

**Reconnaissance Lake Inventory  
of  
Unnamed Lake  
alias M21\***

Waterbody Identifier 00029BABL  
Map # 93M.048  
UTM 09.661567.6145461

Prepared for:  
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March 31, 1998

**Disclaimer**

The Province has not accepted the contents of this product for the purposes of the Forest Practices Code, and reserves the right to dispute the validity of summarized results. The province does not necessarily agree with the classification assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

## **Data Summary**

### **Project Reference Information**

MoELP Project Number	CSK3029
FDIS Project Number	06-LBIR-0010-0003-1998
Forest Region	Prince Rupert
Forest District	Morice
MoELP Region	Skeena
Wildlife Management Unit	6-8
FRBC Region	Skeena-Bulkley

### **Watershed Information**

Higher Level Watershed Code	480-598800-99100-49200
Waterbody Identifier	00029BABL
UTM at Lake Outlet	09.661567.6145461
Number of Tributaries on TRIM or FCM	1
Number of Tributaries observed in field	2
Magnitude	4
Elevation	961 m
NTS Map	93M/08
TRIM Map	93M.048
Biogeoclimatic Zone	SBS
Air Photos	BCB91111 No. 221-223

### **Lake Sampling Summary**

Fish Species Present	Cutthroat Trout, Rainbow Trout Lake
Survey Type	Secondary (1997 RIC Standards)
Water Surface Area	26 ha
Max. Depth	2 m
Secchi Depth	1.8 m
Shoreline Perimeter	2.3 km
Lake Length	1 km
Number of Islands	None

### **Contractor Information**

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**Report Edited by:**    **Names:**              Glenn Grieve

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## **Acknowledgments**

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- Photo CD's
- Photographs and Negatives
- Photocopies of Original Field Data

## **1.0 Introduction**

### ***1.1 Project scope/Objectives***

The primary purpose of the reconnaissance inventory of M21\* was to gather information on the presence or absence of fish in the lake, and to gather preliminary data on biophysical attributes of the lake. M21\* was a secondary lake included in a secondary level reconnaissance inventory of 34 lakes located in the northern portions of the Kalum, Kispiox, Bulkley and Morice Forest Districts.

### ***1.2 Location***

Unnamed Lake M21\* is located approximately 90 kilometers northeast of Smithers Airport and about 17 kilometres northeast of Fort Babine, B. C. The latitude of M21\* is 55° 25' 43.3" and the longitude is 126° 26' 48". The location of the lake is given in Figure 1.

#### **1.2.1 Access**

The field crew reached this lake by helicopter. The flight to the lake from Smithers, B. C. took approximately 35 minutes. The lake was not directly accessible by road, however the Morrison Main Forest Service Road (FSR) passed the west side of the lake. Access could be obtained by a short hike through about 200 metres of riparian zone from a cutblock located on the west side of the lake. There were no pre-existing trails providing access to M21\*.

## **2.0 Resource Information**

A thorough data search of Ministry of Environment lake files yielded no preexisting information about M21\*. A cutblock was located on the west side of the lake and cutblocks were also observed nearby to the north. No preexisting campsites were identified.

### ***2.1 Points of Interest***

M21\* has potential for recreational activities including hiking and camping. The mixed coniferous and deciduous stand surrounding the lake would lend itself to both of these activities. Although angling efforts were unsuccessful, this lake may have sport fishing potential as fish were rising frequently.

The water level at M21\* was approximately 0.8-1.0 metres lower than normal. Evidence for this observation came from the exposed mud flats around the perimeter of the lake and the abandoned beaver lodge on the eastern shore. Photographs of the area are found on CD#4 photos 127 and 137.



