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# 1972 New Brunswick Mine Water Quality Monitoring Program Data

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Surveillance Report EPS 5-WP-73-7  
Atlantic Region

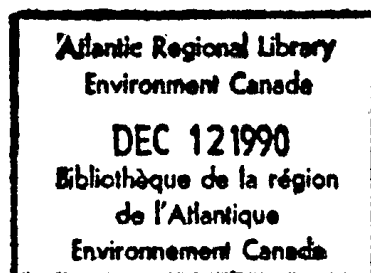


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| 1972 NEW BRUNSWICK  
MINE WATER QUALITY MONITORING PROGRAM DATA

by

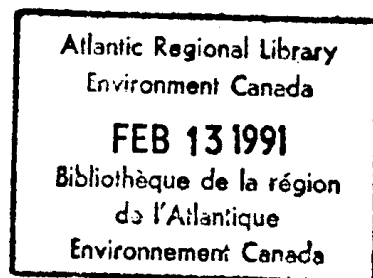


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Surveillance and Analysis Division  
Environmental Protection Service  
Department of the Environment  
Atlantic Region

Report Number EPS-5-WP-73-7

April, 1973





ENVIRONMENTAL PROTECTION SERVICE REPORT SERIES

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## INTRODUCTION

In 1972, the Environmental Protection Service of Environment Canada carried on the responsibilities of the New Brunswick Mine Water Quality Monitoring Program. The Program has been operative in the region since 1966 and was initiated by the Resource Development Branch of the Department of Fisheries and Forestry. The principal purpose of this Program was and remains, to collect stream quality data above and within the zone of influence of all base metal mining operations in New Brunswick in order to assess the effects of these developments on the receiving aquatic environments.

## METHODS

Last year, a total of 100 stations representing 16 abandoned, existing and known potential mine sites (Fig. 1) were sampled on a regular basis (as shown in Table I).

The samples were delivered to Moncton where they were analyzed by the Environmental Management Service for the following water quality parameters.

Colour		Fe (total)
Conductance		As
Turbidity		Sb
Alkalinity		Cu
Hardness	Ca <sup>++</sup>	Zn
	Mg <sup>++</sup>	Pb
pH		Cd
		Sulphur compounds

- Notes:
- Arsenic was determined for Nigadoo River Mine, Lake George Antimony Mine and Anaconda-Caribou Mine samples only.
  - Antimony was determined for Lake George Antimony Mine samples.
  - Total extractible heavy metal fractions were determined for Cu, Zn, and Pb.
  - Cadmium analyses were determined for samples as indicated on mine sample location sheets (see Results).

NEW BRUNSWICK MINE MONITORING PROGRAM - 1972

TABLE 1.

MINE. (area code)	Number of Samples	Collection Frequency	Total Samples	MONTHS												
				APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER				
				week of 16 25 30												
ALCONDA AMERICAN BRASS. (AB)	7	7	49		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
BRUNSWICK #6. (#6)	17	11	187	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
BRUNSWICK #12. (B)	6	4	24		(X)		(X)			(X)						
BURNHILL TUNGSTEN. (BT)	5	6	30		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
CHESTER. (C)	8	5	40		(X)		(X)		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
COPPERFIELDS MINING CORPORATION. (CNC)	7	3	21			(X)			(X)					(X)		
HEATH STEEL. (H)	12	6	72		(X)		(X)		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
KEMAY. (K)	4	3	12		(X)				(X)					(X)		
LAKE GEORGE ANTIMONY. (LGA)	4	6	24		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
MILLSTREAM. (M)	3	3	9		(X)				(X)					(X)		
MOUNT PLEASANT. (MP)	5	6	30		(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
NEW LARDER U. (NLU)	1	3	3		(X)				(X)					(X)		
RICADOO. (RIG)	5	4	20	(X)			(X)				(X)					
RESTIGOUCHE. (R)	7	5	35			(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
TEXAS GULF. (T)	4	3	12			(X)			(X)					(X)		
WEDGE. (W)	4	3	12		(X)			(X)								
TOTAL ANALYSES:			580													
																BIOMASSAYS CONDUCTED = ( )



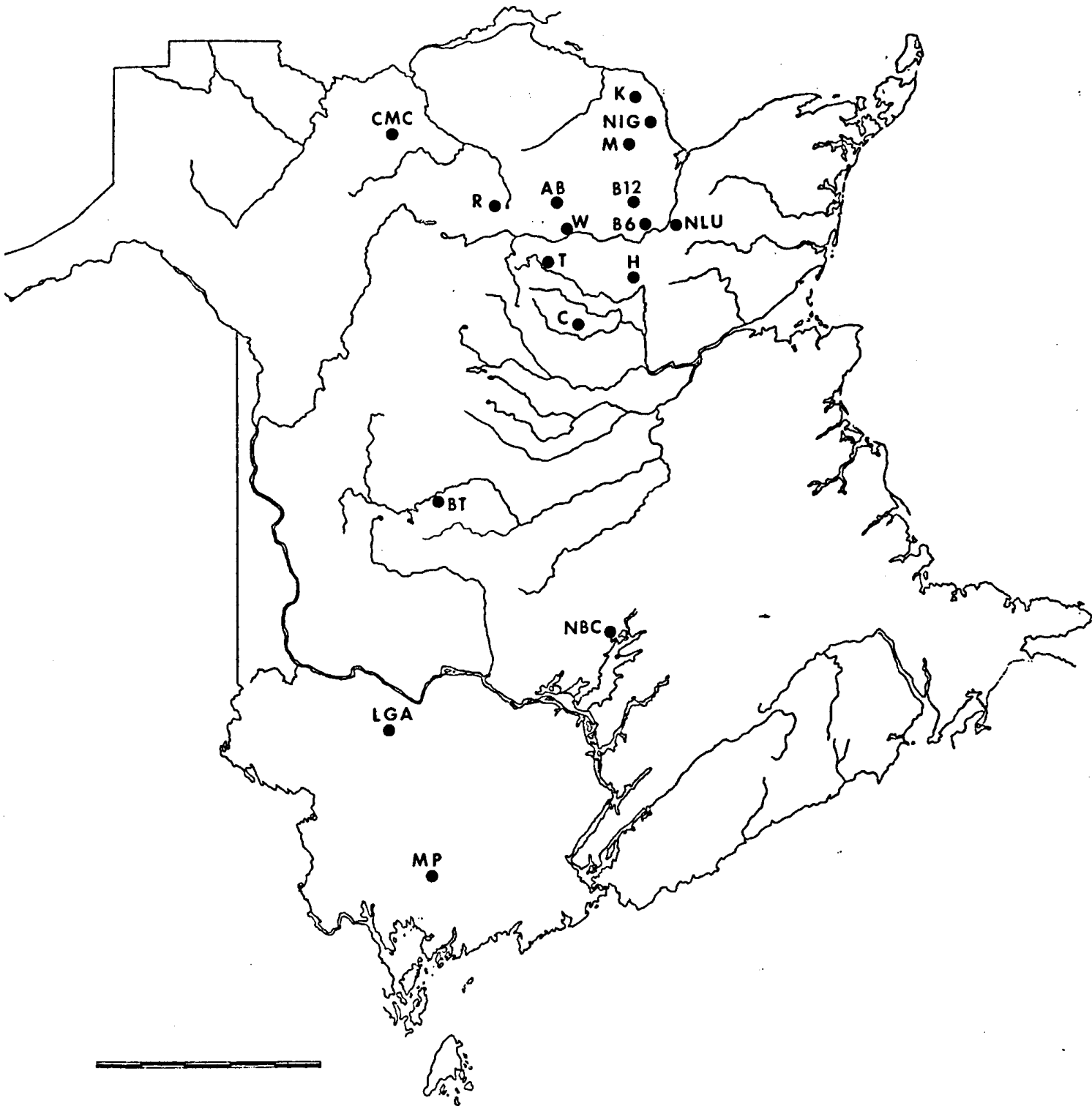


Figure 1  
NEW BRUNSWICK MINES SAMPLED

- Total sulphur and thiosulphates were determined for samples from Brunswick No. 12 Mine stations B-4 and B-9.

The frequency at which each location was sampled in 1972 is indicated in Table I. Environmental Protection Service staff collect all samples with the exception of stations MP-6 to MP-13 at Mount Pleasant.

In addition to water quality data, certain stations noted on the station data sheets in the results were sampled for both benthic organisms and fish toxicity data. The benthic communities and population densities were determined by means of artificial multiplate substrate samplers installed for three weeks in the stream beds. After this period of time, all organisms inhabiting the samplers, were removed, preserved, identified and counted.

The toxicity evaluations were conducted by bioassay testing of receiving water samples. All bioassays, were carried out at the Newcastle Toxicity Testing Laboratory using juvenile Atlantic salmon. The procedure involved exposure of 10 fish to 100% water samples for 96 hours under static bioassay conditions. LT 50's were determined and are reported in conjunction with the water quality data.

## RESULTS

All results collected through the New Brunswick Mine Water Quality Monitoring Program are presented in summary, tabular form.

Data for individual mines are presented in alphabetical order and as follows:

- (i) Station location sheet - describes location of all stations and indicates special analyses conducted
- (ii) Map of Mine site and sampling stations.
- (iii) Table summarizing water quality and toxicity data for each station.
- (iv) Tables summarizing benthic biological data for the year plus breakdown for each sampling period.

ANACONDA AMERICAN BRASS LTD.

MINE: Anaconda American Brass Ltd.

AREA CODE: "AB"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
AB-1	Cd	Forty Mile Brook, at site, above mine property (control).	66°18'01"	47°34'05"
AB-2		Forty Mile Brook, at new bridge culvert below adit.	66°17'17"	47°34'05"
AB-3		Forty Mile Brook, below adit, at reservoir spillway discharge.	66°17'00"	47°34'00"
AB-4	*Cd EM	Mouth of Forty Mile Brook at Nepisiguit.	66°07'05"	47°23'19"
AB-5		Outflow from new tailings ponds.	66°16'42"	47°33'45"
AB-6		Below tailings outflow into Forty Mile Brook.	66°16'18"	47°34'07"
AB-7	* EM	Nepisiguit River, at bridge on Mines Road to Bathurst.	66°04'16"	47°22'30"

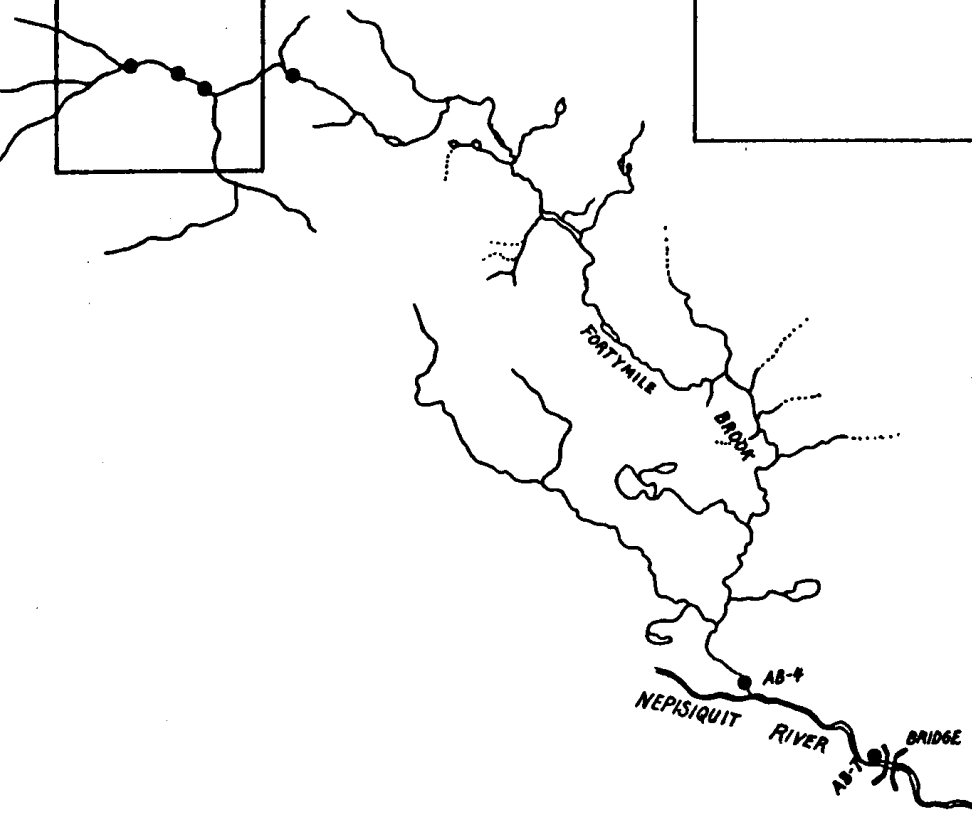
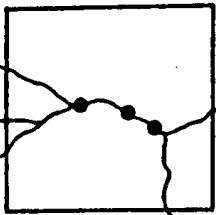
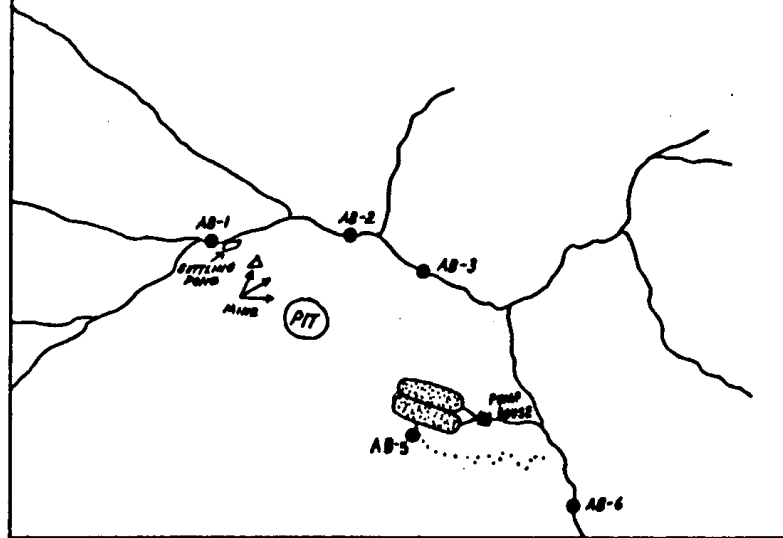
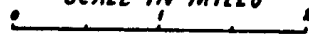
\* Bioassays performed.

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# AREA AB

SCALE IN MILES



ANACONDA AMERICAN BRASS LTD.

SAMPLING STATIONS.....●

SCALE IN MILES















SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : AB-4  
LOCATION: Mouth of Forty Mile Brook at Nepisiquit

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	11
2. pH .....	7.1
3. Total Hardness mg/L .....	23.7
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. 5 mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.18

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PHYSICAL FACTORS

1. Depth cm .....	53
2. Substrate .....	Rock, gravel & sand
3. Velocity cm/sec .....	83.3

BOTTOM COMMUNITY

1. Total Number/Sampler .....	266	
2. Total Number of Taxa .....	10	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Simuliidae .....	50
4. Second .....	Tendipedidae .....	30
5. Third .....	Baetidae .....	11
6. Fourth .....	Hydropsychiidae .....	5
7. Diversity .....	1.283	

BIOLOGICAL RESULTS

CODE : AB-4

LOCATION : Mouth of Fourty Mile Brook at Nepisiquit.

TAXA	Sampling Period		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlodidae			1.5	0.5	1.5	0.5
Pteronarcidae			0.5	0.5	0.5	0.5
Ephemeroptera						
Baetidae			29.5	11	29.5	11
Trichoptera						
Hydropsychidae			15	5	15	5
Psychomyiidae			0.5	0.5	0.5	0.5
Rhyacophilidae			1.5	0.5	1.5	0.5
Philopotamidae			5	2	5	2
Diptera						
Tendipedidae			79	30	79	30
Simuliidae			133	50	133	50
Rhagionidae			0.5	0.5	0.5	0.5
TOTAL			266		266	











SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE :AB-7

LOCATION:Nepisiquit River at Bridge on Mine Road to Bathurst.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	13.6
2. pH .....	6.8
3. Total Hardness mg/L.....	17.3
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. 5 mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.17

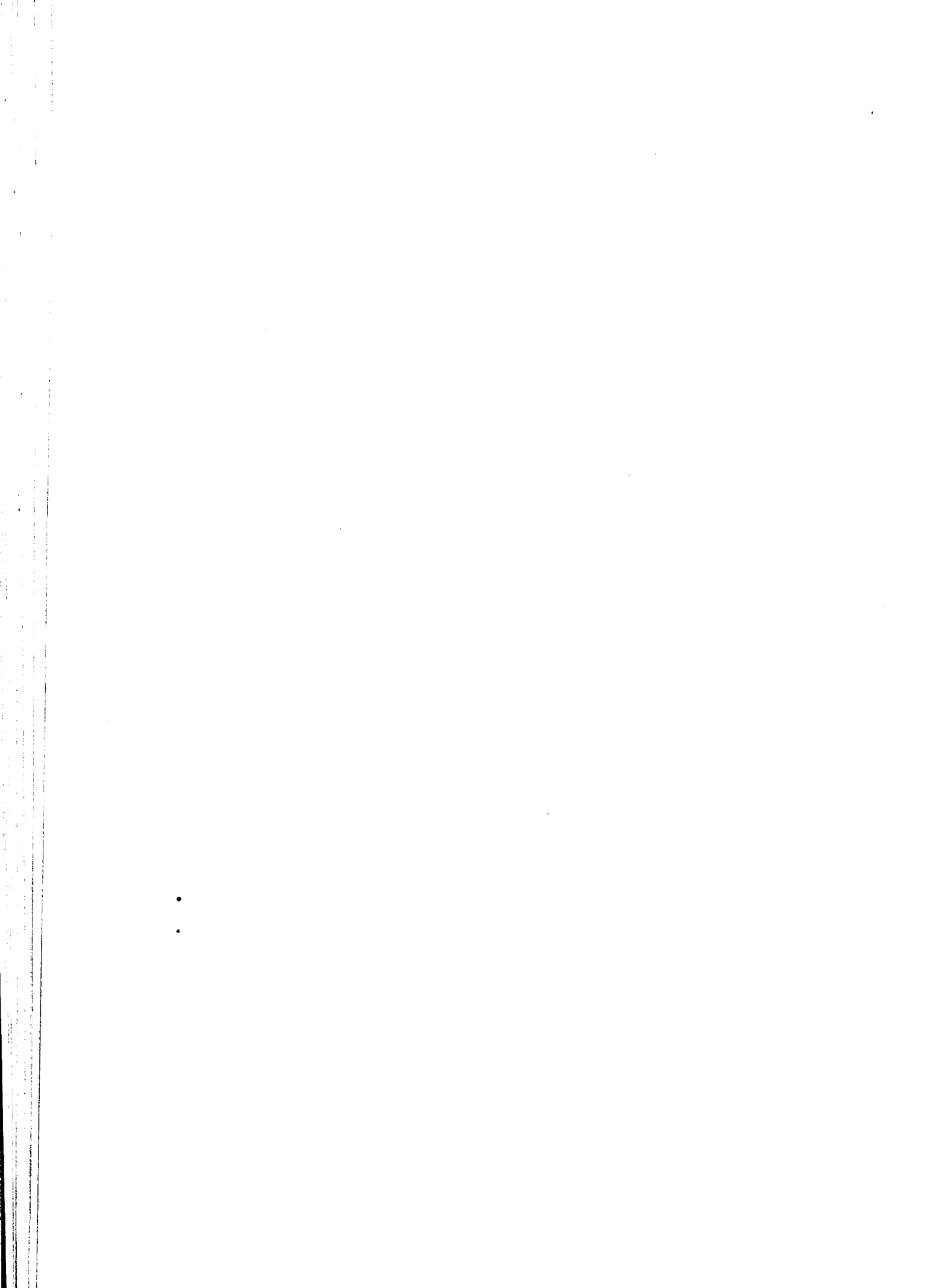
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PHYSICAL FACTORS

1. Depth cm .....	150
2. Substrate .....	Rock, sand & silt.
3. Velocity cm/sec .....	46

BOTTOM COMMUNITY

1. Total Number/Sampler		
2. Total Number of Taxa		
Numerically Dominant	TAXA	% TOTAL
3. First		
4. Second		
5. Third		
6. Fourth		
7. Diversity		



BRUNSWICK MINING & SMELTING CO. LTD.  
(No. 6 Pit)

MINE: Brunswick Mining & Smelting Co. Ltd.  
(No. 6 pit)

AREA CODE: "B#6"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
B#6-1B		Outflow from Knight Brook treatment system.	65°48'50"	47°24'36"
B#6-1C		Outflow of open pit sump pump.	65°49'52"	47°24'30"
B#6-1D		Austin Brook above sump pump outflow.	65°49'38"	47°24'06"
B#6-1E	(abandoned Iron Mine on B#6 property)		65°49'40"	47°23'58"
B#6-8	* Cd EM	Nepisiguit, above Austin Brook	65°49'36"	47°23'38"
B#6-7	*	Nepisiguit, mouth of Austin Brook.	65°49'12"	47°23'50"
B#6-2		Nepisiguit, midway between Austin mouth and dam.	65°48'10"	47°23'58"
B#6-5	*	Nepisiguit, above Knight Brook.	65°46'12"	47°24'14"
B#6-4	*	Nepisiguit, mouth of Knight Brook.	65°45'40"	47°24'10"
B#6-9	Cd	Nepisiguit, below Knight Brook.	65°44'00"	47°23'57"
B#6-10		Nepisiguit, below Knight Brook, 3 miles.	65°43'08"	47°24'40"
B#6-13	* Cd EM	Nepisiguit, at bridge near NLU Mine.	65°42'22"	47°26'23"
B#6-14	*	Nepisiguit, Pabineau Falls	65°40'40"	47°30'28"
B#6-15		Nepisiguit, below Pabineau River, at reserve.	65°40'00"	47°32'18"
B#6-17	*	Nepisiguit, above Bathurst, at water pump station.	65°39'00"	47°34'22"
B#6-16		Nepisiguit, Bathurst, at Irving Pier.	65°38'24"	47°36'52"
B#6-18		Nepisiguit, Bathurst, opposite Irving Pier. (below Pulp Mill).	65°38'28"	47°36'55"

\* Bioassays Performed.

Cd - Cadmium analyses.

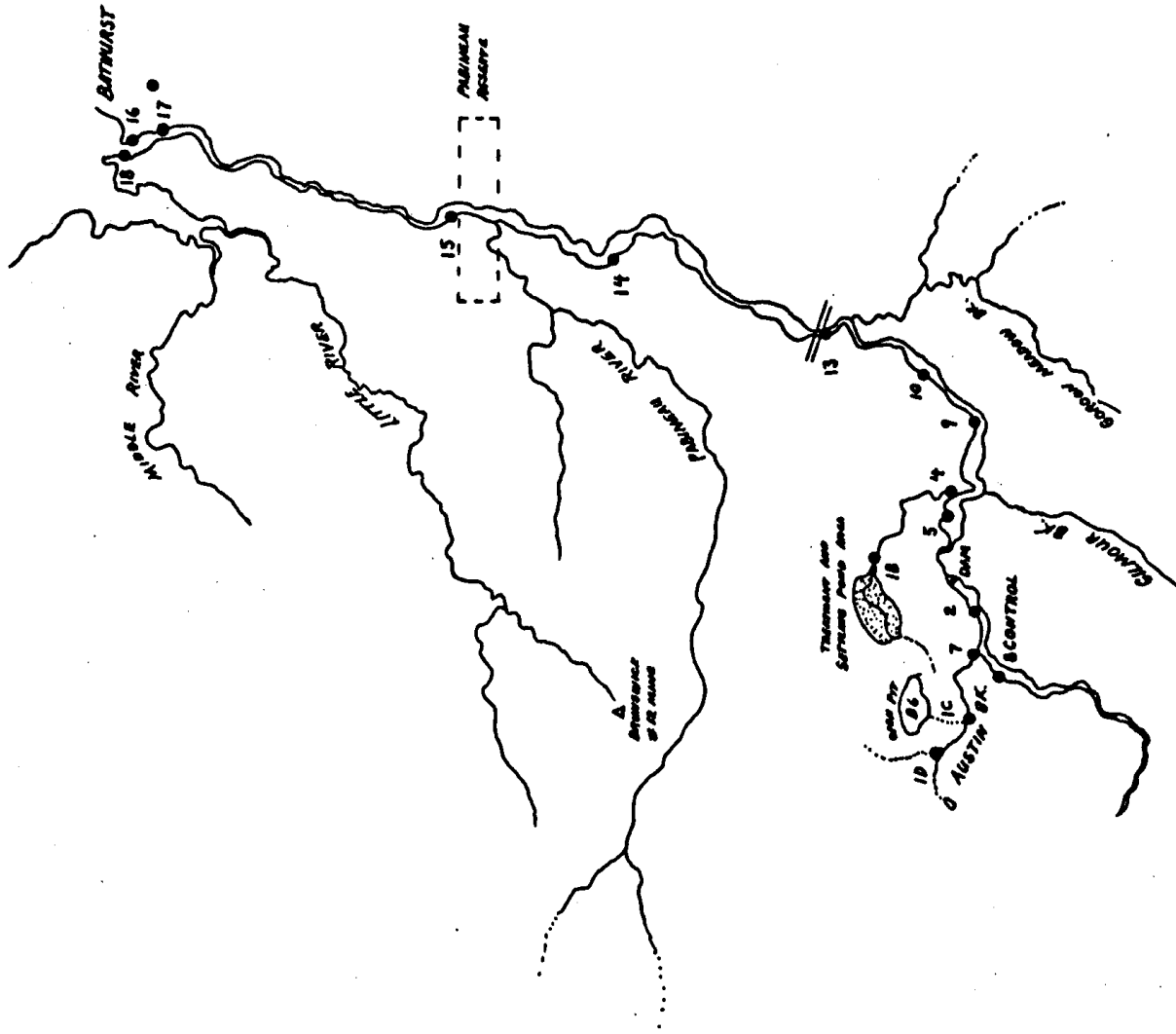
EM - Ecological Monitoring Station.

# AREA B6

BRUNSWICK MINING & SMELTING CO. LTD.

