a
26/09/1996	7	27	27	93M7	n/a	Another angle showing the aquatic vegetation infestation of Boucher L	E			L	9					GS/JC	St	n/a
26/09/1996	7	28	28	93M7	n/a	Boucher L outlet from boat	S			L, Ch	9			653289	6146103	GS/JC	St	n/a
26/09/1996	7	29	29	93M7	n/a	Beaver lodge 80 m from Boucher L outlet	S			L	9					GS/JC	St	n/a
26/09/1996	7	30	30	93M10	n/a	Upstream limit of Boucher L outlet sample site	Dn	1	1	Ch	9					GS/JC	St	notebook
26/09/1996	7	31	31	93M10	n/a	Downstream limit of Boucher L outlet sample site	Up	1	1	Ch	9					GS/JC	St	30m tape
26/09/1996	7	32	32	93M10	n/a	Example of habitat at Boucher L outlet sample site	Bd	1	1	Ch	9					GS/JC	St	30m tape
26/09/1996	7	33	33	93M10	n/a	Marsh above beaver dam at Boucher L inlet: not surveyed	E	1		L, Ch	9					GS/JC	St	n/a
26/09/1996	7	34	34	93M10	n/a	Beaver dam in Boucher L inlet	E	1		L, Ch	9					GS/JC	St	n/a
26/09/1996	7	35	35	93M10	n/a	Benchmark in Boucher L	E			L	9	653247	6146464			GS/JC	St	n/a
26/09/1996	7	36	36	93M10	n/a	Panoramic (#1) of Boucher L from S end going E to W	NE			L	9					GS/JC	St	n/a
26/09/1996	7	37	37	93M10	n/a	Panoramic (#2) of Boucher L from S end going E to W	N			L	9					GS/JC	Wd	n/a
26/09/1996	8	1	5	93M10	n/a	Panoramic (#3) of Boucher L from S end going E to W	N			L	9					GS/JC	Wd	n/a
26/09/1996	8	2	6	93M10	n/a	Panoramic (#4) of Boucher L from S end going E to W	N			L	9					GS/JC	Wd	n/a
26/09/1996	8	3	7	93M10	n/a	Panoramic (#5) of Boucher L from S end going E to W	N			L	9					GS/JC	Wd	n/a
26/09/1996	8	4	8	93M10	n/a	Panoramic (#6) of Boucher L from S end going E to W	NW			L	9					GS/JC	Wd	n/a
26/09/1996	8	5	9	93M10	n/a	Panoramic (#7) of Boucher L from S end going E to W	NW			L	9					GS/JC	Wd	n/a
26/09/1996	8	6	10	93M10	n/a	Panoramic (#8) of Boucher L from S end going E to W	NW			L	9					GS/JC	Wd	n/a
26/09/1996	8	7	11	93M10	n/a	Panoramic (#1) of Boucher L from N end going W to E	SW			L	9					GS/JC	Wd	n/a
26/09/1996	8	8	12	93M10	n/a	Panoramic (#2) of Boucher L from S end going W to E	S			L	9					GS/JC	Wd	n/a
26/09/1996	8	9	13	93M10	n/a	Panoramic (#3) of Boucher L from S end going W to E	SE			L	9					GS/JC	Wd	n/a
27/09/1996	8	11	15	93L10	n/a	Unnamed L from helicopter	E			WS	9					GS/JC	St	n/a
27/09/1996	8	12	15	93L10	n/a	S end of Unnamed L from helicopter including meandering inlet	E			WS	9					GS/JC	St	n/a

Date	Roll	Negative	Counter	NTS Map Sheet	Watershed Code	Description	Photodocumentation Direction	Platform	Form2 Reach	Site	Picture Type	UTM Zone	Efield	Nfield	Ecorrect	Ncorrect	Crew	Focal Length	Scale
27/09/1996	8	15	18	93L10	n/a	Gee trap #3 in littoral habitat of Unnamed L	E				L	9					GS/JC	St	Gee trap
27/09/1996	8	16	19	93L10	n/a	Littoral habitat of Unnamed L in which gee trap #4 was placed	S				L	9					GS/JC	St	n/a
27/09/1996	8	17	20	93L10	n/a	Unnamed L outlet including beaver lodge to right. Gee trap #5 placed at edge of dam	N				L	9	647527	6166191			GS/JC	Wd	n/a
27/09/1996	8	18	21	93L10	n/a	Gee trap #4 in Unnamed L	W				L	9					GS/JC	St	Gee trap
27/09/1996	8	19	22	93L10	n/a	View from behind 1m high beaver dam at Unnamed L outlet	S	1			L	9					GS/JC	St	30m tape roll
27/09/1996	8	20	23	93L10	n/a	Second beaver dam 20m below first in Unnamed L outlet	S	1			Ch	9					GS/JC	St	n/a
27/09/1996	8	21	24	93L10	n/a	Third beaver dam below second in Unnamed L outlet	S	1			Ch	9					GS/JC	St	n/a
27/09/1996	8	22	25	93L10	n/a	Fourth beaver dam below third in Unnamed L outlet	S	1			Ch	9					GS/JC	St	30m tape roll
27/09/1996	8	23	26	93L10	n/a	Downstream limit of Unnamed L outlet sample site	Up	1	1		Ch	9					GS/JC	St	30m tape roll
27/09/1996	8	24	27	93L10	n/a	Upstream limit of Unnamed L outlet sample site	Dn	1	1		Ch	9					GS/JC	St	30m tape roll
27/09/1996	8	25	28	93L10	n/a	GS electrofishing in Unnamed L outlet	XS	1	1		Ch	9					GS/JC	St	Person (6'1")
27/09/1996	8	26	29	93L10	n/a	Example of habitat in Unnamed L outlet sample site	Bd	1	1		Ch	9					GS/JC	St	Person (6'1")
27/09/1996	8	27	30	93L10	n/a	Beaver dam in Unnamed L inlet	Up, S	1			Ch, L	9					GS/JC	St	Person and notebook
27/09/1996	8	28	31	93L10	n/a	Benchmark in Unnamed L	E				L	9	651565	6054572			GS/JC	St	n/a
27/09/1996	8	29	32	93L10	n/a	Littoral habitat of Unnamed L in which gee trap #1 was placed	E				L	9					GS/JC	St	n/a
27/09/1996	8	30	33	93L10	n/a	Littoral habitat of Unnamed L in which gee trap #2 was placed	E				L	9					GS/JC	St	n/a
27/09/1996	8	32	35	93L10	n/a	Marshy area of Unnamed L Inlet: inaccessible by boat	S	1			WS, Ch	9					GS/JC	St	n/a