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1973 New Brunswick Mine Water Quality Monitoring Program Data

Surveillance Report EPS 5-AR-74-16
Atlantic Region

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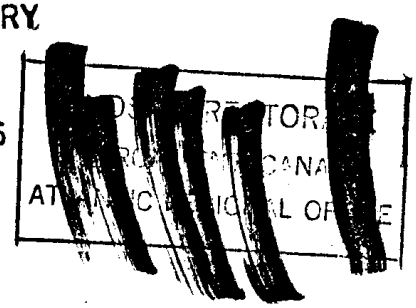


1973 NEW BRUNSWICK

MINE WATER QUALITY MONITORING PROGRAM DATA

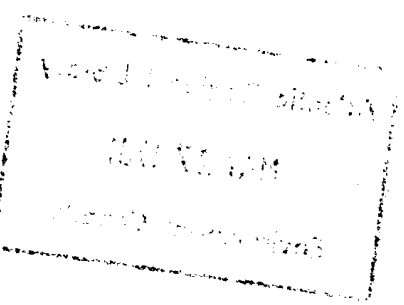
by

SURVEILLANCE SECTION

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

Report Number EPS-5-AR-74-16

December 17, 1974.



ABSTRACT

In 1973, the Northeastern New Brunswick Mine Water Quality Program was continued, with 17 different areas being sampled. This report presents the important sampling data and interprets the state of water quality in each area.

RESUME

Durant l'année 1973, le Service de Protection de l'Environnement a continué le programme de la qualité des eaux des mines au nord-ouest du Nouveau-Brunswick en prenant des échantillons a 17 endroits différents. Ce rapport présente les résultats les plus importants de l'échantillonage et il interprète l'état de la qualité des eaux et de la faune a chaque endroit.

ACKNOWLEDGEMENTS

This report is due to the efforts and co-operation of many individuals and organizations. The sampling was carried out by W. Norton and W. Anderson.

All chemical analyses were performed by the laboratory of the Water Quality Branch, Environmental Management Service, in Moncton; the fine co-operation of D. Cullen and his staff is gratefully acknowledged. Data were compiled by P. Hawkins, and the report was written by R. Wilson and edited by D. Lord.

This work was carried out as part of the surveillance program of the Surveillance Section, Surveillance and Analysis Division, EPS Halifax, under cost code 9533-943.

The insect collections were identified by W. Pierce.

TABLE OF CONTENTS

1 INTRODUCTION

The New Brunswick Mine Water Quality monitoring program has been operating 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 receiving aquatic environments.

The year 1973 was an unsettled one for the mining industry in New Brunswick with labour unrest plaguing production, and materials shortages and transportation delays affecting the operation of treatment systems. The data on the following pages indicate both improvements and deteriorations in environmental quality, and we have noted these in the narrative which begins the data for each mining region in the report.

2 METHODS

In 1973, a total of 114 stations representing 17 abandoned, existing and known potential mine sites were sampled on a regular basis (1).

Samples destined for heavy metals analysis were acidified in the field, and all samples were then delivered to Moncton where they were analyzed by the Environmental Management Service for the following water quality parameters: turbidity, pH, copper, iron, lead, magnesium, conductance, hardness, calcium, zinc, arsenic, antimony, cadmium, mercury, chromium and humic acids. Not all of these analyses were performed on each sample

- arsenic was determined for Nigadoo River mine, Lake George antimony mine, and Anaconda Caribou samples only.

- antimony was determined for Lake George antimony mine samples only.
- the heavy metal levels were determined on a total extractable basis.
- cadmium analyses were determined for samples as indicated on the mine sample location sheets.

In addition to water quality data, benthic organisms and fish toxicity data were collected for certain key stations in the receiving water. The benthic communities and the population densities were determined by means of artificial multiplate substrate samplers installed for varying periods of time in the stream beds. The toxicity evaluations were carried out on receiving water samples. All bioassays were carried out at the Newcastle toxicity testing laboratory using juvenile Atlantic salmon. The procedure involved exposure of ten fish to undiluted river water for 96 hours under static testing conditions. For those samples which were acutely toxic, LT 50's were determined and are reported in conjunction with the water quality data.

The users of this report series should note that the toxic unit calculations for 1973 have been carried out on a different basis than in previous years. Humic acid levels were measured, and the theoretical toxicity of copper was corrected for their presence using a table derived from the graph presented by Cook and Hoos. The basic toxicity calculations were made according to the equations of Zitko on a Hewlett Packard 9810A calculator.

The fanatical users will also note that the method of statistical summarization has been changed. The median has been used as the statistic for central tendency rather than the arithmetic mean. The reasons for this are twofold: first, the error introduced by an

analytical anomaly is minimized, and second, there is good reason to suppose that the water quality data collected are non-normal in distribution. Data variability has been indicated only by the range. A test run using this procedure on the 1972 data indicates that there is very little difference between the two statistical procedures in most instances.

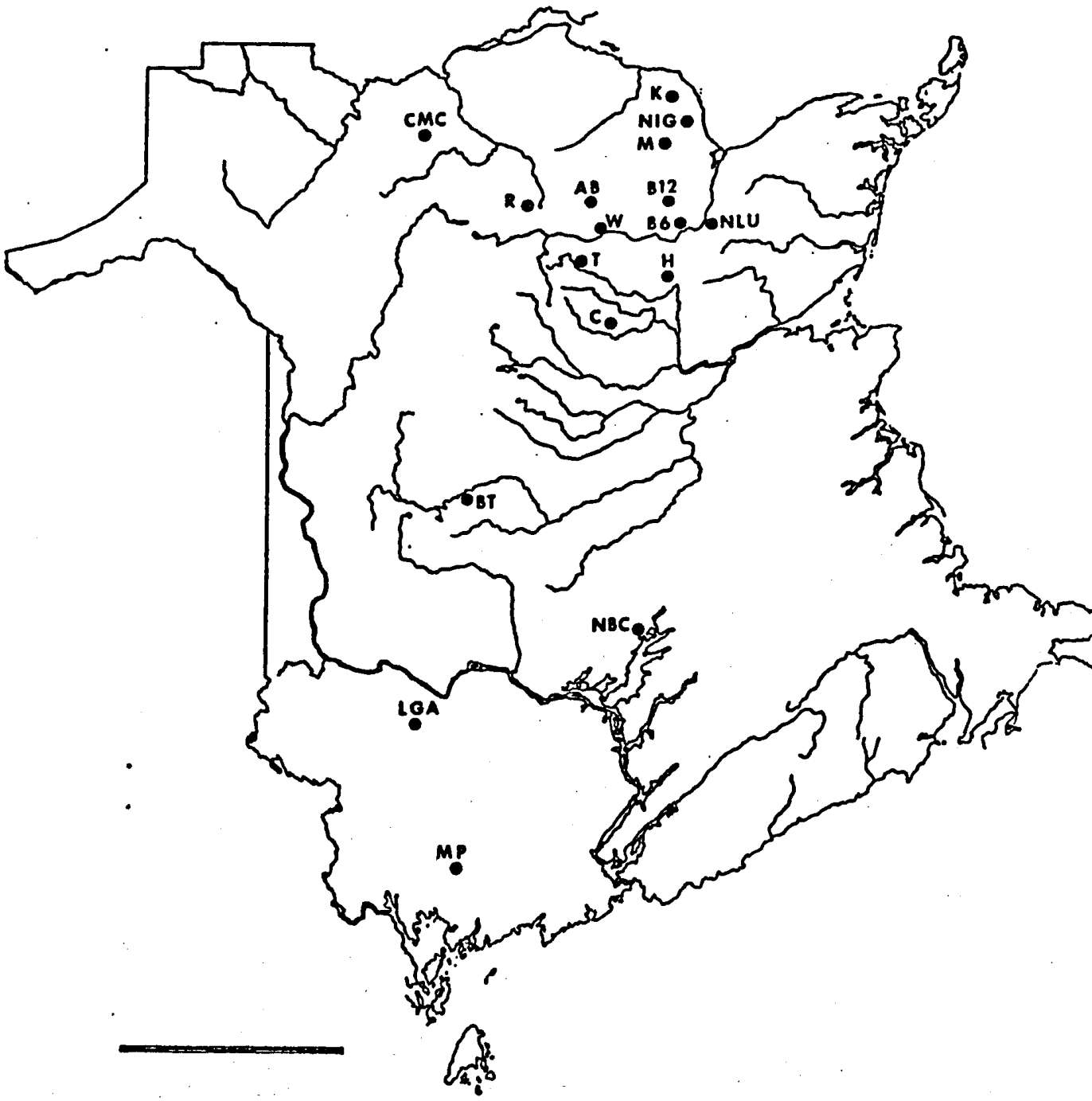
3 RESULTS

As in past years, the results collected through the New Brunswick Mine Water Quality monitoring program are presented in summary, tabular form. Not all of the measurements made have been reported, however.

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

(1) Narrative sheet indicating significant events in the operation of the mine and trends in receiving water quality.
(2) Station location sheet describing the location of all stations and indicating any special analyses conducted.
(3) Map of mine site and sampling stations.
(4) Tables summarizing water quality and toxicity data for each station.
(5) Tables summarizing benthic biological data for the year plus breakdown for each sampling period.

NOTE: Latitudes and Longtitudes for sampling stations are not given in this report, as during a routine check it was found that some of the latitudes and longtitudes reported in 1972 were in considerable error compared to their 'correct' values and so readers of earlier reports should be aware that some of these previously reported lat. and long. values may be in error. For sampling stations included in the NAQUADAT system, correct values for both lats. and longs. are available.



NEW BRUNSWICK MINES SAMPLED

ANACONDA AMERICAN BRASS LTD.

Anaconda American Brass Ltd.

This mine was closed for most of 1973, but began site work again in late September. Accordingly, data for the first three quarters of the year represent water quality under non-operational conditions, and are essentially the same as those collected for 1972. These data points can be taken to indicate the quality resulting from background conditions and the physical alteration to the environment of surface working in the mine area. A certain amount of the zinc levels present appears to be due only to the presence of the mine and its associated surface facilities.

The water quality at AB 6, the station on Forty Mile Brook below the tailings outfall, decreased dramatically in the last quarter of the year presumably as a result of the resumption of work, but the increased zinc levels did not carry through to the Nepisiguit River below Forty Mile Brook and were detectable by just slightly elevated zinc values at the mouth of Forty Mile Brook.

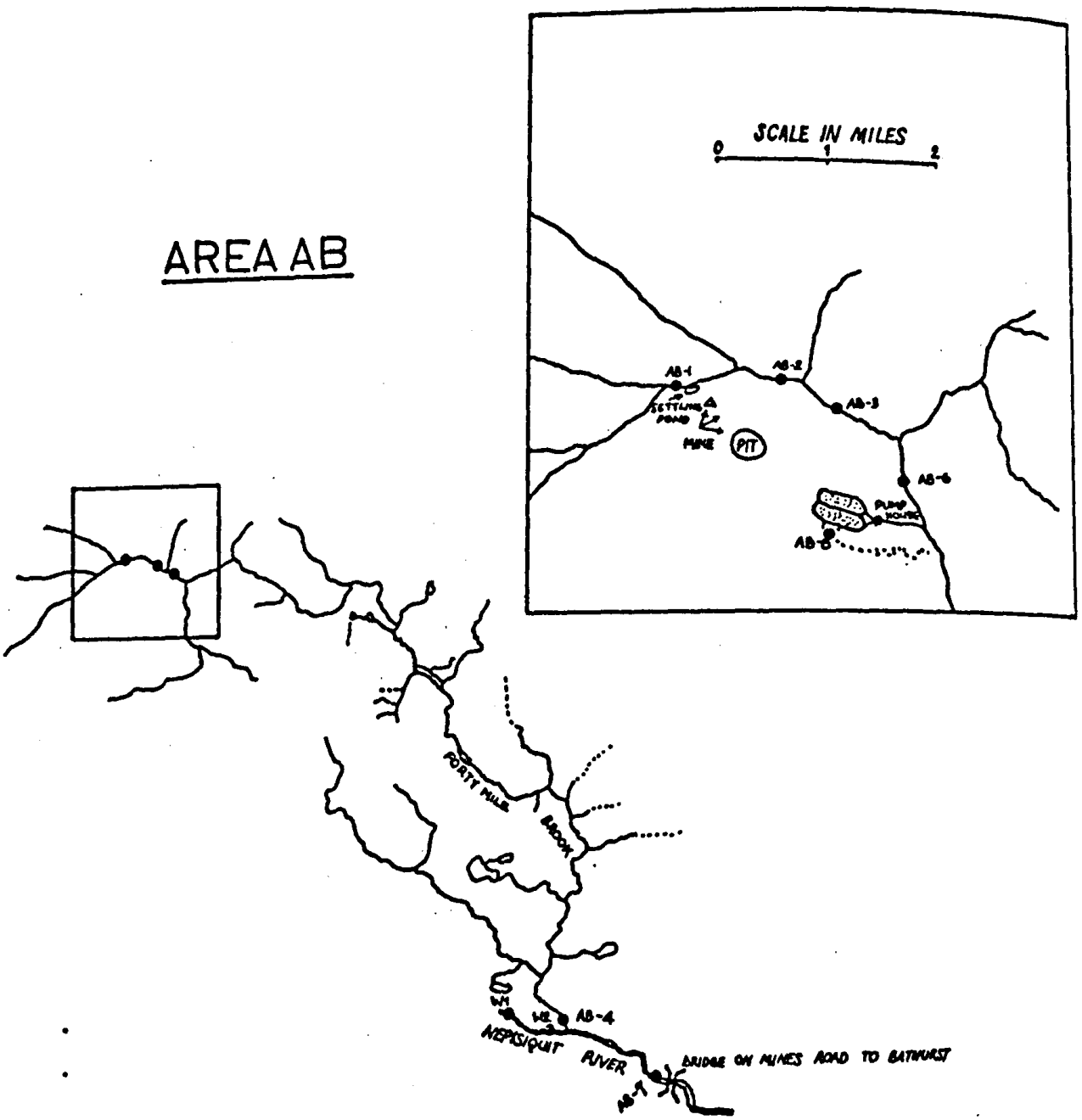
Fewer individuals per sampler were collected at the ecological monitoring site at the mouth of Forty Mile Brook, but one more taxon was found, than in 1972. The station was operated from mid June to mid August, when streamflow in the region was above normal to excessive. The overall diversity there was significantly down from 1972 but higher at AB-7, downstream on the Nepisiguit.

MINE: Anaconda American Brass Ltd. AREA CODE: "AB"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
AB-1	Forty Mile Brook, at site, 1/2 mile above mine property (control).	NB-31	00NB01BK0012
AB-2	Forty Mile Brook, at new bridge culvert below adit.		
AB-3	Forty Mile Brook, below adit, at reservoir spillway discharge.		
AB-4*	50 ft. above mouth of Forty Mile Brook at Nepisiguit River	NB-30	00NB01BK0015
AB-5	Outflow from new tailings ponds.		
AB-6	Below tailings outflow into Forty Mile Brook.		
AB-7*	Nepisiguit River 2 miles below Forty Mile Brook at Mines Branch Camp (at bridge on mines road to Bathurst)	NB-29	00NB01BK0020

* Ecological Monitoring Station



ANACONDA AMERICAN BRASS LTD.