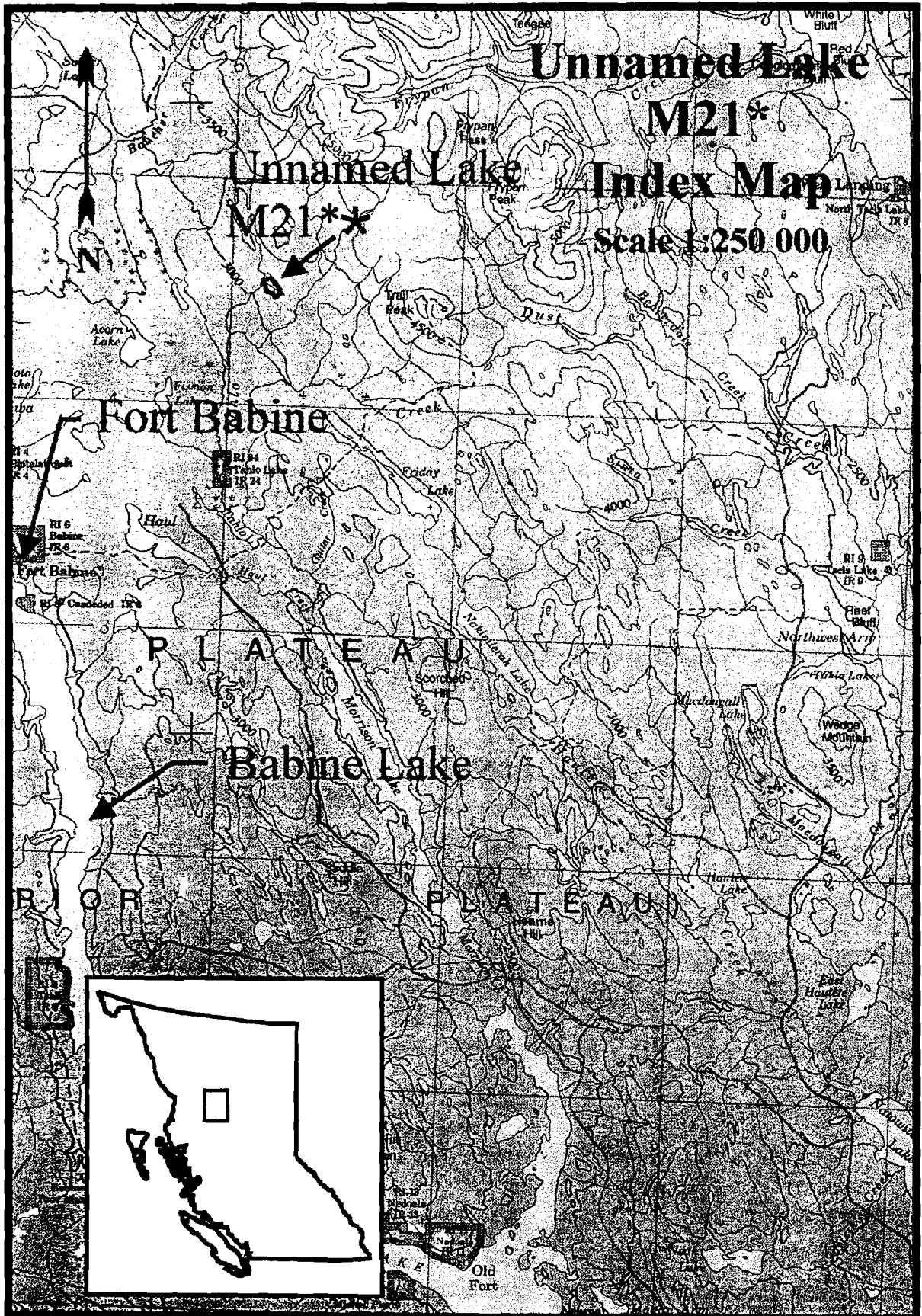


Figure 1. Map showing the location of Unnamed Lake (M21\*), Waterbody Identifier 00029BABL.

### **3.0 Methods**

Methods used in the inventory of this lake were those described primarily in the Resource Inventory Committee of British Columbia (RIC) document entitled Reconnaissance 1:20 000 Fish and Fish Habitat Inventory Standards and Procedures, May 1997 for secondary lakes. In addition, the standards prescribed in the following documents were used:

- Fisheries Information Summary System: Data Compilation and Mapping Procedures. Federal/Provincial Fish Habitat Inventory and Information Program. February 1995.
- Lake and Stream Inventory: Standards and Procedures, RIC Draft, May 1995; to be replaced in March 1997 by: Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures.
- Users Guide to the British Columbia Watershed/Waterbody Identifier System, Version 2.1, RIC Draft January 1997;
- Fish Collection Methods and Standards, RIC Draft January 1997;
- Field Key to Fresh Water Fishes of British Columbia, RIC Draft 1993;
- Bathymetric Standards for Lake Inventories, A: Fish and Fish Habitat, RIC Draft, January 1997;
- Aerial Photography and Videography Standards for Fish Habitat Channel Assessment, RIC 2nd Draft, March 1996;
- A Guide to Photodocumentation for Aquatic Inventory, RIC Draft, March 1996;
- Standards for Aquatic Mapping, RIC Draft, January 1997;
- Ambient Fresh Water and Effluent Sampling Manual, RIC Draft, July 1994;
- Identification Keys to the Aquatic Plants of British Columbia, RIC Draft 1994;
- BC Standards, Specifications and Guidelines for Resource Surveys Using Global Positioning Systems (GPS) Technology, RIC Draft, 1995.

Prior to landing on the edge of the lake, aerial photographs of the lake and its associated streams were taken from the helicopter. Upon landing on the edge of the lake, angling was attempted. If no fish were caught by angling, a multimesh, 92 m long floating gill net was set. The deepest part of the lake was then found using a Lowrance echosounder by measuring the depth along one e-line and then measuring the depth along one transect at right angles to the e-line and at the deepest point on the e-line. At the deepest point we measured the dissolved oxygen concentration and temperature at 1 metre intervals to either the bottom of the lake or 30 metres, whichever came first. The pH and conductivity of the surface water and a sample from 1 metre above the bottom were measured. The secchi depth was then determined at this location and photographs of the surrounding shoreline were taken. At this point, the floating gill net was checked for fish. If it was empty, a similar sinking gill net and five minnow traps were set. The shoreline was surveyed, locations of inlet and outlet streams were recorded and assessed visually for significant habitat from the boat, substrate was assessed, aquatic vegetation was mapped and the high water mark was estimated. The nets and minnow traps were then frequently checked and if nothing was caught, they were left to fish overnight. In the morning, nets and traps were hauled regardless of fish capture.

Equipment used in the M21\* inventory included the following:

- Lowrance X-16 echosounder was used to find the depth of the deepest spot in the lake to determine the limnological sampling site
- Eight foot Zodiac inflatable boat powered by a 2 hp Honda 4 cycle outboard motor was used for studying inlet and outlet streams, shoreline vegetation and substrate composition, and for setting minnow traps
- YSI Model 57 portable Oxygen Meter was used for dissolved oxygen and temperature measurements
- Oakton pH/mV/C meter was used for pH measurements
- LaMotte Conductivity Meter was used for conductivity measurements
- Eagle Explorer 12 Channel GPS Receiver or Garmin 12XL GPS handheld units were used for UTM measurements on the lake
- Pentax 35 mm single lens reflex (SLR) camera with a standard 35 mm focal length lens was used for all photography
- Microsoft Word 6.0 was used for production of the report, and Microsoft Excel 5.0 was used for data storage, calculations, and graphing
- CorelDRAW Graphics 6.0 was used for composition of lake outline, fishing, and index maps
- Ministry of Environment digital entry tools entitled Field Data Information System (FDIS) and Fish Collection Form (Fishcoll) were used for recording data

## 4.0 Results and Discussion

### 4.1 General Description

M21\* is located on an interior plateau of generally low relief. The elevation at the lake was 961 metres and the surface area was 26 ha. The surrounding country has recreational potential for hiking and camping. Natural campsites are available on the edge of the lake in the mixed coniferous and deciduous stand.

### 4.2 Immediate Shoreline

The shoreline of M21\* was 100% wetland. Emergent aquatic vegetation covered approximately 30% of the surface area of the lake and included sedges (*Carex spp.*), horsetails (*Equisetum spp.*), yellow pondlily (*Nuphar spp.*), mare's tail (*Hippuris vulgaris*), marsh cinquefoil (*Potentilla palustris*) and *Potamogeton spp.* Submergent aquatic vegetation, namely *Potamogeton richardsonii*, was abundant and covered about 80% of the lake bottom. Substrate consisted of organic fines.