NO. 6 PIT - 17 STATIONS

SAMPLING STATIONS.....●



DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

MINE WATER QUALITY

EPG-1103

TABLE 1 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-1B

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50 hrs.
May 2	5	-	3.6		3.2	327.5	4.0	72.5	0.4			25.36		
May 25	10	-	3.1		2.6	1085	26.0	480.0	0.8			55.9		
June 13	15	-	2.8		2.7	1120.2	50	0.5	0.018			28.1		
July 5	18	1.20	11.3		11.4	1765	0.875	15.0	0.020			1.12		
July 27	16	0.75	6.2		6.5	1571	0.50	24.0	0.004			1.63		
Aug. 17	19	0.13	6.15		6.8	1716	0.010	6.3	<0.002			0.35		
Sept. 5	17	0.6	11.8		12.1	2322	0.038	1.3	0.047			0.06		
Sept. 28	10	0.13	11.2		10.8	2065	0.011	0.25	0.002			0.01		
Oct. 17	7	0.03	9.9		7.7	1531	0.12	1.3	0.007			0.13		
Nov. 7	5	1.60	11.4		11.6	2001	0.02	1.77	0.007			0.09		
Nov. 21	1	-	2.95		2.8	911.1	29.0	450.0	0.68			65.00		
$\bar{x}$	11.182	0.634	7.309		7.109	1492 235	10.052	95.679	0.181			16.159		
SD	6.161	0.597	3.848		3.893	583.624	17.095	183.930	0.301			24.319		
SE	1.858	0.226	1.160		1.174	175.969	5.154	55.457	0.091			7.333		

ATLANTIC REGION

MINE WATER QUALITY

TABLE 2	COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)	STATION B#6-1C
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DATE	TEMP °C	FLOW cfs.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50- hrs.
May 2	6	0.10	4.2		3.8	1151.1	1.3	215	3.0			18.2		
May 25	9	0.54	4.45		2.9	1277	0.4	260	1.4			19.2		
June 13	2.3		4.25		3.2	1506.5	0.25	260	1.7			18.76		
July 5	15	1.06	4.60		3.1	1427	0.45	185	3.5			12.54		
July 27	No effluent	outflow		Shutdown for 2 weeks										
Aug. 17	19	0.65	4.30		2.8	1476.5	0.25	0.087	3.0			0.30		
Sept. 5	16	0.6	3.30		3.0	1574.	5.0	440.0	4.3			29.0		
Sept. 28	11	1.22	4.40		2.8	1622	1.0	385.0	3.5			22.9		
Oct. 17	8	0.75	4.20		3.2	1560	0.87	240	3.35			15.0		
Nov. 7	7	0.01	3.62		2.9	1386	2.375	270	3.6			19.51		
Nov. 21	5	1.0	3.95		2.9	1456	1.9	300	0.9			20.16		
$\bar{x}$		11.900	4.127		3.060	1423 600	1.380	255.509	2.825			17.557		
SD		6.064	0.399		0.299	147.338	1.459	117.911	1.107			7.484		
SE		1.917	0.126		0.095	46.592	0.461	37.287	0.350			2.367		

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

EPG-1103

TABLE 3 COMPANY BRUNSWICK MINING & SMELTING CO. STATION B#6-1D  
LTD. (NO. 6 PIT)

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	4	0.77	5.6		5.0	13.8	0.05	0.25	0.05			1.90		
May 25	6	10.0	5.7		5.8	10.3	0.013	0.086	0.005			0.63		
June 13	13	8.8	5.8		5.7	17.9	0.016	0.1	0.008			0.53		
July 5	12	6.24	5.9		5.9	14.9	0.01	0.125	0.006			0.48		
July 27	11	2.56	7.3		6.5	17.8	0.002	0.079	<0.002			0.17		
Aug. 17	13	2.0	6.35		6.8	14.7	0.002	0.1	0.003			0.19		
Sept. 5	14	13.8	4.9		5.7	36.5	0.027	0.575	0.01			0.91		
Sept. 28	8	9.6	6.6		5.8	32.9	0.004	0.35	0.004			0.43		
Oct. 17	5	4.6	5.6		5.9	15.2	0.009	0.10	0.005			0.41		
Nov. 7	2	4.8	5.7		5.6	15.3	0.009	0.25	0.007			0.66		
Nov. 21	0		5.6		5.4	15.1	0.010	0.25	0.004			0.69		
$\bar{x}$	8.000	6.317	5.914		5.827	19.036	0.014	0.206	0.009			0.636		
SD	4.899	4.154	0.633		0.486	8.158	0.014	0.153	0.014			0.471		
SE	1.477	1.314	0.191		0.147	2.460	0.004	0.046	0.004			0.142		



ATLANTIC REGION

LAKE WATER QUALITY

TABLE 4	COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)	STATION B#6-1E
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DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No Sample collected.													
May 25	"	"	"											
June 13	"	"	"											
July 5	"	"	"											
July 27	"	"	"											
Aug. 17	15		2.9		3.1	174	0.043	18.0	0.015			7.39		
Sept. 5	14		3.1		3.5	111	0.041	10.0	0.06			5.66		
Sept. 28	11		3.4		3.1	166	0.06	20.0	0.10			8.57		
Oct. 17	7		3.2		3.7	149	0.071	14.0	0.071			6.52		
Nov. 7	3		5.6		6.1	68.8	0.02	3.7	0.017			2.74		
Nov. 21	0		4.5		4.2	77.5	0.017	4.8	0.025			3.28		
X	8.333		3.783		3.950	124.383	0.042	11.750	0.048			5.693		
SD	6.055		1.053		1.131	45.313	0.021	6.758	0.035			2.297		
SE	2.472		0.430		0.462	18.499	0.009	2.759	0.014			0.938		

MINE WATER QUALITY										COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)				STATION B#6-8	
DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.	
May 2	1		6.45		6.4	13.5	0.004	0.06	0.002	.00007	<0.001	0.20	100		
May 25	6		6.52		6.5	10.7	0.005	0.031	0.002	<0.0005	<0.001	0.23	100		
June 13	12		6.5	13-6-72	6.5	18.2	0.008	0.3	0.004	0.0001	0.001	0.65	100		
July 5	13		6.55		6.9	15.6	0.005	0.097	0.003	<0.0005	<0.001	0.29	100		
July 27	15		7.55	24-7-72	7.0	18.0	<0.002	0.073	0.002	0.00025	0.001	0.16	100		
Aug. 17	16		6.52		7.3	18.0	0.002	0.042	<0.002	.0001	<0.001	0.11	100		
Sept. 5	15		6.70	1-9-72	7.0	18.5	0.095	0.098	0.01	.00082	<0.001	2.27	100		
Sept. 28	11		6.65		6.8	18.5	0.002	0.22	0.004	<0.0005	<0.001	0.38	100		
Oct. 17	4		6.70		6.3	16.9	0.009	0.175	0.004	.00335	<0.001	0.50	100		
Nov. 7	0		6.10		6.5	15.1	<0.002	0.047	0.003	.00010	<0.001	0.14	100		
Nov. 21	0		7.00		6.2	15.6	0.004	0.02	0.002	.00111	<0.001	0.14	100		
$\bar{x}$	8.455		6.658		6.673	16.236	0.013	0.106	0.003	0.0007	0.001	0.461	100.000		
S.D.	6.378		0.367		0.347	2.470	0.027	0.089	0.002	0.0011	0.000	0.623	0.000		
S.E.	1.923		0.111		0.105	0.745	0.008	0.027	0.001	0.0004	0.000	0.188	0.000		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B#6-8

LOCATION: Nepisiquit River Above Austin Brook.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	14
2. pH .....	6.9
3. Total Hardness mg/L .....	18.2
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	1.02

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PHYSICAL FACTORS

1. Depth cm .....	
2. Substrate .....	Silt & clay.
3. Velocity cm/sec .....	

BOTTOM COMMUNITY

1. Total Number/Sampler .....	16.75	
2. Total Number of Taxa .....	6	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	85
4. Second .....	Oligochaeta .....	7.5
5. Third .....	Dytiscidae .....	3
6. Fourth .....	Perlidae/Leptoceridae/Limnephidae	1.5ea
7. Diversity .....	0.623	

BIOLOGICAL RESULTS

CODE : B#6-8

LOCATION : Nepisiquit River, above Austin Brook.

TAXA	Sampling Period 13/6/72-24/7/72		Sampling Period 24/7/72 - 1/9/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera Perlidae	0.5	8	--	--	0.25	1.5
Trichoptera Leptoceridae	0.5	8	--	--	0.25	1.5
Limnephilidae	0.5	8	--	--	0.25	1.5
Diptera Tendipedidae	4.5	68	24	89	14.25	85
Coleoptera Dytiscidae	--	--	--	4	0.5	3
Annelida Oligochaeta	0.5	8	2	7	1.25	7.5
<b>TOTAL</b>	<b>6.5</b>		<b>27</b>		<b>16.75</b>	

ATLANTIC REGION

TABLE 6 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-7

MINE WATER QUALITY

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	150- hrs.
May 2	3	22.4	5.6		5.9	20.4	0.04	1.05	0.005			2.33	100	
May 25	7	23.0	6.9		5.7	12.5	0.01	0.4	0.005			1.05	100	
June 13	13	27.7	5.1		5.3	18	0.029	1.0	0.012			2.22	100	
July 5	12	15.0	5.15		4.9	19.8	0.047	1.50	0.018			3.20	10	<20.0
July 27	13	3.75	6.80		6.3	21.4	0.017	1.3	0.018			2.18	100	
Aug. 17	15	1.48	6.90		6.6	25.9	0.014	1.25	0.02			1.81	30	41.00
Sept. 5	14	28.0	4.70		5.0	34.6	0.098	2.35	0.032			3.71	100	
Sept. 28	9	6.5	6.70		5.7	28.4	0.013	1.3	0.012			1.74	100	
Oct. 17	6	6.9	5.65		4.7	21.9	0.065	1.45	0.02			3.28	100	
Nov. 7	1	10.9	4.52		4.8	19.8	0.066	1.8	0.011			4.04	100	
Nov. 21	0		4.80		4.6	21.2	0.059	1.9	0.012			3.86	Zero	26.40
$\bar{x}$	8.455	14.563	5.711		5.409	22.173	0.042	1.391	0.015			2.675	76.364	
S.D.	5.410	10.062	0.047		0.677	5.780	0.028	0.515	0.008			0.991	41.054	
S.E.	1.631	3.182	0.285		0.204	1.743	0.009	0.155	0.002			0.299	12.378	

ATLANTIC REGION

MINE WATER QUALITY

TABLE 7	COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)	STATION B#6-2
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DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No sample collected.													
May 25	6.5		6.40		6.5	9.7	0.01	0.023	0.002			0.41		
June 13	10		6.95		6.9	12.6	0.006	0.04	<0.002			0.26		
July 5	13		6.83		6.8	14.9	0.005	0.042	0.003			0.21		
July 27	15		7.60		7.1	16.2	0.002	0.022	0.002			0.09		
Aug. 17	17		6.40		7.2	17.3	<0.002	0.018	<0.002			0.08		
Sept. 5	15		7.00		6.9	17.8	0.016	0.082	0.007			0.50		
Sept. 28	9		6.72		7.0	15.0	<0.002	0.022	0.002			0.09		
Oct. 17	4		6.35		6.5	16.0	0.006	0.062	0.003			0.25		
Nov. 7	0		7.00		6.2	15.1	<0.002	0.086	0.003			0.20		
Nov. 21	0		6.60		6.1	15.9	<0.002	0.085	0.015			0.21		
$\bar{x}$	8.950		6.785		6.720	15.050	0.005	0.048	0.004			0.230		
S.D.	6.202		0.382		0.377	2.362	0.005	0.028	0.004			0.137		
S.E.	1.961		0.121		0.119	0.747	0.001	0.009	0.001			0.043		

TABLE 8  
MINE WATER QUALITY  
COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)  
STATION #6-5

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT50- hrs.
May 2	No sample collected.													
May 25	7		6.70		6.1	10.6	0.018	0.2	0.003			1.02	100	
June 13	10	1150.0	7.15		6.9	11.5	0.003	0.029	<0.002			0.15	100	
July 5	13	1296.0	7.20		7.1	14.7	0.002	0.031	0.003			0.11	100	
July 27	15	394.0	6.58		7.1	12.5	0.002	0.035	0.002			0.13	100	
Aug. 17	14	340.0	6.90		7.1	18.0	<0.002	0.081	0.004			0.17	100	
Sept. 5	15	1508.0	6.90		6.6	18.0	0.013	0.087	0.007			0.44	100	
Sept. 28	9	591.0	6.75		7.2	15.2	0.002	0.022	0.004			0.09	100	
Oct. 17	4	680.0	6.00		3.6	16.0	0.003	0.040	0.004			0.15	100	
Nov. 7	0	512.0	6.00		6.6	14.9	<0.002	0.056	0.003			0.15	100	
Nov. 21	0		6.63		5.9	15.9	<0.002	0.06	0.004			0.15	100	
$\bar{x}$	8.700	808.875	6.681		6.420	14.730	0.005	0.064	0.004			0.256	100.000	
S.D.	5.813	445.070	0.412		1.086	2.518	0.006	0.053	0.001			0.286	0.000	
S.E.	1.838	157.356	0.130		0.343	0.796	0.002	0.017	0.000			0.090	0.000	

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION  
MINE WATER QUALITY

TABLE	9	COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)	STATION B#6-4
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DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50- hrs.
May 2	No sample collected.													
May 25	7	51.2	3.20		3.4	93.6	1.4	28.0	0.042			24.7	Zero	4.28
June 13	11	8.2	3.40		3.7	341	2.7	55.0	0.037			17.93	Zero	5.25
July 5	12	11.7	3.45		3.7	286	1.0	18.5	0.046			7.20	Zero	5.25
July 27	14	3.6	3.65		3.7	1056	0.70	28.0	0.037			2.86	Zero	<13.0
Aug. 17	14	3.2	3.40		3.5	531	1.3	40.5	0.035			8.13	Zero	5.30
Sept. 5	14	26.0	3.60		3.8	327	0.5	18.5	0.0245			5.50	50	6.50
Sept. 28	8	7.4	4.20		4.0	269	0.35	13.0	0.012			4.54	Zero	22.75
Oct. 17	5	4.6	4.10		3.7	222	0.69	18.5	0.012			8.05	40	47.1
Nov. 7	1	8.0	3.85		4.1	154	0.85	18.0	0.011			10.93	Zero	6.90
Nov. 21	0		3.10		2.9	353	7.5	125	0.1			41.90	Zero	2.87
$\bar{x}$	8.600	13.767	3.595		3.650	363.260	1.697	36.300	0.036			13.174	9.000	11.938
S.D.	5.296	15.648	0.363		0.334	271.059	2.145	33.667	0.026			12.078	19.120	13.668
S.E.	1.675	5.216	0.115		0.106	85.716	0.678	10.646	0.008			3.819	6.046	4.322



TABLE 10 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-9  
MINE WATER QUALITY

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No sample collected.													
May 25	6		6.00		6.3	10.6	0.03	0.5	0.005	<0.0005	0.001	2.03		
June 13	10		6.25		6.8	24.9	0.068	1.9	<0.002	.00005	0.003	3.60		
July 5	13		6.35		6.7	35.6	0.072	1.50	0.008	<0.0005	0.003	2.42		
July 27	15		6.40		6.8	61.1	0.052	1.7	0.004	.00025	0.003	1.68		
Aug. 17	14		6.55		7.2	34.9	0.043	1.25	0.003	.0001	0.004	1.83		
Sept. 5	15		6.90		7.0	28.6	0.045	0.75	0.01	.00122	0.0015	1.58		
Sept. 28	9		6.70		6.8	32.8	0.029	0.82	0.004	.00044	0.001	1.30		
Oct. 17	5		6.50		6.2	26.4	0.059	0.925	0.004	.0022	0.002	2.11		
Nov. 7	0		6.68		6.0	22.8	0.05	0.95	<0.002	.00136	0.0025	2.22		
Nov. 21	0		4.80		4.3	45.0	0.60	11.0	0.022	.00153	0.0015	15.46		
$\bar{x}$	8.700		6.313		6.410	32.270	0.105	2.130	0.006	0.0009	0.0022	3.423		
SD	5.774		0.589		0.829	13.634	0.175	3.148	0.006	0.0008	0.0010	4.275		
SE	1.826		0.186		0.262	4.312	0.055	0.996	0.002	0.0003	0.0003	1.352		

EP6-JJ03

DEPARTMENT OF THE ENVIRONMENT  
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ATLANTIC REGION

MINE WATER QUALITY

TABLE	11	COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)	STATION B#6-10
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DATE	TEMP. ° C	FLOW c.f.t.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No sample collected.													
May 25	6		6.80		6.4	9.7	0.01	0.075	0.003			0.52		
June 13	10		6.72		7.0	13.4	0.021	0.3	0.008			1.15		
July 5	13		7.50		7.2	18.7	0.012	0.25	0.003			0.65		
July 27	15		7.30		7.3	20.3	0.012	0.10	<0.002			0.40		
Aug. 17	14		7.25		7.2	19.2	0.002	0.15	<0.002			0.27		
Sept. 5	15		7.10		6.8	19.5	0.02	0.15	0.005			0.65		
Sept. 28	9		6.80		6.9	17.4	0.004	0.10	0.002			0.25		
Oct. 17	5		6.60		6.6	17.2	0.007	0.15	0.004			0.41		
Nov. 7	0		7.20		5.9	15.4	0.0065	0.15	0.003			0.42		
Nov. 21	0		6.50		6.0	19.6	0.068	1.45	0.004			0.830		
$\bar{x}$	8.700		6.977		6.730	17.040	0.016	0.288	0.004			0.830		
S.D.	5.774		0.336		0.497	3.344	0.019	0.414	0.002			1.000		
S.E.	1.826		0.106		0.157	1.057	0.006	0.131	0.001			0.316		

TABLE 12 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-13  
MINE WATER QUALITY

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	2		6.20		6.5	14.3	0.03	0.25	0.004	<00005	0.001	1.26	100	
May 25	5.5		6.75		6.4	8.9	0.011	0.061	0.002	<00005	<0.001	0.56	100	
June 13	10		6.72		6.9	12.5	0.014	0.2	0.002	0.0001	<0.001	0.80	100	
July 5	13		6.40		6.9	16.6	0.012	0.175	0.005	0.0001	0.001	0.58	100	
July 27	15		7.35	24-7-72	7.2	19.6	0.005	0.10	<0.002	.00009	<0.001	0.26	100	
Aug. 17	14		6.90		7.4	19.4	0.003	0.18	0.004	.00025	<0.001	0.33	100	
Sept. 5	15		7.20	1-9-72	7.2	18.5	0.02	0.1	0.01	.00016	0.001	0.61	100	
Sept. 28	9		6.80		7.1	16.7	0.003	0.082	0.002	.00021	<0.001	0.20	100	
Oct. 17	5		6.20		6.1	16.3	0.006	0.10	0.003	.00184	<0.001	0.31	100	
Nov. 7	0		6.10		6.5	14.9	<0.002	0.087	0.002	.00055	<0.001	0.20	100	
Nov. 21	0		6.50		6.1	19.3	0.068	1.175	0.005	.00005	0.0025	3.21	40	70.50
$\bar{x}$	8.045		6.647		6.755	16.091	0.016	0.228	0.004	0.0004	0.0011	0.756	94.545	
SD	5.859		0.410		0.457	3.306	0.019	0.320	0.002	0.0006	0.0005	0.873	18.091	
SE	1.766		0.124		0.138	0.997	0.006	0.096	0.001	0.0002	0.0001	0.263	5.455	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B#6-13

LOCATION: Nepisiquit River at Bridge Near N.L.U. Mine.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	13.3
2. pH .....	7.2
3. Total Hardness mg/L .....	16.8
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units.....	0.56

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PHYSICAL FACTORS

1. Depth cm .....	150
2. Substrate .....	Bedrock, sand, silt.
3. Velocity cm/sec .....	80

BOTTOM COMMUNITY

1. Total Number/Sampler .....	87.5	
2. Total Number of Taxa .....	6	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	72
4. Second .....	Hydropsychidae .....	23
5. Third .....	Baetidae .....	2
6. Fourth .....	Simuliidae .....	1
7. Diversity .....	0.765	

CODE : B#6-13

BIOLOGICAL RESULTS

LOCATION : Nepisiquit, at Bridge Near N.L.U. Mine.

TAXA	Sampling Period		Sampling Period 24/7/72 - 1/9/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera Baetidae			2	2	2	2
Trichoptera Hydropsychidae Philopotamidae			20 0.5	23 0.5	20 0.5	23 .5
Diptera Tendipedidae Simuliidae			63.5 1	72 1	63.5 1	72 1
Annelida Oligochaeta			0.5	0.5	0.5	0.5
<b>TOTAL</b>			<b>87.5</b>		<b>87.5</b>	

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

MINE WATER QUALITY

TABLE 13 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-14

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No sample collected.													
May 25	5.5		6.50		6.3	9.2	0.009	0.043	0.002			0.43	100	
June 13	10		6.75		6.8	12.7	0.009	0.2	<0.002			0.64	100	
July 5	13		6.40		6.9	16.6	0.009	0.175	0.005			0.50	50	99.0
July 27	15		7.60		7.1	19.2	0.002	0.10	0.002			0.19	100	
Aug. 17	14		6.60		7.1	19.4	0.002	0.20	<0.002			0.34	90	
Sept. 5	15		7.40		7.2	18.3	0.023	0.1	0.007			0.68	100	
Sept. 28	9		7.00		7.1	16.6	0.006	0.10	0.002			0.31	100	
Oct. 17	5		6.60		6.5	16.3	0.008	0.25	0.004			0.61	100	
Nov. 7	0		6.00		6.7	14.9	<0.002	0.10	<0.002			0.17	100	
Nov. 21	0		6.62		6.1	19.1	0.057	1.125	0.010			2.93	100	
$\bar{x}$	8.650		6.747		6.780	16.230	0.013	0.239	0.004			0.680	94.000	
S.D.	5.803		0.473		0.377	3.254	0.017	0.318	0.003			0.811	15.776	
S.E.	1.835		0.150		0.119	1.029	0.005	0.100	0.001			0.256	4.989	

ATLANTIC REGION

MINE WATER QUALITY

TABLE 14 COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT) STATION B#6-15

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	No sample collected.													
May 25	5		6.50		6.1	9.7	0.01	0.043	0.003			0.46		
June 13	10		6.60		6.4	14.6	0.007	0.09	<0.002			0.34		
July 5	13		6.50		6.6	14.7	0.006	0.083	0.005			0.31		
July 27	15		7.40		7.1	17.5	0.005	0.10	<0.002			0.27		
Aug. 17	14		6.62		7.3	18.3	0.002	0.10	<0.002			0.20		
Sept. 5	15		6.60		6.8	19.3	0.02	0.15	0.01			0.66		
Sept. 28	9		7.00		6.8	18.8	0.002	0.072	0.004			0.16		
Oct. 17	5		7.80		6.4	15.9	0.004	0.007	0.004			0.12		
Nov. 7	1		7.60		6.7	14.1	< 0.002	0.055	<0.002			0.15		
Nov. 21	0		6.45		6.3	15.8	0.025	0.50	0.003			1.46		
$\bar{x}$	8.700		6.907		6.650	15.870	0.008	0.120	0.004			0.413		
S.D	5.677		0.510		0.369	2.850	0.008	0.139	0.002			0.403		
S.E	1.795		0.161		0.117	0.901	0.003	0.044	0.001			0.127		

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

EPG-1103

TABLE 15		COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)										STATION B#6-17		
DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT-50 hrs.
May 2	2		6.32		6.2	14.0	0.050	0.625	0.006			2.50	100	
May 25	5		6.30		6.3	9.7	0.015	0.071	0.005			0.70	100	
June 13	10		6.72		7.0	13.0	0.034	0.3	0.6			2.28	100	
July 5	12		7.50		7.1	27.7	0.009	0.175	0.005			0.36	100	
July 27	16		7.50		7.3	19.3	0.005	0.10	0.002			0.26	100	
Aug. 17	15		7.40		7.0	19.7	0.003	0.13	0.004			0.26	100	
Sept. 5	16		7.35		6.8	864.7	0.02	0.5	0.0245			0.07	100	
Sept. 28	9		7.30		6.9	18.6	0.003	0.10	0.004			0.22	100	
Oct. 17	5		6.70		6.6	16.3	0.010	0.70	0.004			1.39	100	
Nov. 7	1		6.20		6.8	14.9	<0.002	0.094	<0.002			0.22	100	
Nov. 21	0		6.52		6.4	18.8	0.04	1.05	0.004			2.47	100	
$\bar{x}$	8.273		6.892		6.764	94.245	0.017	0.350	0.060			0.975	100.000	
S.D.	6.035		0.523		0.350	255.573	0.017	0.326	0.179			0.994	0.000	
S.E.	1.820		0.158		0.106	77.058	0.005	0.098	0.054			0.300	0.000	

MINE WATER QUALITY



TABLE 16  
COMPANY  
BRUNSWICK MINING & SMELTING CO.  
LTD. (NO. 6 PIT)

STATION

B#6-16

MINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
19 72														
May 2	2		6.0		6.5	308.0	0.02	0.25	0.004			0.10		
May 25	6		6.50		6.4	15.8	0.008	0.083	0.002			0.34		
June 13	10		6.50		6.7	232.4	0.01	0.1	0.002			0.06		
July 5	14		7.25		7.1	49.0	0.011	0.175	0.008			0.25		
July 27	16		7.20		7.1	36.9	0.017	0.10	<0.002			0.31		
Aug. 17	17		6.52		6.7	947	0.002	0.095	0.002			0.01		
Sept. 5	17		6.55		6.7	20.4	0.023	0.15	0.01			0.70		
Sept. 28	9		6.63		7.3	811	0.003	0.092	0.002			0.01		
Oct. 17	6		7.05		7.0	1060	0.004	0.083	0.004			0.01		
Nov. 7	1		7.30		6.6	453	0.015	0.125	0.003			0.04		
Nov. 21	0		6.55		6.5	281	0.034	0.75	0.007			0.28		
$\bar{x}$	8.909		6.732		6.782	383.136	0.013	0.182	0.004			0.192		
SD	6.441		0.409		0.296	387.411	0.010	0.195	0.003			0.213		
SE	1.942		0.123		0.089	116.809	0.003	0.059	0.001			0.064		

MINE WATER QUALITY

TABLE 17		COMPANY BRUNSWICK MINING & SMELTING CO. LTD. (NO. 6 PIT)					STATION B#6-18						
DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 2	4		7.10	6.7	338.0	0.025	0.25	0.004			0.11		
May 25	6		6.40	6.3	21.7	0.006	0.053	0.002			0.19		
June 13	12		6.65	6.9	669.9	0.09	0.1	0.002			0.02		
July 5	19		7.40	6.5	68.4	0.014	0.175	0.009			0.23		
July 27	17		7.10	6.9	71.2	0.009	0.10	0.002			0.13		
Aug. 17	17		6.95	6.4	775	0.003	0.010	0.02			0.00		
Sept. 5	17		6.58	6.8	734	0.016	0.1	0.01			0.03		
Sept. 28	10		6.95	6.6	450	0.006	0.095	0.004			0.03		
Oct. 17	7		7.15	6.7	1460	0.003	0.083	0.007			0.01		
Nov. 7	4		6.95	6.8	940	0.015	0.09	0.005			0.02		
Nov. 21	1		6.70	6.6	226	0.036	0.75	0.010			0.35		
$\bar{x}$	10.364		6.903	6.655	523.109	0.013	0.164	0.007			0.101		
SD	6.392		0.292	0.197	443.995	0.010	0.204	0.005			0.114		
S.E.	1.927		0.088	0.059	133.869	0.003	0.061	0.002			0.034		

BRUNSWICK MINING & SMELTING CO. LTD.  
(No. 12 Operation)

MINE: Brunswick Mining & Smelting Co. Ltd.