SAMPLING STATIONS.....•

SCALE IN MILES

0 2 4

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	ANACONDA AMERICAN BRASS LTD.	AB-1

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 15	3.0	62.4	6.90	6.6		6.0	14.3	<0.002	0.045	0.004		0.001	0.11		
June 16	11.0	7.23	6.90	6.9		3.0	26.8	0.005	0.039	0.007	.00006	<0.001	0.12		
July 25	18.0	0.80	7.00	7.5		2.0	39.4	0.007	0.019	0.002		0.001	0.10		
Aug. 30	13.0	0.44	7.20	7.2		3.0	36.5	0.011	<0.002	0.003		<0.001	0.11		
Sept. 25	4.0	0.80	7.10	7.4		3.0	35.7	<0.002	<0.002	<0.002		<0.001	0.02		
Oct. 23	6.0	2.35	7.05	7.7		2.0	34.8	<0.002	0.003	0.002		<0.001	0.03		
Nov. 21	0		6.60	7.4		4.0	33.7	0.005	<0.002	0.080		<0.001	0.11		
Dec. 11	0		6.40	7.0		8.0	28.3	<0.002	0.002	0.004		<0.001	0.02		
Med.	5.0	1.575	6.95	7.3		3.0	34.25	<0.003	0.002	0.003	.00006	<0.001	0.105		
Max.	18.0	62.4	7.20	7.7		8.0	39.4	0.011	0.045	0.080	.00006	0.001	0.12		
Min.	0.0	0.44	6.40	6.6		2.0	14.3	<0.002	<0.002	<0.002	.00006	<0.001	0.02		

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	ANACONDA AMERICAN BRASS LTD.	AB-2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 15	3	70.8	8.40	6.80		6.0	17.8	0.15	0.22	0.003			1.87		
June 18	11	10.8	6.90	6.90		3.0	36.8	0.15	0.75	0.007			2.20		
July 25	19	1.96	6.80	7.10		6.0	68.1	0.40	1.35	0.008			3.86		
Aug. 30	13	0.81	7.00	7.30		4.0	54.1	0.20	0.70	0.009			1.57		
Sept. 25	4	0.80	6.80	7.00		3.0	54.0	0.15	0.71	0.007			1.60		
Oct. 23	7	2.10	6.80	7.30		3.0	53.9	0.084	0.65	0.004			1.10		
Nov. 21	0		6.15	7.00		3.0	44.3	0.05	0.50	0.006			0.84		
Med.	7.0	2.03	6.80	7.00		3.0	53.9	0.15	0.70	0.007			1.60		
Max.	19.0	70.8	8.40	7.30		6.0	68.1	0.40	1.35	0.009			3.86		
Min.	0.0	0.80	6.15	6.80		3.0	17.8	0.05	0.22	0.003			0.84		

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TABLE	COMPANY	STATION
3	ANACONDA AMERICAN BRASS LTD.	AB-3

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 15	3.0	117.6	7.10	6.6		7.0	17.0	0.079	0.49	0.005			1.54		
June 18	11.0	29.5	6.90	6.7		6.0	30.7	0.070	0.40	0.006			0.90		
July 25	20.0	1.96	6.70	6.7		7.0	43.8	0.093	0.40	0.003			0.73		
Aug. 30	14.0	1.97	6.70	7.3		7.0	41.6	0.091	0.40	0.007			0.76		
Sept. 25	7.0	1.60	6.73	7.1		6.0	45.0	0.088	0.54	0.002			0.85		
Oct. 23	6.0	1.03	6.90	7.3		5.0	48.1	0.064	0.35	0.005			0.61		
Nov. 21	1.0		6.10	7.0		6.0	41.2	0.050	0.50	0.007			0.70		
Dec. 11	0		6.00	6.8		8.0	35.1	0.070	0.50	0.006			0.84		
Med.	6.5	1.965	6.715	6.9		6.5	41.4	0.074	0.445	0.005			0.80		
Max.	20.0	117.6	7.10	7.3		8.0	48.1	0.093	0.54	0.007			1.54		
Min.	0.0	1.03	6.00	6.6		5.0	17.0	0.050	0.35	0.002			0.61		

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TABLE	COMPANY	STATION
4	ANACONDA AMERICAN BRASS LTD.	AB-4

MINE WATER QUALITY

DATE 19-73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0	2200.0	6.10	6.2		8.0	14.3	0.019	0.090	0.005	.00016	<0.001	0.35	40	
May 15	5.0	1080.0	6.70	6.6		7.0	11.4	0.012	0.080	0.004	<.00005	0.001	0.31	100	
May 23	5.0	1555.0	6.50	6.4		8.0	11.9	0.027	0.100	0.051	.00024	0.002	0.57	100	
* June 11	14.0		7.10				26.3	0.017	0.056						
June 12	10.0	422.0	6.85	6.7		5.0	21.3	0.013	0.100	0.002	.00017	<0.001	0.27	80	
June 18	10.0	147.6	7.00	6.9		4.0	22.7	0.010	0.180	0.006	.00004	<0.001	0.36	100	
July 3	17.0	77.3	7.00	7.3		3.0	31.3	0.020	0.090	0.005		0.001	0.33	100	
* July 19	17.0		5.70				33.0	0.009	0.024						
July 24	16.0	32.8	7.30	7.6		2.0	35.5	0.004	0.045	0.002		0.001	0.10	100	
July 25	17.0	32.8	7.00	7.1		2.0	35.1	0.011	0.060	0.002		0.001	0.20	100	
Aug. 7	15.0	235.8	7.10	6.7		14.0	24.5	0.011	0.093	0.006		0.001	0.18	100	
* Aug. 14	13.0		6.30				22.8	0.009	0.090						
Aug. 23	13.0	167.0	7.10	7.1		5.0	29.6	0.003	0.048	0.006		0.001	0.08	100	
Aug. 30	13.0	110.5	7.00	7.4		3.0	32.1	0.005	0.033	0.004		0.001	0.09	100	
Sept. 11	10.0	59.1	6.85	7.6		3.0	32.0	0.008	0.057	0.002		<0.001	0.15	100	
Sept. 25	4.0	63.9	7.11	7.3		3.0	21.1	0.005	0.045	0.002		<0.001	0.11	100	
Oct. 8	4.0	63.9	7.45	7.6		3.0	33.6	0.003		0.002		<0.001	0.08	100	
Med.		Cont'd next page													
Max.															
Min.															

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	ANACONDA AMERICAN BRASS LTD.	AB-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
Oct 23	6.5	35.4	7.15	7.8		2.0	39.4	0.004	0.067	<0.002		<0.001	0.11		
Oct. 25	3.0	35.4	7.35	7.7		2.0	38.0	0.004	0.100	0.002		<0.001	0.14		
Nov. 21	0		6.35	7.2		6.0	34.1	0.010	0.300	0.002		<0.001	0.37		
Dec. 11	0		6.50	6.8		9.0	28.3	0.013	0.250	0.005		0.001	0.37		
* = Ecological Monitoring samples.															
Med.	10.0	93.9	7.00	7.15		3.5	31.1	0.010	0.080	0.003	.00016	<0.001	0.19	100	
Max.	17.0	2200.0	7.45	7.8		14.0	39.4	0.027	0.300	0.051	.00024	0.002	0.57	100	
Min.	0	32.8	5.70	6.2		2.0	11.4	0.003	0.024	<0.002	.00004	<0.001	0.08	80	

BIOLOGICAL RESULTS

CODE : AB-4

TAXA	Sampling Period 11/6/73 - 19/7/73		Sampling Period 17/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	17.5	28.00	6.0	5.13	11.75	13.09
Plecoptera						
Perlidae	0.5	0.80	---	---	0.25	0.28
Perlodidae	0.5	0.80	---	---	0.25	0.28
Pteronarcidae	1.5	2.40	---	---	0.75	0.84
Trichoptera						
Hydropsychidae	4.0	6.4	1.0	0.85	2.5	2.79
Psychomyiidae	1.0	1.6	---	----	0.5	0.56
Rhyacophilidae	----	-----	1.0	0.85	0.5	0.56
Diptera						
Rhagionidae	1.5	2.40	1.0	0.85	1.25	1.39
Tendipedidae	35.5	56.80	107.0	91.45	71.25	79.39
Tipulidae	0.5	0.80	----	-----	0.25	0.28
Lepidoptera	----	-----	1.0	0.85	0.5	0.56
TOTAL	62.5		117.0		89.75	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : AB-4

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	14.6
2.	pH	6.4
3.	Total Hardness mg/l	27.37
4.	Dissolved oxygen	
	% SAT.	97.7
5.	Total Carbon mg/l	16.0
6.	Organic Carbon mg/l	12.4
7.	B.O.D.$_5$ mgO_2/L	0.66
8.	NO_3-N mg/L	0.128
9.	Total PO_4 mg/L	0.10
10.	Toxic Units	0.28

	PHYSICAL FACTORS	
1.	Depth cm	38.3
2.	Substrate	Granule
3.	Velocity cm/sec	78.0

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		90
2.	Total Number of Taxa		11
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	79.4
4.	Second	Baetidae	13.1
5.	Third	Hydropsychidae	2.8
6.	Fourth	Rhagionidae	1.4
7.	Diversity	0.79	

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TABLE	COMPANY	STATION
5	ANACONDA AMERICAN BRASS LTD.	AB-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 15	10	3.10	10.20	10.4		<1.0	39.8	0.20	0.58	0.009			2.81		
June 18	14	0.05	6.60	6.8		1.0	311.0	0.036	0.20	0.006			0.12		
July 25	No sample collected.			No outflow during remainder of 1973 sampling period.											
Med.	12.0	1.575	8.40	8.6		<1.0	175.4	0.118	0.39	0.007			1.465		
Max.	14.0	3.10	10.20	10.4		1.0	311.0	0.20	0.58	0.009			2.81		
Min.	10.0	0.05	6.60	6.8		<1.0	39.8	0.036	0.20	0.006			0.12		

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TABLE	COMPANY	STATION
6	ANACONDA AMERICAN	AB-6

MINE WATER QUALITY

DATE 19-73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 15	3.0	80.5	7.20	6.8		6.0	17.7	0.052	0.33	0.003			1.05		
June 18	11.0	43.3	6.80	6.7		6.0	31.6	0.041	0.45	0.005			0.75		
July 25	16.0	3.93	6.90	6.8		4.0	82.9	0.054	0.80	0.004			0.85		
Aug. 30	15.0	3.30	7.00	7.3		6.0	50.7	0.055	0.50	0.005			0.63		
Sept. 25	4.0	2.65	6.90	7.0		5.0	55.7	0.058	0.93	<0.002			0.98		
Oct. 23	6.0	2.81	6.80	6.9		3.0	91.5	0.520	8.50	0.002			7.94		
Nov. 21	0		5.95	7.2		3.0	76.4	0.500	3.70	0.005			5.80		
Dec. 11	0		6.35	6.7		8.0	55.7	0.200	1.50	0.006			1.80		
Med.	5.0	3.61	6.85	6.85		5.5	55.7	0.056	0.865	0.004			1.015		
Max.	16.0	80.50	7.20	7.3		8.0	91.5	0.520	8.50	0.006			7.94		
Min.	0	2.65	5.95	6.7		3.0	17.7	0.041	0.33	<0.002			0.63		

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TABLE	COMPANY	STATION
7	ANACONDA AMERICAN BRASS LTD.	AB-7

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		6.20	6.4		7.0	16.9	<0.002	0.052	0.002			0.10	90	
May 15	5.0		7.00	6.8		6.0	9.7	0.004	0.091	0.004			0.26	100	
May 23	5.0		6.85	6.5		7.0	10.0	0.006	0.036	0.006			0.17	100	
* June 11	13.0		6.80				15.1	0.007	0.017						
June 12	11.0		7.00	6.7		4.0	14.5	0.013	0.044	<0.002			0.28	100	
June 18	10.0		6.75	6.9		3.0	15.4	0.005	0.041	0.005			0.18	90	
July 3	17.0		6.95	7.1		3.0	19.9	0.012	0.032	0.004			0.25	100	
* July 19	15.0		5.80				19.0	0.005	0.024						
July 24	15.0		7.00	7.4		2.0	17.8	0.004	0.973	0.003			0.21	100	
July 25	17.0		7.00	6.8		2.0	18.4	0.015	0.100	0.002			0.49	100	
Aug. 7	15.0		7.05	6.8		13.0	19.4	0.005	0.050	0.003		<0.001	0.11	100	
* Aug. 14	12.0		6.50				17.5	0.005	0.080						
Aug. 23	14.0		6.50	6.8		3.0	19.7	0.002	0.027	0.006		0.001	0.08	100	
Aug. 30	14.0		7.20	7.5		2.0	20.4	0.007	0.040	0.004		0.001	0.20	100	
Sept. 11	11.0		6.70	7.5		2.0	19.2	<0.002	0.044	0.004		<0.001	0.11	100	
Sept. 25	4.0		7.10	7.4		3.0	20.9	0.002	0.045	0.004			0.10	100	
Oct. 8	4.0		7.50	7.2		4.0	31.3	<0.002	0.035	<0.002			0.06	100	
Med.															
Max.	Cont'd next page.														
Min.															