The level of the lake was significantly lower than normal. This may have been due to water running under the beaver dam at the outlet. As a result, the shoreline had exposed mud flats

around the entire perimeter. Sedges (*Carex* spp.) were found between these flats and the mature forest. The mud flats were approximately 2 metres wide in most areas. Photos of the flats are located on CD#4, photos 127, 135, and 137.

Terrestrial plants observed on the lake shore included; Buckbrush (*Betula* spp.), Labrador tea (*Ledum groenlandicum*), Bunchberry (*Cornus canadensis*), Spruce (*Picea* spp.), Fir (*Abies* spp.), Pine (*Pinus* spp.), Alder (*Alnus* spp.), Willow (*Salix* spp.), Narrow-leaved cotton-grass (*Eriophorum angustifolium*), Common reed (*Phragmites australis*), Beaked sedge (*Carex rostrata*), and Daggerleaved rush (*Juncus ensifolius*).

### **4.3 Surrounding Country**

M22\* is surrounded by rolling hills of the Nechako Plateau and is within the SBS Biogeoclimatic zone. The majority of these hills are covered by a mixed coniferous and deciduous stand. There was a cutblock on the west side of the lake, however, a riparian zone was left between the cutblock and the lake. Other cutblocks were nearby to the north of the lake. The closest visible mountain is Frypan Peak located about 11 kilometres to the northeast.

### **4.4 Summary of Data Collection**

The data collected was recorded in digital files written by the Ministry of Environment in Microsoft Access 2.0 under the name Field Data Information System (FDIS). The specific file name is fdisdat.mdb and contains all of the habitat information. In a similar digital entry tool called Fish Collection Form (Fishcoll), all information relating to fish and fish sampling effort was recorded in a file named fishcoll.mdb. The information in these files is contained in an appendix in hardcopy form and is also provided on a 3 1/2 inch diskette at the back of this document.

#### **4.4.1 Annotated Air Photo**

An annotated air photo of M21\* showing limnological station, fish sampling sites and inlet and outlet streams is given in Figure 2.

#### **4.4.2 Lake Outline Map**

An outline map of M21\* showing limnological station, fish sampling sites, inlet and outlet streams and photograph locations and directions is given in Figure 3.



Figure 2. Enlargement of Footprint Lake\* (Waterbody Identifier 00029BABL) from aerial photograph BCB9111 No. 221-223.

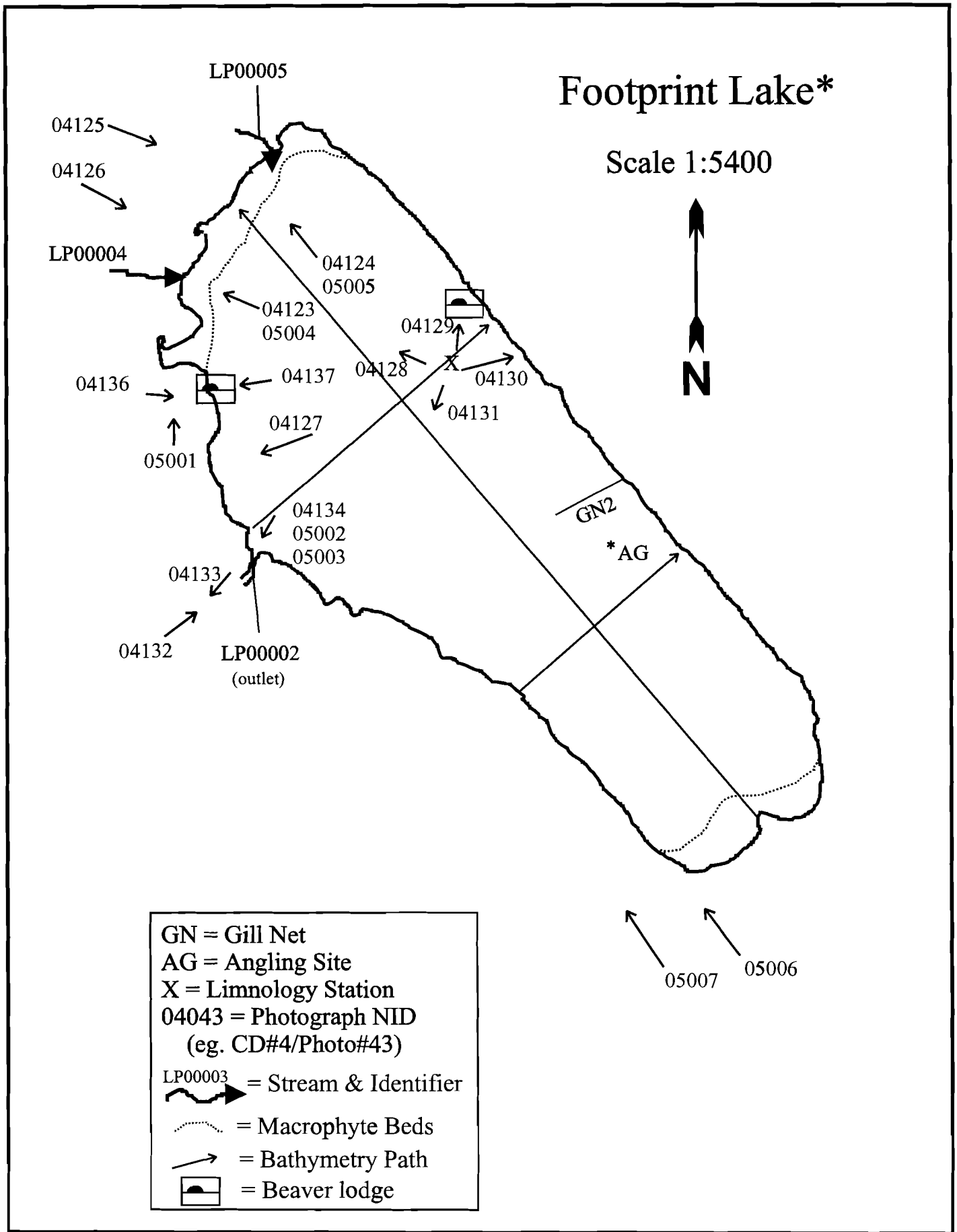


Figure 3. Outline map of Footprint Lake\* (Waterbody Identifier 00029BABL) showing limnological station, fish sampling locations, inlet and outlet streams, significant aquatic macrophyte beds, shoreline features, and photograph locations and directions.