AREA CODE: "B"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
B-4		Outfall from last tailings pond.	65°52'31"	47°27'30"
B-5		Outfall from biological treatment pond before neutralization.	65°51'36"	47°27'32"
B-9		Outfall from final treatment pond at Dam #3.	65°51'44"	47°27'25"
B-6	* Cd EM	South Little River at Theriault Road bridge.	66°03'24"	47°31'08"
B-7	* Cd EM	Little River at Theriault Road. (Control).	66°03'28"	47°31'30"
B-8		Little River above Bathurst, approx. 1 mile.	65°40'30"	47°35'18"

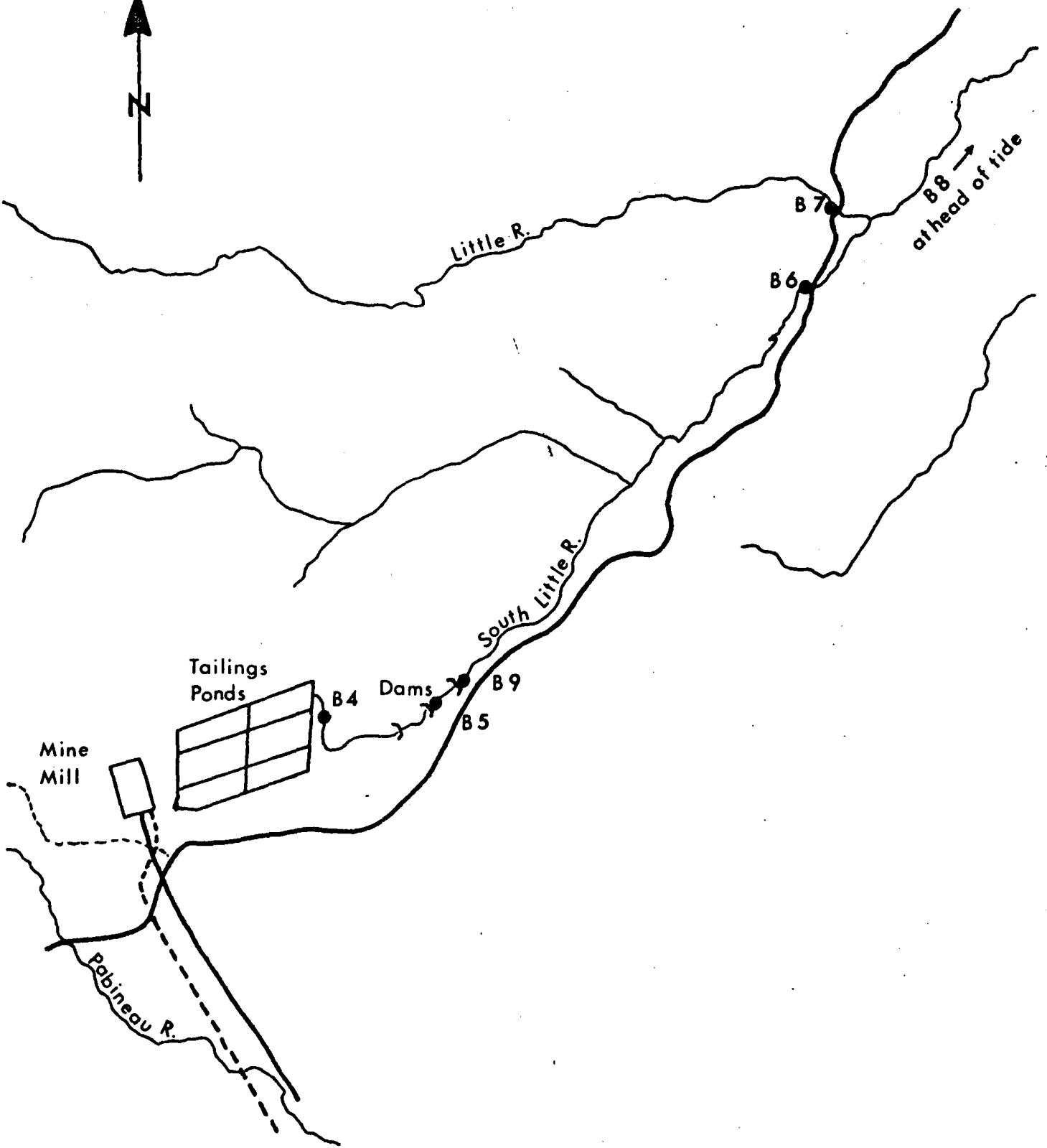
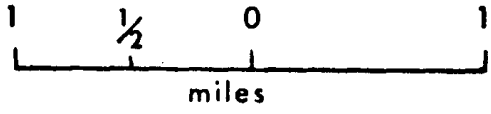
\* Bioassays performed.

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# AREA B

BRUNSWICK MINING & SMELTING CO. LTD.  
NO. 12













SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B-6

LOCATION: South Little River at Theriault Road Bridge.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	10
2. pH .....	2.9
3. Total Hardness mg/L.....	296.3
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	1.96

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PHYSICAL FACTORS

1. Depth cm .....	44
2. Substrate .....	Rock & pebble.
3. Velocity cm/sec .....	50

BOTTOM COMMUNITY

1. Total Number/Sampler .....	18.25	
2. Total Number of Taxa .....	9	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	37
4. Second .....	Heptageniidae .....	19
5. Third .....	Psychomyiidae .....	16
6. Fourth .....	Baetidae .....	11
7. Diversity .....	1.674	

CODE : B-6

BIOLOGICAL RESULTS

LOCATION : South Little River, at Theriault Road Bridge.

TAXA	Sampling Period 14/6/72 - 18/7/72		Sampling Period 18/7/72 - 22/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae			0.5	1	.25	2
Pteronarcidae			0.5	1	.25	2
Ephemeroptera						
Heptageniidae			7	20	3.5	19
Baetidae			4	11	2	11
Trichoptera						
Hydropsychidae			1.5	4	.75	4
Psychomyiidae			6	17	3	16
Limnephilidae			2	6	1	5
Diptera						
Tendipedidae	0.5	100	13	37	6.75	37
Simuliidae			0.5	1	.75	4
<b>TOTAL</b>	<b>0.5</b>		<b>35</b>		<b>18.25</b>	



SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B-7

LOCATION: Little River at Theriault Road.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	9.3
2. pH .....	6.5
3. Total Hardness mg/L .....	16.6
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.33

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PHYSICAL FACTORS

1. Depth cm.....	45
2. Substrate.....	Rock
3. Velocity cm/sec .....	15

BOTTOM COMMUNITY

1. Total Number/Sampler .....	214	
2. Total Number of Taxa .....	8	
Numerically Dominant	TAXA	% TOTAL
3. First.....	Tendipedidae .....	54
4. Second.....	Hydropsychidae .....	17
5. Third .....	Simuliidae .....	14
6. Fourth .....	Baetidae .....	8
7. Diversity .....	1.353	

BIOLOGICAL RESULTS

CODE : B-7

LOCATION : Little River, at Theriault Road.

TAXA	Sampling Period		Sampling Period 18/7/72 - 22/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera Perlodidae			3	1	3	1
Ephemeroptera Baetidae			18	8	18	8
Odonata Gomphidae.			1.5	1	1.5	1
Trichoptera Hydropsychidae			36.5	17	36.5	17
Philopotamidae			5.5	3	5.5	3
Rhyacophilidae			2	1	2	1
Diptera Tendipedidae			116.5	54	116.5	54
Simuliidae			31	14	31	14
<b>TOTAL</b>		<b>214</b>		<b>214</b>		







BURNTHILL TUNGSTEN

MINE: Burnthill Tungsten.

AREA CODE: "BT"

STATIONS:

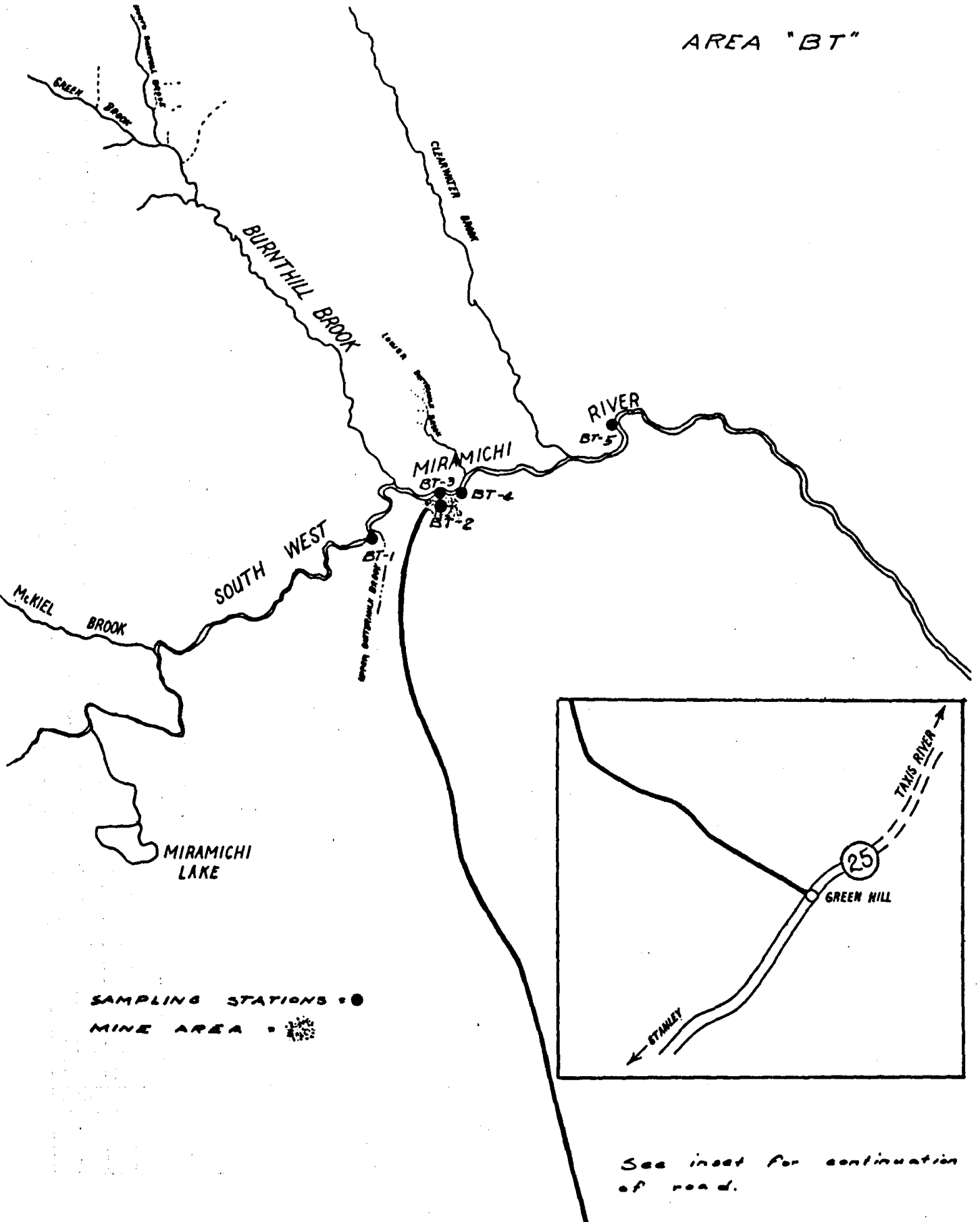
<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
BT-1	Cd EM	Right bank S.W. Miramichi River, at Protection Branch Warden's Camp, approx. 3 miles above Burnthill Mine.	66°49'46"	47°33'49"
BT-2		Outflow from Burnthill Mine settling pond at outlet.	66°48'56"	47°34'18"
BT-3		Outflow from settling pond drainage at river edge.	66°48'56"	47°34'23"
BT-4	Cd EM	Right bank S.W. Miramichi River approx. 100 yds. below Burnthill Mine settling pond outflow.	66°48'07"	47°34'09"
BT-5		Left bank S.W. Miramichi River at Rocky Bend, approx. 5 miles below Burnthill Mine area, past Rocky Brook Camps.	66°41'24"	47°36'03"

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

BURNTHILL TUNGSTEN

AREA "BT"



SAMPLING STATIONS ••

MINE AREA ••••

See inset for continuation of road.

TABLE 1  
 MINE WATER QUALITY  
 COMPANY  
 BURNTHILL TUNGSTEN  
 STATION  
 BT - 1

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOLOGICAL MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 30	12		6.73	5-6-72	6.3	9.2	0.002	0.004	<0.002	<0.0005	0.001	0.09		
June 22	15	648.0	6.65	↕	6.7	10.7	0.003	0.007	<0.002		<0.001	0.12		
July 25	16		7.65	6-7-72	7.0	13.3	0.002	<0.002	0.002	0.00018	0.001	0.06		
Aug. 29	17		6.75		7.1	15.2	<0.002	0.013	0.007	0.00009	0.001	0.08		
Oct. 3	7		6.70		6.9	16.0	<0.002	0.010	0.004	0.00059	<0.001	0.07		
Nov. 23	0		6.82		6.8	13.3	<0.002	0.050	0.027	0.001	<0.001	0.99		
$\bar{x}$	11.167		6.883		6.800	12.950	0.002	0.089	0.007	0.0005	0.002	0.235		
S.D.	6.555		0.380		0.283	2.597	0.000	0.201	0.010	0.0004	0.002	0.370		
S.E.	2.676		0.155		0.115	1.060	0.000	0.082	0.004	0.0002	0.001	0.151		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : BT-1  
LOCATION: South West Miramichi Approx. 3 Miles Above  
Burnthill Mine.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	12.8
2. pH .....	7.0
3. Total Hardness mg/L .....	13.3
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.09

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PHYSICAL FACTORS

1. Depth cm .....	150
2. Substrate .....	Bedrock & large boulders.
3. Velocity cm/sec .....	25

BOTTOM COMMUNITY

1. Total Number/Sampler .....	30.5	
2. Total Number of Taxa .....	10	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	62
4. Second .....	Baetidae .....	11
5. Third .....	Heptageniidae .....	10
6. Fourth .....	Ancylidae .....	6
7. Diversity .....	1.351	

CODE : BT-1

BIOLOGICAL RESULTS

LOCATION : South West Miramichi, approx. 3 Miles Above Burnthill Mine.

TAXA	Sampling Period 5/6/72 - 6/7/72		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Heptageniidae	3	10			3	10
Baetidae	3.5	11			3.5	11
Trichoptera						
Hydropsychidae	0.5	2			0.5	2
Diptera						
Tendipedidae	19	62			19	62
Rhagionidae	0.5	2			0.5	2
Annelida						
Oligochaeta	0.5	2			0.5	2
Gastropoda						
Ancyliidae	2	6			2	6
Viviparidae	0.5	2			0.5	2
Pelecypoda						
Anodontinae	0.5	2			0.5	2
Turbellaria						
Planariidae	0.5	2			0.5	2
<b>TOTAL</b>	<b>30.5</b>				<b>30.5</b>	

TABLE 2 COMPANY BURNTHILL TUNGSTEN STATION BT - 2  
 MINE WATER QUALITY

DATE	TEMP ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
19 Z2														
May 30	19		3.68		3.8	39	0.039	0.4	0.017			0.84		
June 22	20	0.05	3.80		3.8	37.2	0.035	0.25	0.018			0.68		
July 25	20	0.05	3.70		3.8	46.7	0.021	0.15	0.018			0.34		
Aug. 29	21	0.02	3.80		3.7	79.0	0.015	0.325	0.019			0.32		
Oct. 3	10	0.07	4.00		3.9	69.3	0.048	0.60	0.024			0.78		
Nov. 23	0	0.10	4.35		3.8	43.9	0.027	0.25	0.031			0.52		
$\bar{x}$	15.000	0.058	3.888		3.800	52.517	0.031	0.329	0.021			0.580		
SD	8.390	0.029	0.253		0.063	17.369	0.012	0.157	0.005			0.222		
SE	3.425	0.013	0.103		0.026	7.091	0.005	0.064	0.002			0.091		

TABLE 3	COMPANY BURNHILL TUNGSTEN	STATION BT - 3
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MINE WATER QUALITY

DATE	TEMP °C	FLOW c.ft.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 30	17	0.24	3.40		3.6	56.0	0.071	0.4	0.017			0.91		
June 22	20	0.06	3.75		3.6	52.9	0.061	0.2	0.015			0.70		
July 25	20	0.04	3.70		3.9	4017	0.028	0.10	0.012			0.41		
Aug. 29	20	0.02	3.90		3.8	65.2	0.015	0.10	0.012			0.19		
Oct. 3	8	0.24	4.20		4.0	68.0	0.034	0.03	0.012			0.46		
Nov. 23	0		4.10		3.9	46.7	0.038	0.225	0.015			0.57		
$\bar{x}$	14.167	0.120	3.842		3.800	54.917	0.041	0.176	0.014			0.540		
SD	8.353	0.110	0.291		0.167	10.505	0.021	0.131	0.002			0.249		
SE	34.0	0.049	0.119		0.068	4.289	0.009	0.054	0.001			0.102		



MINE WATER QUALITY

TABLE 4		COMPANY BURNTHILL TUNGSTEN										STATION BT - 4		
DATE 1972	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 30	14		6.62	5-6-72	6.4	9.3	<0.002	0.004	0.002	<00005	<0.001	0.09		
June 22	16		6.70	↑ 6-7-72	6.9	11.0	0.002	0.009	< 0.002		<0.001	0.09		
July 25	18		7.16		6.7	13.6	<0.002	<0.002	<0.002	.00005	<0.001	0.06		
Aug. 29	16		6.70		6.6	15.5	<0.002	0.015	0.005	.00057	0.003	0.08		
Oct. 3	7		6.50		6.6	15.5	<0.002	0.02	0.004	.00078	0.001	0.09		
Nov. 23	0		6.72		5.8	13.0	<0.002	0.035	0.004	.00061	<0.001	0.13		
$\bar{x}$	11.833		6.733		6.500	12.983	0.002	0.014	0.003	0.0005	0.001	0.090		
SD	6.940		0.224		0.379	2.472	0.000	0.012	0.001	0.0003	0.001	0.023		
SE	2.833		0.092		0.155	1.009	0.000	0.005	0.001	0.0002	0.000	0.009		

## SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : BT-4

LOCATION: South West Miramichi River, just Below  
Burnthill Outflow.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	13
2. pH .....	6.7
3. Total Hardness mg/L .....	12.8
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.08

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### PHYSICAL FACTORS

1. Depth cm .....	120
2. Substrate .....	Boulders, rock & sand.
3. Velocity cm/sec .....	33

### BOTTOM COMMUNITY

1. Total Number/Sampler .....	25	
2. Total Number of Taxa .....	5	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Phryganeidae .....	36
4. Second .....	Baetidae .....	40
5. Third .....	Heptageniidae .....	12
6. Fourth .....	Rhagionidae .....	8
7. Diversity .....	1.318	

CODE : BT-4

BIOLOGICAL RESULTS

LOCATION : South West Miramichi River, just Below Burnthill Mine Outflow.

TAXA	Sampling Period 5/6/72 - 6/7/72		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	10	40			10	40
Heptageniidae	3	12			3	12
Trichoptera						
Phryganeidae	9	36			9	36
Diptera						
Tendipedidae	1	4			1	4
Rhagionidae	2	8			2	8
<b>TOTAL</b>	<b>25</b>				<b>25</b>	

ATLANTIC REGION

MINE WATER QUALITY

TABLE 5	COMPANY BURNTHILL TUNGSTEN	STATION BT - 5
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DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 30	11		6.55		6.4	7.1	0.005	0.005	<0.002			0.24		
June 22	16	780.0	6.65		6.7	10.1	0.003	0.009	<0.002			0.13		
July 25	15		7.40		6.9	11.8	<0.002	<0.002	<0.002			0.07		
Aug. 29	15		6.70		6.7	12.1	<0.002	0.013	0.004			0.09		
Oct. 3	7		6.60		6.5	12.5	<0.002	0.010	0.002			0.08		
Nov. 23	0		6.80		6.1	13.3	<0.002	0.018	0.004			0.09		
̄x	10.667		6.783		6.550	11.150	0.003	0.010	0.003				0.117	
S.D.	6.218		0.314		0.281	2.248	0.001	0.006	0.001				0.064	
S.E.	2.539		0.128		0.115	0.918	0.000	0.002	0.000				0.026	

CHESTER MINES LTD.

MINE: Chester Mines Ltd.

AREA CODE: "C"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
C-1		Clearwater Stream, above mine property.	66°14'06"	47°06'34"
C-2		Clearwater Stream, below mine property.	66°13'09"	47°04'55"
C-3	Cd	Effluent drainage from open pit area.	66°13'14"	47°05'30"
C-4		Sheephouse Brook above mine property.	66°12'48"	47°08'28"
C-5		Sheephouse Brook below mine property.	66°10'36"	47°06'24"
C-6	* Cd EM	South Sevogle River, above mouth Clearwater Stream.	66°10'54"	47°03'16"
C-7		South Sevogle River, below mouth Clearwater Stream, above Sheephouse Brook.	66°11'44"	47°03'36"
C-8	* Cd EM	South Sevogle River, below mouth Sheephouse Brook.	65°57'43"	47°04'43"

\* Bioassays performed.

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# CHESTER MINES LTD

## AREA "C"

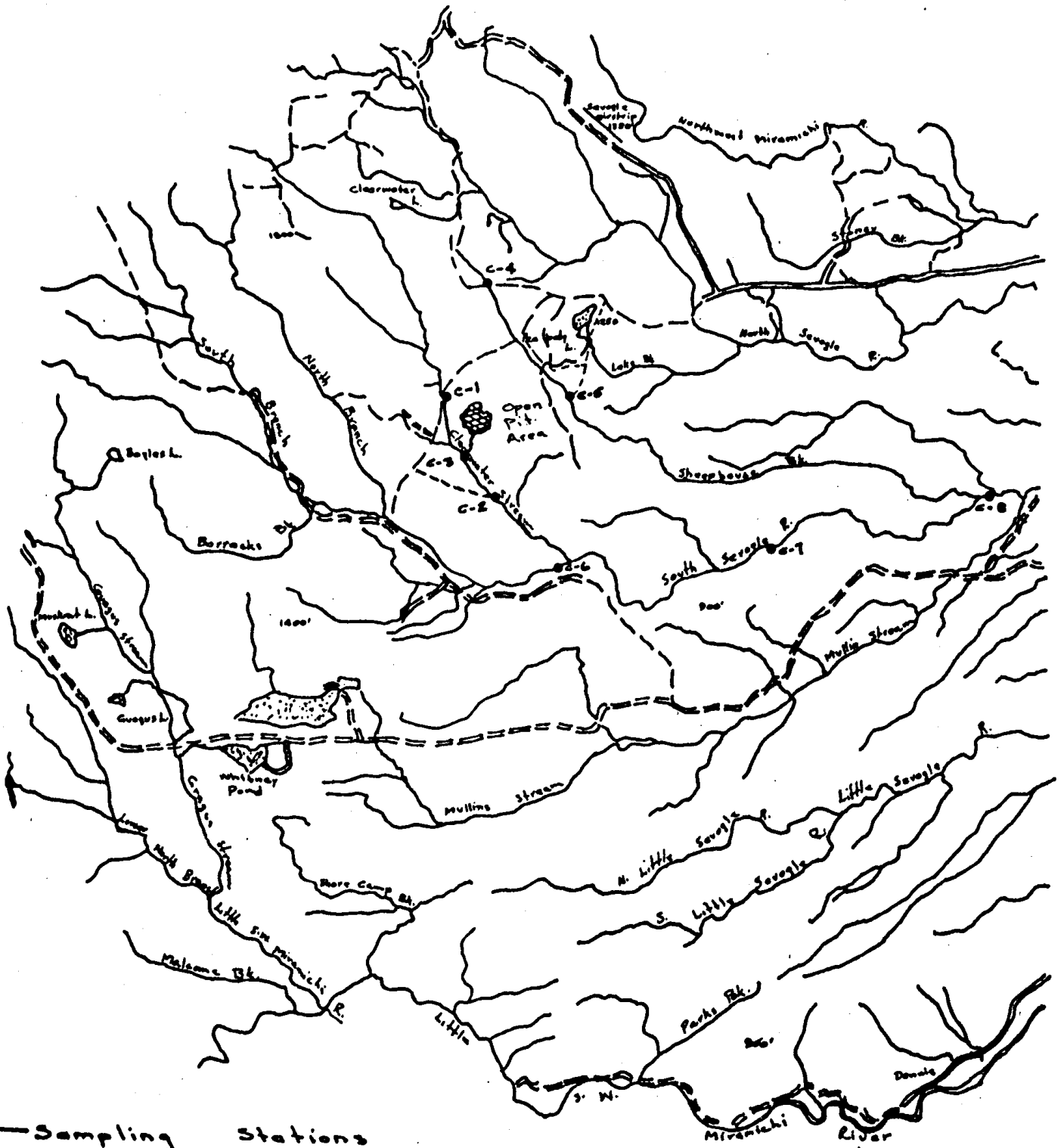


TABLE  
1COMPANY  
CHESTER MINES LTD.STATION  
C - 1

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 15	13	158.0	7.10		7.1	18.4	0.01	0.035	<0.002			0.28		
June 29	11	140.0	6.71		7.2	19.6	<0.002	0.003	<0.002			0.05		
Aug. 1	12	40.0	6.50		7.4	22.0	<0.002	0.02	<0.002			0.07		
Sept. 12	10	106.0	6.55		7.1	21.8	0.009	0.1	0.005			0.32		
X̄	11.500	111.000	6.715		7.200	20.450	0.006	0.040	0.003			0.180		
S.D.	1.291	52.013	0.272		0.141	1.746	0.004	0.042	0.002			0.140		
S.E.	0.645	26.006	0.136		0.071	0.873	0.002	0.021	0.001			0.070		



TABLE 2 COMPANY CHESTER MINES LTD. STATION C - 2

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	IT 50 hrs.
19 72														
June 15	13	198.0	6.95		7.6	16.2	0.017	0.062	0.008			0.53		
June 29	11	60.0	6.60		7.0	18.6	0.014	0.078	0.016			0.44		
Aug. 1	13	36.0	6.40		7.1	20.5	0.032	0.10	0.021			0.82		
Sept. 12	10	217.4	6.90		7.2	20.0	0.077	0.10	0.03			1.78		
Σ	11.750	105.350	6.713		7.225	18.825	0.035	0.085	0.019			0.893		
S.D.	1.500	72.884	0.259		0.263	1.926	0.029	0.019	0.009			0.613		
S.E.	0.750	36.442	0.130		0.131	0.963	0.015	0.009	0.005			0.307		

(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

TABLE 3 COMPANY CHESTER MINES LTD. STATION C - 3

PAINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC Units	SURVIVAL %	LT 50 hrs.
June 15 1972	19	0.33	3.00	.	3.2	17.4	3.0	10.0	2.5	.00005	0.005	88.64		
June 29	17	0.06	3.40		3.2	21.4	3.0	11.0	30.0	.00005	0.004	105.23		
Aug. 1	16	0.20	2.90		3.0	23.5	5.0	26.0	3.3	.00088	0.001	128.6		
Sept. 12	11	0.20	3.35		3.2	17.2	3.3	13.5	2.3	.00005	0.002	101.45		
$\bar{x}$	15.750	0.198	3.163		3.150	19.875	3.575	15.125	9.525	0.0003	0.003	105.980		
S.D.	3.403	0.110	0.250		0.100	3.096	0.960	7.398	13.547	0.0004	0.002	16.668		
S.E.	1.702	0.055	0.125		0.050	1.548	0.480	3.699	6.838	0.0002	0.001	8.334		

TABLE 4		COMPANY CHESTER MINES LTD.								STATION C - 4				
DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOLOGICAL MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
19 72														
June 15	13	9.1	6.60		6.7	14.3	0.008	0.023	<0.002			0.26		
June 29	12	7.0	6.80		6.7	15.9	0.002	0.036	0.004			0.11		
Aug. 1	14	1.0	6.40		7.0	18.6	0.009	0.033	0.002			0.25		
Sept. 12	10	15.0	6.52		6.5	17.6	0.009	0.028	0.007			0.26		
$\bar{x}$	12.250	8.025	6.580		6.725	16.600	0.007	0.030	0.004			0.220		
S.D.	1.708	5.779	0.168		0.206	1.896	0.003	0.006	0.002			0.073		
S.E.	0.854	2.890	0.084		0.103	0.948	0.002	0.003	0.001			0.037		

LAKE WATER QUALITY

TABLE 5 COMPANY CHESTER MINES LTD. STATION C - 5

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 15 72	13	14.5	6.85		6.7	14.3	0.003	0.018	<0.002			0.11		
June 29	12	11.6	6.78		6.9	16.2	<0.002	0.018	0.002			0.08		
Aug. 1	14	1.0	6.50		7.1	18.3	0.002	0.025	0.002			0.08		
Sept. 12	10	16.8	6.60		6.6	18.0	0.002	0.012	0.005			0.07		
$\bar{x}$	12.250	10.975	6.683		6.825	16.700	0.002	0.018	0.003			0.085		
S.D.	1.708	6.982	0.161		0.222	1.849	0.001	0.005	0.002			0.017		
S.E.	0.854	3.491	0.080		0.111	0.925	0.000	0.003	0.001			0.009		

TABLE 6 COMPANY CHESTER MINES LTD. N STATION C - 6

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 15 19 72	10	197.0	6.70	15-6-72 ↑	6.6	6.4	0.007	0.013	<0.002	.00005	<0.001	0.37	100	
June 29	13	86.4	7.00	↓	7.0	10.0	<0.002	0.003	0.002	.00005	<0.001	0.08	*70	
Aug. 1	14	130.0	6.70	26-7-72	6.8	11.5	0.005	0.033	0.002	.00025	<0.001	0.29	100	
Sept. 12	10	155.3	6.95		7.0	12.0	<0.002	0.017	0.005	.00016	<0.001	0.10	100	
̄	11.750	142.175	6.838		6.850	9.975	0.004	0.017	0.003	0.00013	0.001	0.210	100.000	
S.D.	2.062	46.322	0.160		0.191	2.530	0.002	0.012	0.002	0.00010	0.000	0.143	0.000	
S.E.	1.031	23.161	0.080		0.096	1.265	0.001	0.006	0.001	0.00005	0.000	0.071	0.000	

AQUE WATER QUALITY

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : C-6

LOCATION: South Sevogle River Above Mouth of Clearwater Stream.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	11
2. pH.....	6.8
3. Total Hardness mg/L .....	10.0
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units.....	0.25

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PHYSICAL FACTORS

1. Depth cm .....	55
2. Substrate .....	Rock & sand.
3. Velocity cm/sec .....	76.6

BOTTOM COMMUNITY

1. Total Number/Sampler .....	25	
2. Total Number of Taxa .....	5	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	60
4. Second .....	Tipulidae .....	16
5. Third .....	Limnephilidae .....	12
6. Fourth .....	Heptageniidae .....	8
7. Diversity .....	1.184	

CODE : C-6

BIOLOGICAL RESULTS

LOCATION : South Sevogle River, Above Mouth of Clearwater Stream.