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ATLANTIC REGION

TABLE	COMPANY	STATION
7	ANACONDA AMERICAN BRASS LTD.	AB-7

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
Oct. 23	6.5		7.10	7.6		1.0	21.3	0.003	0.044	<0.002		<0.001	0.12		
Oct. 25	3.0		7.00	7.6		1.0	19.9	0.005	0.077	<0.002		<0.001	0.22		
Nov. 21	1.0		6.15	7.7		3.0	24.1	0.002	0.100	0.005			0.16		
Dec. 11	0		6.40	7.0		8.0	20.2	0.006	0.100	0.005			0.20		
* = Ecological Monitoring Samples.															
Med.	11.0		6.95	7.05		3.0	19.2	0.005	0.044	0.004		<0.001	0.175	100	
Max.	17.0		7.50	7.7		13.0	31.3	0.015	0.100	0.006		0.001	0.49	100	
Min.	0		5.80	6.4		1.0	9.7	<0.002	0.017	<0.002		<0.001	0.06	90	

EPG-1105 (Feb. 1973)

BIOLOGICAL RESULTS

CODE : AB-7

TAXA	Sampling Period		Sampling Period		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	21.5	40.19	30.0	20.76	25.75	26.01
Heptageniidae	0.5	0.93	---	---	0.25	0.25
Plecoptera						
Perlidae	3.0	5.6	----	---	1.5	1.52
Pteronarcidae	5.5	10.28	5.5	3.8	5.5	5.56
Trichoptera						
Hydropsychidae	1.5	2.80	3.0	2.08	2.25	2.27
Limnephilidae	2.5	4.67	----	-----	1.25	1.26
Philopotamidae	0.5	0.93	----	-----	0.25	0.25
Psychomyiidae	1.0	1.87	0.5	0.35	0.75	0.76
Diptera						
Ceratopogonidae	----	----	0.5	0.35	0.25	0.25
Rhagionidae	0.5	0.93	----	----	0.25	0.25
Simuliidae	----	----	1.0	0.69	0.5	0.51
Tendipedidae	17.0	31.78	104.0	71.97	60.5	61.11
TOTAL	53.5		144.5		99.0	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : AB-7
LOCATION:

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	13.3
2.	pH	6.4
3.	Total Hardness mg/l	17.2
4.	Dissolved oxygen	
	% SAT.	104.3
5.	Total Carbon mg/l	10.9
6.	Organic Carbon mg/l	8.3
7.	B.O.D.$_5$ mgO_2/L	0.81
8.	NO_3-N mg/L	0.014
9.	Total PO_4 mg/L	0.070
10.	Toxic Units	0.24

	PHYSICAL FACTORS	
1.	Depth cm	41.3
2.	Substrate	Pebble
3.	Velocity cm/sec	17.2

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		99
2.	Total Number of Taxa		12
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	61.1
4.	Second	Baetidae	26.0
5.	Third	Pteronarcidae	5.6
6.	Fourth	Hydropsychidae	2.3
7.	Diversity	1.2	

BRUNSWICK MINING & SMELTING CO., NO. 6 MINE

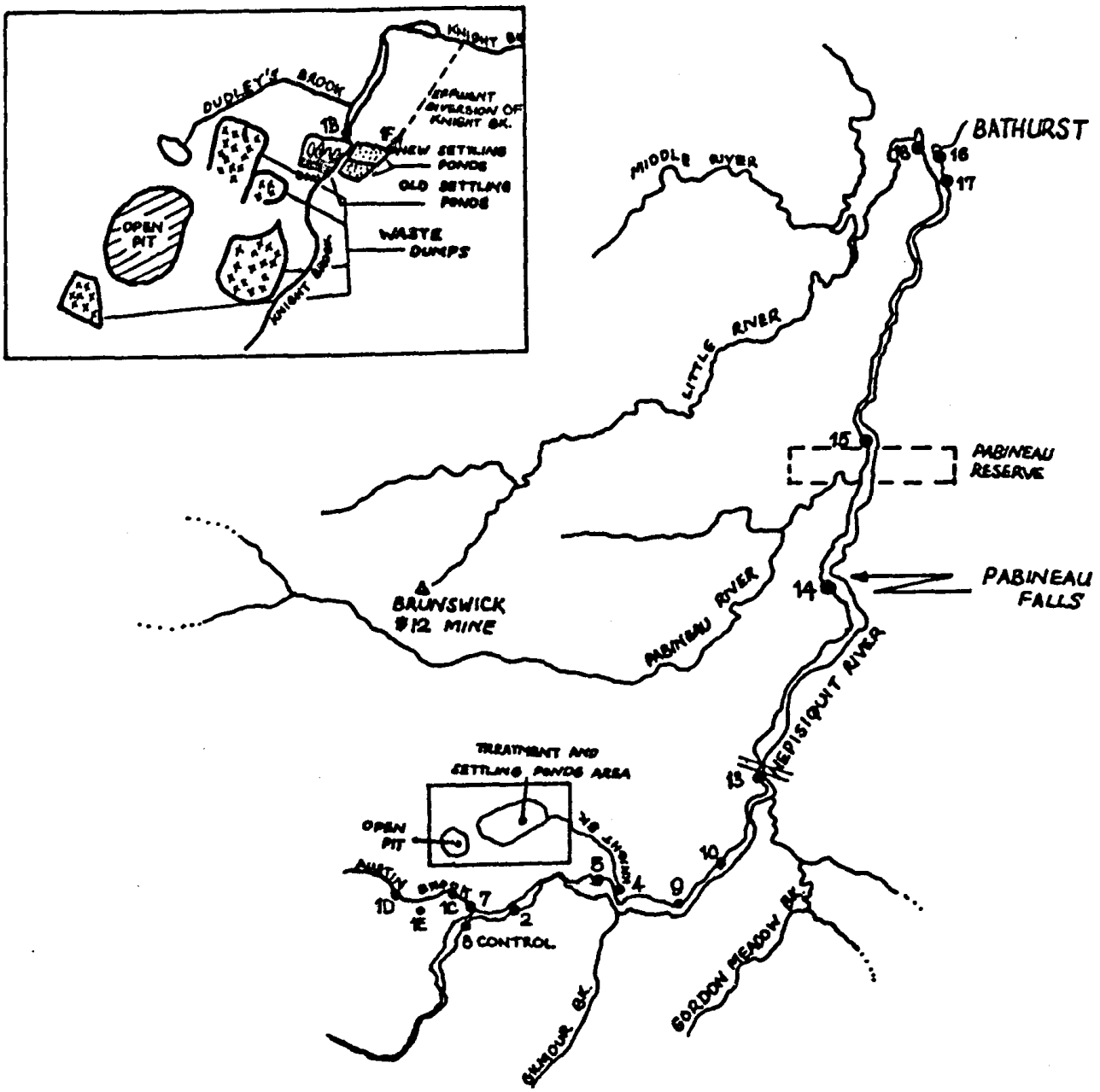
Brunswick Mining and Smelting No. 6 Mine

Sporadic operation of the mine water treatment system was reflected in the high metal levels in the effluent; the average zinc concentration in 1973 was over three times that measured in 1972. Surprisingly, however, the contamination at the mouth of Knight Brook was less this year than last, a phenomenon which must be attributed to the Knight Brook swamp. During the year, a program was completed to control seepage from the contaminated area and to divert the effluent from the treatment pond around the Knight Brook swamp, but any consequent improvement at the mouth of Knight Brook has been masked by the variability of the effluent. Sampling at station B-6 - 1C, the outflow from the open pit sump pump, has been discontinued because this stream has now been diverted to the treatment system.

The quality of the Nepisiguit River above the mine was improved in 1973, from the median of 0.25 TU in 1972 to a median of 0.16 TU. The value of 2.3 TU in the August 23 sample is the first record since 1970 of a value of more than one toxic unit at this station, but seemingly anomalous peaks such as this have occurred earlier in the past. It is noteworthly that no fish died in the bioassay of this sample. The benthic fauna at B6-8 was richer in 1973 than in 1972 and far more abundant, but the samplers were withdrawn on August 19, a week before the 2.3 TU value was obtained.

Below Knight Brook, the quality of the Nepisiguit River was slightly improved over 1972 due to the lower zinc levels at the mouth of the brook, but toxic levels were reached at least once at all the stations above Pabineau Falls. The metal levels at Pabineau Falls have not reached one toxic unit since 1970.

AREA B6



BRUNSWICK MINING & SMELTING CO. LTD. — NO. 6 PIT

SAMPLING STATIONS _____ •

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

AREA CODE: "B#6"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
B#6-1B	Outflow from Knight Brook treatment system (old settling ponds)		
B#6-1C	Outflow of open pit sump pump.		
B#6-1D	Austin Brook above sump pump overflow		
B#6-1E	Iron Mine on B#6 property		
B#6-1F	Outflow from new settling ponds		
B#6-2	Nepisiguit, midway between Austin mouth and dam		
B#6-4	Nepisiguit, mouth of Knight Brook		
B#6-5	Nepisiguit River, 50 ft. above mouth of Knight Brook. 1/2 mi. below Bathurst Mines	NB-35	00NB01BK0003
B#6-7	Nepisiguit, mouth of Austin Brook. 1 1/2 mi. above Bathurst Mines.	NB-34	00NB01BK0006
B#6-8*	Nepisiguit 100 ft. above mouth of Austin Brook; 1 1/2 above village of Bathurst Mines.	NB-33	00NB01BK0007
B#6-9	Nepisiguit, below Knight Brook		
B#6-10	Nepisiguit, 3 mi. below Knight Brook, 1 1/2 mil below Bathurst Mines.	NB-37	00NB01BK0050
B#6-13*	Nepisiguit River at bridge on road to Allardville	NB-38	00NB01BK0026

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

AREA CODE: "B#6"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing
B#6-17	Nepisiguit, above Bathurst, at water pump station.		
B#6-18	Nepisiguit, Bathurst, opposite Irving Pier. (below Pump Mill).		

* Ecological Monitoring Station

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
B#6-14	Nepisiguit, Pabineau Falls		
B#6-15	Nepisiguit, below Pabineau River, at reserve		
B#6-16	Nepisiguit River, Bathurst, at Irving Pier	NB-39	00NB01BK0030

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ATLANTIC REGION

TABLE	COMPANY	STATION
2.	Brunswick Mining & Smelting Co Ltd No. 6 Pit	B#6 -1C

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	6.0	1.64	3.0	3.3			871.8	9.5	150.0	3.4			22.8		
May 23	8.0	2.90	2.90	3.2		28.0	855.0	13.0	170.0	0.75			27.6		
Jun 12	15.0	0.04	3.60	3.0			1510.0	1.4	255.0	1.85			16.5		
Jul 3		NO SAMPLE COLLECTED.													
		OUTFLOW DIVERTED INTO KNIGHT BROOK													
		TREATMENT SYSTEM.													
Med	8.0	1.64	3.00	3.2		28.0	871.8	9.5	170.0	1.85			22.8		
Max	15.0	2.90	3.60	3.3		28.0	1510.0	13.0	255.0	3.40			27.6		
Min	6.0	0.04	2.90	3.0		28.0	855.0	1.4	150.0	0.75			16.5		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
1.	Brunswick Mining & Smelting Ltd No. 6 Pit	B#6 - 1B

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	4.0	4.26	3.00	3.2			363.1	16.0	175.0	0.3			66.4		
May 23	8.0	8.20	3.25	3.0		24.0	180.0	4.0	60.0	0.45			36.5		
Jun 12	19.0	0.40	9.60	10.0		2.0	1770.	17.75	208.	0.052			17.4		
Jul 3	22.0	0.07	3.20	3.1		58.0	1658.	22.0	330.	1.40			27.2		
Jul 24	20.0	0.06	3.20	2.9			1802.	25.5	405.	0.80			30.2		
Aug 7	12.0	0.68	3.50	3.0			338.	6.0	110.	0.095			37.2		
Aug 23	19.0	0.26	2.60	2.6			1355.	22.5	410.	0.85			38.8		
Sep 11	11.0	0.07	2.70	2.6			1798.	4.0	710.	0.62			38.7		
Oct 8	10.0	0.34	3.30	2.8			1830.	10.7	330.	0.40			20.8		
Med	12.0	0.34	3.20	3.0		24.0	1658.0	16.0	330.0	0.450			36.5		
Max	22.0	8.20	9.60	10.0		58.0	1830.0	25.50	710.0	1.400			66.4		
Min	4.0	0.06	2.60	2.6		2.0	180.0	4.00	60.0	0.052			17.4		

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ATLANTIC REGION

MINE WATER QUALITY

TABLE	COMPANY	STATION
3.	Brunswick Mining & Smelting Co. Ltd. (No. 6 pit)	B#6 - 1D.

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	1.5	19.7	4.65	5.3		10.0	9.8	0.007	0.015	0.014			0.41		
May 23	5.0	45.0	5.10	4.4		14.0	15.4	0.015	0.11	0.010			0.31		
Jun 12	13.0	5.0	3.20	5.5		7.0	27.4	0.103	0.25	0.008			0.96		
Jul 3	21.0	0.03	6.00	5.8		6.0	26.8	0.034	0.30	0.015			0.62		
Jul 24	20.0	0.40	5.80	5.9		3.0	37.3	0.030	0.30	0.004			0.58		
Aug 7	14.0	1.56	5.40	5.2		6.0	37.4	0.003	0.55	0.007			0.56		
Aug 23	16.0	0.78	5.80	6.2		2.0	31.1	0.0020	0.15	0.007			0.45		
Sep 11	10.0	0.40	5.50	5.6		2.0	53.2	0.008	0.25	0.004			0.27		
Oct 8	5.0	0.66	5.80	5.4		<1.0	76.9	0.008	0.90	0.006			0.66		
Oct 25	4.0	.0.40	6.40	7.2		2.0	34.6	0.006	0.55	0.005			0.65		
Nov 22	1.0		5.35	5.3		5.0	23.2	0.020	0.30	0.015			0.60		
Dec 12	0		4.50	4.4		9.0	21.4	0.100	0.85	0.030			1.92		
Med	7.5	0.72	5.45	5.45		5.5	29.25	0.017	0.30	0.007			0.59		
Max	21.0	45.0	6.40	7.2		14.0	76.9	0.103	0.90	0.030			1.92		
Min	0	0.03	3.20	4.4		<1.0	9.8	0.003	0.11	0.004			0.27		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4.	Brunswick Mining & Smelting Co. Ltd (No. 6 pit)	B#6 - 1E

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		3.40	3.7		4.0	52.0	0.059	4.6	0.150			4.13		
May 23	6.0		3.50	3.6		< 1.0	83.7	0.032	7.0	0.056			4.71		
Jun 12	15.0	0.04	3.50	3.4		< 1.0	99.1	0.045	12.5	0.100			7.56		
Jul 3	19.0	0.02	3.30	3.3		2.0	108.0	0.04	9.9	0.100			5.72		
Jul 24	20.0	0.01	3.50	3.4		2.0	125.0	0.032	9.3	0.059			4.85		
Aug 7	18.0	0.03	3.40	3.4		2.0	124.0	0.018	9.6	0.057			4.97		
Aug 23	19.0		2.80	3.2		12.0	145.0	0.036	16.0	0.200			7.54		
Sep 11	14.0	0.02	3.20	3.3		4.0	138.0	0.022	10.5	0.053			5.07		
Oct 8	7.0		3.40	3.4		3.0	154.0	0.033	15.0	0.065			6.72		
Oct 25	4.0		3.65	3.4		2.0	150.0	0.027	14.0	0.038			6.37		
Med	14.5	0.02	3.40	3.4		2.0	124.5	0.032	10.2	0.062			5.395		
Max	20.0	0.04	3.65	3.7		12.0	154.0	0.059	16.0	0.200			7.56		
Min	2.0	0.01	2.80	3.2		<1.0	52.0	0.018	4.6	0.038			4.13		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
9.	Brunswick Mining & Smelting Co. Ltd. (No. 6 pit)	B#6 -4 -