#### 4.4.3 Streams

**Table 1. A list of streams associated with M21\*.**

Table 1 lists all of the streams that were shown on the 1:20 000 TRIM and Forest Cover Maps as flowing into or out of M21\*. All of these streams were found in the field. The table also lists one inlet stream (LP00005) located by the ground crew that was not detailed on the 1:20000 maps. LP numbers are interim location point numbers assigned to each stream pending replacement with unique watershed codes.

Map Number	Project ID	Interim Location Point Number	Found in Field	UTM Zone	Easting	Northing	High Level Watershed Code	Comments
93M.048	06-LBIR-0010-0003-1998	LP00002	Yes	9U	659880	6143080	480-598800-99100-49200	Unnamed Lake M21* Outlet;
93M.048	06-LBIR-0010-0003-1998	LP00004	Yes	9U	661400	6145760	480-598800-99100-49200	Unnamed Lake M21* Inlet;
93M.048	06-LBIR-0010-0003-1998	LP00005	Yes	9U	661500	6145850	480-598800-99100-49200	Unnamed Lake M21* Inlet;

##### 4.3.4.1 Streams Surveyed

Detailed comments on the individual streams observed can be found on the Lake Survey Form.

LP00002. There was a beaver dam located at the head of the outlet stream. Water was seeping through the base of the dam. It appeared that the water had been seeping through the breached dam for a period of time sufficient to drop the level of the lake. At the time of survey the lake depth was only two metres, and it was suspected that the low level-breached dam combination may affect the overwintering habitat of the lake.

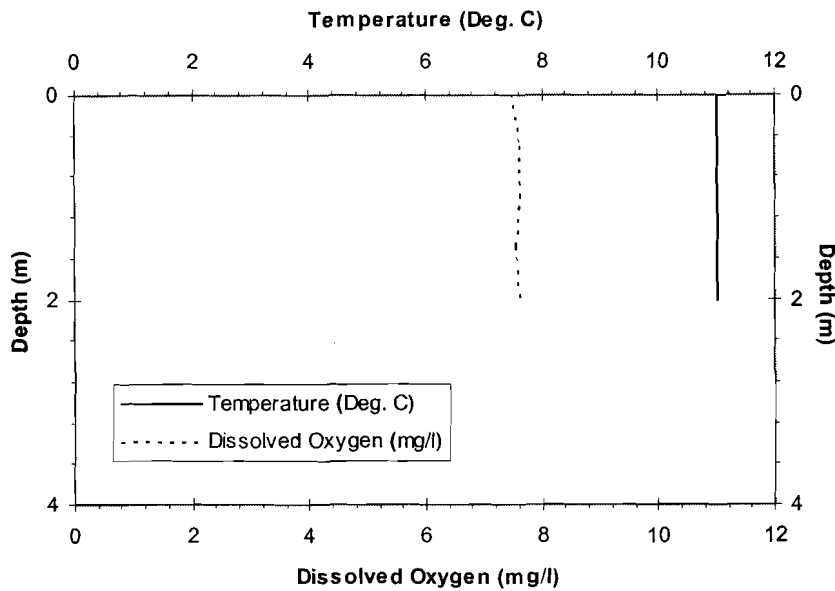
The only inlet recorded on TRIM and Forest Cover Maps was found in the field.

#### 4.4.4 Limnological Sampling

Limnological sampling was conducted at 1434 hours on September 22, 1997. This site is marked LS on the accompanying annotated air photo map and lake outline map. Field data was recorded on the Lake Survey Form, a copy of which can be found in the appendix.

##### 4.4.4.1 Stratification

M21\* was not thermally stratified. The shallow lake was also observed as not stratified with respect to dissolved oxygen. Both temperature and oxygen concentrations remained constant with depth. M21\* appeared to be oligotrophic.



**Figure 4. Temperature and dissolved oxygen profiles for M21\* on September 22, 1997.**



#### 4.4.5 Photographs

Photographs taken at this lake are recorded on Compact Disks #2124 and #765(CD #4 and #5), one of a duplicate set of six CD's produced during the overall project assessing 34 lakes.

**Table 2. Index to photographs.**

Roll #	Frame	CD/Photo Number	Direction	NID Map	NID	UTM Zone	Easting	Northing	Comment
81	2	5/002	W	93M.048	5002	9U	661400	6145380	outlet LP00001 from the air
81	3	5/003	W	93M.048	5003	9U	661400	6145380	outlet LP00001 from the air
81	4	5/004	N	93M.048	5004	9U	661400	6145760	LP00003 from the air
81	5	5/005	N	93M.048	5005	9U	661500	6145850	LP00004 from the air
81	6	5/006	N	93M.048	5006	9U	661350	6145800	overview
81	7	5/007	N	93M.048	5007	9U	661350	6145800	overview
94	10	4/123	N	93M.048	4123	9U	661500	6145700	swamp LP00003 and LP00004 from the air
94	11	4/124	N	93M.048	4124	9U	661600	6145800	swamp LP00003 and LP00004 from the air
94	12	4/125	S	93M.048	4125	9U	661350	6145950	north end of lake (swamp) from the air
94	13	4/126	S	93M.048	4126	9U	661350	6145950	north end of lake (swamp) from the air
94	14	4/127	N	93M.048	4127	9U	661450	6145500	mud flats
94	15	4/128	N	93M.048	4128	9U	661626	6145418	looking NW from limnology station
94	16	4/129	N	93M.048	4129	9U	661626	6145418	looking NE from limnology station
94	17	4/130	S	93M.048	4130	9U	661626	6145418	looking SE from limnology station
94	18	4/131	S	93M.048	4131	9U	661626	6145419	looking SW from limnology station
94	19	4/132	E	93M.048	4132	9U	661400	6145380	beaver dam looking u/s to mouth of LP00001
94	20	4/133	W	93M.048	4133	9U	661400	6145380	beaver dam looking d/s from mouth of LP00001
94	21	4/134	S	93M.048	4134	9U	661500	6145500	bay to outlet
94	22	4/135	S	93M.048	4135	9U	661400	6145760	LP00003 looking d/s to mouth
94	23	4/136	X	93M.048	4136	9U	661300	6145600	cutthroat trout
94	24	4/137	W	93M.048	4137	9U	661400	6145600	beaver lodge now above water

N.B. The NID is the Numerical Identifier of a feature, in this case, a photograph. The first digit of the NID represents the CD number and the last three digits represent the photo number.