TAXA	Sampling Period 15/6/72 - 26/7/72		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	1	4			1	4
Heptageniidae	2	8			2	8
Trichoptera						
Limnephilidae	3	12			3	12
Diptera						
Tendipedidae	15	60			15	60
Tipulidae	4	16			4	16
<b>TOTAL</b>	<b>25</b>				<b>25</b>	

TABLE 7

COMPANY

CHESTER MINES LTD.

STATION

C - 7

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/c	LT 50 hrs.
19 72														
June 15	10	200.0	6.72		6.8	8.6	0.002	0.014	0.002			0.11		
June 29	14	273.0	6.78		6.8	9.3	0.002	0.025	0.009			0.14		
Aug. 1	15		6.60		6.8	11.5	0.005	0.024	0.002			0.22		
Sept. 12	11	257.6	7.00		6.6	16.3	0.009	0.023	0.007			0.27		
$\bar{x}$	12.500	243.533	6.775		6.750	11.425	0.005	0.023	0.005			0.185		
S.D.	2.380	38.479	0.168		0.100	3.477	0.003	0.006	0.004			0.073		
S.E.	1.190	22.216	0.084		0.050	1.738	0.002	0.003	0.002			0.037		



AIR WATER QUALITY

DATE	TEMP. ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	IT 50 hrs.
June 15	No sample.	Bridge out, too deep to wade.												
June 29	14	416.0	7.10		6.7	10.2	0.002	0.024	0.004	<0.001	<0.001	0.12	*Zero	44.0
Aug. 1	16		6.55		6.8	11.5	0.002	0.048	0.005	.00018	0.002	0.16	100	
Sept. 12	11		7.10		7.0	11.5	0.005	0.023	0.007	.0001	0.001	0.21	100	
$\bar{x}$	13.667		6.917		6.833	11.067	0.003	0.032	0.005	0.0004	0.001	0.163	100.000	
S.D.	2.517		0.318		0.153	0.751	0.002	0.014	0.002	0.0005	0.001	0.045	0.000	
S.E.	1.453		0.183		0.088	0.433	0.001	0.008	0.001	0.0003	0.000	0.026	0.000	



COPPERFIELDS MINING CORP.

MINE: Copperfields Mining Corp.

AREA CODE: "CMC"

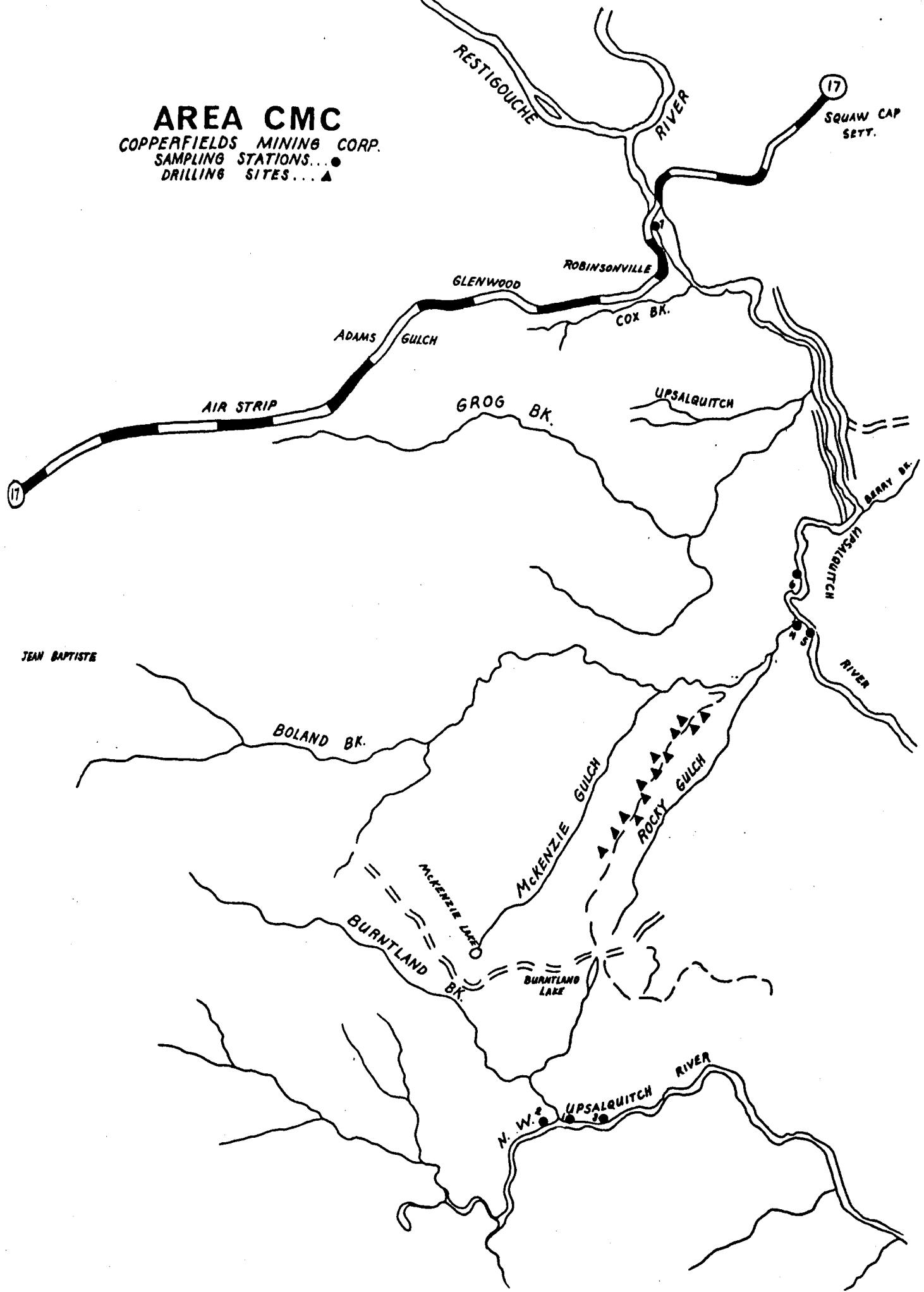
STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
CMC-1		Burntland Brook, mouth, at N.W. Upsalquitch River	66°58'36"	47°38'54"
CMC-2	EM.	N.W. Upsalquitch River, above mouth of Burntland Brook.	66°58'50"	47°38'50"
CMC-3		N.W. Upsalquitch River, below mouth of Burntland Brook.	66°58'04"	47°38'54"
CMC-4		Boland Brook, mouth, at Upsalquitch River.	66°53'41"	47°46'36"
CMC-5		Upsalquitch River, above mouth of Boland Brook.	66°53'10"	47°46'04"
CMC-6	Cd EM	Upsalquitch River, below mouth of Boland Brook.	66°56'54"	47°47'03"
CMC-7		Upsalquitch River, at Robinsonville, at bridge	66°56'54"	47°52'28"

Cd - Cadmium analyses.

EM -Ecological Monitoring Station.

**AREA CMC**  
COPPERFIELDS MINING CORP.  
SAMPLING STATIONS...●  
DRILLING SITES...▲



(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

ARISE WATER QUALITY

TABLE 1 COMPANY STATION  
COPPERFIELDS MINING CORP. CMC - 1

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 13 19 72	16	4.55	7.90	.	7.8	67	0.004	0.002	0.005			0.05		
Aug. 24	17	8.3	7.90		8.0	65.2	<0.002	<0.002	0.004			0.02		
Oct. 26	4	16.0	6.70		7.6	63.2	<0.002	<0.002	0.004			0.02		
̄x	12.333	9.617	7.500		7.800	65.113	0.003	0.009	0.004			0.030		
S.D.	7.234	5.837	0.603		0.200	1.901	0.001	0.012	0.001			0.017		
S.E.	4.117	3.370	0.400		0.115	1.097	0.001	0.007	0.000			0.010		

TABLE 2 COMPANY COPPERFIELDS MINING CORP. STATION CMC - 2

APNE WATER QUALITY

DATE	TEMP ° C	FLOW c.f.s.	pH field	BIOL MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 irs.
July 13 1972	15	48.75	8.15		7.8	95.9	0.004	0.012	0.005			0.03		
Aug. 24	20	32.5	7.80		8.1	66.1	<0.002	<0.002	0.0035			0.02		
Oct. 26	4	168.0	6.80		7.8	61.1	<0.002	<0.002	0.003			0.02		
$\bar{X}$	13.000	83.083	7.583		7.900	74.367	0.003	0.005	0.004			0.023		
S.D.	8.185	73.987	0.701		0.173	18.815	0.001	0.006	0.001			0.006		
S.E.	4.726	42.717	0.404		0.100	10.863	0.001	0.003	0.001			0.003		







TABLE	5	COMPANY	Copperfields Mining Corp.	STATION	CMC - 5
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ARISE WATER QUALITY

DATE	TEMP. ° C	FLOW cfs.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 lvs.
July 12	15		7.88	.	7.8	72.2	<0.002	0.008	0.002			0.02		
Aug. 24	15		7.30		8.2	82.3	<0.002	<0.002	0.006			0.02		
Oct. 26	4		7.42		7.4	65.2	<0.002	0.010	0.004			0.02		
$\bar{x}$	11.333		7.533		7.800	73.233	0.002	0.007	0.004			0.020		
S.D.	6.351		0.306		0.400	8.597	0.000	0.004	0.002			0.000		
S.E.	3.667		0.177		0.231	4.963	0.000	0.002	0.001			0.000		



MINE WATER QUALITY

TABLE 7	COMPANY Copperfields Mining Corp.	STATION CMC - 7
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DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 12	17		7.60		7.8	74.7	0.007	0.03	0.005			0.07		
Aug. 24	14		7.30		7.8	79.8	<0.002	0.008	0.0035			0.02		
Oct. 26	4		7.50		7.5	72.3	<0.002	0.008	0.003			0.02		
$\bar{x}$	11.667		7.467		7.700	75.600	0.004	0.015	0.0038			0.037		
S.D.	6.807		0.153		0.173	3.830	0.003	0.013	0.0010			0.029		
S.E.	3.930		0.088		0.100	2.211	0.002	0.007	0.0006			0.017		

HEATH STEELE MINES LIMITED

MINE: Heath Steele Mines Limited

AREA CODE: "H"

STATIONS:

<u>Station No.</u>	<u>Special Analyses.</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
H-3	* Cd	South Tomogonops River, below tailings pond at Newcastle Road.	66°02'03"	47°30'21"
H-4		Clean water channel, above "A" pit.	66°05'13"	47°32'11"
H-10A		Clean water channel, diversion to Little South Tomogonops.	66°03'18"	47°32'20"
H-12	Cd	Little South Tomogonops above mine property.	66°04'26"	47°33'10"
H-13		Little South Tomogonops below adit.	66°03'06"	47°32'16"
H-16		Little South Tomogonops, at O'Brien's camp.	66°01'25"	47°32'19"
H-17	* Cd	Tomogonops River, at mouth.	65°50'30"	47°29'29"
H-18	* EM	N.W. Miramichi, above mouth of Tomogonops.	65°50'39"	47°29'24"
H-19	*	N.W. Miramichi, above mouth of Tomogonops, at Payne (Miner's) Bridge.	65°53'54"	47°26'18"
H-20		Little River, one mile upstream of mouth, above mouth of Tomogonops.	65°54'47"	47°26'19"
H-21	* EM	N.W. Miramichi, below mouth of Tomogonops, at Wayerton Bridge.	65°51'00"	47°23'04"
H-22		North Branch Tomogonops, above mine property, (control).	66°04'06"	47°34'15"

\* Bioassays performed.

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# AREA H

HEATH STEELE MINES LTD.  
16 SAMPLING STATIONS

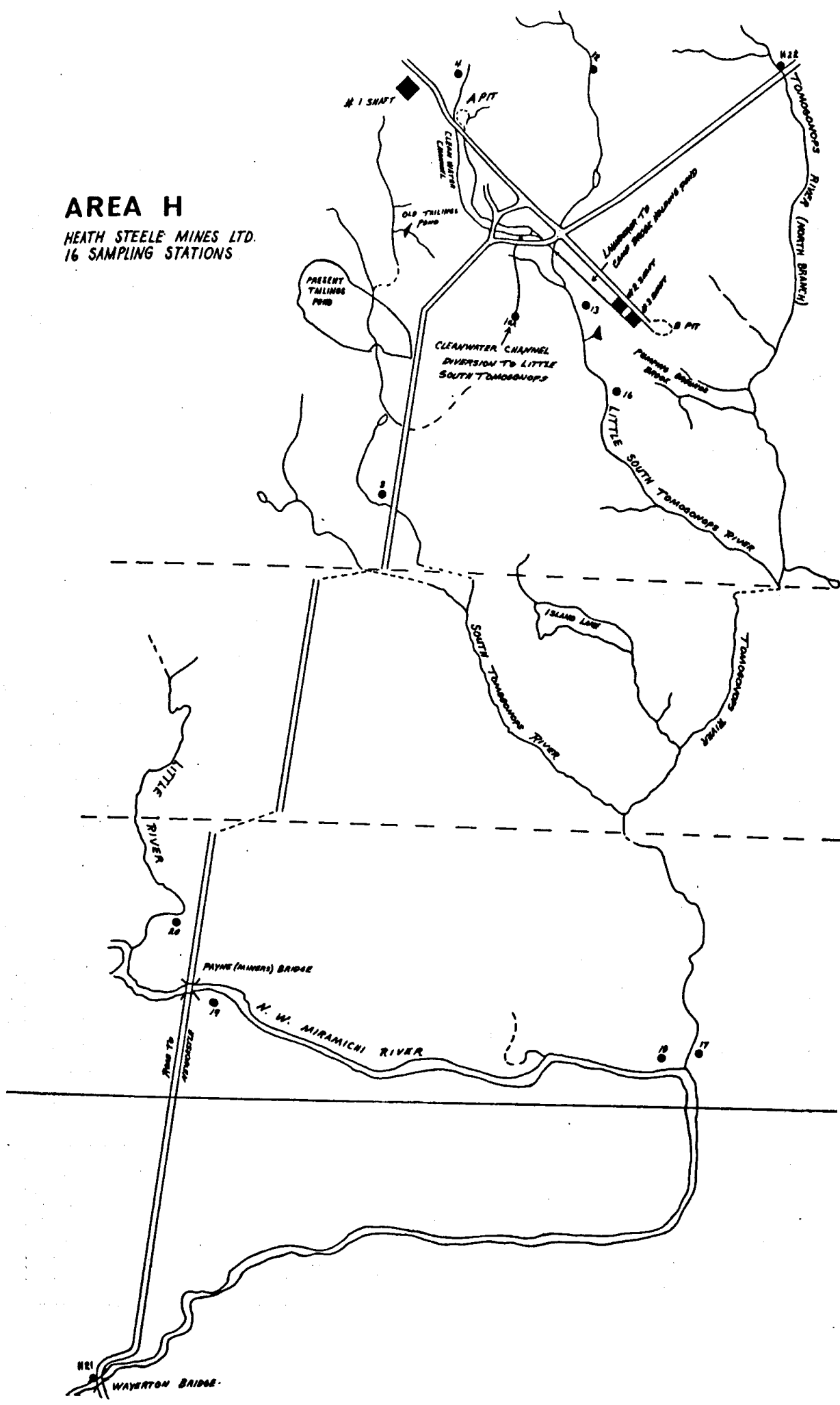


TABLE 1 COMPANY: HEATH STEELE MINES LTD. STATION H - 3

DATE 19__72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1	15	57.6	9.80		9.0	372	0.01	0.046	0.038	0.0002	0.001	0.03	100	
July 11	15	25.2	6.82		6.2	427.3	0.008	0.08	0.007	.00015	<0.001	0.03	100	
Aug. 22	15	7.9	6.80		7.1	384	<0.002	0.091	0.006	<.0005	<0.001	0.02	100	
Sept. 19	11	9.25	6.65		7.3	353	0.005	0.085	0.007	.00032	0.001	0.03	100	
Nov. 1	1	41.4	7.15		6.2	691	<0.002	0.10	0.004	.00059	<0.001	0.02	100	
Nov. 20	0	18.0	7.28		5.6	375	<0.002	0.095	0.005	.0027	<0.001	0.02	100	
X̄	9.500	26.558	7.417		6.900	433.717	0.005	0.083	0.011	0.001	0.001	0.025	100.000	
SD	7.145	19.528	1.191		1.207	128.436	0.003	0.019	0.013	0.001	0.000	0.005	0.000	
SE	2.918	7.972	0.486		0.493	52.434	0.001	0.008	0.005	0.000	0.000	0.002	0.000	



TABLE	2	COMPANY	HEATH STEELE MINES LTD.	STATION	H - 4
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MINE WATER QUALITY

DATE 19 72	TEMP °C	FLOW c.ft.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1	10	3.2	5.60		5.0	5.1	0.004	0.064	0.008			0.39		
July 11	10	0.46	5.15		5.8	6.6	0.005	0.048	0.005			0.36		
Aug. 22	11	0.12	6.10		6.9	7.0	<0.002	0.021	0.006			0.15		
Sept. 19	9	0.90	6.00		6.6	6.0	0.013	0.054	0.007			0.80		
Nov. 1	1	1.04	5.40		6.1	5.7	<0.002	0.056	0.005			0.25		
Nov. 20	1	1.20	6.30		6.1	5.1	<0.002	0.35	0.004			1.03		
$\bar{x}$	7.000	1.153	5.758		6.083	5.917	0.005	0.099	0.006			0.497		
S.D.	4.690	1.079	0.445		0.663	0.778	0.004	0.124	0.001			0.343		
S.E.	1.915	0.440	0.182		0.270	0.318	0.002	0.051	0.001			0.140		

ATLANTIC REGION

TABLE 3

COMPANY  
Heath Steele Mines Ltd.

STATION

H - 10A

MINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50 hrs.
June 1	12	10.0	4.61		4.4	95.4	0.2	2.5	0.032			2.61		
July 11	14	1.8	4.45		4.3	150	0.23	2.45	0.029			1.97		
Aug. 22	14	0.22	4.50		4.4	223	0.35	3.0	0.027			1.93		
Sept. 19	9	2.90	4.00		4.0	242	0.60	9.25	0.07			4.40		
Nov. 1	0	2.60	4.50		4.4	176	0.3	1.95	0.025			1.76		
Nov. 20	0		4.50		4.2	198	0.425	2.9	0.043			2.32		
X	8.167	3.504	4.427		4.283	180.733	0.351	3.675	0.038			2.498		
S.D.	6.585	3.777	0.216		0.160	53.079	0.147	2.757	0.017			0.981		
S.E.	2.688	1.689	0.088		0.065	21.669	0.060	1.125	0.007			0.400		

TABLE 4	COMPANY Heath Steele Mines Ltd.	STATION H - 12
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DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1	13	45.4	6.30		6.0	5.0	< 0.002	0.014	0.002	<.00005	<0.001	0.15		
July 11	15	5.75	6.50		6.0	8.0	0.002	0.015	0.003	<.00005	<0.001	0.12		
Aug.22	17	1.50	6.50		6.9	9.3	<0.002	0.12	0.009	.0005	<0.001	0.34		
Sept.19	11	7.80	6.70		6.5	8.8	0.002	0.028	0.005	.00044	0.001	0.14		
Nov. 1	1	6.40	5.90		6.0	7.6	<0.002	0.026	0.003	.00053	<0.001	0.15		
Nov.20	1	2.00	5.50		5.9	7.9	0.002	0.024	0.002	.00108	<0.001	0.14		
̄	4.667	11.475	6.233		6.217	7.767	0.002	0.038	0.004	0.001	0.001	0.173		
S.D.	7.005	16.806	0.450		0.397	1.495	0.000	0.041	0.003	0.000	0.000	0.082		
S.E.	2.860	6.861	0.186		0.162	0.610	0.000	0.017	0.001	0.000	0.000	0.034		

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

MINE WATER QUALITY

TABLE	5	COMPANY HEATH STEELE MINES LTD.	STATION H - 13
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DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LI50 hrs.
June 1	14	57.6	5.71		4.9	14.1	0.056	0.6	0.011			2.61		
July 11	15	5.60	4.40		4.5	31.2	0.10	1.55	0.01			3.14		
Aug. 22	15	1.80	4.51		4.3	33.4	0.125	2.15	0.013			3.90		
Sept. 19	10	6.50	4.30		4.1	46.8	0.2	3.75	0.022			5.13		
Nov. 1	1	7.70	3.90		4.2	28.3	0.18	1.80	0.009			4.91		
Nov. 20	0		4.45		4.3	34.9	0.25	3.1	0.010			6.38		
$\bar{X}$	9.167	15.840	4.545		4.383	31.533	0.152	2.158	0.013			4.345		
6.96 S.D.	6.969	23.449	0.611		0.286	10.625	0.071	1.127	0.005			1.395		
S.E.	2.845	10.487	0.249		0.117	4.338	0.029	0.460	0.002			0.570		

TABLE 6 COMPANY: HEATH STEELE MINES LTD. STATION H - 16

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1	14	69.0	6.00		5.0	8.8	0.091	0.6	0.005			4.85		
July 11	15	8.0	4.75		4.8	30.8	0.10	1.45	0.008			3.06		
Aug. 22	16	2.4	5.00		4.8	32.7	0.10	1.8	0.009			3.29		
Sept. 19	10	20.0	4.70		4.5	44.0	0.2	2.675	0.016			4.40		
Nov. 1	1	10.1	4.35		4.8	27.0	0.18	1.225	0.005			4.40		
Nov. 20	0		5.00		4.6	34.8	0.15	2.7	0.007			4.70		
$\bar{X}$	9.333	21.990	4.967		4.750	29.683	0.137	1.742	0.008			4.117		
S.D.	7.146	27.087	0.560		0.176	11.703	0.047	0.830	0.004			0.753		
S.E.	2.917	12.113	0.229		0.072	4.778	0.019	0.334	0.002			0.308		

MINE WATER QUALITY										COMPANY HEATH STEELE MINES LTD.						STATION H - 17		
TABLE 7																		
DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.				
June 1	15	480.0	7.30		6.7	70.2	0.022	0.10	0.005	<00005	0.001	0.23	100					
July 11	15	230.0	5.70		7.0	73.8	0.016	0.17	0.003	<00005	<0.001	0.23	100					
Aug. 22	15	36.4	6.70		7.3	111	0.003	0.20	0.009	.0005	0.001	0.13	100					
Sept. 19	11	25.2	6.55		6.9	78.6	0.038	0.275	0.005		0.0015	0.43	100					
Nov. 1	0	64.0	6.55		6.5	61.6	0.022	0.15	0.004	.0015	<0.001	0.29	100					
Nov. 20	0	63.0	7.50		6.2	74.1	0.008	0.225	0.007	.00148	<0.001	0.21	100					
$\bar{x}$	9.333	149.767	6.717		6.767	78.217	0.018	0.187	0.006	0.002	0.001	0.253	100.000					
$S.D.$	7.394	178.182	0.639		0.388	17.040	0.012	0.061	0.002	0.001	0.000	0.101	0.000					
$S.E.$	3.018	72.743	0.261		0.158	6.956	0.005	0.025	0.001	0.000	0.000	0.041	0.000					

TABLE 8

COMPANY  
HEATH STEELE MINES LTD.

STATION  
H - 18

MINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	1750 hrs.
June 1	14	1000.0	7.00	1-6-72 ↕	6.8	12.0	<0.002	0.032	0.002			0.13	100	
July 11	15	192.0	7.10	5-7-72	7.1	18.0	0.004	0.011	0.003			0.11	100	
Aug. 22	16	128.0	7.10		7.4	19.0	<0.002	0.010	0.004			0.06	100	
Sept. 19	12	300.0	7.00		6.8	18.0	0.023	0.028	0.007			0.57	100	
Nov. 1	0	345.0	7.15		6.9	17.0	<0.002	0.022	0.003			0.09	100	
Nov. 20	0	260.0	7.65		6.4	18.5	<0.002	0.09	0.007			0.19	100	
$\bar{x}$	9.500	370.833	7.167		6.900	17.083	0.006	0.032	0.004			0.192	100.000	
S.D.	7.477	317.732	0.244		0.335	2.577	0.008	0.030	0.002			0.190	0.000	
S.E.	3.052	129.714	0.100		0.137	1.052	0.003	0.012	0.001			0.078	0.000	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : H-18

LOCATION: North West Miramichi, Above Mouth of Tomogonopo River.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	15
2. pH.....	7.1
3. Total Hardness mg/L .....	16.3
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units.....	0.27

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PHYSICAL FACTORS

1. Depth cm.....	40
2. Substrate .....	Bedrock
3. Velocity cm/sec .....	73

BOTTOM COMMUNITY

1. Total Number/Sampler .....	53	
2. Total Number of Taxa .....	6	
Numerically Dominant	TAXA	% TOTAL
3. First.....	Baetidae .....	41
4. Second.....	Heptageniidae .....	23
5. Third .....	Tendipedidae .....	17
6. Fourth .....	Simuliidae .....	9
7. Diversity.....	1.150	



CODE : H-18

BIOLOGICAL RESULTS

LOCATION : North West Miramichi, Above Mouth of Tomogonops River.