MINE WATER QUALITY

DATE 19-73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1		NO	SAMPLES	COLLECTED.		BAD	ROAD,	UNFIT	FOR	TRAVEL.					
May 23	5.0	78.0	3.45	3.4		6.0	92.8	0.015	.0.077	0.009			0.14	0	3.95
Jun 12	14.0	21.0	3.40	3.5		4.0	337.0	2.0	27.3	0.081			10.19	0	2.20
Jul 3	20.0	2.76	3.25	3.5		3.0	196.0	0.70	19.0	0.047			9.10	0	2.35
Jul 24	20.0	1.17	3.60	3.5		<1.0	116.0	0.30	7.15	0.019			5.19	0	10-14 hrs
Aug 7	15.0	10.5	4.40	3.3		8.0	237.0	1.0	26.0	0.035			10.81	90?	
Aug 23	16.0	2.45	2.90	3.5		4.0	238.0	0.70	25.0	0.055			9.72	0	2.60
Sep 11	12.0	10.3	3.0	3.0		20.0	683.0	3.75	100.0	0.20			16.47	0	3.44
Oct 8	5.0	4.12	3.50	3.4		3.0	643.0	0.95	30.0	0.044			5.05	0	4.62
Oct 25	4.5	1.82	3.72	3.6		2.0	329.0	0.50	19.5	0.021			5.72		
Nov 22	0		3.20	2.9			422.0	6.00	107.5	0.070			30.14		
Dec 12	0		3.40	3.1		2.0	222.0	3.0	44.0	0.070			22.74		
Med	12.0	4.12	3.40	3.4		3.5	238.0	0.95	26.0	0.044			9.72	0	3.44
Max	20.0	78.0	4.40	3.6		20.0	683.0	6.00	107.5	0.081			30.14	90?	10-14
Min	0	1.17	2.90	2.9		<1.0	92.8	0.015	0.077	0.009			0.14	0	2.20

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ATLANTIC REGION

TABLE	COMPANY	STATION
7.	Brunswick Mining & Smelting Co Ltd. (No. 6 pit)	B#6-2

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		5.80	6.3		8.0	9.9	0.002	0.091	0.005			0.22		
May 23	5.0		6.25	6.3		9.0	10.0	0.009	0.11	0.004			0.34		
Jun 12	13.0		6.80	6.5		4.0	13.0	0.003	0.063	< 0.002			0.17		
Jul 3	23.0		6.70	6.6		3.0	16.1	0.004	0.059	0.005			0.18		
Jul 24	21.0		6.70	6.8		2.0	16.2	0.004	0.037	0.006			0.17		
Aug 7	17.0		6.40	6.7		13.0	17.3	<0.002	0.034	0.004			0.07		
Aug 23	14.0		6.60	6.8		3.0	15.9	0.003	0.088	0.004			0.21		
Sep 11	18.0		6.35	7.3		3.0	17.0	<0.002	0.055	0.007			0.13		
Oct 8	7.0		6.90	7.1		2.0	17.4	<0.002	0.027	0.004			0.09		
Oct 25	3.0		6.55	7.1		1.0	17.0	0.002	0.026	<0.002			0.09		
Med	13.5		6.575	6.75		3.0	16.15	0.002	0.057	0.004			0.17		
Max	23.0		6.90	7.3		13.0	17.4	0.009	0.11	0.007			0.34		
Min	2.0		5.80	6.3		1.0	9.9	<0.002	0.026	<0.002			0.07		

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ATLANTIC REGION

TABLE	COMPANY	STATION
8.	Brunswick Mining & Smelting Co Ltd. (No. 6 pit)	B#6-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	NO	SAMPLE		COLLECTED.		BAD		ROAD,	UNFIT	FOR	TRAVEL.				
May 23	5.0		5.90	5.9		10.0	9.5	0.003	0.054	0.004			0.15	80	
Jun 12	15.0		7.15	6.6		5.0	<13.3	<0.002	0.025	0.004			0.08	90	
Jul 3	21.0		6.90	7.0		3.0	15.8	0.003	0.013	0.004			0.09	100	
Jul 24	20.0		7.00	6.9		2.0	15.3	<0.002	0.010	0.002			0.07	100	
Aug 7	16.0		6.65	6.7		12.0	17.0	<0.002	0.061	0.008			0.12	100	
Aug 23	15.0		6.80	6.9		3.0	16.1	<0.002	0.038	0.004			0.11	100	
Sep 11	14.0		6.70	7.2		3.0	16.8	<0.002	0.015	0.002			0.06	100	
Oct. 8	7.0		7.50	7.3		1.0	17.4	<0.002	0.020	0.004			0.08	100	
Oct 25	5.0		6.80	7.0		1.0	17.0	0.003	0.025	0.002			0.11		
Nov 22	0		6.50	6.6		4.0	18.7	<0.002	0.045	0.006			0.10		
Med	14.5		6.80	6.9		3.0	16.45	<0.002	0.025	0.004			0.095	100	
Max	21.0		7.50	7.3		12.0	18.7	0.003	0.061	0.008			0.15	100	
Min	0		5.90	5.9		1.0	9.5	<0.002	0.010	0.002			0.06	80	

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
6.	Brunswick Mining & Smelting Co Ltd. (No. 6 pit)	B#6-7

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	1.5	147.0	5.25	4.8		11.0	11.5	0.040	0.60	0.010			1.58	100	
May 23	5.0	176.0	4.50	4.4		17.0	12.5	0.083	1.20	0.015			2.96	0	35.00
Jun 12	12.0	31.5	4.90	4.7		4.0	20.6	0.054	2.00	0.016			3.52	0	12.00
Jul 3	20.0	4.92	6.30	6.0		1.0	21.9	0.034	1.00	0.038			2.07	70	
Jul 24	20.0	3.14	6.50	6.3		4.0	25.3	0.015	0.075	0.010			1.11	100	
Aug 7	15.0	19.7	4.60	4.6		7.0	41.0	0.091	5.60	0.040			5.52	0	35.00
Aug 23	15.0	2.15	4.30	4.8		2.0	36.2	0.075	4.50	0.049			5.44	0	8.10
Sep 11	11.0	3.93	6.20	6.6		3.0	34.0	0.010	1.50	0.012			1.67	30	53.50
Oct 8	6.0	4.90	5.70	4.9		1.0	39.2	0.021	2.90	0.029			2.99	100	
Oct 25	3.0	1.06	5.15	4.8		1.0	37.4	0.017	3.10	0.024			3.23		
Nov 22	1.0		4.80	4.9		7.0	22.8	0.015	1.65	0.018			2.35		
Dec 12	0		4.10	4.1		8.0	20.4	0.150	2.50	0.013			4.75		
Med	8.5	4.91	5.025	4.8		4.0	24.05	0.037	1.825	0.017			2.975	30	35.00
Max	20.0	176.0	6.50	6.6		17.0	41.0	0.150	5.60	0.049			5.52	100	53.50
Min	0	1.06	4.10	4.1		1.0	11.5	0.010	0.60	0.010			1.11	0	8.10

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ATLANTIC REGION

TABLE	COMPANY	STATION
5.	Brunswick Mining & Smelting Co. Ltd. (No. 6 pit)	B#6-8

MINE WATER QUALITY

	DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	May 1	1.5		6.20	6.3		8.0	10.1	<0.002	0.096	0.005	.00016	<0.001	0.23	90	
	May 23	5.0		6.80	6.4		17.0	9.0	0.005	0.044	0.004	.00048	0.001	0.15	100	
*	Jun 11	14.0		6.40				13.8	0.006	0.015						
	Jun 12	13.0		6.60	6.1		5.0	14.9	0.015	0.300	0.006	<.00005	0.001	0.72	90	
	Jul 3	21.0		7.00	6.9		3.0	16.6	0.004	0.047	0.010	<.00005	<0.001	0.16	100	
*	Jul 19	21.0		5.50				15.9	0.004	0.012						
	Jul 24	21.0		7.10	7.0		2.0	17.3	0.003	0.083	0.002	.00005	0.001	0.20	100	
	Aug 7	16.0		6.70	6.6		15.0	18.7	0.002	0.100	0.005	.00062	0.001	0.17	100	
*	Aug 14	16.0		6.10				15.4	0.005	0.172						
	Aug 23	15.0		6.70	6.8		3.0	19.1	0.003	1.500	0.002	.00005	<0.001	2.30	100	
	Sep 11	12.0		6.80	7.5		3.0	18.0	<0.002	0.062	0.002	<.00005	0.001	0.13	100	
	Oct 8	7.0		7.50	7.1		2.0	18.6	0.002	0.073	0.006			0.16	100	
	Oct 25	3.0		6.70	7.1		1.0	17.3	0.002	0.035	0.003		0.001	0.10		
	Nov 22	0		6.65	6.7		4.0	19.6	0.002	0.058	0.005	<0.05	<0.001	0.12		
	Dec 12	0		6.20	6.5		12.0	16.3	<0.002	0.040	0.005		<0.001	0.09		
	* - Ecological monitoring samples.															
	Med	13.0		6.70	6.75		3.5	16.6	0.003	0.058	0.005	.00005	0.001	0.16	100	
	Max	21.0		7.50	7.5		17.0	19.6	0.015	1.500	0.010	<0.05	0.001	2.30	100	
	Min	0		5.50	6.1		1.0	9.0	<0.002	0.010	0.002	<.00005	<0.001	0.09	90	

EP6-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B#6-8

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	17.0
2.	pH	6.2
3.	Total Hardness mg/l	14.9
4.	Dissolved oxygen	
	% SAT.	101.0
5.	Total Carbon mg/l	16.3
6.	Organic Carbon mg/l	13.6
7.	B.O.D.$_5$ mgO_2/L	0.936
8.	NO_3-N mg/L	0.016
9.	Total PO_4 mg/L	<0.001
10.	Toxic Units	0.29

	PHYSICAL FACTORS	
1.	Depth cm	52.0
2.	Substrate	Silt
3.	Velocity cm/sec	NIL

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		158
2.	Total Number of Taxa		11
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	78.5
4.	Second	Chironomidae	13.3
5.	Third	Baetidae	4.0
6.	Fourth	Oligochaeta	2.8
7.	Diversity	0.77	

BIOLOGICAL RESULTS

CODE : B#6-8

TAXA	Sampling Period 11/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	7.0	12.73	5.5	2.10	6.25	3.95
Trichoptera						
Hydropsychidae	---	-----	0.5	0.19	0.25	0.16
Lepidostomatidae	---	-----	1.5	0.57	0.75	0.47
Psychomyiidae	---	-----	0.5	0.19	0.25	0.16
Diptera						
Chironomidae	42.0	76.36	---	----	21.0	13.27
Tendipedidae	3.0	5.45	245.5	93.88	124.25	78.52
Coleoptera						
Elmidae	0.5	0.91	---		0.25	0.16
Dytiscidae	-----	----	0.5	0.19	0.25	0.16
Oligochaeta	2.5	4.55	6.5	2.49	4.5	2.84
Pelecypoda	----	-----	0.5	0.19	0.25	0.16
Gastropoda	----	-----	0.5	0.19	0.25	0.16
TOTAL	55.0		261.5		158.25	

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ATLANTIC REGION

TABLE	COMPANY	STATION
10.	Brunswick Mining & Smelting Co. Ltd. (No. 6 pit)	B# 6-9

MINE WATER QUALITY

DATE 19-73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1		NO	SAMPLE		COLLECTED.			BAD	ROAD,	UNFIT		FOR	TRAVEL.		
May 23	3.0		5.50	5.8		7.0	13.0	0.82	1.30	0.006	.00012	0.003	3.34		
Jun 12	15.0		6.40	6.1		5.0	32.8	0.15	1.70	0.007	.00004	0.003	2.85		
Jul 3	21.0		6.65	6.6		3.0	24.6	0.037	0.90	0.006	<.00005	<0.001	1.68		
Jul 24	20.0		6.70	6.8		3.0	18.0	0.011	0.20	0.003	.00006	0.001	0.51		
Aug 7	15.0		6.00	6.1		14.0	35.3	0.075	2.20	0.008		0.004	2.50		
Aug 23	15.0		6.50	6.7		1.41	23.8	0.020	0.80	0.006	.00005	0.001	1.41		
Sep 11	14.0		6.20	6.5		3.0	39.6	0.085	3.15	0.010	<.00005	0.005	3.72		
Oct 8	7.0		6.50	6.8		1.0	42.3	0.037	1.12	0.003	<0.05	0.002	1.39		
Oct 25	4.0		6.55	6.7		2.0	30.0	0.021	0.80	0.003		<0.001	1.21		
Nov 22	0		5.20	4.6		1.0	47.3	0.43	8.00	0.013	<0.05		10.88		
Med	14.5		6.45	6.55		3.0	31.4	0.056	1.21	0.006	.000055	0.002	2.09		
Max	21.0		6.70	6.8		14.0	47.3	0.43	8.00	0.013	<0.05	0.005	10.88		
Min	0		5.20	4.6		1.0	13.0	0.011	0.20	0.003	.00004	<0.001	0.51		

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ATLANTIC REGION

TABLE	COMPANY	STATION
11.	Brunswick Mining & Smelting Co. Ltd. (No. 6 pit)	B# 6-10

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	NO SAMPLE COLLECTED. ROAD UNFIT FOR TRAVEL.														
May 23	5.0		6.0	6.1		10.0	10.9	0.030	0.45	0.005			1.23		
Jun 12	15.0		6.70	6.7		5.0	15.5	0.015	0.20	0.003			0.53		
Jul 3	2.10		6.95	7.0		3.0	16.3	0.009	0.093	0.006			0.33		
Jul 24	20.0		7.10	6.9		2.0	15.8	0.004	0.045	0.004			0.18		
Aug 7	15.0		6.50	6.7		13.0	19.1	0.008	0.25	0.004			0.43		
Aug 23	15.0		6.90	6.7		4.0	18.2	0.003	0.075	0.004			0.16		
Sep 11	14.0		6.70	7.0		4.0	19.6	0.013	0.30	0.004			0.61		
Oct 8	7.0		6.80	7.1		2.0	20.2	0.006	0.15	0.005			0.35		
Oct 25	4.0		6.70	6.9		1.0	17.8	<0.002	0.10	0.002			0.20		
Nov 22	0		6.40	6.6		3.0	21.5	0.030	0.75	0.006			1.52		
Med	14.5		6.70	6.8		3.5	18.0	0.085	0.17	0.004			0.39		
Max	21.0		7.10	7.1		13.0	21.5	0.030	0.75	0.006			1.52		
Min	0		6.00	6.1		1.0	10.9	<0.002	0.045	0.002			0.16		

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ATLANTIC REGION

TABLE	COMPANY	STATION
12.	Brunswick Mining & Smelting Co. Ltd. (No 6 pit)	B# 6-13

MINE WATER QUALITY

	DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	May 1	2.0		6.10	6.2		9.0	8.7	0.002	0.080	0.005	.00012	0.001	0.21	100	
	May 23	5.0		6.30	6.4		10.0	9.2	0.013	0.18	0.005	.00006	0.002	0.55	90	
*	Jun 11	11.5		6.80				109.7	0.016	0.171						
	Jun 12	15.0		6.95	6.6		7.0	13.5	0.011	0.10	0.003	.00004	<0.001	0.31	90	
	Jul 3	21.0		7.00	6.9		3.0	16.3	0.008	0.064	0.004	<.00005	0.001	0.27	100	
*	Jul 19	22.0		5.40				16.4	0.005	0.031						
	Jul 24	20.0		7.20	6.9		2.0	15.6	0.002	0.037	0.004	.00042	0.001	0.12	100	
	Aug 7	16.0		6.75	6.6		15.0	18.5	0.008	0.15	0.006		0.001	0.28	90	
*	Aug 14	18.0		6.30				16.2	0.018	0.440						
	Aug 23	16.0		6.90	6.6		3.0	16.3	0.003	0.078	0.004	<.00005	0.001	0.19	100	
	Sep 11	14.0		6.90	7.1		4.0	18.9	0.012	0.30	0.002	<.00005	0.001	0.61	100	
	Oct 8	7.0		7.60	7.2			19.7	0.002	0.098	0.002		<0.001	0.19	100	
	Oct 25	5.0		6.75	7.1		2.0	18.7	0.004	0.097	<0.002		<0.001	0.24		
	Nov 22	0		6.50	6.8		5.0	21.3	0.030	0.750	0.004	< 0.05	0.001	1.36		
	Dec 12	0		6.20	6.3		13.0	17.9	0.030	0.570	0.009		0.001	1.09		
	* = Ecological Monitoring Samples															
	Med	14.0		6.75	6.7		5.0	16.4	0.008	0.100	0.004	<.000055	0.001	0.275	100	
	Max	22.0		7.60	7.2		15.0	109.7	0.030	0.750	0.009	<0.05	0.002	1.36	100	
	Min	0		5.40	6.2		2.0	8.7	0.002	0.031	<0.002	.0004	<0.001	0.12	90	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B#6-13