X = Direction not relevant N, E, S, W = Compass Directions

All photographs taken with standard 35 mm focal length lens.

#### 4.4.6 Sampling Summary

**Table 3. Fish sampling effort summary for M21\* and its associated streams on September 22, 1997.**

Fishing Effort Summary							
Site No.	Method	Depth at sampling	Set		Pull		Species
			Date	Time	Date	Time	
1	Angling	Surface	Sept. 22	1330	Sept. 22	1400	
2	Floating Gill Net	2 m	Sept. 22	1410	Sept. 22	1415	CT, RB

CT=Cutthroat Trout      RB=Rainbow Trout

#### 4.5 Summary of Fish Captured

**Table 4. Summary of data from fish sampled in M21\*, September 22, 1997.**

Lake Name	Spp.	Number of fish	Mean length (mm)	Range of Lengths (mm)
M21*	RB	2	315	270-360
M21*	CT	3	240	230-250

CT=Cutthroat Trout      RB=Rainbow Trout

#### 4.6 Fisheries Observations

##### 4.6.1 Fish

Three cutthroat trout (*Oncorhynchus clarki*) and two rainbow trout (*Oncorhynchus mykiss*) were captured in a floating gill net set for five minutes. Angling was unsuccessful with an effort of one half hour.

##### 4.6.2 Habitat

The habitat for fish in this lake appeared to be good. Emergent and submergent aquatic vegetation was plentiful throughout the lake and would provide good cover for fish. The entire lake was located in the littoral zone as the maximum depth was two metres.

##### 4.6.2.1 Fisheries Sensitive Zones

The three streams were surrounded by wetlands that could be considered Fisheries Sensitive Zones.

#### *4.6.2.2 Restoration and Rehabilitation Opportunities*

One large cutblock was located to the west of M21\*. The riparian zone left between the cutblock and the lake was approximately 200-250 metres wide. No rehabilitation was considered necessary.

#### **4.7 Logistics**

There were no significant problems in the field work component of this inventory.

Data entry in this report was done using a program called Field Data Information System (FDIS) produced by Ministry of Environment, Lands and Parks of British Columbia. There were multiple releases of this data entry tool throughout production of this report and this caused a loss of significant time. In addition, the Lake Survey Form component of this program was not released until the project was nearly finished causing undue delays.

## **References**

### **Section A. Standards Documents**

The following documents were used as guidelines in conducting this project.

- Anon. (1997) Bathymetric Standards for Lake Inventories. British Columbia Ministry of Environment, Lands and Parks, 42 pp.
- Anon. (1995) Fisheries Information Summary System: Data Compilation and Mapping Procedures. British Columbia Ministry of Environment, Lands and Parks, and Department of Fisheries and Oceans, 105 pp.
- Anon. (1996) A Guide to Photodocumentation, Resources Inventory Committee Manual, Province of British Columbia.
- Anon. (1996) Field Key to the Freshwater Fishes of British Columbia, Resources Inventory Committee Manual, Province of British Columbia.
- Anon. (1997) User's Guide to British Columbia's Watershed/Waterbody Identifier System, version 2.1, Resources Inventory Committee, Province of British Columbia.
- Anon. (1997) Field Data Information System Users Manual. British Columbia Environment, Lands and Parks.
- Anon. (1997) Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures.
- Anon. (1997) Fish Collection Methods and Standards. Ministry of Environment, Lands and Parks' Fish Inventory Unit in consultation with Gordon Haas of UBC Fish Museum.
- Anon. (1997) Standards for Fish and Fish Habitat Mapping. Fisheries Section, Resources Inventory Branch, Resources Inventory Committee

### **Section B. List of Contacts**

The following individuals were contacted during the course of this study.

- Deleeuw, D. (1997) Senior Habitat Biologist. Ministry of Environment, Terrace, British Columbia. Personal Communication.
- Facchin, Angelo. (1997-1998) Ministry of Environment, Lands and Parks, Victoria, British Columbia. Field Data Information System. Personal Communication.

Giroux, Paul. Fisheries Inventory Specialist. Ministry of Environment. Smithers, British Columbia. Personal Communication.

Hatlevik, Sig. Senior Fisheries Technician. Ministry of Environment. Smithers, British Columbia. Personal Communication.

Hazelwood, G. (1997) Biologist. Terrace, British Columbia. Personal Communication.

Miers, Lynn. (1997-1998) Ministry of Environment, Lands and Parks, Victoria, British Columbia. Field Data Information System. Personal Communication.

Neis, P. (1997). Ministry of Environment, Lands and Parks, Smithers, British Columbia. Personal Communication.

Senka, J. (1997) Environmental Protection. Waste Management Branch, Ministry of Environment, Lands and Parks, Smithers, British Columbia. Personal Communication.

Stewart, R. (1997) Forest Ecosystem Specialist. Ministry of Environment, Kispiox Forest District, Hazelton, British Columbia. Personal communication.

### **Section C. Field Guides**

The following field guides were used for this project.

Scott, W. B. and Crossman, E. J. (1973) Freshwater Fishes of Canada. Fisheries Research Board of Canada, Ottawa. Published by Crown.