TAXA	Sampling Period 1/6/72 - 5/7/72		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	22	41			22	41
Heptageniidae	12	23			12	23
Trichoptera						
Hydropsychidae	3	6			3	6
Limnephilidae	2	4			2	4
Diptera						
Tendipedidae	9	17			9	17
Simuliidae	5	9			5	9
<b>TOTAL</b>	<b>53</b>				<b>53</b>	

TABLE 9  
MINE WATER QUALITY  
COMPANY  
HEATH STEELE MINES, LTD.  
STATION  
H - 19

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	1750 hrs.
June 1	13	910.8	6.75		6.5	10.0	0.004	0.007	0.005			0.16	100	
July 11	15	144.0	6.95		6.7	15.6	0.005	0.007	0.003			0.14	100	
Aug. 22	16	96.0	7.21		7.3	17.2	<0.002	0.006	0.004			0.06	100	
Sept. 19	13	280.0	6.95		7.3	15.6	0.005	0.019	0.005			0.17	100	
Nov. 1	0	260.0	6.80		6.8	14.3	<0.002	0.005	0.004			0.07	100	
Nov. 20	0	6.90	6.90		6.3	15.5	<0.002	0.005	0.002			0.06	100	
$\bar{x}$	9.500	338.160	6.927		6.817	14.700	0.003	0.008	0.004			0.110	100.000	
SD	7.450	329.298	0.161		0.412	2.480	0.002	0.005	0.001			-0.052	0.000	
SE	3.041	147.266	0.066		0.168	1.013	0.001	0.002	0.000			0.021	0.000	

TABLE		COMPANY								STATION				
10		HEATH STEELE MINES LTD.								H - 20				
DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1 15		224.0	6.30		6.6	19.2	0.005	0.014	<0.002					
July 11 14		42.0	7.00		7.3	29.2	<0.002	0.029	0.003			0.13		
Aug. 22 14		32.0	7.20		7.6	34.2	<0.002	0.069	0.006					
Sept. 19 11		68.0	7.00		7.3	30.0	<0.002	0.008	0.002			0.10		
Nov. 1 0		68.4	6.50		6.9	24.9	<0.002	0.015	0.003			0.06		
Nov. 20 0		56.0	6.90		6.6	29.8	<0.002	0.018	0.002			0.05		
$\bar{x}$	9.000	8.1733	6.817		7.050	27.883	0.003	0.026	0.003					
S.D.	7.099	71.163	0.343		0.414	5.179	0.001	0.022	0.002			0.075		
S.E.	2.898	29.052	0.140		0.169	2.114	0.001	0.009	0.001			0.034		

MINE WATER QUALITY

MINE WATER QUALITY

TABLE 11		COMPANY HEATH STEELE MINES LTD.		STATION H - 21										
DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 1	14	640.0	6.90	30-5-72 ↑	6.6	22.4	0.008	0.036	0.005			0.20	100	
July 11	16	182.0	6.82	5-7-72 ↓	7.1	27.4	0.006	0.044	0.005			0.15	100	
Aug. 22	16	241.5	7.30		7.4	33.8	<0.002	0.021	0.003			0.05	100	
Sept. 19	13	291.0	6.90		7.1	30.3	0.013	0.066	0.005			0.27	100	
Nov. 1	0	290.0	6.60		6.8	23.2	0.007	0.056	0.004			0.21	100	
Nov. 20	0		7.60		6.7	28.3	<0.002	0.029	0.003			0.07	100	
̄	9.833	328.900	7.020		6.950	27.567	0.006	0.042	0.004			0.158	100.000	
S.D.	7.705	179.549	0.363		0.302	4.305	0.004	0.017	0.001			0.085	0.000	
S.E.	3.146	80.297	0.148		0.123	1.757	0.002	0.007	0.000			0.035	0.000	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE :H-21

LOCATION: North West Miramichi, Wayerton Bridge.

WATER QUALITY

AVERAGE

1.	Water Temp. C° .....	15.3
2.	pH.....	7.0
3.	Total Hardness mg/L.....	27.8
4.	Dissolved oxygen % SAT.	
5.	Total Carbon mg/L	
6.	Organic Carbon mg/L	
7.	B.O.D.5 mgO <sub>2</sub> /L	
8.	NO <sub>3</sub> -N mg/L	
9.	Total PO <sub>4</sub> mg/L	
10.	Toxic Units.....	0.21

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PHYSICAL FACTORS

1.	Depth cm.....	38
2.	Substrate.....	Bedrock, sand, silt.
3.	Velocity cm/sec.....	70

BOTTOM COMMUNITY

1.	Total Number/Sampler .....	99
2.	Total Number of Taxa .....	6
	Numerically Dominant TAXA	% TOTAL
3.	First..... Tendipedidae .....	89
4.	Second .....	Baetidae ..... 5
5.	Third .....	Heptageniidae/Hydropsychidae.2
6.	Fourth.....	Rhagionidae/Oligochaeta.....1
7.	Diversity.....	0.459

CODE : H-21

BIOLOGICAL RESULTS

LOCATION : North West Miramichi, Wayerton Bridge.

TAXA	Sampling Period 30/5/72-5/7/72		Sampling Period		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	5	5			5	5
Heptageniidae	2	2			2	2
Trichoptera						
Hydropsychidae	2	2			2	2
Diptera						
Tendipedidae	88	89			88	89
Rhagionidae	1	1			1	1
Annelida						
Oligochaeta	1	1			1	1
<b>TOTAL</b>	<b>99</b>				<b>99</b>	

TABLE 12 COMPANY HEATH STEELE MINES LTD. STATION H - 22  
MINE WATER QUALITY

DATE	TEMP. °C	FLOW cfs.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50. hrs.
June 1	14	84.5	6.40		6.2	7.2	0.002	0.017	0.002			0.13		
July 11	15	5.25	6.60		6.8	8.9	<0.002	0.011	0.003			0.11		
Aug. 22	17	3.6	7.00		7.0	10.2	<0.002	0.017	0.006			0.11		
Sept. 19	13	7.7	6.80		6.4	10.0	0.002	0.033	0.005			0.15		
Nov. 1	1	20.2	6.52		6.3	9.0	<0.002	0.023	0.003			0.13		
Nov. 20	0	13.4	6.70		6.7	10.2	<0.002	0.017	0.003			0.11		
$\bar{x}$	10.000	22.442	6.670		6.567	9.250	0.002	0.020	0.004			0.123		
SD	7.483	31.003	0.213		0.314	1.162	0.000	0.008	0.002			0.016		
SE	3.055	12.657	0.087		0.128	0.475	0.000	0.003	0.001			0.007		

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KEEWAY MINES (abandoned)

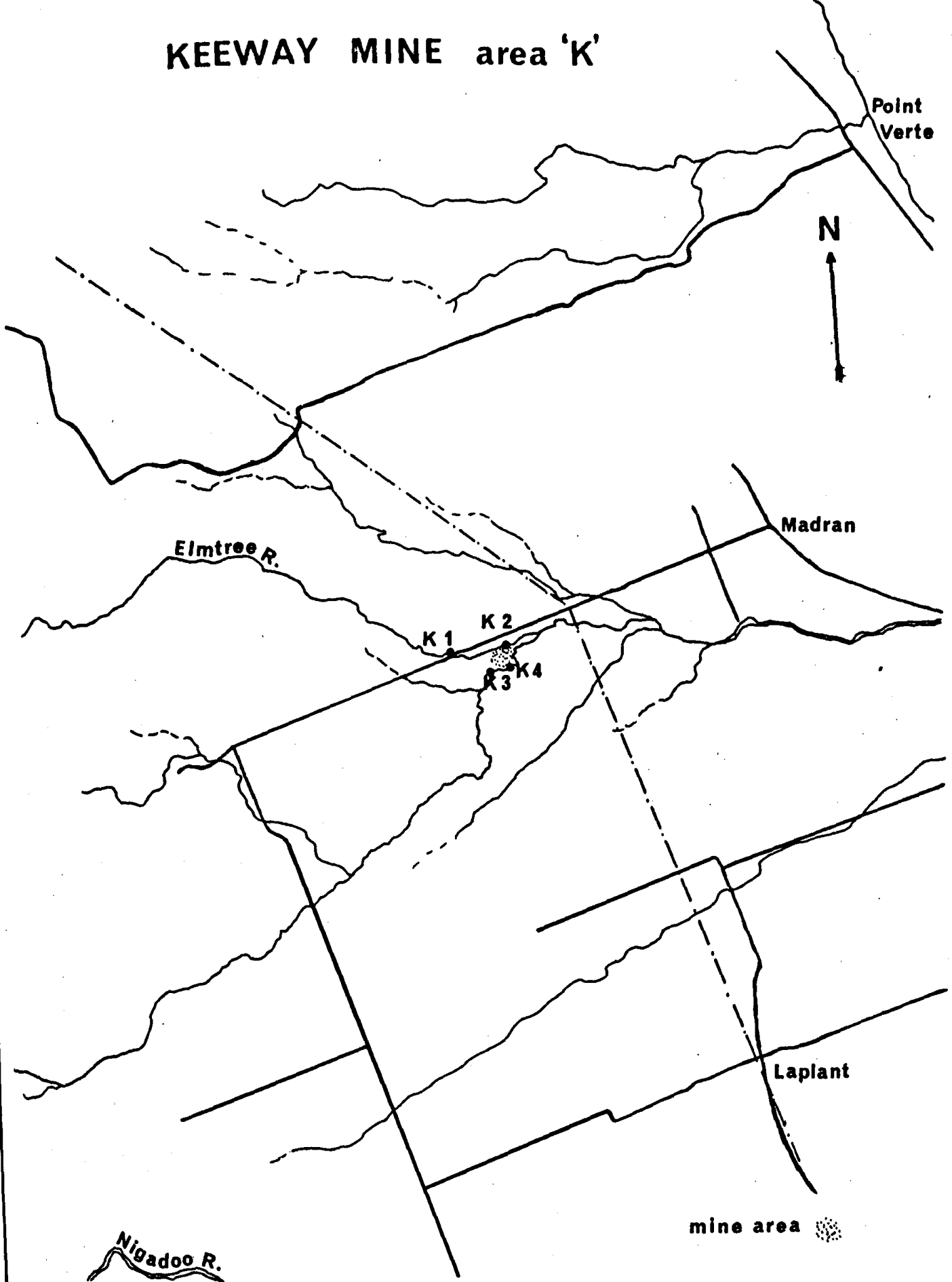
MINE: Keeway Mines (abandoned)

AREA CODE: "K"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
K-1		Elmtree River, at bridge on main road above minesite.	65°48.7'	47°48.5'
K-2		Elmtree River, at washed out bridge, below mine concentrator site.	65°48.6'	47°48.5'
K-3		Elmtree River, above tailings impoundment	65°48.6'	47°48.5'
K-4		Elmtree River, below tailings pond, at small bridge	65°48.6'	47°48.5'

# KEEWAY MINE area 'K'





SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : K-1  
LOCATION: Elmtree River Above Keeway Minesite.

WATER QUALITY AVERAGE

1.	Water Temp. C° .....	9.3
2.	pH .....	6.7
3.	Total Hardness mg/L.....	10.2
4.	Dissolved oxygen % SAT.	
5.	Total Carbon mg/L	
6.	Organic Carbon mg/L	
7.	B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8.	NO <sub>3</sub> -N mg/L	
9.	Total PO <sub>4</sub> mg/L	
10.	Toxic Units.....	0.10

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PHYSICAL FACTORS

1.	Depth cm .....	50
2.	Substrate .....	Bedrock, sand, silt.
3.	Velocity cm/sec .....	39.3

BOTTOM COMMUNITY

1.	Total Number/Sampler .....	52.75
2.	Total Number of Taxa .....	10
	Numerically Dominant TAXA	% TOTAL
3.	First..... Tendipedidae .....	49
4.	Second..... Heptageniidae .....	16.5
5.	Third..... Baetidae .....	8
6.	Fourth..... Perlidae .....	7
7.	Diversity .....	2.197

BIOLOGICAL RESULTS

CODE : K-1

LOCATION : Elmtree River, Above Keeway Minesite.

TAXA	Sampling Period 17/6/72-27/7/72		Sampling Period 27/7/72-30/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae			7.5	11	3.75	7
Ephemeroptera						
Baetidae			8.5	12	4.25	8
Heptageniidae			17.5	26	8.75	16.5
Trichoptera						
Hydropsychidae			8	12	4	7.5
Rhyacophilidae			1.5	2	0.75	1.5
psychomyiidae			2	3	1	2
Limnephilidae			0.5	1	0.25	0.5
Diptera						
Tendipedidae	36	97	16	23	26	49
Simuliidae			6.5	9	3.25	1.5
Rhagionidae	1	3	0.5	1	0.75	1.5
TOTAL	37		68.5		52.75	

AQUIC WATER QUALITY

TABLE 2	COMPANY KEEWAY MINES	STATION K-2
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DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	IT 50 hrs.
1972														
May 17	4	710.0	5.61		5.7	6.1	<0.002	<0.002	0.002			0.11		
Aug. 8	19	8.2	6.85		6.8	16.6	0.005	0.30	0.042			0.65		
Oct. 18	4	32.5	6.90		6.4	10.5	<0.002	0.02	0.007			0.12		
̄	9.000	250.233	6.453		6.300	11.067	0.003	0.107	0.017			0.293		
S.D.	8.660	398.355	0.731		0.557	5.273	0.002	0.167	0.022			0.309		
S.E.	5.000	229.990	0.422		0.321	3.044	0.001	0.096	0.013			0.178		

## MINE WATER QUALITY

TABLE 3			COMPANY KEEWAY MINES						STATION K-3					
DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17		No sample collected.		Could not reach station.	High water.									
Aug. 8	17	3.8	7.10		7.0	22.8	0.002	0.010	0.002			0.05		
Oct. 18	4	14.4	6.90		6.7	18.4	<0.002	0.01	0.003			0.06		
$\bar{X}$	10.500	9.100	7.000		6.850	20.600	0.002	0.010	0.003			0.055		
SD	9.192	7.495	0.141		0.212	3.111	0.000	0.000	0.001			0.007		
SE	6.500	5.300	0.100		0.150	2.200	0.000	0.000	0.001			0.005		



DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % /o	LT 50 hrs.
May 17	No sample collected.			Could not reach station. High water.										
Aug. 8	17	3.8	7.05	27-7-72 ↑ ↓	7.1	22.6	0.002	0.015	0.002			0.06		
Oct. 18	4	14.4	6.80	30-8-72	6.6	18.4	<0.002	0.01	0.003			0.06		
$\bar{x}$	10.500	9.100	6.925		6.850	20.500	0.002	0.013	0.003			0.060		
S.D.	9.192	7.495	0.177		0.354	2.970	0.000	0.004	0.001			0.000		
S.E.	6.500	5.300	0.125		0.250	2.100	0.000	0.003	0.001			0.000		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : K-4

LOCATION: Elmtree River Below Keeway Minesite.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	11.3
2. pH.....	6.8
3. Total Hardness mg/L.....	20.5
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units.....	0.06

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PHYSICAL FACTORS

1. Depth cm .....	29
2. Substrate .....	Rock, sand & silt.
3. Velocity cm/sec.....	45

BOTTOM COMMUNITY

1. Total Number/Sampler .....	34	
2. Total Number of Taxa .....	7	
Numerically Dominant	TAXA	% TOTAL
3. First.....	Baetidae .....	65
4. Second.....	Heptageniidae .....	15
5. Third.....	Perlidae/Tendipedidae .....	6
6. Fourth.....	Rhyacophilidae/Psychomyiidae/ Rhagionidae	3 ea/
7. Diversity .....	1.209	

CODE : K-4

BIOLOGICAL RESULTS

LOCATION : Elmtree River, Below Keeway Minesite.

TAXA	Sampling Period		Sampling Period 27/7/72 - 30/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera Perlidae			2	6	2	6
Ephemeroptera Baetidae			22	65	22	65
Heptageniidae			5	15	5	15
Trichoptera Rhyacophilidae			1	3	1	3
Psychomyiidae			1	3	1	3
Diptera Tendipedidae			2	6	2	6
Rhagionidae			1	3	1	3
<b>TOTAL</b>			<b>34</b>		<b>34</b>	

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LAKE GEORGE ANTIMONY  
(Durham Consolidated)

MINE: Lake George Antimony  
(Durham Consolidated)

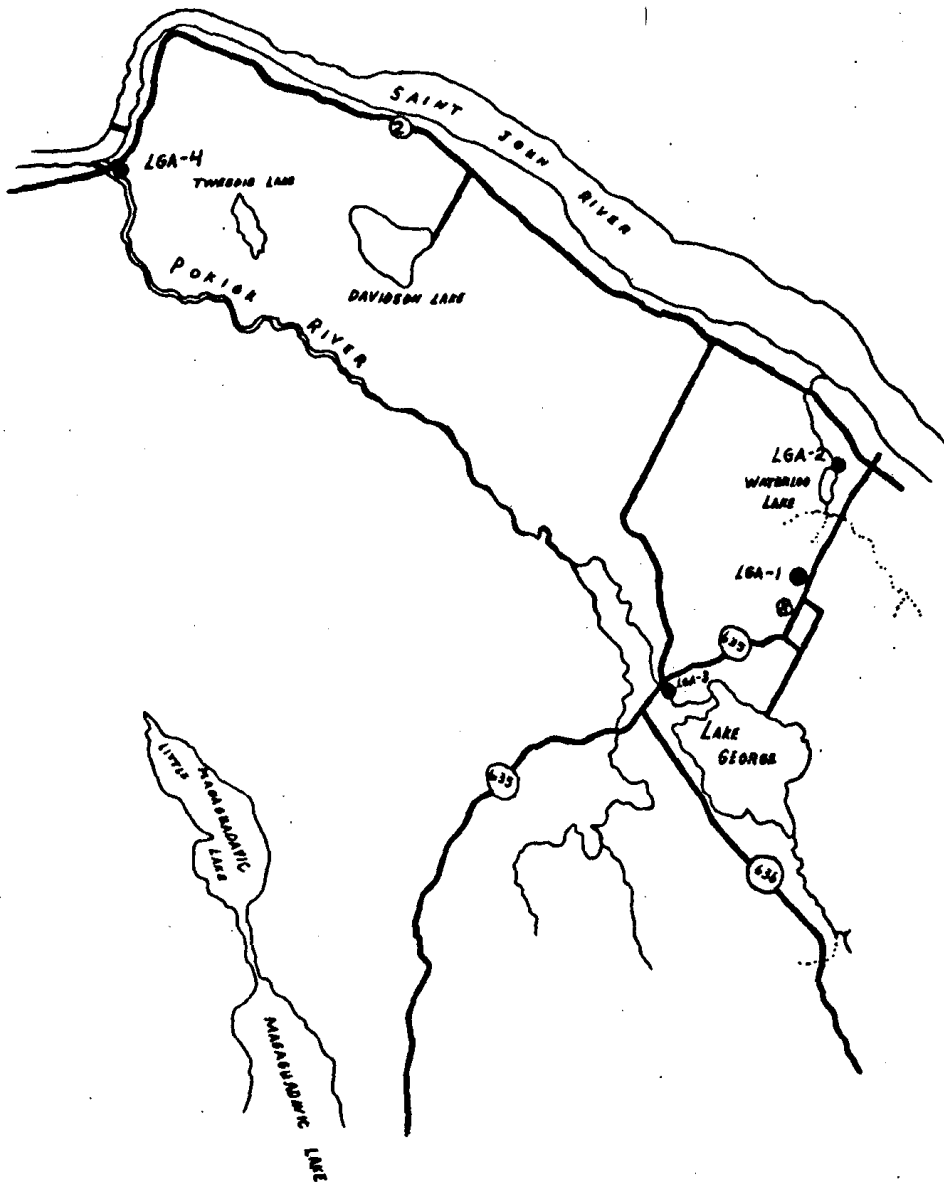
AREA CODE: "LGA"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
LGA-1		Settling pond effluent at outfall.	67°01'32"	45°51'21"
LGA-2		Outflow from Waterloo Lake en route Saint John River.	67°01'16"	45°52'54"
LGA-3		Pokiok River, upstream of highway bridge, Route 635, outlet of Lake George.	67°04'26"	45°50'05"
LGA-4		Mouth of Pokiok River, at highway bridge of Trans Canada Highway, near St. John River.	67°14'54"	45°57'33"

LAKE GEORGE ANTIMONY

AREA "L.G.A."



⊙ = MINE SITE

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

MINE WATER QUALITY

TABLE	COMPANY	STATION
1	LAKE GEORGE ANTIMONY	LGA-1

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As- ppm	Sb ppm	TOXIC UNITS	SURVIVAL %/o	LT50 hrs.
May 15	13	0.4	7.70		7.2	107.0	<0.002	<0.002	0.25	0.260	9.1	0.14		
June 14	17	0.25	7.13		7.3	182.5	<0.002	0.015	0.013	1.5	14.0	0.02		
July 17	20	0.08	6.70		7.5	267.2	0.002	0.008	0.008	1.15	33.0	0.01		
Aug. 15	17	0.04	7.81		7.5	731.0	0.005	0.015	<0.002		24.0	0.01		
Sept. 21	No sample.	No outflow.	Mill shut down.											
Nov. 25	11		7.20		6.8	227.0	<0.002	0.015	0.022	1.0	20.5	0.02		
̄	15.600	0.193	7.308		7.260	302.940	0.003	0.011	0.059	0.978	20.120	0.040		
S.D.	3.578	0.166	0.452		0.288	246.565	0.001	0.006	0.107	0.522	9.219	0.056		
S.E.	1.600	0.083	0.202		0.129	110.267	0.001	0.003	0.048	0.261	4.123	0.025		



MINE WATER QUALITY

TABLE 2		COMPANY LAKE GEORGE ANTIMONY						STATION LGA-2						
DATE	TEMP °C	FLOW c.f.t.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb- ppm	TOXIC UNITS	SURVIVAL %/o	1159 hrs.
May 15	7	22.4	6.90		6.5	17.8	0.005	<0.002	0.002	0.013	0.4	0.12		
June 14	19	6.25	6.75		6.7	19.5	0.004	0.033	<0.002	0.017	0.10	0.14		
July 17	20	0.15	7.35		7.0	26.0	0.011	0.013	0.003	0.016	<0.002	0.20		
Aug. 15	19	0.13	7.50		6.8	27.8	0.005	0.015	<0.002		0.30	0.10		
Sept. 21	14	0.20	6.90		6.8	29.5	0.002	0.015	0.005	0.032	0.028	0.05		
Nov. 25	2		7.00		6.5	21.0	<0.002	0.016	0.007	0.039	0.011	0.07		
$\bar{x}$	13.500	5.826	7.067		6.717	23.600	0.005	0.016	0.004	0.023	0.140	0.113		
s.D.	7.450	9.633	0.273		0.194	4.805	0.003	0.010	0.002	0.011	0.169	0.054		
S.E.	3.041	4.308	0.119		0.079	1.961	0.001	0.004	0.001	0.005	0.069	0.022		



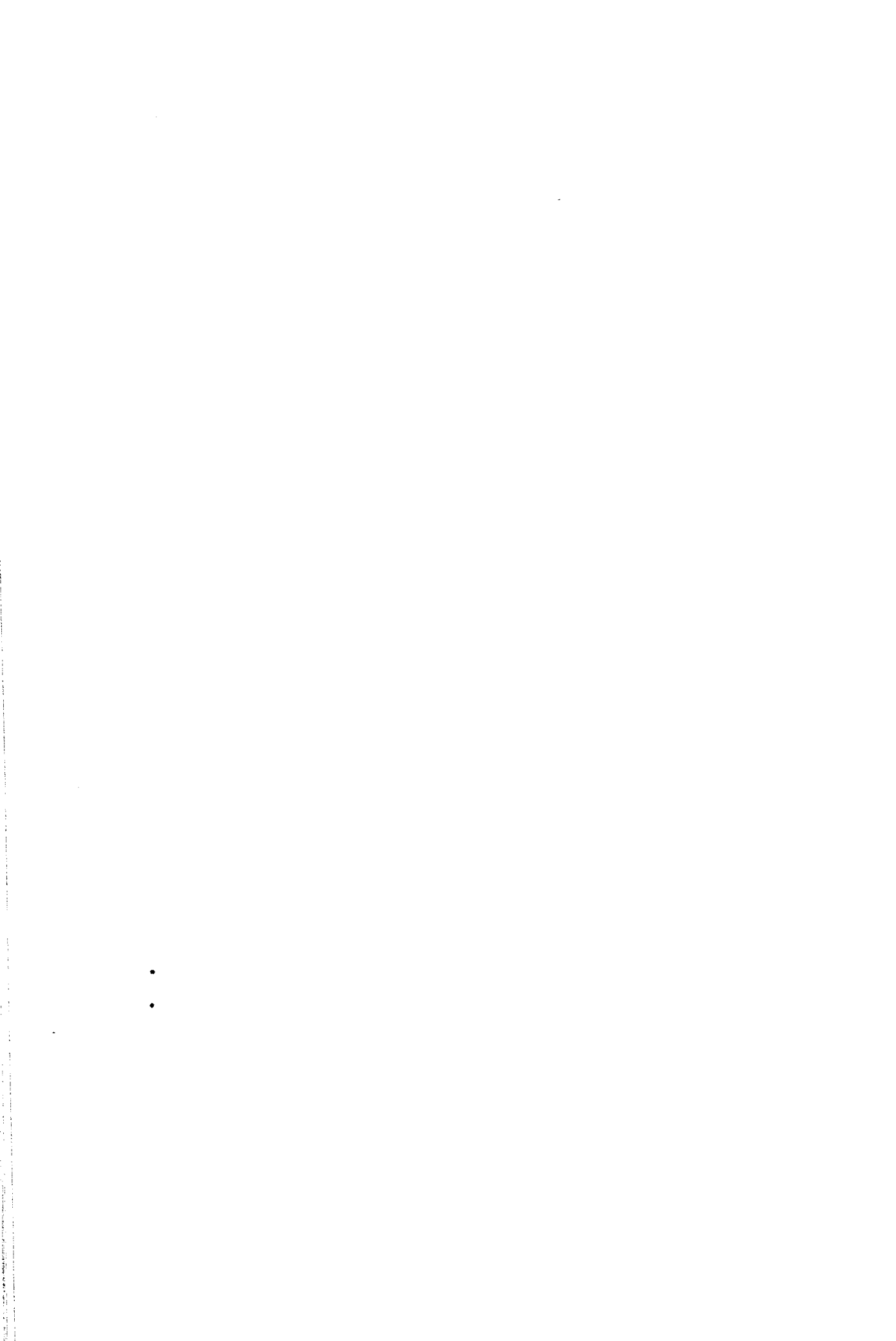
TABLE 4

COMPANY  
LAKE GEORGE ANTIMONY

STATION  
LGA-4

MINE WATER QUALITY

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb ppm	TOXIC UNITS	SURVIVAL % / o	LT 50 hrs.
May 15	9		6.80		6.4	9.8	<0.002	0.1	<0.002	0.014	0.012	0.28		
June 14	15		6.55		6.1	12.3	0.002	0.022	0.002	0.016	0.05	0.10		
July 17	20	32.5	6.60		6.7	18.0	0.009	0.008	<0.002	0.011	<0.002	0.22		
Aug. 15	17	27.6	7.18		6.9	18.9	0.002	0.010	<0.002		0.010	0.06		
Sept. 21	12	16.0	7.25		6.9	24.0	<0.002	0.012	0.005	0.010	0.010	0.06		
Nov. 25	1		7.40		6.2	13.0	0.008	0.013	0.004	0.020	0.015	0.26		
$\bar{x}$	12.333	25.367	6.963		6.533	16.000	0.004	0.028	0.003	0.014	0.017	0.163		
S.D.	6.743	8.474	0.360		0.350	5.245	0.003	0.036	0.001	0.004	0.017	0.102		
S.E.	2.753	4.892	0.147		0.143	2.141	0.001	0.015	0.001	0.002	0.007	0.041		