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	17.2
2.	pH	6.2
3.	Total Hardness mg/l	42.4
4.	Dissolved oxygen	
	% SAT.	101.7
5.	Total Carbon mg/l	13.3
6.	Organic Carbon mg/l	10.9
7.	B.O.D.$_5$ mgO_2/L	1.25
8.	NO_3-N mg/L	0.008
9.	Total PO_4 mg/L	0.037
10.	Toxic Units	0.35

	PHYSICAL FACTORS	
1.	Depth cm	39.0
2.	Substrate	Pebble
3.	Velocity cm/sec	134.0

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		19
2.	Total Number of Taxa		4
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	36.8
4.	Second	Hydropsychidae	36.8
5.	Third	Baetidae	21.1
6.	Fourth	Simuliidae	5.3
7.	Diversity	1.2	

BIOLOGICAL RESULTS

CODE : B#6-13

TAXA	Sampling Period 19/7/73 - 14/8/73		Sampling Period		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	4.0	21.05			4.0	21.05
Trichoptera						
Hydropsychidae	7.0	36.84			7.0	36.84
Diptera						
Simuliidae	1.0	5.26			1.0	5.26
Tendipedidae	>.0	36.84			>.0	36.84
TOTAL	19.0				19.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
13.	Brunswick Mining & Smelting Co. Ltd. (No 6 pit)	B3 6-14

MINE WATER QUALITY

DATE 19-73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		6.20	6.3		9.0	8.7	0.005	0.074	0.005			0.24	100	
May 23	5.0		6.40	5.9		12.0	9.0	0.013	0.20	0.004			0.58	70	
Jun 12	15.0		6.80	6.6		7.0	14.5	0.012	0.18	0.007			0.45	90	
Jul 3	21.0		7.00	6.8		3.0	15.6	0.008	0.053	0.006			0.26	100	
Jul 24	20.0		7.05	6.9		2.0	15.8	0.002	0.029	0.002			0.10	100	
Aug 7	16.0		6.80	6.8		18.0	60.3	0.006	0.15	0.008			0.17	90	
Aug 23	16.0		6.91	6.9		3.0	16.3	0.002	0.075	0.003			0.16	100	
Sep 11	14.0		7.00	7.3		3.0	19.0	0.010	0.35	0.002			0.70	100	
Oct 8	7.0		7.60	7.2		2.0	19.9	0.004	0.15	0.004			0.31	100	
Oct 25	4.0		6.70	7.2		1.0	18.3	0.004	0.15	0.008			0.33		
Nov 22	0		6.50	6.7		12.0	22.7	0.030	0.10	0.006			1.39		
Med	14.0		6.80	6.8		3.0	16.3	0.006	0.150	0.005			0.31	100	
Max	21.0		7.60	7.3		18.0	60.3	0.030	0.900	0.008			1.39	100	
Min	0		6.20	5.9		1.0	8.7	0.002	0.029	0.002			0.10	70	

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
14.	Brunswick Mining & Smelting Co. Ltd. (No 6 pit)	B# 6-15

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		5.90	5.6		11.0	8.9	<0.002	0.038	0.006			0.11		
May 23	5.0		5.70	5.5		11.0	9.2	<0.002	0.025	0.005			0.08		
Jun 12	15.0		6.75	6.2		20.0	11.9	<0.002	0.050	0.006			0.12		
Jul 3	22.0		6.90	7.1		12.0	17.7	0.005	0.034	0.006			0.09		
Jul 24	22.0		7.10	6.5		7.0	17.8	0.004	0.059	0.005			0.13		
Aug 7	17.0		6.35	6.3		18.0	17.5	<0.002	0.016	0.004			0.04		
Aug 23	16.0		6.80	6.8		1.0	1 5.9	<0.002	0.003	0.006			0.06		
Sep 11	16.0		7.35	7.0		8.0	18.9	<0.002	0.027	0.004			0.06		
Oct 8	8.0		6.80	6.9		7.0	19.3	<0.002	0.012	0.003			0.04		
Oct 25	4.5		6.75	7.1		2.0	18.4	0.004	0.090	0.008			0.23		
Nov 22	0		6.55	6.9		6.0	20.8	0.013	0.380	0.008			0.67		
Med	15.0		6.75	6.8		8.0	17.7	<0.002	0.034	0.006			0.09		
Max	22.0		7.35	7.1		20.0	20.8	0.013	0.380	0.008			0.67		
Min	0		5.70	5.5		1.0	8.9	<0.002	0.003	0.003			0.04		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
15.	Brunswick Mining & Smelting Co. Ltd. (No 6 pit)	B# 6-17

MINE WATER QUALITY

DATE 19–73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2		6.00	6.2		9.0	9.0	0.017	0.100	0.010			0.46	100	
May 23	5		6.15	6.0		12.0	9.2	0.013	0.15	0.006			0.47	100	
Jun 12	15		6.75	6.8		7.0	13.3	0.009	0.10	0.003			0.29	100	
Jul 3	22		6.90	6.9		4.0	861.0	0.007	0.10	0.005			0.02	100	
Jul 24	21		7.00	6.9		2.0	15.7	<0.002	0.026	0.002			0.10	100	
Aug 7	19		7.00	6.7		14.0	17.4	0.006	0.15	0.005			0.28	100	
Aug 23	16		7.00	6.9		3.0	16.8	<0.002	0.078	0.004			0.17	100	
Sep 11	16		6.65	7.10		3.0	19.6	0.016	0.30	<0.002			0.71	100	
Oct 8	8		7.60	7.2		2.0	18.4	0.003	0.16	0.004			0.31	100	
Oct 25	5		6.80	7.2		2.0	18.5	0.004	0.081	0.008			0.22		
Nov 22	0		6.65	6.9		6.0	21.3	0.020	0.60	0.006			1.02		
Dec 12	0		6.30	6.3		18.0	17.7	0.030	0.50	0.012			0.99		
Med	11.5		6.775	6.775		5.0	17.55	0.008	0.125	0.005			0.30	100	
Max	22.0		7.60	7.2		18.0	861.0	0.030	0.600	0.012			1.02	100	
Min	0		6.00	6.0		2.0	9.0	<0.002	0.026	<0.002			0.002	100	

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
16.	Brunswick Mining & Smelting Co. Ltd. (No 6 pit)	B# 6-16

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		6.25	6.0		10.0	10.5	0.002	0.085	0.006			0.20		
May 23	5.0		6.20	6.2		16.0	10.0	0.014	0.18	0.005			0.52		
Jun 12	15.0		6.65	6.9		7.0	117.	0.009	0.13	0.004			0.11		
Jul 3	23.0		6.70	7.0		3.0	17.8	0.007	0.042	0.004			0.20		
Jul 24	21.0		7.00	6.9		3.0	1197.	0.006	0.071	0.005			0.01		
Aug 7	20.0		6.50	6.7		10.0	330.	0.009	0.15	0.012			0.06		
Aug 23	19.0		6.71	6.8		4.0	502.	<0.002	0.066	0.005			0.01		
Sep 11	15.0		6.65	7.2		3.0	719.	0.008	0.30	0.011			0.05		
Oct 8	10.0		6.45	6.7		6.0	441.	0.0 04	0.16	0.006			0.04		
Oct 25	6.5		7.25	6.5		10.0	1147.	0.003	0.06	0.002			0.01		
Nov 22	1.0		7.00	6.8		9.0	199.	0.011	0.88	0.006			0.05		
Med	15.0		6.65	6.8		7.0	441.0	0.007	0.13	0.005			0.05		
Max	23.0		7.25	7.2		16.0	1991.0	0.014	0.880	0.012			0.52		
Min	1.0		6.20	6.0		3.0	10.0	<0.002	0.042	0.002			0.01		

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ATLANTIC REGION

TABLE	COMPANY	STATION
17.	Brunswick Mining & Smelting Co. Ltd, (No. 6 pit)	B#6-18

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	4.0		6.05	6.2		12.0	26.2	0.008	0.15	0.014			0.24		
May 23	6.0		6.10	6.0		12.0	10.4	0.014	0.18	0.006			0.52		
Jun 12	15.0		7.30	6.5		38.0	111.	0.009	0.13	0.006			0.12		
Jul 3	22.0		6.80	6.7		6.0	979.	0.019	0.081	0.015			0.02		
Jul 24	22.0		6.95	6.5		20.0	833.	0.006	0.057	0.007			0.01		
Aug 7	20.0		6.60	6.6			850.	0.009	0.20	0.006			0.03		
Aug 23	20.0		6.80	6.3		21.0	539.0	0.003	0.086	0.008			0.02		
Sep 11	16.0		6.70	6.5		10.0	3176.	0.002	0.20	0.010			0.01		
Oct 8	10.0		6.70	7.0		9.0	291.	0.005	0.15	0.004			0.05		
Oct 25	8.0		7.35	6.8		19.0	1459.	0.004	0.084	0.004			0.01		
Nov 22	1.0		7.00	6.9		8.0	788.	0.018	0.50	0.006			0.07		
Med	15.0		6.80	6.5		12.0	788.0	0.008	0.150	0.006			0.03		
Max	22.0		7.35	7.0		38.0	3176.0	0.019	0.500	0.015			0.52		
Min	1.0		6.05	6.0		6.0	10.4	0.002	0.057	0.004			0.01		

BRUNSWICK MINING & SMELTING CO., NO. 12 MINE

Brunswick Mining and Smelting No. 12 Mine

The chemical treatment system at Brunswick #12 was inactive for several months during the year. The outfall from the last tailings pond before the chemical treatment system continued to have about the same quality as in 1972, but the outfall from the biological treatment system showed a slight increase in zinc and the average zinc content of the final effluent was more than doubled. On only one out of seven measurements was the final effluent pH over 5.0, and the effect of this can be seen from the data for station B - 9. The pH at the two stations downstream was low throughout the year as a result, and although there was a slight improvement in November and December, the Little River and the South Little River were both severely degraded within the zone of influence.

An examination of the relative amounts of zinc present in the effluent and at the mouth of the Little River for 1972 and 1973 shows them to be about the same: 11.39 : 1 in 1972 and 10.60 : 1 in 1973. This ratio shows the net decrease in zinc concentration in the river water from outfall to mouth due to dilution, settling, absorption, biological uptake, etc. The similarity in values indicates that the chemical dynamics of the river with respect to these factors has probably not changed significantly in the last two years.

In several instances, the pH of samples taken from the Little River and the South Little River dropped between the time of sample collection and analysis. This is probably because the thiosalts discharged in the effluent were not fully stabilized by the biological treatment system.

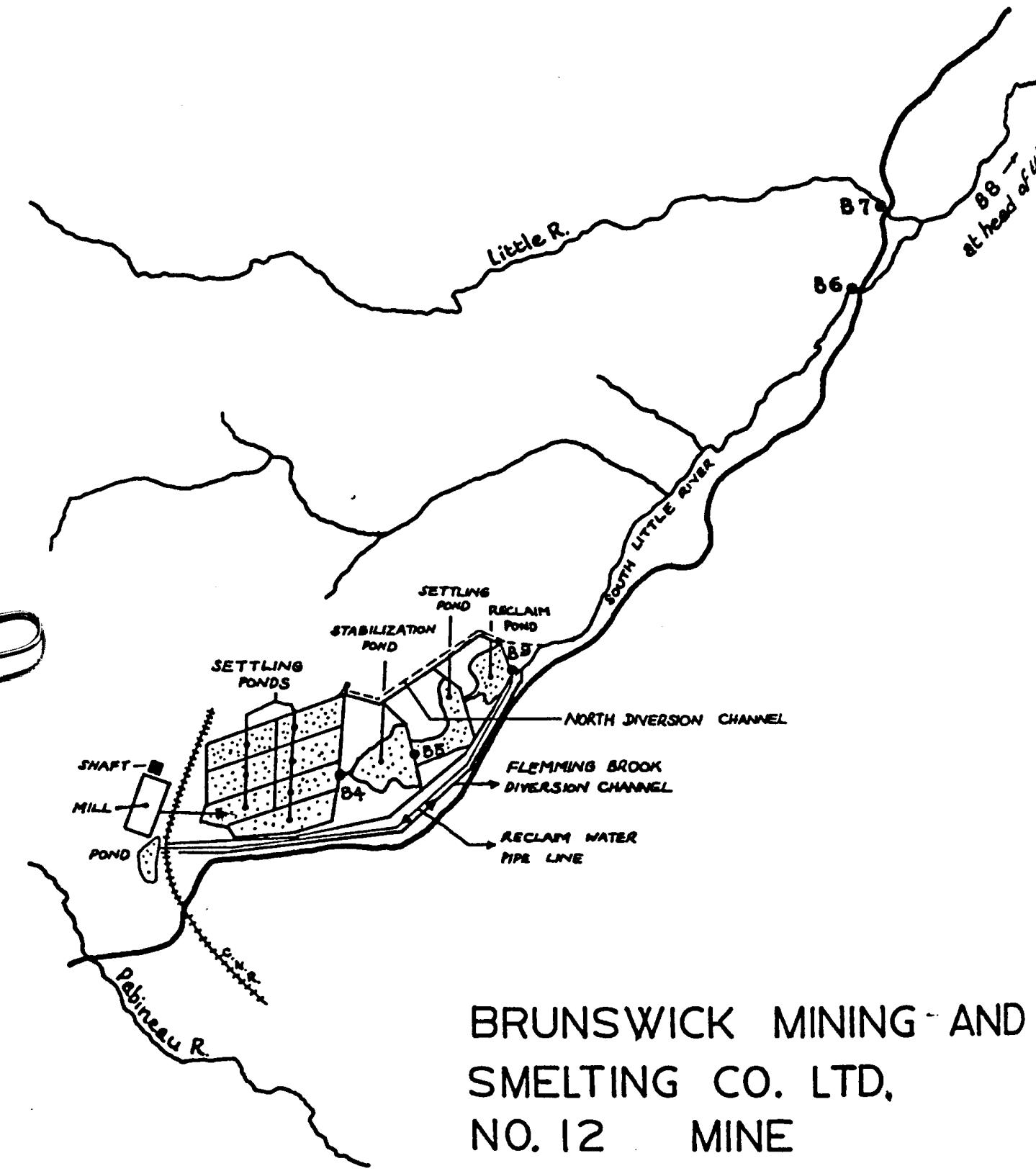
MINE: Brunswick Mining & Smelting Co. Ltd. AREA CODE: "B"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
B-4	Outfall from last tailings pond.		
B-5	Outfall from biological treatment pond before neutralization.		
B-6*	South Little River at Theriault Road bridge.	NB-40	00NB01BJ0009
B-7*	Little River at Theriault Road. (Control).		
B-8	Little River above Bathurst, approx., 1 mile. (at camp - Bathurst Survey site).	NB-41	00NB01BJ0010