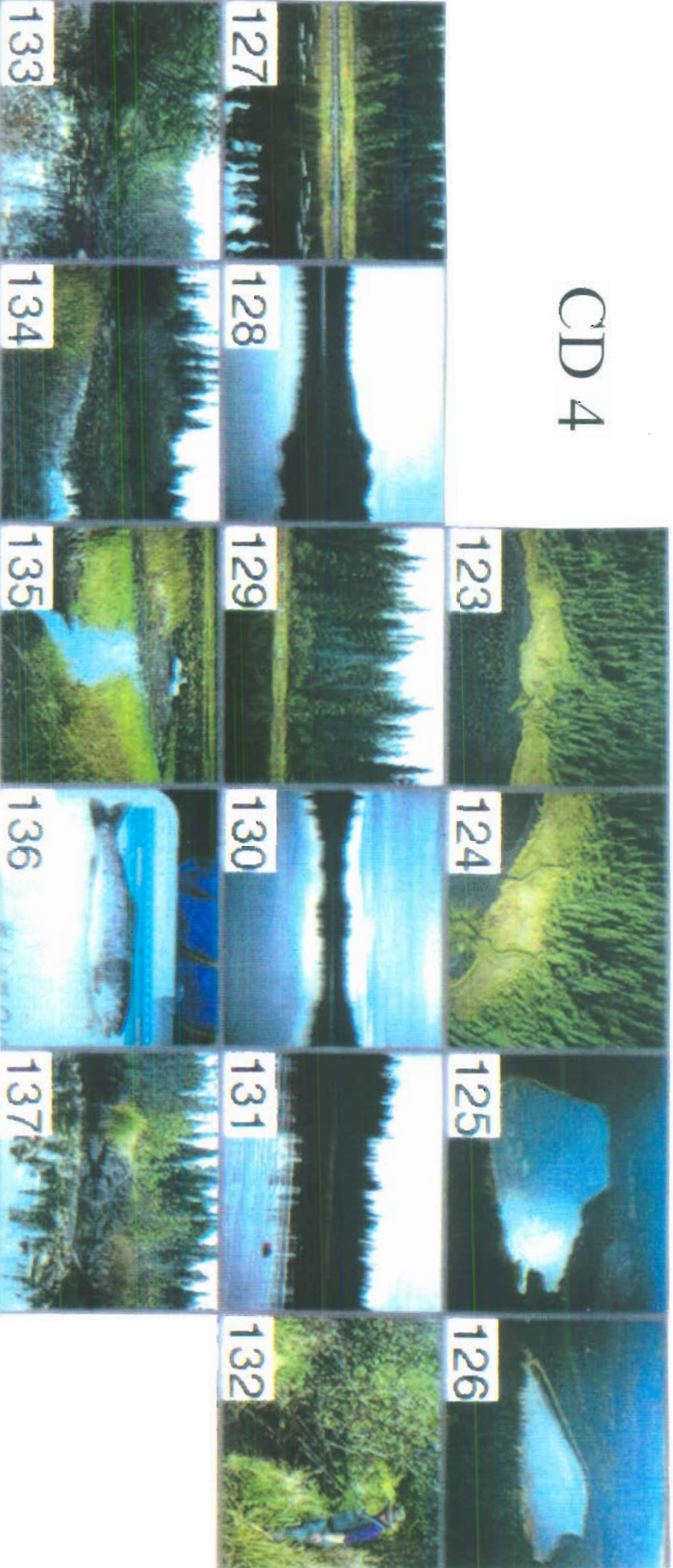
MacKinnon, Pojar and Coupe. (1992). Plants of Northern British Columbia. B. C. Ministry of Forests and Lone Pine Publishing, Vancouver, British Columbia.

## Appendix 1. Photo CD Index Enlargement

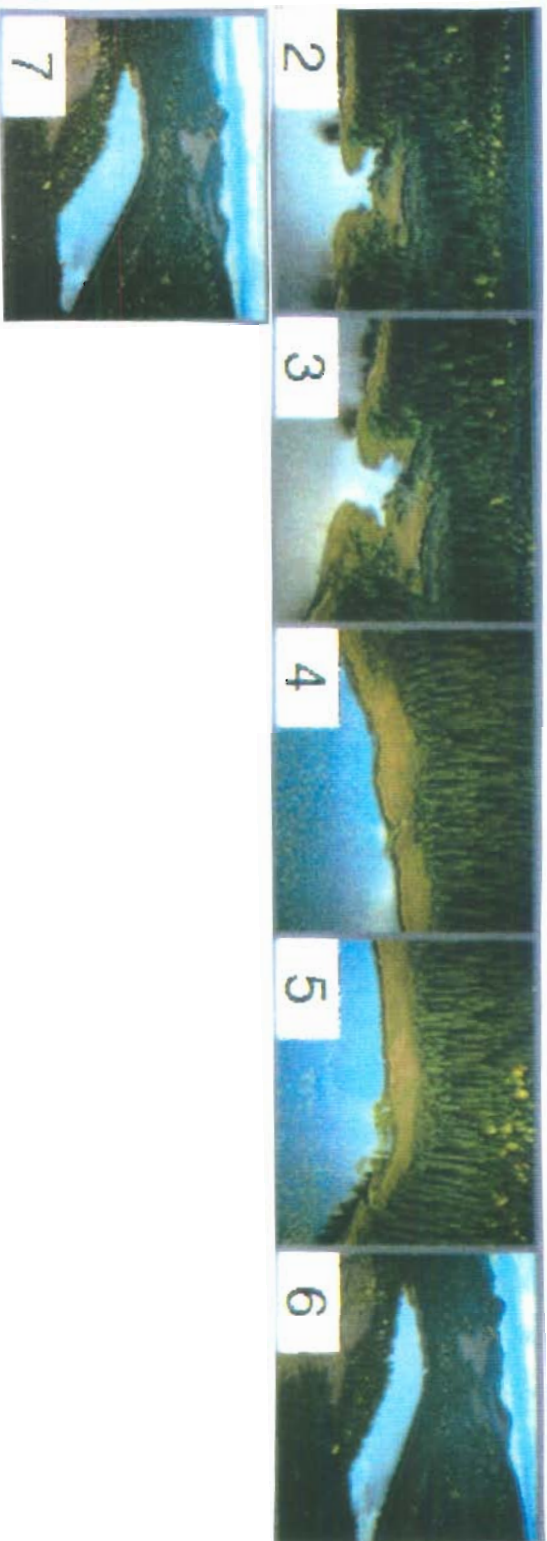
The following page is a contact sheet to be used as an index to photographs stored on CD #4 and 5. These CDs are two of a set of duplicate copies of six CDs that were supplied with the 34 separate lake reports which formed this project.