MILLSTREAM MINE  
(North American Rare Metals)

MINE: Millstream Mine  
(North American Rare Metals)

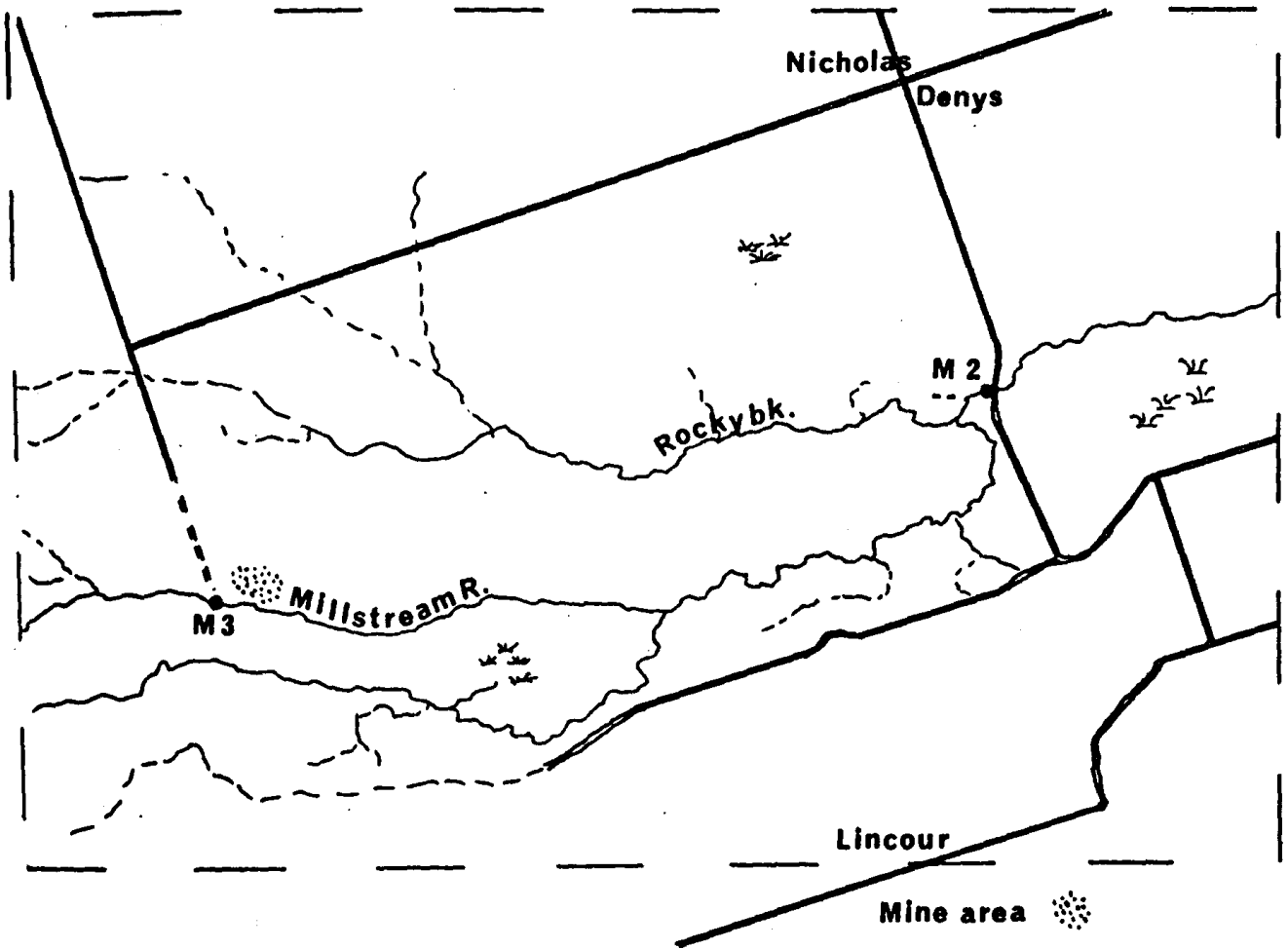
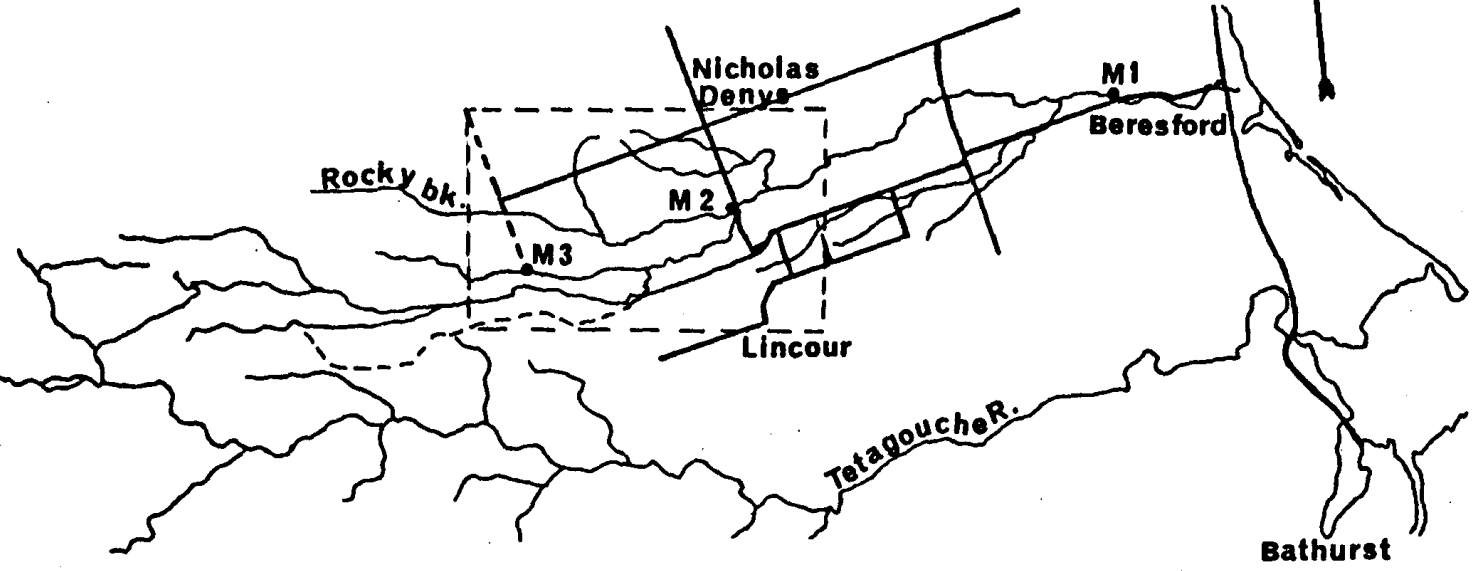
AREA CODE: M

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
M-1	EM	Millstream River, at bridge near Beresford, below mine	65°44.9'	47°42.3'
M-2		Millstream River, at bridge near Nicholas Denys, below confluence of Rocky Brook.	65°54'	47°41'
M-3	EM	Millstream River, at mine campsite, above mine operations.	65°58'	47°40'

EM - Ecological Monitoring Station.

# MILLSTREAM MINE area 'M'



(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

WATER QUALITY

TABLE 1  
 COMPANY: MILLSTREAM MINE  
 STATION: M-1

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SULFIDAL % / o	LT 50 hrs.
May 17	4	890.0	7.40	7-6-72	7.0	23.6	<0.002	<0.002	0.002			0.04		
Aug. 8	17	20.0	7.52	27-7-72 30-8-72	7.5	54.9	0.002	0.09	0.009			0.09		
Oct. 18	4	8.0	7.20		7.5	61.5	<0.002	0.014	0.012			0.03		
$\bar{x}$	8.333	306.000	7.373		7.333	46.667	0.002	0.035	0.008			0.053		
S.D.	7.506	506.794	0.162		0.289	20.247	0.000	0.048	0.005			0.032		
S.E.	4.333	292.021	0.093		0.167	11.690	0.000	0.028	0.003			0.019		



SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : M-1

LOCATION: Millstream River, Beresford Below Mine.

WATER QUALITY

AVERAGE

1.	Water Temp. C° .....	8.3
2.	pH .....	7.4
3.	Total Hardness mg/L .....	46.7
4.	Dissolved oxygen % SAT.	
5.	Total Carbon mg/L	
6.	Organic Carbon mg/L	
7.	B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8.	NO <sub>3</sub> -N mg/L	
9.	Total PO <sub>4</sub> mg/L	
10.	Toxic Units .....	0.05

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PHYSICAL FACTORS

1.	Depth cm .....	55
2.	Substrate .....	Bedrock & rocks.
3.	Velocity cm/sec .....	83.3

BOTTOM COMMUNITY

1.	Total Number/Sampler .....	21.25	
2.	Total Number of Taxa .....	7	
	Numerically Dominant TAXA	% TOTAL	
3.	First .....	Perlidae .....	27
4.	Second .....	Hydropsychidae .....	25
5.	Third.....	Tendipedidae .....	19
6.	Fourth.....	Heptageniidae .....	14
7.	Diversity.....	1.703	

BIOLOGICAL RESULTS

CODE : M-1

LOCATION : Millstream River, Beresford Below Mine.

TAXA	Sampling Period 7/6/72 - 27/7/72		Sampling Period 27/7/72 - 30/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	6	50	5.5	18	5.75	27
Pteronarcidae	1	8	-----	-----	0.5	2
Ephemeroptera						
Baetidae	1	8	3.5	11	2.25	11
Heptageniidae	-----	-----	6	20	3	14
Trichoptera						
Hydropsychidae	1	8	9.5	31	5.25	25
Diptera						
Tendipedidae	2	18	6	20	4	19
Simuliidae	1	8	-----	-----	0.5	2
<b>TOTAL</b>	<b>12</b>		<b>30.5</b>		<b>21.25</b>	

## RUNE WATER QUALITY

DATE	TEMP °C	FLOW cfs.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17	4	550.0	7.40		7.0	26.5	<0.002	<0.002	<0.002			0.04		
Aug. 8	17	9.0	7.50		7.5	58.5	0.005	0.22	0.02			0.22		
Oct. 18	4	54.0	7.25		7.1	49.5	<0.002	0.01	0.002			0.03		
$\bar{X}$	8.333	204.333	7.383		7.200	44.833	0.003	0.077	0.008			0.097		
S.D.	7.506	300.200	0.126		0.265	16.503	0.002	0.124	0.010			0.107		
S.E.	4.333	173.321	0.073		0.153	9.528	0.001	0.071	0.006			0.062		

(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

MINE WATER QUALITY

TABLE 3 COMPANY MILLSTREAM MINE STATION M-3

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOLOGICAL MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 lirs.
May 17	4	92.0	7.30	7-6-72	7.0	30.7	< 0.002	< 0.002	0.002			0.03		
Aug. 8	14	2.5	7.50	27-7-72 30-8-72	7.6	65.8	0.002	0.084	0.005			0.08		
Oct. 18	4	96.0	7.43		7.0	46.4	0.008	0.028	0.005			0.11		
̄	7.333	63.500	7.410		7.200	47.633	0.004	0.038	0.004			0.073		
S.D.	5.774	52.865	0.101		0.346	17.582	0.003	0.042	0.002			0.040		
S.E.	3.333	30.522	0.059		0.200	10.151	0.002	0.024	0.001			0.023		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : M-3

LOCATION: Millstream River, above Mine.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	7.3
2. pH.....	7.4
3. Total Hardness mg/L.....	47.6
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.07

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PHYSICAL FACTORS

1. Depth cm .....	45
2. Substrate.....	Sand & clay.
3. Velocity cm/sec .....	43.3

BOTTOM COMMUNITY

1. Total Number/Sampler .....	38.25	
2. Total Number of Taxa .....	12	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Baetidae .....	41
4. Second.....	Tendipedidae .....	17
5. Third .....	Heptageniidae .....	16
6. Fourth .....	Perlidae .....	11
7. Diversity .....	1.718	

CODE : M-3

BIOLOGICAL RESULTS

LOCATION : Millstream River, Above Mine.

TAXA	Sampling Period 7/6/72 - 27/7/72		Sampling Period 27/7/72 - 30/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	----	----	7.5	14	4.25	11
Perlodidae	1	5	0.5	1	0.25	1
Pteronarcidae	----	----	0.5	1	0.25	1
Ephemeroptera						
Baetidae	5	23	26.5	48	15.75	41
Heptageniidae	0.5	2	12	22	6.25	16
Trichoptera						
Psychomyiidae	0.5	2	----	----	0.25	1
Phryganeidae	1	5	----	----	0.5	1.5
Hydropsychidae	----	----	1.5	3	0.75	2
Rhyacophilidae	----	----	1	2	0.5	1.5
Diptera						
Tendipedidae	9	42	4	77	6.5	17
Rhagionidae	4.5	21	1	2	2.75	7
Hydracarina						
Unknown	----	----	0.5	1	0.25	1
<b>TOTAL</b>	<b>21.5</b>		<b>55</b>		<b>38.25</b>	

MT. PLEASANT

MINE: Mt. Pleasant

AREA CODE: "MP"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
MP-1	Cd EM	Piskahegan River, at bridge on Old Post Road, approx. 3-4 miles upriver from mouth of Upper Niles Brook.	66°53'58"	42°29'05"
MP-2	Cd	Piskahegan River, at bridge on Old Post Road, approx. 1 1/2 miles downriver from mouth of Hatch Brook.	66°53'13"	45°23'44"
MP-3		Magaguadavic River, at Pomeroy Bridge (Old Post Road), approx. 1 mile above mouth of Piskahegan River.	66°55'14"	45°23'49"
MP-4		Magaguadavic River, midway between mouths of Piskahegan River and McDougall Lake Stream, approx. 2 miles below Piskahegan mouth. Route 770, at point of closest proximity to river.	66°52'24"	45°20'55"
MP-5	EM	Magaguadavic River, above Lake Stream	66°51'00"	45°18'50"
MP-6		Lower Niles Brook at Bridge		
MP-7		Hatch Brook #2 below bridge on Mt. Pleasant Road.		
MP-8		Hatch Brook #1 at pump site.		
MP-9		Inlet to Hatch Brook, Sample A, lower side of pipeline.		
MP-10		Inlet to Hatch Brook, Sample B, by road leading to south side of Mtn.		
MP-11		Old adit entrance.		
MP-12		750 feet adit entrance.		
MP-13		900 feet adit entrance.		

Stations MP-6 to MP-13 are collected by New Brunswick Water Authority.

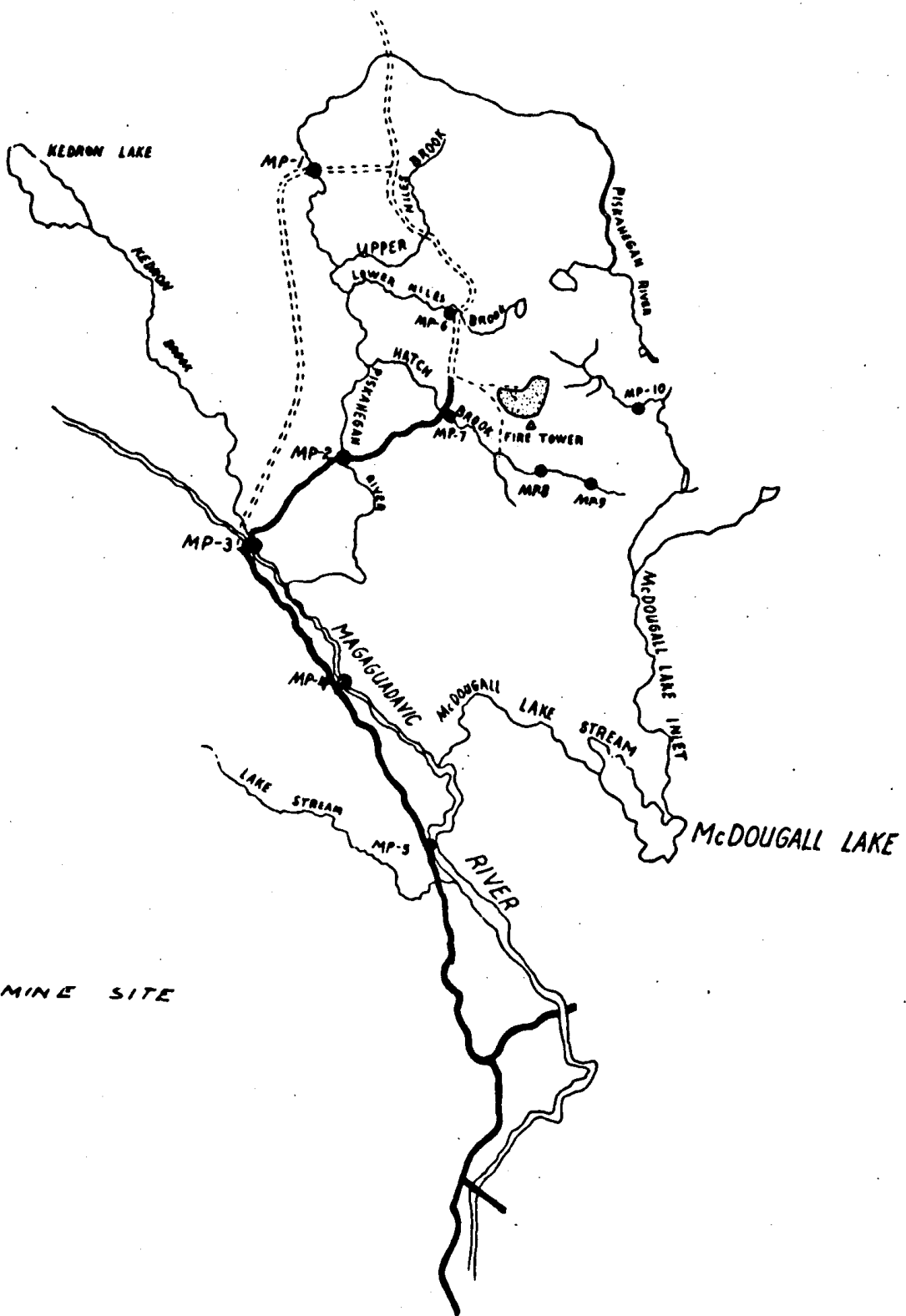
Cd - Cadmium analyses.

EM -Ecological Monitoring Station.



# MOUNT PLEASANT MINE

AREA "MP"



• MINE SITE

## ATLANTIC REGION

## MINE WATER QUALITY

TABLE 1		COMPANY MOUNT PLEASANT										STATION MP-1		
DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 25	12	288.0	5.40		6.0	9.9	<0.002	0.021	0.002		<0.001	0.12		
June 21	19	78.6	6.00	21-6-72 →	6.1	6.9	0.004	0.011	0.002	0.0001	<0.001	0.21		
Aug. 3	19	36.3	6.35	3-8-72 →	6.3	9.6	<0.002	0.003	<0.002	.00058	<0.001	0.08		
Sept. 4	18	75.0	6.68	4-9-72 →	6.2	10.5	<0.002	0.012	0.005	.00032	0.001	0.10		
Oct. 10	7	552.0	6.60		5.5	9.7	<0.002	0.175	0.002	.00085	<0.001	0.44		
Nov. 28	2		6.50		5.1	7.8	<0.002	0.016		.00144	<0.001	0.12		
$\bar{x}$	12.833	205.980	6.255		5.867	9.067	0.002	0.040	0.003	0.0005	<0.001	0.178		
S.D.	7.139	217.158	0.483		0.468	1.395	0.001	0.067	0.001	0.0006	0.000	0.136		
S.E.	2.915	97.116	0.197		0.191	0.510	0.000	0.027	0.001	0.0002	0.000	0.055		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : MP-1

LOCATION: Piskahegan River at Bridge on Old Post Road

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	19
2. pH .....	6.4
3. Total Hardness mg/L .....	9.0
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N. mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.24

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PHYSICAL FACTORS

1. Depth cm .....	75
2. Substrate .....	Bedrock & sand.
3. Velocity cm/sec .....	43.3

BOTTOM COMMUNITY

1. Total Number/Sampler .....	106.25	
2. Total Number of Taxa .....	9	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Heptageniidae .....	45
4. Second .....	Hydropsychidae .....	39
5. Third .....	Baetidae .....	7.5
6. Fourth .....	Tendipedidae .....	5
7. Diversity .....	1.225	

CODE : MP-1

BIOLOGICAL RESULTS

LOCATION : Piskahegan River, at Bridge on Old Post Road.

TAXA	Sampling Period 21/6/72 - 3/8/72		Sampling Period 3/8/72 - 4/9/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	0.5	0.5	----	----	0.25	0.5
Ephemeroptera						
Baetidae	3	3	13	12	8	7.5
Heptageniidae	30.5	28	65	62	47.75	45
Trichoptera						
Hydropsychidae	64	59	19	18	41.5	39
Psychomyiidae	1	1	1	1	1	1
Diptera						
Tendipedidae	6.5	6	5.5	5	6	5
Rhagionidae	1.5	1	----	----	0.75	1
Simuliidae	0.5	0.5	1	1	0.75	1
Gastropoda						
Ancylidae	----	----	0.5	0.5	0.25	0.5
<b>TOTAL</b>	<b>107.5</b>		<b>105</b>		<b>106.25</b>	

MINE WATER QUALITY

TABLE 2 COMPANY MOUNT PLEASANT STATION MP-2

DATE 19 72	TEMP ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % / o	LT 50 hrs.
May 25	12.5		6.20		5.7	7.5	<0.002	0.053	0.002	<.00005	0.001	0.21		
June 21	16.0	288.0	6.50		6.2	8.8	0.004	0.016	0.002	0.0001	<0.001	0.19		
Aug. 3	16.5	390.0	7.55		6.7	12.5	<0.002	0.006	<0.002	.00084	<0.001	0.07		
Sept. 4	17.5	600.0	7.20		6.5	14.3	<0.002	0.017	0.007	.00072	0.001	0.09		
Oct. 10	7.0	742.5	6.65		5.5	11.4	<0.002	0.02	0.004	.00053	<0.001	0.11		
Nov. 28	2.0		5.90		5.0	7.8	<0.002	1.3	0.004	.002	<0.001	3.01		
X	11.917	505.125	6.667		5.933	10.383	0.002	0.235	0.004	0.0007	< 0.001	0.613		
S.D.	6.192	204.732	0.616		0.647	2.769	0.001	0.522	0.002	0.0007	0.000	1.175		
S.E.	2.528	102.366	0.252		0.264	1.131	0.000	0.213	0.001	0.0003	0.000	0.480		

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

EP6-1103

TABLE		COMPANY				STATION								
		MOUNT. PLEASANT				MP-3								
DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT50 hrs.
19 72														
May 25	14		6.50		6.1	10.8	<0.002	0.002	0.003			0.07		
June 21	19		6.75		6.6	11.6	0.004	0.008	0.002			0.15		
Aug. 3	16		7.25		7.0	18.1	<0.002	0.003	<0.002			0.05		
Sept. 4	18		7.37		6.7	17.6	0.009	0.010	0.005			0.23		
Oct. 10	8		6.60		6.5	16.9	<0.002	0.011	0.003			0.07		
Nov. 28	2		6.30		6.2	11.0	<0.002	0.03	0.002			0.13		
$\bar{x}$	12.833		6.795		6.517	14.333	0.004	0.011	0.003					
S.D.	6.585		0.427		0.331	3.536	0.003	0.010	0.001			0.117		
S.E.	2.688		0.174		0.135	1.444	0.001	0.004	0.000			0.068		
												0.028		

MINE WATER QUALITY

DEPARTMENT OF THE ENVIRONMENT  
 (ENVIRONMENTAL PROTECTION)  
 ATLANTIC REGION

MINE WATER QUALITY

TABLE 4 COMPANY MOUNT PLEASANT STATION MP-4

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50 hrs.
May 25	15		6.60		5.5	6.6	<0.002	<0.002	0.002			0.10		
June 21	19	390.0	6.65		6.6	11.3	0.002	0.007	0.002			0.08		
Aug. 3	17	124.0	6.93		7.0	17.6	0.002	0.003	<0.002			0.05		
Sept. 4	18	208.0	7.57		7.0	17.0	<0.002	0.012	0.005			0.07		
Oct. 10	8	747.5	6.50		6.2	14.0	<0.002	0.014	0.003			0.08		
Nov. 28	2		5.90		5.4	9.6	<0.002	0.041	0.004			0.16		
$\bar{x}$	15.167	367.375	6.692		6.283	12.683	0.002	0.013	0.003			0.090		
SD	6.735	276.670	0.548		0.711	4.312	0.000	0.014	0.001			0.038		
SE	2.750	138.335	0.224		0.290	1.760	0.000	0.006	0.001			0.015		

MINE WATER QUALITY											COMPANY MOUNT PLEASANT				STATION MP-5		
DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.			
May 25	15		6.45		6.0	9.5	<0.002	<0.002	<0.002								
June 21	19	450.0	6.80	21-6-72	6.7	11.3	0.002	0.007	0.002			0.08					
Aug. 3	18	62.0	7.10	3-8-72	7.0	16.9	0.002	0.003	<0.002			0.05					
Sept. 4	18	144.0	7.12	4-9-72	6.9	16.3	<0.002	0.008	0.005			0.07					
Oct. 10	8	864.0	6.85		6.4	18.9	<0.002	0.017	0.004			0.07					
Nov. 28	2		5.85		5.7	9.3	<0.002	0.425	0.004			0.98					
$\bar{x}$	13.333	380.000	6.695		6.450	13.700	0.002	0.077	0.003			0.222					
S.D.	6.861	363.307	0.480		0.517	4.167	0.000	0.171	0.001			0.372					
S.E.	2.801	181.654	0.196		0.211	1.701	0.000	0.070	0.001			0.152					



SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : MP-5

LOCATION: Magaguadavic River Above Lake Stream.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	15
2. pH .....	6.9
3. Total Hardness mg/L.....	15.7
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.07

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PHYSICAL FACTORS

1. Depth cm.....	85
2. Substrate.....	Rocks, sand , silt.
3. Velocity cm/sec.....	33.3

BOTTOM COMMUNITY

1. Total Number/Sampler.....	47.75	
2. Total Number of Taxa .....	12	
Numerically Dominant	TAXA	% TOTAL
3. First.....	Tendipedidae .....	31
4. Second.....	Baetidae/Heptageniidae .....	15 ea.
5. Third.....	Neritidae ,.....	11.5
6. Fourth.....	Psychomyiidae .....	10
7. Diversity.....	1.968	

CODE : MP-5

BIOLOGICAL RESULTS

LOCATION : Magaguadavic River, Above Lake Stream.