* Ecological Monitoring Station

AREA B



BRUNSWICK MINING AND SMELTING CO. LTD.
NO. 12 MINE

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT #12	B-4

MINE WATER QUALITY

DATE 19_73	TEMP. °c	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	9.0	12.0	4.70	3.7			1607	0.30	140.0	4.8			8.58		
July 11	22.0	0.43	5.40	3.6			1229	0.20	12.0	8.1			1.62		
Aug. 27	17.0	4.33	5.30	2.5		16.0	1152	0.088	12.0	7.0			1.57		
Oct. 3	12.0	2.50	4.80	2.5			1347	0.40	80.0	4.0			6.00		
Oct. 24	7.0	0.80	5.10	2.7			1172	0.02	65.0	20.0			6.71		
Nov. 22	2.0		5.40	3.3			1700	0.022	80.0	4.3			4.68		
Dec. 12	2.0		6.65	3.3		1.0	1684	0.005	13.0	0.2			0.74		
Med.	9.0	2.50	5.30	3.3		8.5	1347	0.088	65.0	4.8			4.68		
Max.	22.0	12.0	6.65	3.7		16.0	1700	0.40	140.0	20.0			8.58		
Min.	2.0	0.43	4.70	2.5		1.0	1152	0.005	12.0	0.2			0.74		

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT # 12	B-5

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	9.0		4.60	4.1			872.1	0.250	80.0	2.7			8.79		
July 11	19.0		3.10	2.8		9.0	1258	0.046	51.0	5.7			4.21		
Aug. 27	16.0		2.80	2.5		40.0	1188	0.021	63.0	6.5			5.43		
Oct. 3	10.0		2.60	2.0			1354	0.020	71.0	4.35			5.20		
Oct. 24	6.0		2.70	2.4			1250	0.010	85.0	7.0			6.84		
Nov. 22	1.0		3.30	2.9			1076	0.040	57.5	4.3			5.31		
Dec. 12	2.0		3.90	3.0		3.0	681	0.020	30.0	2.8			4.30		
Med.	9.0		3.10	2.8		9.0	1188	0.021	63.0	4.35			5.31		
Max.	19.0		4.60	4.1		40.0	1354	0.250	85.0	7.0			8.79		
Min.	1.0		2.60	2.0		3.0	681	0.010	30.0	2.7			4.21		

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT # 12	B-6

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	4.0	140.4	4.70	3.6		6.0	107.0	<0.002	3.70	0.081	.00016	0.005	2.11	100	
* June 12	14.0		3.60				287.0	0.024	18.60	1.000					
July 11	20.0	11.9	3.00	3.0			997.0	0.014	22.00	1.000	.00005	<0.001	2.12	0	5.00
* July 19	23.0		2.60				1290.0	0.006	24.66	1.380					
* Aug. 14	18.0		3.00				473.0	0.032	16.75	1.500					
Aug. 27	14.0	18.9	2.60	2.7		3.32	971.0	0.039	35.00	3.300	.00005	0.001	3.63	0	9.00
Oct. 3	8.0	11.9	2.70	2.5			1168.0	0.150	54.00	3.600		0.037	4.64	0	1.92
Oct. 24	6.5	5.6	2.80	3.0		35.0	560.0	0.010	20.00	1.100		<0.001	3.29		
Nov. 22	0		4.00	2.9			653.0	0.020	0.95	0.600	<0.05	0.001	0.23		
Dec. 12	0		4.10	2.9		5.0	403.0	0.040	13.0	0.750		<0.001	2.91		
	* = Ecological Monitoring Samples.														
Med.	11.0	11.9	3.00	2.9		5.5	606.5	0.022	19.30	1.050	.000105	0.001	2.91	0	5.00
Max.	23.0	140.4	4.70	3.6		35.0	1290.0	0.150	54.00	3.600	<0.05	0.037	4.64	100	9.00
Min.	0	5.6	2.60	2.5		3.32	107.0	<0.002	0.95	0.081	.00005	<0.001	0.23	0	1.92

EP6-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B-6

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	18.3
2.	pH	3.1
3.	Total Hardness mg/l	683.3
4.	Dissolved oxygen	
	% SAT.	66.3
5.	Total Carbon mg/l	10.5
6.	Organic Carbon mg/l	10.1
7.	B.O.D.$_5$ mgO_2/L	3.8
8.	NO_3-N mg/L	0.096
9.	Total PO_4 mg/L	0.246
10.	Toxic Units	4.7

	PHYSICAL FACTORS	
1.	Depth cm	30
2.	Substrate	Pebble
3.	Velocity cm/sec	110

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		29.5
2.	Total Number of Taxa		4
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	95.8
4.	Second	Trichoptera (unknown)	1.7
5.	Third	Gyrinidae	1.7
6.	Fourth	Lepidoptera	0.9
7.	Diversity	0.22	

BIOLOGICAL RESULTS

CODE : B-6

TAXA	Sampling Period 12/6/73 - 11/7/73		Sampling Period 11/7/73 - 23/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Diptera Tendipedidae	5.5	91.67	51.0	96.23	28.25	95.76
Trichoptera unknown pupa	---	-----	1.0	1.89	0.5	1.69
Coleoptera Gyrinidae	---	-----				
Lepidoptera	0.5	8.33	----	----	0.25	0.85
TOTAL	6.0	53.0			29.5	

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT # 12	B-7

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	4.0	162.0	6.30	6.4		10.0	9.9	0.002	0.007	0.002	.00007	0.001	0.04	100	
* June 12	12.0		6.80				18.1	0.001	<0.002	0.003					
July 11	17.0	8.9	7.10	7.0		9.0	31.1	0.004	0.067	0.010	<.00005	0.001	0.10	100	
* July 19	21.0		6.20				27.4	0.001	0.003	0.006					
* Aug. 14	14.0		6.10				19.4	0.002	0.070	0.040					
Aug. 27	13.0	11.9	6.30	6.8		6.0	27.7	<0.002	0.009	0.003	.00005	<0.001	0.03	100	
Oct. 3	7.0	6.6	7.00	6.6		3.0	30.6	<0.002	0.017	0.002		<0.001	0.04	100	
Oct. 24	6.0	6.0	6.90	7.8		3.0	31.7	<0.002	0.007	0.002		<0.001	0.03		
Nov. 22	0		6.60	7.3		20.0	24.5	<0.002	0.009	0.003	<0.05	0.001	0.03		
Dec. 12	0		6.40	3.0		40.0	17.5	<0.002	0.020	0.900			1.04		
	* = Ecological Monitoring Samples														
Med.	9.5	8.9	6.50	6.8		9.0	25.95	<0.002	0.009	0.0055	.00006	<0.001	0.04	100	
Max.	21.0	162.0	7.10	7.8		40.0	31.7	0.004	0.070	0.900	<0.05	0.001	1.04	100	
Min.	0	6.0	6.10	3.0		3.0	9.9	0.001	<0.002	0.002	<.00005	< 0.001	0.03	100	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : B-7

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	15.7
2.	pH	6.4
3.	Total Hardness mg/l	21.6
4.	Dissolved oxygen	
	% SAT.	93.7
5.	Total Carbon mg/l	13.6
6.	Organic Carbon mg/l	12.3
7.	B.O.D.$_5$ mgO_2/L	0.64
8.	NO_3-N mg/L	0.028
9.	Total PO_4 mg/L	0.222
10.	Toxic Units	0.08

	PHYSICAL FACTORS	
1.	Depth cm	30
2.	Substrate	Pebble
3.	Velocity cm/sec	85

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		238.0
2.	Total Number of Taxa		11
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	83.3
4.	Second	Baetidae	4.7
5.	Third	Hydropsychidae	4.5
6.	Fourth	Philopotamidae	2.6
7.	Diversity	0.76	

BIOLOGICAL RESULTS

CODE : B-7

TAXA	Sampling Period 12/6/73 - 11/7/73		Sampling Period 11/7/73 - 23/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	16.0	5.78	6.5	3.11	11.25	4.73
Heptageniidae	1.0	0.36	0.5	0.24	0.75	0.32
Plecoptera						
Perlidae	----	----	0.5	0.24	0.25	0.11
Trichoptera						
Hydropsychidae	2.0	0.72	19.5	9.33	10.75	4.52
Philopotamidae	12.0	4.33	0.5	0.24	6.25	2.63
Psychomyiidae	6.0	2.17	1.5	0.72	3.75	1.58
Rhyacophilidae	----	-----	0.5	0.24	0.25	0.11
Diptera						
Ceratopogonidae	----	-----	6.5	3.11	3.25	1.37
Rhagionidae	----	-----	5.0	2.39	2.50	1.05
Tendipedidae	240.0	86.64	156.5	74.88	198.25	83.30
Megaloptera						
Corydalidae	----	-----	1.5	0.72	0.75	0.32
TOTAL	277.0		209.0		328.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
6	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT # 12	B-8

MINE WATER QUALITY

DATE 19-73	TEMP. °c	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	4.0	690.0	4.60	4.1		9.0	27.0	<0.002	1.2	0.025			1.49		
July 11	20.0	49.5	3.50	3.3		13.0	402	0.007	7.2	0.60			1.63		
Aug. 27	13.0	43.6	3.00	2.9		30.0	438	0.020	1.3	16.5			3.42		
Oct. 3	9.0	58.8	2.90	2.9			769	0.026	28.0	1.65			3.49		
Oct. 24	6.5	14.8	3.10	2.5			1540	0.006	65.0	7.5			4.42		
Nov. 22	0		4.40	3.3		3.0	358	0.011	4.15	0.20			1.01		
Dec. 12	0		4.45	3.2		5.0	138	0.015	4.00	0.20			2.04		
Med.	6.5	49.5	3.50	3.2		9.0	402.0	0.011	4.15	0.60			2.04		
Max.	20.0	690.0	4.60	4.1		30.0	1540.0	0.026	65.0	16.5			4.42		
Min.	0	14.8	2.90	2.5		3.0	27.0	<0.002	1.2	0.025			1.01		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	BRUNSWICK MINING & SMELTING CO. LTD. PROJECT # 12	B-9

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 10	9.0	16.7	5.00	4.8			664.6	0.054	44.0	1.30			6.10		
July 11	19.0	0.92	3.40	2.8			1482	0.029	51.0	2.30			3.38		
Aug. 27	18.0	4.60	2.70	2.4			1330	0.50	65.0	4.65		0.018	5.11		
Oct. 3	10.0	3.55	2.50	2.2			1414	0.20	69.0	4.00			4.91		
Oct. 24	6.5	0.96	2.90	2.7			1018	0.024	35.5	2.40			3.43		
Nov. 22	2.0		9.70	4.6		2.0	1406	0.013	1.95	0.30			0.15		
Dec. 12	1.0		3.80	3.0		4.0	1093	0.02	28.2	2.25			2.58		
Med.	9.0	3.55	3.40	2.8		3.0	1330.0	0.029	44.0	2.30		0.018	3.43		
Max.	19.0	16.7	9.70	4.8		4.0	1482.0	0.50	69.0	4.65		0.018	6.10		
Min.	1.0	0.92	2.50	2.2		2.0	664.6	0.013	1.95	0.30		0.018	0.15		

BURNTHILL TUNGSTEN MINE

Burnthill Tungsten Mine

The last recorded operation of this mine/mill was in 1955. With the exception of the drainage from the old settling pond, the water quality in this area was excellent in 1974, and the monitoring of stations BT - 2 through BT - 5 will be dropped in 1974.

Users of this report series should note an error in the statistical tabulation of zinc for 1972 at station BT - 1. The mean value should be 0.014± 0.018 mg/l.

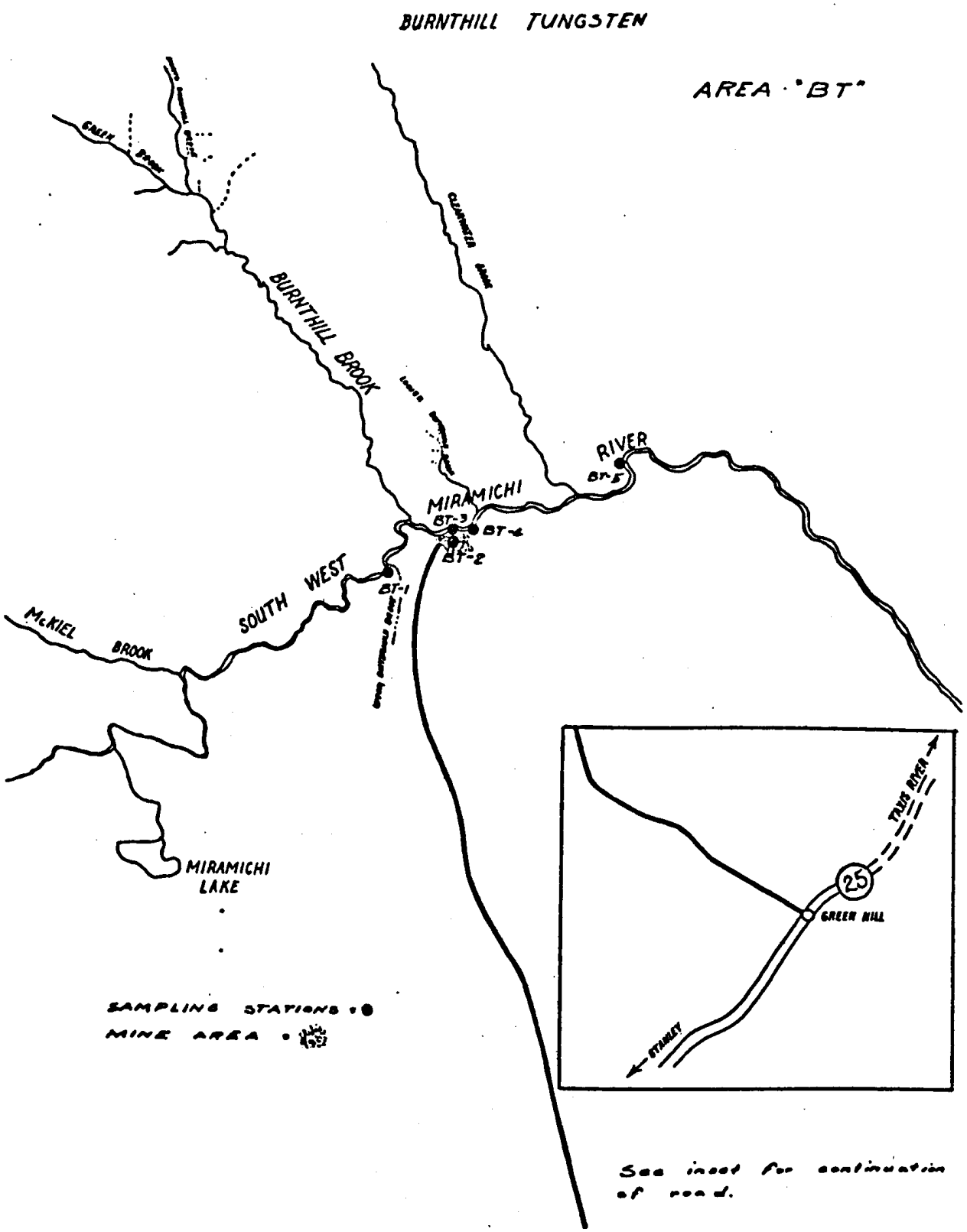
MINE: Burnthill Tungsten

AREA CODE: "BT"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
BT-1*	Right bank S.W. Miramichi River, at Protection Branch Warden's Camp, approx. 3 miles above Burnthill Mine. 2 mi. above mouth of Burnthill Brook.	NB-43	00NB01BM0002
BT-2 BT-2	Outflow from Burnthill Mine settling pond at outlet.		
BT-3	Outfflow from settling pond drainage at river edge.		
BT-4*	Right bank S.W. Miramichi River approx. 100 yds. below Burnthill Mine settling pond outflow, 1/2 mi. below mouth of Burnthill Brook.	NB-44	00NB01BM0003
BT-5	Left bank S.W. Miramichi River at Rocky Bend, approx. 5 miles below Burnthill Mine area, past Rocky Brook Camps.		