CD/Photo Number	Direction	NID Map	NID	UTM Zone	Easting	Northing	Comment
5/002	W	93M.048	5002	9U	661400	6145380	outlet LP00001 from the air
5/003	W	93M.048	5003	9U	661400	6145380	outlet LP00001 from the air
5/004	N	93M.048	5004	9U	661400	6145760	LP00003 from the air
5/005	N	93M.048	5005	9U	661500	6145850	LP00004 from the air
5/006	N	93M.048	5006	9U	661350	6145800	overview
5/007	N	93M.048	5007	9U	661350	6145800	overview
4/123	N	93M.048	4123	9U	661500	6145700	swamp LP00003 and LP00004 from the air
4/124	N	93M.048	4124	9U	661600	6145800	swamp LP00003 and LP00004 from the air
4/125	S	93M.048	4125	9U	661350	6145950	north end of lake (swamp) from the air
4/126	S	93M.048	4126	9U	661350	6145950	north end of lake (swamp) from the air
4/127	N	93M.048	4127	9U	661450	6145500	mud flats
4/128	N	93M.048	4128	9U	661626	6145418	looking NW from limnology station
4/129	N	93M.048	4129	9U	661626	6145418	looking NE from limnology station
4/130	S	93M.048	4130	9U	661626	6145418	looking SE from limnology station
4/131	S	93M.048	4131	9U	661626	6145419	looking SW from limnology station
4/132	E	93M.048	4132	9U	661400	6145380	beaver dam looking u/s to mouth of LP00001
4/133	W	93M.048	4133	9U	661400	6145380	beaver dam looking d/s from mouth of LP00001
4/134	S	93M.048	4134	9U	661500	6145500	bay to outlet
4/135	S	93M.048	4135	9U	661400	6145760	LP00003 looking d/s to mouth
4/136	X	93M.048	4136	9U	661300	6145600	cutthroat trout
4/137	W	93M.048	4137	9U	661400	6145600	beaver lodge now above water

# CD 4



# CD5



## Appendix 2. Field Data Information System (FDIS)



# FDIS Lake Form

16-Jul-98

Watershed Code: **480-598800-99100-49200-0000-0000-000-000-000-000-000**  
 Reach # 1 ILP Map # ILP #

## WATERBODY

<b>Waterbody Type</b>	Secondary	<b>Sample Type</b>	Secondary	<b>Project ID</b>	06-LBIR-0010-1015-1998	
<b>Lake Name</b>		<b>Local Name</b>	M21 (Unnamed Lake)		<b>Fish Form?</b>	<input checked="" type="checkbox"/>
<b>Watershed Code</b>	480-598800-99100-49200-0000-0000-000-000-000-000-000					
<b>Reach #</b>	<input type="text" value="1"/>	<b>Air Photo Ref.</b>	BCB91111 221-223	<b>Ref. Comment</b>		
<b>Waterbody ID</b>	00029BABL	<b>ILP Map #</b>		<b>ILP #</b>	<b>Magnitude</b>	4
<b>NID Map #</b>		<b>NID #</b>		<b>UTM</b>	<input type="text" value="9"/> <input type="text" value="661567"/> <input type="text" value="6145461"/>	
	<b>TRIM Map #      Year</b>			<b>Surface Area</b>	26	<b>Source</b> <b>Method</b>
	93M.048      1990			<b>Elevation</b>	961	MAP      MAP
				<b>Biogeoclimatic Zone</b>	SBS	

### TERRAIN CHARACTERISTICS

<b>Setting</b>	VF	<b>Aspect</b>	E
<b>Hillslope Coupling</b>	DC	<b>Basin Genesis</b>	GL
<b>LAND USE</b>	NO AG FB FR MI PR UD OT		
<b>Percentage</b>	<input type="text" value="100"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		

### SHORELINE CHARACTERISTICS

<b>Shoreline Type</b>	i	ii	iii	iv	v
<b>Percentage</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="100"/>	<input type="text"/>
<b>Cover</b>	<input type="text" value="ABUN"/>	<b>Resorts</b>	<b>Camps</b>	<b>Boatlaunch</b>	
<b>Rec. Features</b>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>		

## INLETS / OUTLETS

# Inlets (Perm.) 2      Inlets (Other) 0      Outlets: 1      Spawning hab. present?

I/O	Watershed Code	ILP Map #	ILP #	Comments
O		93M.048	2	
I		93M.048	4	
I		93M.048	5	

### SURVEY INFORMATION

<b>Date</b>	1997-09-22	<b>to</b>	1997-09-23
<b>Agency</b>	C074	<b>Crew</b>	MB/DW

### ACCESS

<b>AIR</b>	<input type="checkbox"/> FW	<input checked="" type="checkbox"/> H	<b>ROAD</b>	<input type="checkbox"/> V2	<input type="checkbox"/> V4	<b>Auto within</b>
<b>OFF ROAD</b>	<input type="checkbox"/> FT	<input type="checkbox"/> ATV	<input type="checkbox"/> V4	<b>Distance</b>		
<b>TRAIL?</b>	<input type="checkbox"/>	<b>Distance</b>				
<b>Closest Community</b>	Smithers					
<b>Comments</b>	No Comments					

### AQUATIC FLORA

<b>EMERGENT VEG.</b>	<b>SUBMERGENT VEG.</b>
Sparse <input type="checkbox"/> OR 30 %	Sparse <input type="checkbox"/> OR 80 %
<b>Floating Algae?</b>	<input type="checkbox"/>
<b>Voucher Specimen</b>	

Type	Dom. Species
EMERGENT	mare's tail
EMERGENT	horsetail

# FDIS Lake Form

Reach #    ILP Map #    ILP #

1

16-Jul-98

Watershed Code:

480-598800-99100-49200-0000-0000-000-000-000-000-000

EMERGENT	lilypads
EMERGENT	cinquefoil
EMERGENT	grass leaved pot.
EMERGENT	floating leaved pot.
SUBMERGENT	P. richardsonii

## LAKE BATHYMETRY

Type of Survey    EL    Littoral Area    100 %    Method    AE    Max. Depth    2