TAXA	Sampling Period 21/6/72-3/8/72		Sampling Period 3/8/72-4/9/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	1	5	13	17	7	15
Heptageniidae	----	----	14	18	7	15
Odonata						
Coenagrionidae	6	32	4	5	5	10
Gomphidae	1	5	0.5	1	0.75	1.5
Trichoptera						
Hydropsychidae	----	----	2	3	1	2
Helicopsychidae	----	----	0.5	1	0.25	0.5
Limnephilidae	2	11	----	----	1	2
Psychomyiidae	----	----	9.5	12	4.75	10
Diptera						
Tendipedidae	9	47	20.5	27	14.75	31
Gastropoda						
Neritidae	----	----	11	14	5.5	11.5
Viviparidae	----	----	1	1	0.5	1
Clopeoptera						
Elmidae	----	----	0.5	1	0.25	0.5
<b>TOTAL</b>	<b>19</b>		<b>76.5</b>		<b>47.75</b>	

NEW BRUNSWICK COAL CORPORATION

MINE: New Brunswick Coal Corporation

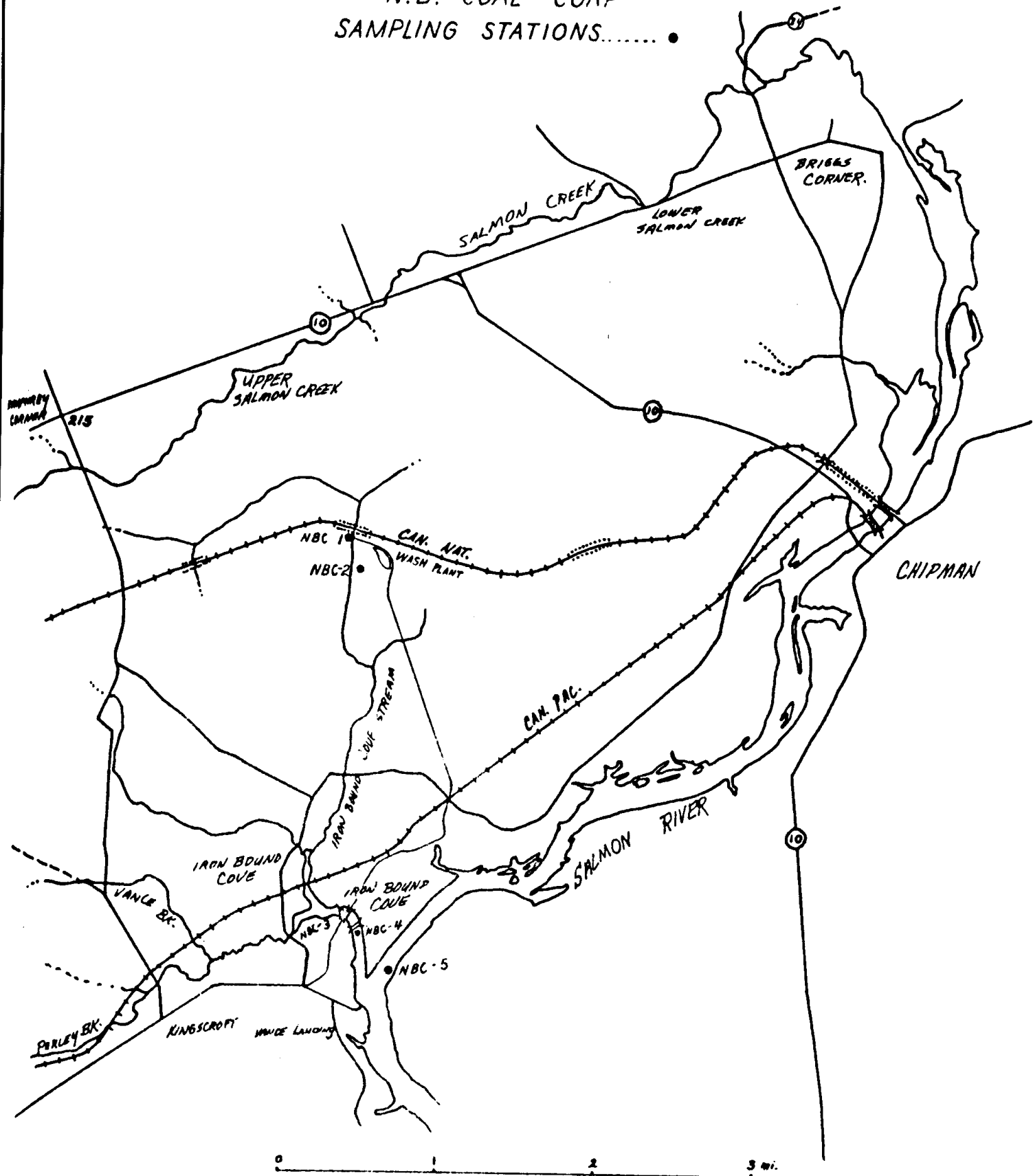
AREA CODE: "NBC"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
NBC-1		Iron Bound Cove Stream at CNR Bridge.		
NBC-2		Minto Coal Wash Effluent en route Iron Bound Cove Stream.		
NBC-3		Iron Bound Cove Stream at Upper Bridge.		
NBC-4		Iron Bound Cove Stream at Lower Bridge.		
NBC-5		Salmon River above Iron Bound Cove Stream.		

# AREA NBC

N.B. COAL CORP  
SAMPLING STATIONS.....●



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KEY ANACON MINES LTD.

MINE: Key Anacon Mines Ltd.  
(New Lander U)

AREA CODE: "NLU"

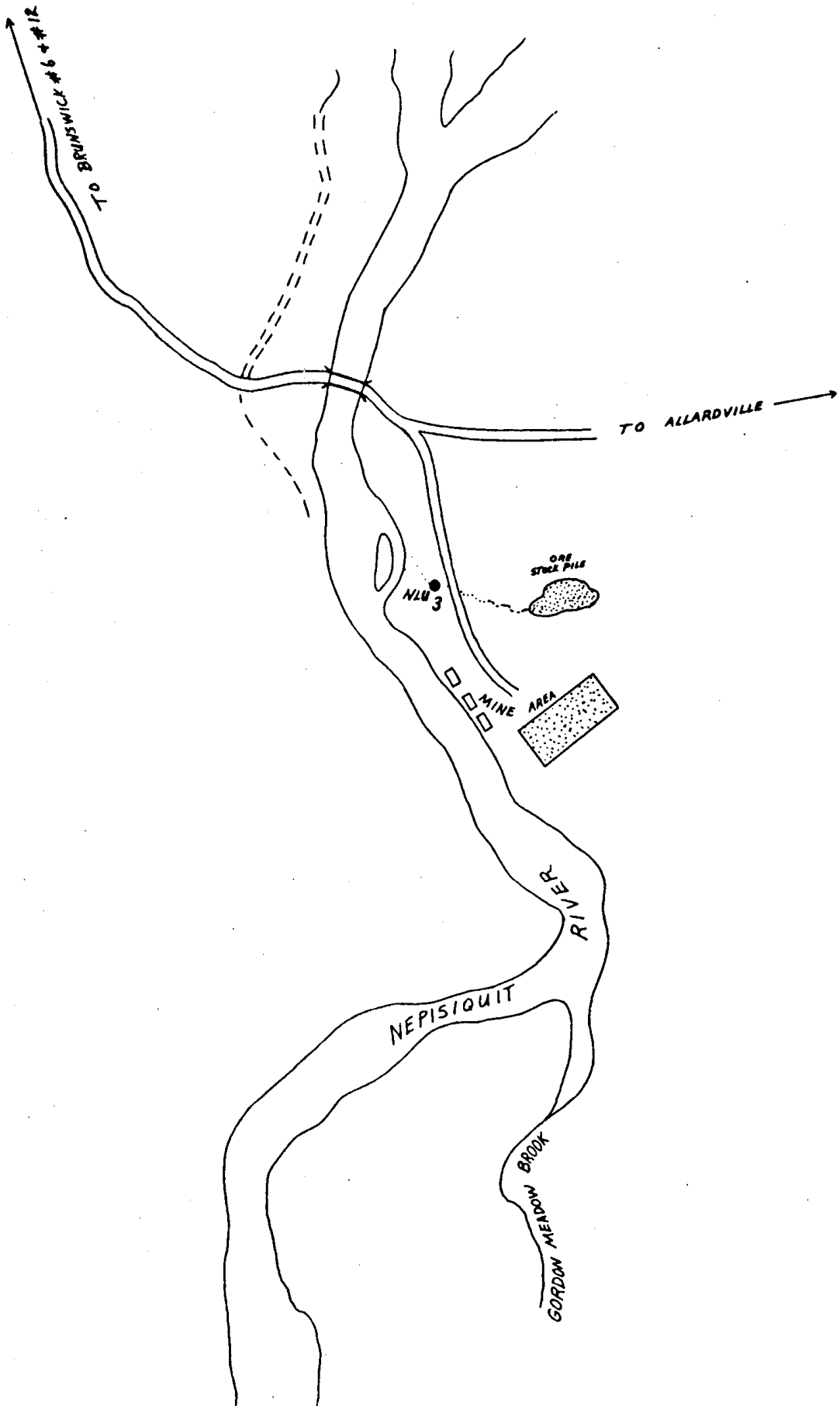
STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
NLU-3		Drainage from ore stock- pile area, sample taken at culvert - see map NLU	65°42'16"	47°26'20"



# AREA NLU

(KEY ANACON.)  
NEW LARDE U.  
SAMPLING STATIONS...●



ATLANTIC REGION

MINE WATER QUALITY

TABLE 1		COMPANY KEY ANACON MINES LTD. (NEW LARDER U)										STATION NLU - 3		
DATE	TEMP ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % / o	LT 50- hrs.
May 2	3	0.48	6.70		6.4	84.3	0.004	1.65	0.004			1.08		
July 6	13	0.02	6.30		6.5	138.0	0.006	0.19	0.004			0.12		
$\bar{x}$	8.000	0.250	6.500		6.450	111.150	0.005	0.920	0.004			0.600		
S.D.	7.071	0.325	0.283		0.071	37.972	0.001	1.032	0.000			0.679		
S.E.	5.000	0.230	0.200		0.050	26.850	0.001	0.730	0.000			0.480		

NIGADOO MINES LTD.

MINE: Nigadoo Mines Ltd.

AREA CODE: "NIG"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
NIG-1		Below outfall tailings pond, at bridge	65°48'01"	47°43'12"
NIG-2		Outfall from #2 settling pond en route Nigadoo River	65°47'06"	47°43'07"
NIG-3	* Cd	Nigadoo River above mine area.	65°48'09"	47°43'17"
NIG-4	* Cd	Nigadoo River below mine area, at bridge.	65°46'32"	47°43'32"
NIG-5		Brook draining concentrate stock pile area at rail-road loading site.	65°43'13"	47°44'23"

\* Bioassays performed.

Cd - Cadmium analyses.

# AREA NIG

NIGADOO MINES LTD.

SAMPLING STATIONS

MILES

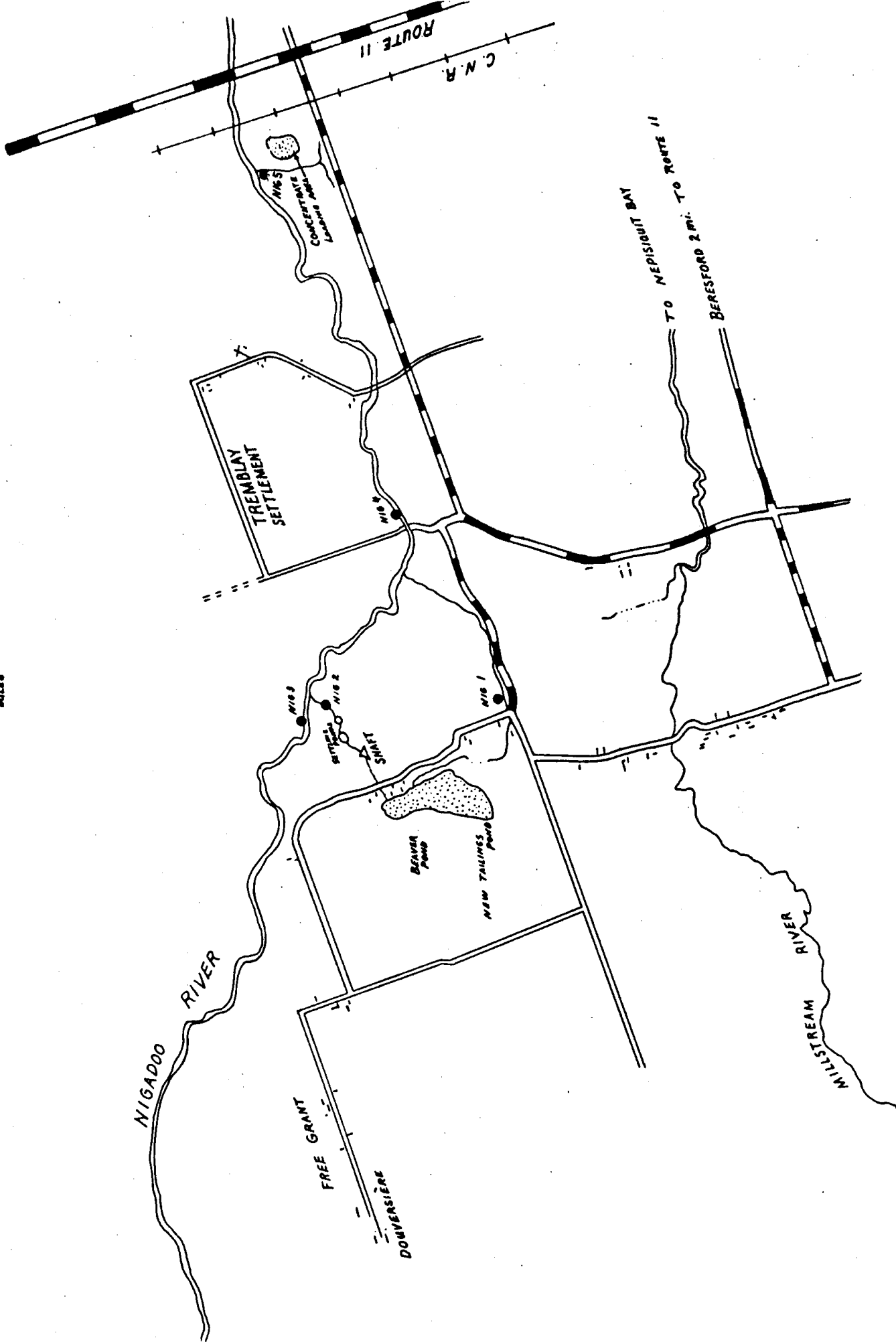




TABLE	COMPANY	STATION
2	NIGALDOO	NIG - 2

MINE WATER QUALITY

DATE	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	PH Lab.	AS ppm	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50- hrs.
May 8	12	0.14	7.40		7.3	0.034	698.0	0.007	12.50	0.58			1.68		
June 27	14	0.06	7.00		7.6	0.034	745.6	0.005	11.0	12.0			2.75		
Sept. 13	No sample collected.			No outflow											
Nov. 15	4	0.03	7.60		6.9	0.031	541.0	0.013	7.5	0.10			1.23		
X̄	10.000	0.077	7.333		7.267	0.033	661.533	0.008	10.333	4.227			1.887		
S.D.	5.292	0.057	0.306		0.351	0.002	107.064	0.004	2.566	6.736			0.781		
S.E.	3.055	0.033	0.176		0.203	0.001	61.813	0.002	1.481	3.889			0.451		

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

\* Malfunction cooling unit

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TABLE 3	COMPANY NIGADOO	STATION NIG - 3
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MINE WATER QUALITY

DATE 19 72	TEMP. ° C	FLOW c.f.s.	pH field	BIOLOGICAL MONITOR	pH Lab.	AS ppm	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 8	3		7.70		6.8		21.8	<0.002	0.004	<0.002	<0.0005	<0.001	0.05	90	
June 28	11	175.0	7.40		7.7	0.007	27.8	<0.002	0.032	0.002	.00005	<0.001	0.07	* 70	
Sept. 13	10	42.6	7.40		7.9	<0.005	47.0	0.013	0.066	0.01		0.0015	0.19	100	
Nov. 15	2	200.0	7.70		7.3	<0.005	39.3	<0.002	0.011	0.002	.00111	<0.001	0.03	100	
$\bar{x}$	6.500	139.200	7.550		7.425	0.006	33.975	0.005	0.028	0.004	0.001	0.001	0.085	96.667	
S.D.	4.655	84.587	0.173		0.486	0.001	11.319	0.006	0.028	0.004	0.001	0.000	0.072	5.774	
S.E.	2.327	48.836	0.087		0.243	0.001	5.660	0.003	0.014	0.002	0.000	0.000	0.036	3.333	



TABLE	4	COMPANY	NIGADOO	STATION	NIG - 4
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MINE WATER QUALITY

DATE 19 72	TEMP °C	FLOW c.f.t.	pH field	BIOL. MONITOR	pH Lab.	AS ppm	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hr.
May 8	3	576.0	7.50		6.7		23.0	0.005	0.017	0.004	<00005	0.001	0.12	90	
June 27	11	504.0	7.20		7.3	0.006	28.5	0.004	0.015	<0.002	0.0001	<0.001	0.08	*90	
Sept. 13	11	88.0	7.25		7.7	<0.005	47.1	0.005	0.028	0.005		0.001	0.07	100	
Nov. 15	2	200.0	7.70		7.2	<0.005	41.6	<0.002	0.015	0.005	.00076	<0.001	0.04	100	
$\bar{X}$	6.750	342.000	7.413		7.225	0.005	35.050	0.004	0.019	0.004	0.000	0.001	0.078	96.667	
S.D.	4.924	235.004	0.232		0.411	0.001	11.198	0.001	0.006	0.001	0.000	0.000	0.033	5.774	
S.E.	2.462	117.502	0.116		0.206	0.000	5.599	0.001	0.003	0.001	0.000	0.000	0.017	3.333	

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

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MINE WATER QUALITY

TABLE 5 COMPANY NIGADOO

STATION

NIG - 5

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	AS ppm	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 8	5	5.75	6.90		6.4	<0.005	48.6	0.005	0.45	0.20			0.57		
June 27	12	1.56	7.00		6.8	0.007	29.8	0.019	0.91	4.0			4.97		
Sept. 13	10	0.30	6.70		7.3	<0.005	61.3	0.023	0.875	0.7			1.33		
Nov. 15	4	0.33	6.81		6.9	<1.0	58.6	0.018	1.0	0.2			1.12		
$\bar{x}$	7.750	1.985	6.853		6.850	0.254	49.575	0.016	0.834	1.275			1.998		
SD	3.862	2.578	0.128		0.370	0.497	14.270	0.008	0.274	1.832			2.007		
S.E.	1.931	1.289	0.064		0.185	0.249	7.135	0.004	0.137	0.916			1.004		

RESTIGOUCHE (formerly Tech. Corp.)

MINE: Restigouche (Formerly Tech. Corp.)

AREA CODE: "R"

STATIONS:

<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
R-1		Above mine property.	66°32'18"	47°29'17"
R-2		Below mine property.	66°31'04"	47°29'34"
R-3		Outfall of last tailings pond.		
R-4		Head of Portage Brook, below mine.	66°35'43"	47°28'40"
R-5	* Cd	Mouth of Portage Brook, at bridge.	66°30'47"	47°24'20"
R-6	* EM	Nepisiguit River, above Portage Brook.	66°31'46"	47°24'07"
R-7	EM	Nepisiguit River, at Popple Depot.	66°30'43"	47°23'47"

Note: Stn. R-3 was previously located at entrance of new flowage (small brook) into Charlotte Creek, midway between Stations R-1 and R-2. This was during the 1967, 68 and 69 sampling periods. Station R-3 was relocated to the present location at the start of the 1970 sampling season.

Stn. R-4 was previously located at a new drill hole. This was a temporary sampling point, one sample only collected here on July 13, 1968. This station was changed to the present location at the beginning of the 1970 sampling period.

\* Bioassays performed.

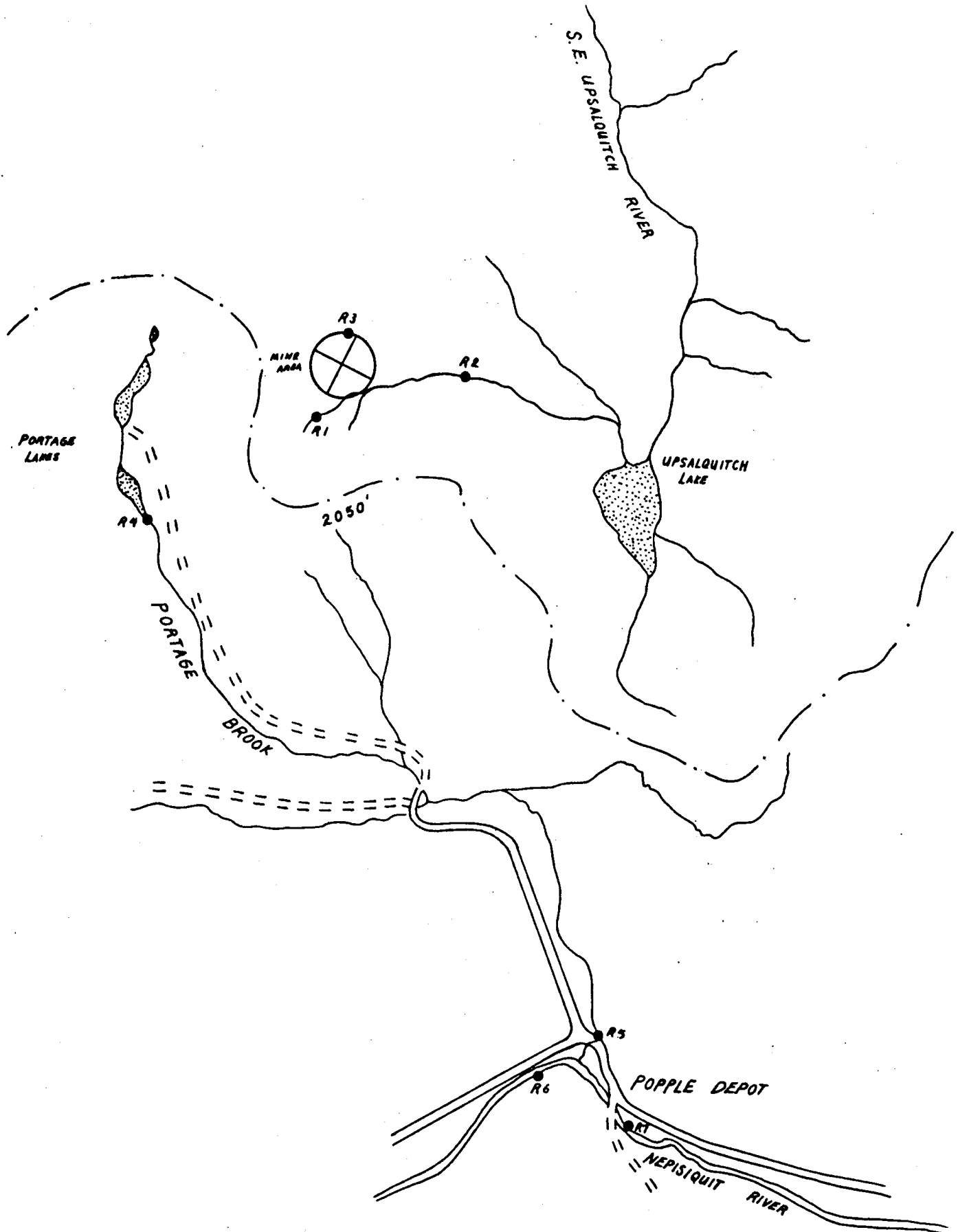
Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# AREA R

RESTIGOUCHE (TECH. CORP.)  
SAMPLING STATIONS...●

mi.





ATLANTIC REGION

MINE WATER QUALITY

TABLE 2 COMPANY Restigouche Mine STATION R-2

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50 hrs.
June 6	9	28.8	6.70		6.9	14.5	<0.002	0.06	<0.002	-	-	0.16	-	-
July 20	13	7.7	7.15		7.6	24.5	<0.002	0.005	<0.002	-	-	0.04	-	-
Aug. 28	11	2.0	7.20		7.5	28.9	<0.002	0.021	0.021	-	-	0.07	-	-
Oct. 5	7	5.7	7.22		7.2	24.3	<0.002	0.011	0.002	-	-	0.05	-	-
Nov. 14	3	6.6	7.10		7.3	26.0	<0.002	0.006	0.007	-	-	0.05	-	-
X̄	8.600	10.160	7.074		7.300	23.640	0.002	0.021	0.007			0.074		
SD	3.847	10.638	0.214		0.274	5.430	0.000	0.023	0.008			0.049		
SE	1.720	4.757	0.096		0.122	2.428	0.000	0.010	0.004			0.022		





MINE WATER QUALITY

TABLE 4		COMPANY Restigouche Mine										STATION R-4	
DATE 1972	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	14	14.4	6.60	7.1	32.7	<0.002	0.006	0.002			0.03		
July 20	18	2.6	7.30	7.6	41.1	<0.002	0.002	<0.002			0.02		
Aug. 28	16	0.20	7.40	7.5	40.0	<0.002	0.018	0.006			0.04		
Oct. 5	10	1.50	7.55	7.2	43.4	<0.002	0.005	0.002			0.03		
Nov. 14	2	0.40	7.40	7.3	43.1	<0.002	0.011	0.005			0.03		
$\bar{x}$	12.000	3.820	7.250	7.340	40.160	0.002	0.008	0.003			0.030		
SD	6.325	5.992	0.374	0.207	4.449	0.000	0.006	0.002			0.007		
SE	2.828	2.680	0.167	0.093	1.990	0.000	0.003	0.001			0.003		

TABLE 5 COMPANY Restigouche Mine STATION R-5  
MINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH • field	BIOL. MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	10	292.0	6.54		6.9	17.5	<0.002	0.002	0.002	0.0001	<0.001	0.05	100	
July 20	11	48.0	7.00		7.5	24.9	<0.002	0.005	0.003	<.00005	<0.001	0.04	100	
Aug. 28	11	43.2	7.20		7.1	22.9	<0.002	0.037	0.006	.00005	<0.001	0.09	100	
Oct. 5	6	52.0	7.42		7.2	23.4	<0.002	0.005	0.002	.00072	<0.001	0.04	100	
Nov. 14	2	52.0	7.10		7.3	22.7	<0.002	0.009	0.005		<0.001	0.05	100	
$\bar{x}$	8.000	97.440	7.052		7.200	22.280	0.002	0.012	0.004	0.0002	0.001	0.054	100.000	
S.D.	3.937	108.823	0.326		0.224	2.807	0.000	0.014	0.002	0.0003	0.000	0.021	0.000	
S.E.	1.761	48.667	0.146		0.100	1.256	0.000	0.006	0.001	0.0002	0.000	0.009	0.000	

TABLE 6 COMPANY Restigouche Mine STATION R-6  
 MINE WATER QUALITY

DATE 19 72	TEMP °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	8		6.90	6-6-72	6.8	12.2	<0.002	0.002	0.002			0.07	100	
July 20	12	161.0	7.10	11-7-72	7.2	19.6	<0.002	0.005	<0.002			0.05	100	
Aug. 28	13		7.30	17-8-72	7.2	17.1	<0.002	0.095	0.003			0.20	100	
Oct. 5	6		7.40		7.3	17.1	<0.002	<0.002	0.002			0.05	100	
Nov. 14	2		7.15		7.2	16.2	<0.002	0.013	0.005			0.08	100	
$\bar{x}$	8.200		7.170		7.140	16.440	0.002	0.023	0.003			0.040	100.000	
SD	4.494		0.192		0.195	2.688	0.000	0.040	0.001			0.063	0.000	
SE	2.010		0.086		0.087	1.202	0.000	0.018	0.001			0.028	0.000	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : R-6

LOCATION: Nepisiquit River Above Postage Brook.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C°.....	8.7
2. pH.....	7.2
3. Total Hardness mg/L.....	16.3
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.06

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PHYSICAL FACTORS

1. Depth cm.....	67
2. Substrate .....	Rock
3., Velocity cm/sec .....	40

BOTTOM COMMUNITY

1. Total Number/Sampler .....	171	
2. Total Number of Taxa .....	12	
Numerically Dominant	TAXA	% TOTAL
3. First.....	Tendipedidae ,.....	70
4. Second .....	Baetidae .....	21
5. Third .....	Heptageniidae/Simuliidae .....	2 ea.
6. Fourth .....	Hydropsychidae .....	1 5
7. Diversity .....	0.954	

CODE : R-6

BIOLOGICAL RESULTS

LOCATION : Nepisiquit River, Above Portage Brook

TAXA	Sampling Period 6/6/72 - 11/7/72		Sampling Period 11/7/72-17/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Pteronarcidae	----	----	1.5	1	0.75	0.5
Ephemeroptera						
Baetidae	41	37	32	14	36.5	21
Heptageniidae	2.5	2	3.5	2	3	2
Trichoptera						
Hydropsychidae	0.5	0.5	5	2	2.75	1.5
Brachycentridae	----	----	1.5	1	0.75	0.5
Limnephilidae	1.5	1	----	----	0.75	0.5
Diptera						
Tendipedidae	56	51	183.5	79	119.75	70
Simuliidae	5	5	3	1	4	2
Rhagionidae	2	2	2	1	2	1
Blepharoceridae	0.5	0.5	----	----	0.25	0.5
Coleoptera						
Gyrinidae	0.5	0.5	----	----	0.25	0.5
Unknown	0.5	0.5	----	----	0.25	0.5
<b>TOTAL</b>	<b>110</b>		<b>232</b>		<b>171</b>	

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

EPC-1103

TABLE		COMPANY				STATION	
7		Restigouche Mine				R-7	

MINE WATER QUALITY

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % / o	LT 50 hrs.
June 6	12		6.75		6.7	12.6	<0.002	0.021	0.002			0.10		
July 20	12		7.10	11-7-72	7.3	18.4	<0.002	<0.002	<0.002			0.05		
Aug. 28	13	156.0	7.14	17-8-72	7.0	17.6	<0.002	0.015	0.003			0.07		
Oct. 5	6	136.0	7.45		6.4	17.3	<0.002	0.005	0.002			0.06		
Nov. 14	2	460.0	7.10		6.3	16.4	<0.002	0.018	0.006			0.08		
$\bar{x}$	9.000	250.667	7.108		6.740	16.460	0.002	0.012	0.003				0.072	
SD	4.796	181.564	0.248		0.416	2.273	0.000	0.008	0.002				0.019	
SE	2.145	104.826	0.111		0.186	1.017	0.000	0.004	0.001				0.009	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : R-7

LOCATION: Nepisiquit River at Popple Depot.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	8.7
2. pH .....	7.2
3. Total Hardness mg/L .....	16.1
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.07

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PHYSICAL FACTORS

1. Depth cm .....	78
2. Substrate .....	Rock
3. Velocity cm/sec .....	30

BOTTOM COMMUNITY

1. Total Number/Sampler .....	260	
2. Total Number of Taxa .....	8	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	73
4. Second .....	Brochycentridae .....	11
5. Third .....	Baetidae .....	10
6. Fourth .....	Heptageniidae .....	2
7. Diversity .....	0.910	

CODE : R-7

BIOLOGICAL RESULTS

LOCATION : Nepisiquit River, at Popple Depot.