* Ecological Monitoring Station.


BURNTHILL TUNGSTEN
AREA "BT"
BURNTHILL BROOK
MIRAMICHI RIVER
BT-5
MIRAMICHI
BT-3
BT-4
BT-2
BT-1
SOUTH WEST
McKIEL BROOK
MIRAMICHI LAKE
SAMPLING STATIONS
MINE AREA
TOBIN RIVER
25
GREEN HILL
STANLEY
See insert for continuation of road.

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Burnthill Tungsten Mine	BT-1

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 31	11.0		6.50	5.60		10.0	8.8	0.008	0.040	2.3	<.00005	<0.001	3.29?		
* June14	14.0		6.90				11.4	0.000	<o.002						
June26	20.0		7.10	7.20		7.0	12.1	0.013	0.007	<0.002	<.00005	<0.001	0.18		
* July20	17.0		5.50				12.1	0.001	0.002						
July31	18.0	936.0	7.10	6.60		6.0	14.3	0.015	0.033	0.004		0.001	0.24		
* Aug 16	15.0		6.00				12.6	0.002	0.070						
Sept 4	18.0	551.6	7.00	7.10		6.0	15.0	<0.002	0.017	0.002		<0.001	0.05		
Oct 2	8.0	643.0	6.80	6.60		8.0	15.2	<0.002	0.025	0.007		0.001	0.07		
	* =	Ecological Monitoring			Samples.										
Med.	16.0	643.0	6.85			7.0	12.35	<0.002	0.021	0,004	<.00005	<0,001	0.18		
Max.	20.0	936.0	7.10			10.0	15.2	0.015	0.070	2.3?	<.00005	0.001	3.29?		
Min.	8.0	551.6	5.50			6.0	8.8	0.000	<0.002	<0.002	<.00005	<0.001	0.05		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : BT-1

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	15.3
2.	pH	6.1
3.	Total Hardness mg/l	12.0
4.	Dissolved oxygen	
	% SAT.	103.3
5.	Total Carbon mg/l	13.1
6.	Organic Carbon mg/l	11.6
7.	B.O.D.$_5$ mgO_2/L	0.88
8.	NO_3-N mg/L	0.054
9.	Total PO_4 mg/L	0.133
10.	Toxic Units	0.11

	PHYSICAL FACTORS	
1.	Depth cm	43.7
2.	Substrate	Cobble
3.	Velocity cm/sec	80.7

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		199
2.	Total Number of Taxa		11
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	38.9
4.	Second	Heptageniidae	18.8
5.	Third	Chironomidae	17.6
6.	Fourth	Hydropsychidae	12.4
7.	Diversity	1.6	

BIOLOGICAL RESULTS

CODE : BT-1

TAXA	Sampling Period 14/6/73 - 20/7/73		Sampling Period 20/7/73 - 16/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	87.0	37.66	68.0	40.72	77.5	38.98
Heptageniidae	----	-----	75.0	44.91	37.5	18.84
Trichoptera						
Hydropsychidae	36.0	15.58	13.5	8.08	24.75	12.44
Philopotamidae	1.0	0.43	0.5	0.30	0.75	0.38
Psychomyiidae	5.0	2.16	----	-----	2.5	1.26
Rhyacophilidae	-----	------	0.5	0.30	0.25	0.13
Diptera						
Chironomidae	70.0	30.30	-----	-----	35.0	17.59
Rhagionidae	2.0	0.87	4.0	2.4	3.0	1.51
Simuliidae	30.0	12.99	1.5	0.90	15.75	>.91
Tendipedidae	-----	-----	3.5	2.10	1.75	0.88
Collembola						
Sminthurides	-----	-----	0.5	0.30	0.25	0.13
TOTAL	231.0		167.0		199.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Burnthill Tungsten Mine	BT-2

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 31	11.0	0.26	4.50	4.30		<1.0	25.1	0.015	0.140	0.023			0.46		
June26	24.0	0.03	4.20	4.10		3.0	39.1	0.016	0.125	0.014			0.28		
July31	21.0	0.01	4.10	3.90		2.0	57.7	0.015	0.200	0.015			0.29		
Sept 4	19.0	0.003	4.30	3.90		1.0	71.3	0.020	0.300	0.019			0.36		
Oct 2	6.0		3.60	3.80		1.0	85.5	0.019	1.500	0.027			1.08?		
Med.	19.0	0.020	4.20	3.90		1.0	57.7	0.016	0.200	0.019			0.36		
Max.	24.0	0.260	4.50	4.30		3.0	85.5	0.020	1.500	0.027			1.08?		
Min.	6.0	0.003	3.60	3.80		<1.0	25.1	0.015	0.125	0.014			0.28		

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Burnthill Tungsten Mine	BT-3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 31	11.0	0.52	4.00	4.00		<1.0	27.0	0.025	0.130	0.017			0.57		
June26	24.0	0.10	4.00	3.80		2.0	43.6	0.025	0.088	0.012			0.35		
Sept 4	14.0	0.03	4.50	3.70		3.0	56.4	0.011	0.036	0.004			0.10		
Oct. 2	4.0	0.03	3.90	4.10		<1.0	50.0	0.007	0.058	0.009			0.12		
Med.	15.0	0.065	4.00	3.90		<1.5	46.8	0.018	0.073	0.010			0.235		
Max.	24.0	0.52	4.50	4.10		3.0	56.4	0.025	0.130	0.017			0.57		
Min.	4.0	0.03	3.90	3.70		<1.0	27.0	0.007	0.036	0.004			0.10		

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	Burnthill Tungsten Mine	BT-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 31	11.0		6.10	5.90		11.0	8.6	0.002	0.045	0.006	<.00005	<0.001	0.13		
* June14	15.0		6.40				11.0	0.000	0.003						
June26	22.0		7.00	6.50		7.50	12.6	<0.002	0.006	0.002	<.00005	<0.001	0.04		
* July20	18.0		5.80				12.1	0.001	0.002						
July31	19.0		6.70	6.30		6.0	13.3	<0.002	0.025	0.002		0.002	0.07		
* Aug 16	16.0		6.40				12.4	0.001	0.090						
Sept 4	18.0		7.10	7.30		6.0	14.3	<0.002	<0.002	0.004		<0.001	0.03		
Oct. 2	8.0		6.70	6.60		7.0	15.2	<0.002	0.009	0.002		<0.001	0.04		
	* = Ecological Monitoring Samples.														
Med.	17.0		6.55	6.50		7.0	12.5	<0.002	0.007	0.002	<.00005	<0.001	0.04		
Max.	22.0		7.10	7.30		11.0	15.2	0.002	0.090	0.006	<.00005	0.002	0.13		
Min.	8.0		5.80	5.90		6.0	8.6	0.000	0.002	0.002	<.00005	<0.001	0.03		

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : BT-4

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	16.3
2.	pH	6.2
3.	Total Hardness mg/l	11.8
4.	Dissolved oxygen	
	% SAT.	10.3
5.	Total Carbon mg/l	12.9
6.	Organic Carbon mg/l	12.2
7.	B.O.D.$_5$ mgO_2/L	0.44
8.	NO_3-N mg/L	0.060
9.	Total PO_4 mg/L	0.009
10.	Toxic Units	0.13

	PHYSICAL FACTORS	
1.	Depth cm	38.7
2.	Substrate	Cobble
3.	Velocity cm/sec	76.8

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		264
2.	Total Number of Taxa		14
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	49.3
4.	Second	Tendipedidae	19.9
5.	Third	Chironomidae	11.1
6.	Fourth	Hydropsychidae	6.8
7.	Diversity	1.5	

BIOLOGICAL RESULTS

CODE : BT-4

TAXA	Sampling Period 14/6/73 - 20/7/73		Sampling Period 20/7/73 - 16/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	100.0	33.67	161.0	63.89	130.5	49.34
Heptageniidae	-----	-----	39.5	15.67	19.75	7.47
Trichoptera						
Hydropsychidae	29.5	9.93	6.5	2.58	18.0	6.81
Lepidostomatidae	0.5	0.17	-----	-----	0.25	0.09
Psychomyiidae	2.5	0.84	-----	-----	1.25	0.47
Rhyacophilidae	-----	-----	2.0	0.79	1.0	0.38
Diptera						
Chironomidae	58.5	19.70	-----	-----	29.25	11.06
Rhagionidae	8.5	2.86	4.0	1.59	6.25	2.36
Simuliidae	9.0	3.03	-----	-----	4.5	1.70
Tendipedidae	88.5	29.80	17.0	6.75	52.75	19.94
Tipuliidae	-----	-----	0.5	0.20	0.25	0.09
Megaloptera						
Sialidae	-----	-----	0.5	0.20	0.25	0.09
Turbellaria	-----	-----	0.5	0.20	0.25	0.09
Oligochaeta	-----	-----	0.5	0.20	0.25	0.09
TOTAL	297.0		252.0		264.5	

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	Burnthill Tungsten Mine	BT-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 31	10.0		6.30	6.10		10.0	7.4	<0.002	0.006	0.005			0.05		
June26	20.0		7.10	6.70		6.0	15.7	0.002	0.004	0.003			0.03		
July31	19.0		6.90	6.50		5.0	11.4	<0.002	0.011	0.003			0.06		
Sept 4	18.0		7.10	7.20		5.0	13.0	<0.002	0.045	0.002			0.11		
Oct 2	7.0		6.80	6.70		5.0	13.3	0.002	0.015	0.007			0.07		
Med.	18.0		6.90	6.70		5.0	13.0	<0.002	0.011	0.003			0.06		
Max.	20.0		7.10	7.20		10.0	15.7	0.002	0.045	0.007			0.11		
Min.	7.0		6.30	6.10		5.0	7.4	<0.002	0.004	0.002			0.03		

EPS 1105 (Feb. 1973)

CHESTER MINES LTD.

Chester Mines Ltd.

During 1973, the regulatory agencies approved the development of this property excluding the massive sulfide ore zones which are the source of present contamination and contingent upon the construction of an advanced treatment system. The 1973 data thus represents the last year of background conditions on Clearwater Stream, although even these have been modified by the presence of the old exploratory pit.

The background metal levels in Clearwater Stream above the mine property have remained essentially the same since sampling began in 1967. The downstream water quality was about the same in 1972 as in 1973. Zinc concentrations in the South Sevogle River were noticeably lower in 1973. With the exception of the highly contaminated pit water, the overall quality of the area was good.

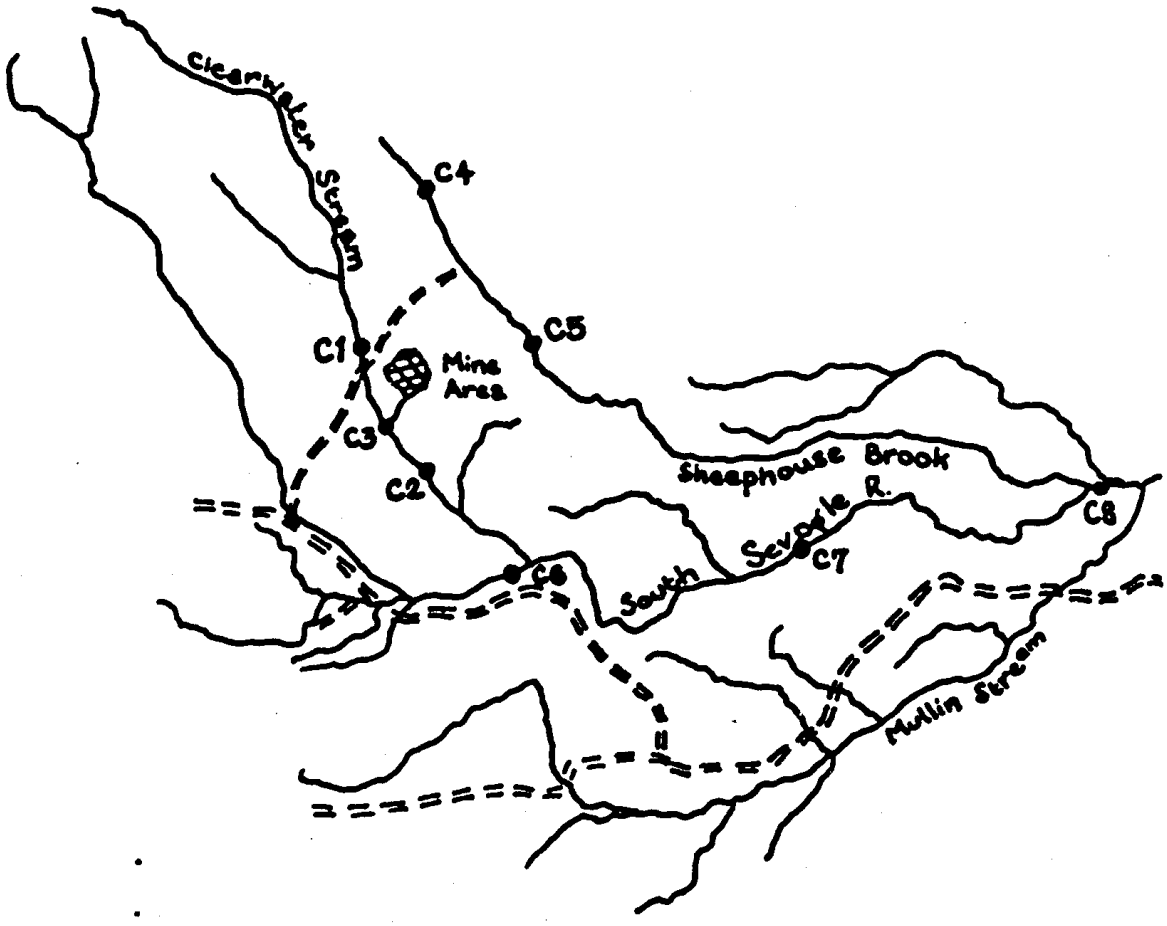
MINE: Chester Mines Ltd.