Benchmark Height    Max Water Level    1

Benchmark Type/Location

Comments

## PHOTO DOCUMENTATION

Photo (R/F)	Foc Lg	Dir	NID Map #	NID #	UTM (zone/easting/northing)		Method	Comments
81 / 2	ST	W	93M.048	5002	9	661400 6145380	MAP	outlet LP00001 from the air
81 / 3	ST	W	93M.048	5003	9	661400 6145380	MAP	outlet LP00001 from the air
81 / 4	ST	N	93M.048	5004	9	661400 6145760	MAP	LP00003 from the air
81 / 5	ST	N	93M.048	5005	9	661500 6145850	MAP	LP00004 from the air
81 / 6	ST	N	93M.048	5006	9	661350 6145800	MAP	overview
81 / 7	ST	N	93M.048	5007	9	661350 6145800	MAP	overview
94 / 10	ST	N	93M.048	4123	9	661500 6145700	MAP	swamp LP00003 and LP00004
94 / 11	ST	N	93M.048	4124	9	661600 6145800	MAP	swamp LP00003 and LP00004
94 / 12	ST	S	93M.048	4125	9	661350 6145950	MAP	north end of lake (swamp) 1
94 / 13	ST	S	93M.048	4126	9	661350 6145950	MAP	north end of lake (swamp) 1
94 / 14	ST	N	93M.048	4127	9	661450 6145500	MAP	mud flats
94 / 15	ST	N	93M.048	4128	9	661626 6145418	GP3	looking NW from limnology
94 / 16	ST	N	93M.048	4129	9	661626 6145418	GP3	looking NE from limnology :
94 / 17	ST	S	93M.048	4130	9	661626 6145418	GP3	looking SE from limnology :
94 / 18	ST	S	93M.048	4131	9	661626 6145419	GP3	looking SW from limnology
94 / 19	ST	E	93M.048	4132	9	661400 6145380	MAP	beaver dam looking u/s to r LP00001
94 / 20	ST	W	93M.048	4133	9	661400 6145380	MAP	beaver dam looking d/s from LP00001
94 / 21	ST	S	93M.048	4134	9	661500 6145500	MAP	bay to outlet
94 / 22	ST	S	93M.048	4135	9	661400 6145760	MAP	LP00003 looking d/s to mo
94 / 23	ST	X	93M.048	4136	9	661300 6145600	MAP	cutthroat trout

**FDIS Lake Form**

Reach # 1 ILP Map # ILP #

16-Jul-98

Watershed Code: 480-598800-99100-49200-0000-0000-000-000-000-000-000

94 / 24 ST W 93M.048 4137 9 661400 6145600 MAP beaver lodge now above w:

**AQUATIC WILDLIFE OBSERVATIONS**

Group	Observations
BIR	mallards
BIR	family of redheaded ducks
BIR	widgeon
BIR	raven
BIR	osprey (fishing-caught at least 2 fish)

**LIMNOLOGICAL STATION  
WATER QUALITY**

Station No. 1 Date 1997-09-22 Time: 14:34  
 Location UTM 9 661626 6145418 EMS #

**METHOD USED WATER SAMPLE**

Secchi Depth 1.8  
 Water Color BROW VE  
 pH (surf/bottom) 7.9 8.1  
 Ice Depth

**DISSOLVED OXYGEN, TEMPERATURE PROFILE AND CONDUCTIVITY**

Depth	DO (d)	T(C)	DO (a)	T (C)	Cond.
0.1	7.4	11	7.5	11	26
0.5	7.6	11	7.6	11	
1	7.6	11	7.6	11	
1.5	7.6	11	7.5	11	
2	7.6	11	7.6	11	28

H2S:

**EQUIPMENT USED**

pH	P2	Water Temp	T2	Conductivity	S4	Dis. Oxygen	D2
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**COMMENTS**

Section	Comments
WEATHER	cloudy with patchy blue sky (air temp 12C)
AQUATIC WILDLIFE OBSERVATION	fish are surfacing everywhere very frequently (but unable to catch one)
INLETS/OUTLETS	LP00002-the outlet channel is seeping through the bottom of a beaver dam. There is spawning habitat downstream of the dam for approx. 20m before another beaver dam is present. The channel is a 1m wide, .05m deep riffle-run combination.
INLETS/OUTLETS	LP00002-It appears that water has been seeping through the breached dam all summer as the water level has recently dropped about 1m. The fish in the lake may not survive the winter as the lake is presently only 2m deep.

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**FDIS Lake Form**

Reach #    ILP Map #    ILP #

1

16-Jul-98

Watershed Code:    **480-598800-99100-49200-0000-0000-000-000-000-000-000**

INLETS/OUTLETS

LP00004-.3m deep, .5m wide inlet stream. The channel is very confined with 100% run and good flow. 90% cover is available from cutbank and sedge. There is no observable spawning habitat.

INLETS/OUTLETS

LP00005-this is a swampy inlet, with no distinct channel visible from the ground.

### Appendix 3. Fish Data Collection Form

# Fish Data Collection Form

## A. Location Referencing

Gazetted Name UNNAMED LAKE Alias M21; Footprint Lake  
 Watshed Cod 480-598800-99100-49200-0000-0000-000-000-000-0 WBID # 00029BABL  
 Reach # 1 Interim Locational ID: Project ID 06-LBIR-0010-1015-1998  
 (BCGS/NTS) Map # 93M.048 Locational Point

## B. Survey Information

Survey Dat 1997/09/22 to 1997/09/22 Agency C074  
 Crew MB /DW/ Fish Collection Permit 34770-20  
 General Comments

## C. Station Identification and Conditions

Site	Method	#	UTM Coordinates	Temp	Con	Vis	Turb
1	AG	1					
2	GN	7					

## D. Fish Summary

Site	Meth	#	H/P	Species	Stage	Age	Tot #	Min Lgth	Max Lgth	Fish Act
1	AG	1	10							
2	GN	7	1	CT	J		1		230	R

## E. Gear Specifications

Site	Meth	#	H/P	D In	T In	D Out	T Out	EF Sec	EF Lgth	EF Wdth	Encl	Nt Typ	Lgth	Dpth	Mesh	IN Sz	Set	Hab	Volt	Freq	Pul	Make	Model
1	AG	1	10	09/22	1330	09/22	1400																
2	GN	7	1	09/22	1410	09/22	1415					FL	100	2	ST		SU	L					

## F. Individual Fish Data

Site	Meth	#	H/P	Species	Lgth	Wgt	Sex	Mat	Age Str	Age Smp #	Age	Vouch #	Gen Str	Gen Smp #	Comments	Roll	Fr
1	AG	1	10														
2	GN	7	1	CT	240										RELEASED		
2	GN	7	1	CT	250										RELEASED		
2	GN	7	1	RB	270										RELEASED		
2	GN	7	1	RB	360										RELEASED		
2	GN	7	1	CT	230	125	F	MT	SC	1			FR	1		94	23