TAXA	Sampling Period		Sampling Period 11/7/72 - 17/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera Pteronarcidae			3.5	1	3.5	1
Ephemeroptera Baetidae			2.7	10	27	10
Heptageniidae			5.5	2	5.5	2
Trichoptera Hydropsychidae			2	1	2	1
Brachycentridae			30	11	30	11
Diptera Tendipedidae			191	73	191	73
Rhagionidae			0.5	0.5	0.5	0.5
Coleoptera Dytiscidae			0.5	0.5	0.5	0.5
TOTAL			260		260	



TEXAS GULF

MINE: Texas Gulf.

AREA CODE: "T"

STATIONS:

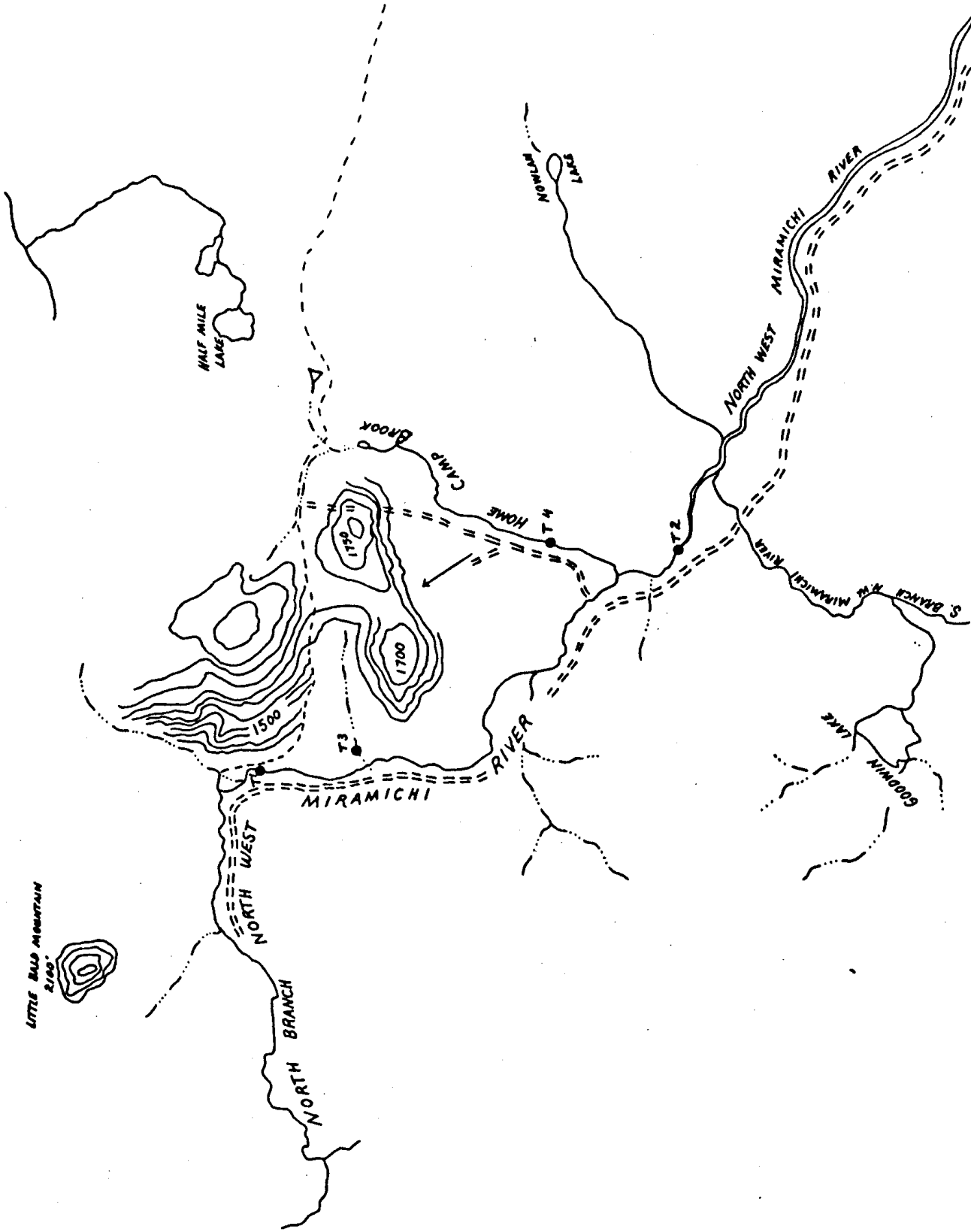
<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
T-1	EM	North Branch, N.W. Miramichi, above mine.	66°21'08"	47°18'52"
T-2	Cd EM	North Branch, N.W. Miramichi, above junction of South Branch.	66°19'38"	47°16'38"
T-3		Small brook entering North Branch at Trout Pool.	66°21'00"	47°18'22"
T-4		Home Camp Brook at bridge above junction with North Branch of N.W. Miramichi.	66°19'28"	47°17'12"

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

# AREA T

TEXAS GULF  
ROAD LOOSE SURFACE  
SAMPLING STATIONS



DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)  
ATLANTIC REGION

EPD-1102

TABLE 1											COMPANY					STATION			
MINE WATER QUALITY											TEXAS GULF					T - 1			
DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %/o	LT 50 hrs.					
June 8	8	295.0	6.85	8-6-72 ↓	6.5	7.3	<0.002	0.006	0.002			0.09							
Aug. 10	12	77.0	7.00	19-7-72 ↓	7.1	13.9	0.002	0.003	<0.002			0.06							
Oct. 24	3	60.0	6.70	23-8-72	6.9	12.6	<0.002	<0.002	0.002			0.07							
$\bar{x}$	7.667	144.000	6.850		6.833	11.933	0.002	0.004	0.002										
SD	4.509	131.046	0.150		0.306	2.371	0.000	0.002	0.000				0.073						
SE	2.603	75.659	0.087		0.176	1.369	0.000	0.001	0.000				0.015						

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : T-1

LOCATION: North Branch, North West Miramichi Above Mine.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	7.6
2. pH .....	6.8
3. Total Hardness mg/L .....	11.9
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.07

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PHYSICAL FACTORS

1. Depth cm .....	51
2. Substrate .....	Rock & sand
3. Velocity cm/sec .....	80

BOTTOM COMMUNITY

1. Total Number/Sampler .....	154.5	
2. Total Number of Taxa .....	10	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	77
4. Second .....	Baetidae .....	17
5. Third .....	Simuliidae .....	2
6. Fourth .....	Hydropsychidae/Rhagionidae ....	1
7. Diversity .....	0.768	

CODE : T-1

BIOLOGICAL RESULTS

LOCATION : North Branch, North West Miramichi, Above Mine.

TAXA	Sampling Period 8/6/72-19/7/72		Sampling Period 19/7/72-23/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	22.5	14	30.5	20	26.5	17
Heptageniidae	0.5	0.3	1.5	1	1	0.5
Trichoptera						
Hydropsychidae	0.5	0.3	3.5	2	.2	1
Psychomyiidae	-----	-----	0.5	0.3	0.25	0.5
Phyacophilidae	1	1	-----	-----	0.5	0.5
Diptera						
Tendipedidae	131.5	82	106.5	71	119	77
Simuliidae	3	2	2.5	2	2.75	2
Rhagionidae	0.5	0.3	3.5	2	2	1
Tipulidae	-----	-----	0.5	3	0.25	0.5
Gastropoda						
Unknown	0.5	0.3	-----	-----	0.25	0.5
TOTAL	160		149		154.5	

DEPARTMENT OF THE ENVIRONMENT  
(ENVIRONMENTAL PROTECTION)

ATLANTIC REGION

AIRNE WATER QUALITY

TABLE 2 COMPANY TEXAS GULF STATION T - 2

DATE 19 72	TEMP. ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % / o	LT 50 hrs.
June 8	9	556.0	7.00	8-6-72 ↑	6.6	8.7	<0.002	<0.002	0.002	.00005	<0.001	0.08		
Aug. 10	12	77.9	6.95	19-7-72 ↑	7.2	13.7	0.002	0.005	<0.002		<0.001	0.07		
Oct. 24	3	96.0	6.68	23-8-72	6.7	11.7	<0.002	0.002	0.003	0.002	<0.001	0.07		
XI	8.000	243.300	6.877		6.833	11.367	0.002	0.003	0.002	0.001	0.001	0.073		
S.D	4.583	270.957	0.172		0.321	2.517	0.000	0.002	0.001	0.001	0.000	0.006		
S.E	2.646	156.437	0.099		0.186	1.453	0.000	0.001	0.000	0.001	0.000	0.003		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : T-2

LOCATION: North Branch, North West Miramichi Above  
South Branch.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	8
2. pH .....	6.9
3. Total Hardness mg/L .....	11.4
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.07

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PHYSICAL FACTORS

1. Depth cm .....	51.7
2. Substrate .....	Rock, sand, silt.
3. Velocity cm/sec .....	56.7

BOTTOM COMMUNITY

1. Total Number/Sampler.....	134.75	
2. Total Number of Taxa .....	8	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	54
4. Second .....	Baetidae .....	24
5. Third .....	Simuliidae .....	13
6. Fourth .....	Hydropsychidae .....	4
7. Diversity .....	1.277	



CODE : T-2

BIOLOGICAL RESULTS

LOCATION : North Branch, North West Miramichi, Above South Branch.

TAXA	Sampling Period 8/6/72 - 19/7/72		Sampling Period 19/7/72 - 23/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	1	1	0.5	0.5	0.75	0.5
Ephemeroptera						
Baetidae	26	24	38	24	32	24
Heptageniidae	1.5	1	2.5	2	2	1
Trichoptera						
Hydropsychidae	0.5	0.5	10.5	6	5.5	4
Rhyacophilidae	----	----	1	1	0.5	0.5
Diptera						
Tendipedidae.	77.5	71	68	42	72.75	54
Rhagionidae	2	2	5	3	3.5	2.5
Simuliidae	----	----	35.5	22	17.75	13
<b>TOTAL</b>			<b>161</b>		<b>134.75</b>	



TABLE 4 COMPANY TEXAS GULF STATION T - 4

MINE WATER QUALITY

DATE	TEMP. ° C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL % / o	LT 50 hrs.
19 72														
June 8	7	31.5	6.90		6.7	14.1	<0.002	0.007	<0.002			0.07		
Aug. 10	12	3.0	7.10		7.2	20.4	0.002	0.003	<0.002			0.05		
Oct. 24	2	9.6	6.65		6.9	18.4	<0.002	0.002	0.004			0.05		
̄	7.000	14.700	6.883		6.933	17.633	0.002	0.004	0.003			0.057		
S.D.	5.000	14.919	0.225		0.252	3.219	0.000	0.003	0.001			0.012		
S.E.	2.887	8.613	0.130		0.145	1.859	0.000	0.002	0.001			0.007		



WEDGE (Cominco Corp.)

MINE: Wedge (Cominco Corp.)

AREA CODE: "W"

STATIONS:

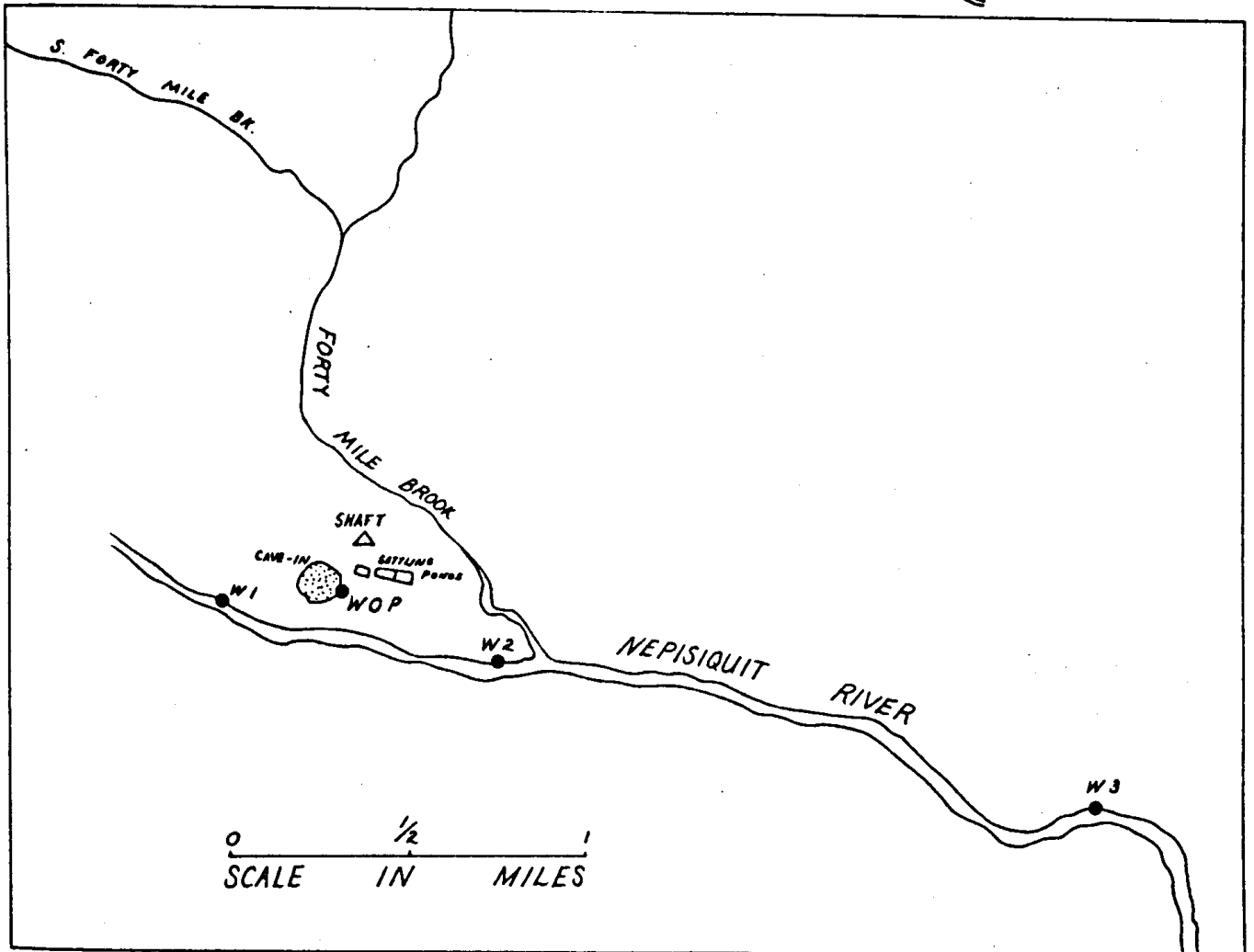
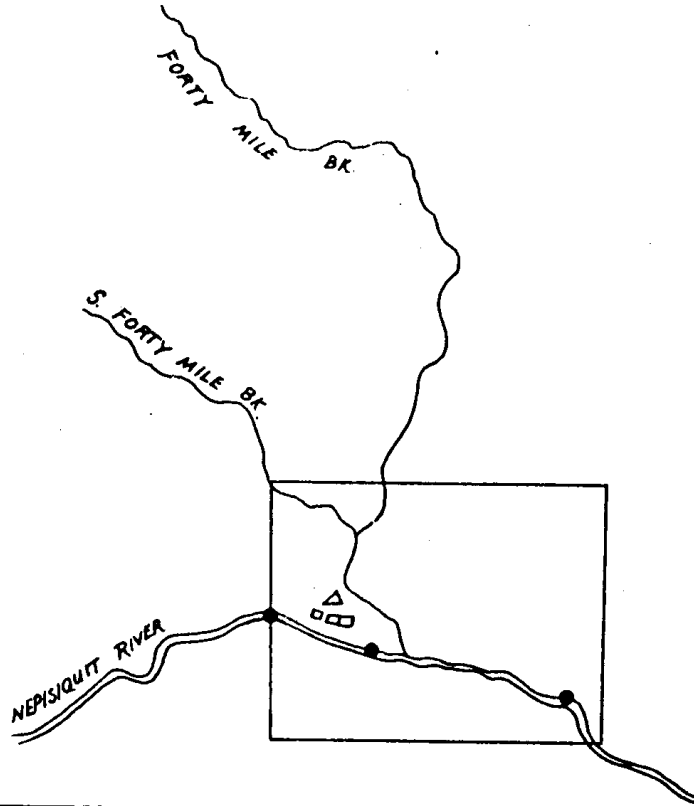
<u>Station No.</u>	<u>Special Analyses</u>	<u>Location</u>	<u>West Long.</u>	<u>North Lat.</u>
W-1	* EM	Nepisiguit, above mine, approx. 1/2 mile.	66°08'16"	47°23'24"
W-2	* Cd EM	Nepisiguit, below mine, above mouth Forty Mile Brook.	66°07'09"	47°23'17"
W-3		Nepisiguit, below Forty Mile Brook, at Mines Branch Camp (similar to AB-7).	66°05'06"	47°23'06"
W.O.P.	Cd	Caved-in section of mine tunnel between shaft and river bank.		

\* Bioassays performed.

Cd - Cadmium analyses.

EM - Ecological Monitoring Station.

**AREA W**  
WEDGE MINES  
SAMPLING STATIONS...







ATLANTIC REGION

MINE WATER QUALITY

TABLE 1	COMPANY	STATION
	WEDGE (COMINCO CORP.)	W - 1

DATE 19 72	TEMP. °C	FLOW c.f.s.	pH field	BIOLOGICAL MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
Nov. 7	0		7.56		6.2	14.4	* 0.086	0.05				* 2.43	100	
Nov. 21	0		6.83		6.6	14.6	0.017	0.028	0.025			0.53	100	
* The toxic unit level on Nov. 7 was exceptionally high for this station (2.43) and was due to a high concentration of copper (.086 ppm). These figures were however used in the calculation of $\bar{x}$ , SD and SE.														
$\bar{x}$	7.692		7.103		6.462	14.315	0.010	0.067	0.005			0.414	100.000	
SD	5.893		0.483		0.669	1.661	0.023	0.103	0.006			0.651	0.000	
SE	1.635		0.134		0.186	0.461	0.006	0.029	0.002			0.181	0.000	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : W-1

LOCATION: Nepisiquit River, Above Wedge Mine.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	10.3
2. pH .....	7.3
3. Total Hardness mg/L .....	13.8
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.11

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PHYSICAL FACTORS

1. Depth cm .....	150
2. Substrate .....	Rock
3. Velocity cm/sec .....	50

BOTTOM COMMUNITY

1. Total Number/Sampler .....	59.75	
2. Total Number of Taxa .....	14	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	26
4. Second .....	Baetidae .....	20
5. Third .....	Heptageniidae/Limnephilidae:...	16 ea.
6. Fourth .....	Anodontinae .....	9
7. Diversity .....	1.967	

CODE : W-1

BIOLOGICAL RESULTS

LOCATION : Nepisiquit River, Above Wedge Mine.

TAXA	Sampling Period 6/6/72 - 14/7/72		Sampling Period 14/7/72 - 17/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	2.5	4	1	2	1.75	3
Perlodidae	0.5	1	-----	-----	0.25	0.5
Pteronarcidae	2.5	4	1	2	1.75	3
Ephemeroptera						
Baetidae	12	21	12	19	12	20
Heptageniidae	2.5	4	17	27	9.75	16
Odonata						
Gomphidae	-----	-----	0.5	1	0.25	0.5
Trichoptera						
Hydropsychidae	1	2	-----	-----	0.5	1
Leptoceridae	-----	-----	2	3	1	2
Limnephilidae	19	33	-----	-----	9.5	16
Beraeidae	-----	-----	0.5	1	0.25	0.5
Rhyacophilidae	0.5	1	-----	-----	0.25	0.5
Philopotamidae	2.5	4	-----	-----	1.25	2
Diptera						
Tendipedidae	14	26	17.5	28	15.75	26
Pelecypoda						
Anodontinae	-----	-----	11	17	5.5	9
<b>TOTAL</b>	<b>57</b>		<b>62.5</b>		<b>59.75</b>	





SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : W-2

LOCATION: Nepisiquit River, Below Wedge Mine at Mouth of  
Forty Mile Brook.

<u>WATER QUALITY</u>	<u>AVERAGE</u>
1. Water Temp. C° .....	12.5
2. pH .....	7.3
3. Total Hardness mg/L .....	14.2
4. Dissolved oxygen % SAT.	
5. Total Carbon mg/L	
6. Organic Carbon mg/L	
7. B.O.D. <sub>5</sub> mgO <sub>2</sub> /L	
8. NO <sub>3</sub> -N mg/L	
9. Total PO <sub>4</sub> mg/L	
10. Toxic Units .....	0.25

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PHYSICAL FACTORS

1. Depth cm .....	
2. Substrate .....	silt
3. Velocity cm/sec .....	

BOTTOM COMMUNITY

1. Total Number/Sampler .....	61.25	
2. Total Number of Taxa .....	10	
Numerically Dominant	TAXA	% TOTAL
3. First .....	Tendipedidae .....	81
4. Second .....	Baetidae .....	9
5. Third .....	Hydropsychidae .....	4
6. Fourth .....	Perlidae .....	1.5
7. Diversity .....	0.771	

CODE : W-2

BIOLOGICAL RESULTS

LOCATION : Nepisquit Below Wedge Mine, at Mouth of Forty Mile Brook.

TAXA	Sampling Period 6/6/72 - 14/7/72		Sampling Period 14/7/72 - 17/8/72		Average	
	Number	% Total	Number	% Total	Number	% Total
Plecoptera						
Perlidae	1	33	1	1	1	1.5
Pteronarcidae	-----	-----	1	1	0.5	1
Perlodidae	1	33	-----	-----	0.5	1
Ephemeroptera						
Baetidae	1	33	11	9	6	9
Trichoptera						
Hydropsychidae	-----	-----	55	5	2.75	4
Psychomyiidae	-----	-----	0.5	0.5	0.25	0.5
Brachycentridae	-----	-----	0.5	0.5	0.25	0.5
Limnephilidae	-----	-----	0.5	0.5	0.25	0.5
Diptera						
Tendipedidae	-----	-----	99	82	49.5	81
Rhagionidae	-----	-----	0.5	0.5	0.25	0.5
<b>TOTAL</b>	<b>3</b>		<b>119.5</b>		<b>61.25</b>	

TABLE 3 COMPANY WEDGE (COMINCO CORP.) STATION W - 3

DATE	TEMP. °C	FLOW c.f.s.	pH field	BIOL. MONITOR	pH Lab.	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 9	2		6.70		6.2	15.3	0.020	0.10	0.004			0.69		
Aug. 9	13		6.90		7.2	19.3	0.005	0.042	0.002			0.17		
Nov. 6	0		7.53		6.5	16.6	0.009	0.046	0.005			0.30		
$\bar{x}$	5.000		7.043		6.633	17.067	0.011	0.063	0.004			0.387		
S.D.	7.000		0.433		0.513	2.040	0.008	0.032	0.002			0.271		
S.E.	4.041		0.250		0.296	1.178	0.004	0.019	0.001			0.156		







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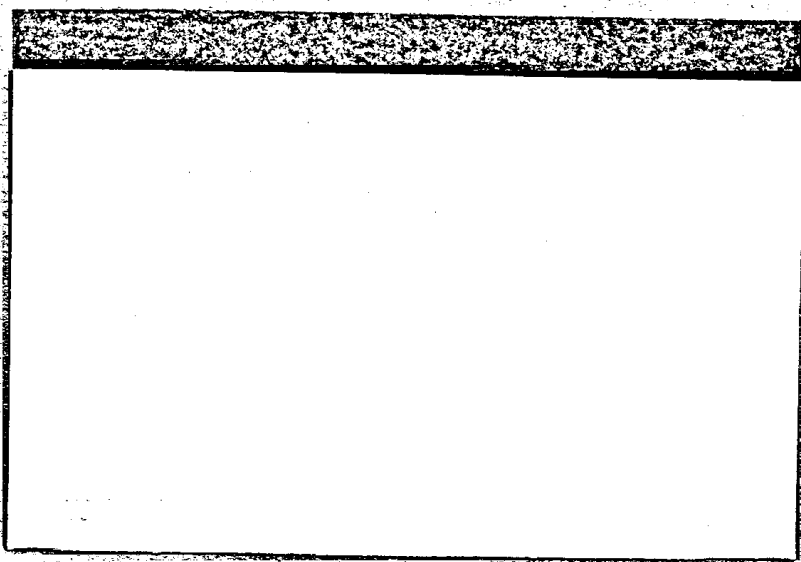
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