AREA CODE: "C"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
C-1	Clearwater Stream, 1/4 mi. above Chester mine property.	NB-45	00NB01BQ0020
C-2	Clearwater Stream, 1/2 mi. below Chester mine property.	NB-46	00NB01BQ0021
C-3	Effluent drainage from open pit area.		
C-4	Sheephouse Brook above mine property.		
C-5	Sheephouse Brook below mine property.		
C-6	South Sevogle River, 4 mi. above mouth Clearwater Stream	NB-46A	00NB01BQ0054
C-7	South Sevogle River, below mouth Clearwater Stream, 1/2 miles above mouth of Sheephouse Brook.	NB-47	00NB01BQ0055
C-8	South Sevogle River, below mouth Sheephouse Brook.		

AREA C



CHESTER MINES LTD.

SAMPLING STATIONS_ _ _ _ _•

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	CHESTER MINES LTD.	C-1

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	9	138.0	6.60	6.7		3.0	17.6	<0.002	0.035	0.002			0.09		
June 27	16	6.0	7.10	7.1		4.0	24.1	<0.002	0.002	<0.002			0.02		
Aug. 2	17	14.7	6.90	7.1		5.0	27.1	<0.002	0.014	0.002			0.03		
Sept. 3	14	7.86	7.10	7.7		1.0	28.4	<0.002	0.002	0.002			0.03		
Oct. 1	4	9.85	6.95	7.2		1.0	29.4	<0.002	0.009	0.004			0.04		
Oct. 30	0	9.80	7.00	7.0		2.0	29.7	<0.002	0.017	0.005			0.05		
Med.	11.5	9.825	6.975	7.1		2.5	27.75	<0.002	0.011	0.002			0.035		
Max.	17.0	138.0	7.10	7.7		5.0	29.7	<0.002	0.035	0.005			0.09		
Min.	0.0	6.0	6.60	6.7		1.0	17.6	<0.002	0.002	<0.002			0.02		

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	CHESTER MINES LTD.	C-2

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	9.0	192.0	6.80	6.9		3.0	16.5	0.031	0.10	0.021			0.79		
June 27	16.0	14.5	6.90	7.2		4.0	21.4	0.022	0.076	0.02			0.38		
Aug. 2	17.0	15.7	7.10	7.2		5.0	24.9	0.007	0.036	0.008			0.11		
Sept. 3	15.0	7.84	7.20	7.7		2.0	27.3	0.01	0.077	0.012			0.26		
Oct. 1	4.0	9.85	7.00	7.3		1.0	32.8	0.014	0.10	0.015			0.31		
Oct. 30	0	11.5	7.00	7.1		2.0	29.8	0.009	0.083	0.009			0.23		
Med.	12.0	13.0	7.00	7.2		2.5	26.1	0.012	0.080	0.013			0.285		
Max.	17.0	192.0	7.20	7.7		5.0	32.8	0.031	0.100	0.021			0.79		
Min.	0.0	7.84	6.80	6.9		1.0	16.5	0.007	0.036	0.008			0.11		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	CHESTER MINES LTD.	C-3

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOX:C UNITS	SURVIVAL %	LT 50 hrs.
June 6	10.0	0.16	3.20	3.3		2.0	11.4	2.90	5.5	2.25	.00043	0.005	107.36		
June 27	21.0	0.03	3.10	3.3		10.0	24.9	3.75	11.0	2.80	<.00005	0.003	38.26		
Aug. 2	20.0	0.01	3.10	3.1		32.0	35.7	5.80	19.5	2.95		0.001	31.55		
Sept. 3	19.0	0.02	3.10	2.9		24.0	40.5	3.35	20.5	3.10		<0.001	30.06		
Oct. 1	4.0	0.03	3.00	2.7		16.0	43.5	4.50	32.0	2.70		0.002	43.36		
Oct. 30	0	0.003	3.00	3.2			56.3	2.75	15.0	1.80		0.001	35.91		
Nov. 20	2.0		2.90	2.6			32.7	19.50	87.5	4.30		0.200	361.01		
Med.	10.0	0.025	3.10	3.1		16.0	35.7	3.75	19.5	2.80	<.00024	0.002	38.26		
Max.	21.0	0.16	3.20	3.3		32.0	56.3	19.50	87.5	4.30	.00043	0.200	361.01		
Min.	0.0	0.003	2.90	2.6		2.0	11.4	2.75	5.5	1.80	<.00005	<0.001	30.06		

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	CHESTER MINES LTD.	C-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	9	11.8	6.75	6.6		5.0	14.2	<0.002	0.049	0.016			0.13		
June 27	23	1.30	6.80	6.8		6.0	23.0	0.013	0.010	0.005			0.12		
Aug. 2	18	1.70	7.12	6.9		10.0	26.3	0.100	0.089	0.006			0.66		
Sept. 3	18	0.78	6.40	7.0		4.0	26.4	0.010	0.035	<0.002		<0.001	0.14		
Oct. 1	4	0.40	7.05	6.9		3.0	24.2	<0.002	0.016	0.004			0.05		
Oct. 30	0	0.25	6.90	6.6		7.0	24.4	<0.002	0.016	0.005			0.04		
Med.	13.5	1.04	6.85	6.85		5.5	24.3	<0.006	0.025	0.005		<0.001	0.125		
Max.	23.0	11.8	7.12	7.0		10.0	26.4	0.100	0.089	0.016		<0.001	0.66		
Min.	0.0	0.25	6.40	6.6		3.0	14.2	<0.002	0.010	<0.002		<0.001	0.04		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	CHESTER MINES LTD.	C-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 6	9	34.80	6.72	6.4		5.0	12.3	<0.002	0.033	0.006			0.10		
June 27	23	3.60	6.85	6.9		7.0	22.8	0.019	0.053	0.039			0.25		
Aug. 2	18	2.90	7.00	6.8		9.0	26.8	<0.002	0.019	0.003			0.04		
Sept. 3	18	2.35	6.50	7.5		4.0	26.8	<0.002	<0.002	<0.002		<0.001	0.02		
Oct. 1	4	2.35	7.10	7.1		3.0	24.2	<0.002	0.005	0.004			0.04		
Oct. 30	0	1.00	6.81	6.8		7.0	24.9	<0.002	0.008	0.004			0.03		
Med.	13.5	2.625	6.83	6.85		6.0	24.55	<0.002	0.013	0.004		<0.001	0.04		
Max.	23.0	34.8	7.10	7.5		9.0	26.8	0.019	0.053	0.039		<0.001	0.25		
Min.	0.0	1.00	6.50	6.4		3.0	12.3	<0.002	<0.002	<0.002		<0.001	0.02		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
6	CHESTER MINES LTD.	C-6

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW g.p.m	pH field	pH Lab	.	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Oil ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 7	7.0	469.0	7.10	6.5		4.0	6.7	<0.002	0.037	0.006	.00004	0.002	0.15		
June 27	18.0	78.0	7.00	6.9		5.0	11.7	0.004	0.006	0.002	<.00005	<0.001	0.08	100	
Aug. 2	18.0	98.4	7.20	7.1		9.0	14.9	<0.002	0.002	<0.002		0.001	0.02	100	
Sept. 3	16.0	19.6	6.90	7.5		3.0	15.9	<0.002	<0.002	0.002		0.001	0.04	100	
Oct. 1	5.0	63.0	7.00	7.0		3.0	15.4	<0.002	<0.002	0.002		<0.001	0.05	100	
Oct. 30	0	26.2	6.82	7.0		3.0	15.9	<0.002	0.006	0.004		<0.001	0.05		
Med.	11.5	70.5	7.00	7.0		3.5	15.15	<0.002	0.004	0.002		<0.001	0.05	100	
Max.	18.0	469.0	7.20	7.5		9.0	15.9	0.004	0.037	0.006		0.002	0.15	100	
Min.	0.0	19.6	6.82	6.5		3.0	6.7	<0.002	<0.002	<0.002		<0.001	0.02	100	

EPS-1108 (Feb. 1972)

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ATLANTIC REGION

TABLE	COMPANY	STATION
7	CHESTER MINES LTD.	C-7

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 7	7.0	531.0	6.95	6.7		5.0	8.9	0.003	0.013	0.005			0.09		
June 27	20.0	152.0	7.05	6.9		4.0	11.3	0.004	0.003	<0.002			0.08		
Aug. 2	18.0	219.5	7.20	7.0		9.0	14.9	<0.002	<0.002	0.002			0.02		
Sept. 3	16.0	39.3	7.10	7.5		2.0	11.2	<0.002	0.002	0.001			0.07		
Oct. 1	5.0	88.5	7.00	7.1		2.0	11.2	0.002	0.012	0.007			0.10		
Oct. 30	0	47.2	6.60	7.0		2.0	12.4	<0.002	0.008	0.004			0.08		
Med.	11.5	120.25	7.025	7.0		3.0	11.25	<0.002	0.005	0.003			0.08		
Max.	20.0	531.0	7.20	7.5		9.0	14.9	0.004	0.013	0.007			0.10		
Min.	0.0	39.3	6.60	6.7		2.0	8.9	<0.002	<0.002	<0.002			0.02		

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ATLANTIC REGION

TABLE	COMPANY	STATION
8	CHESTER MINES LTD.	C-8

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 7	No sample collected.			Bridge washed out.											
June 27	21.0	330.0	6.95	6.9		7.0	12.3	0.005	0.009	<0.002	<.00005	<0.001	0.08	100	
Aug. 2	19.0		7.10	6.9		8.0	10.7	<0.002	0.004	<0.002		0.001	0.04	100	
Sept. 3	17.0	98.4	6.70	7.4		3.0	15.9	<0.002	0.011	0.005		<0.001	0.06	100	
Oct. 1	5		7.10	7.0		3.0	16.4	<0.002	<0.002	0.002		<0.001	0.04	100	
Oct. 30	1		6.40	6.8		20.0	14.0	<0.002	0.008	0.002		<0.001	0.03		
Med.	17.0	214.2	6.95	6.9		7.0	14.0	<0.002	0.008	0.002	<.00005	<0.001	0.04	100	
Max.	21.0	330.0	7.10	7.4		20.0	16.4	0.005	0.011	0.005	<.00005	0.001	0.08	100	
Min.	1.0	98.4	6.40	6.8		3.0	10.7	<0.002	<0.002	<0.002	<.00005	<0.001	0.03	100	

COPPERFIELDS MINING

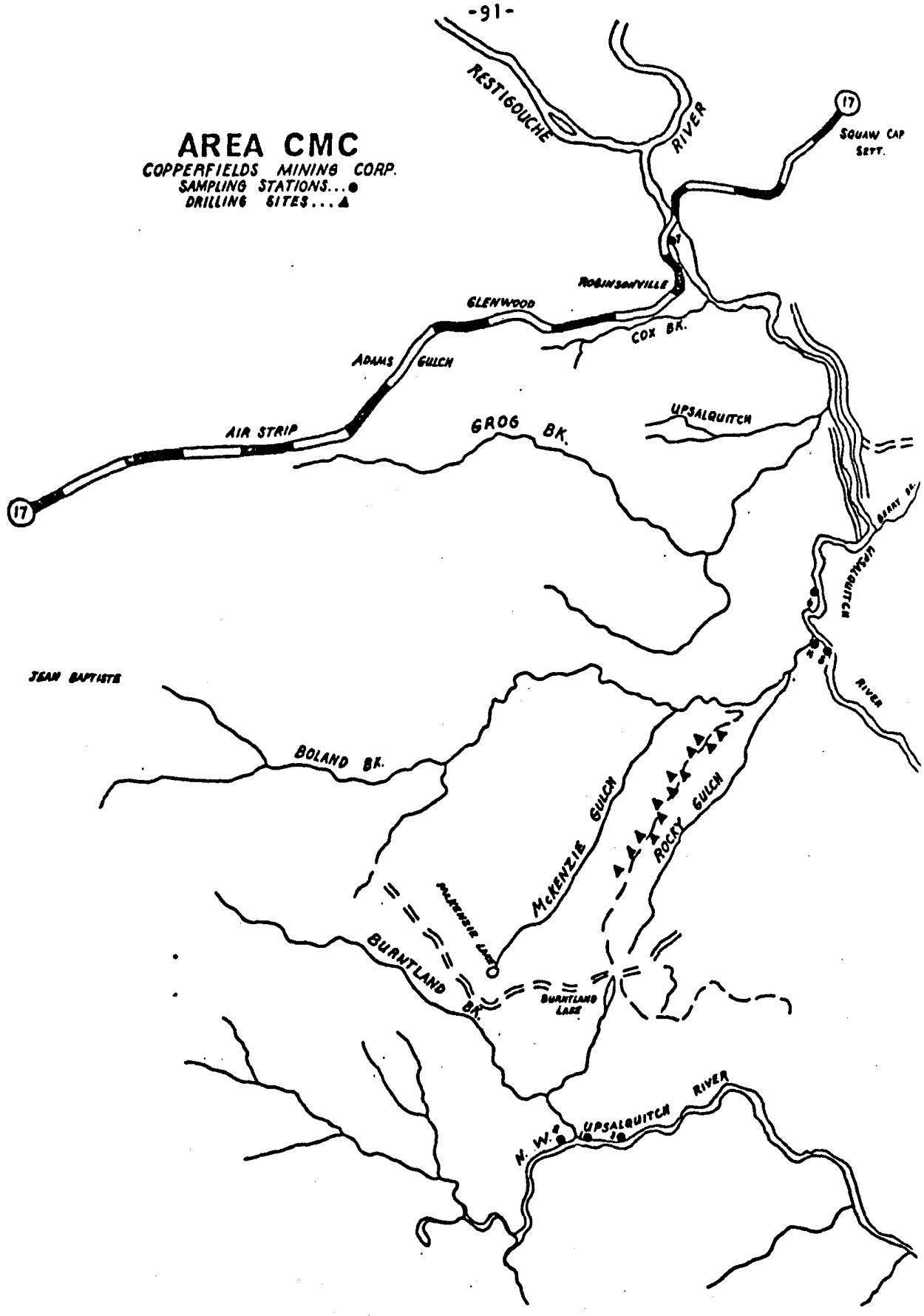
Copperfields Mining

Water quality in Burntland Brook and the quality of the lower Upsalquitch River continued to be high in 1973. EPS has no record of further exploratory activity by the company, and will drop the CMC stations from the 1974 monitoring program.

MINE: Copperfields Mining Corp. AREA CODE: "CMC"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
CMC-1	Burntland Brook, mouth at N.W. Upsalquitch River.		
CMC-2	N.W. Upsalquitch River, above mouth of Burntland Brook.		
CMC-3	N.W. Upsalquitch River, below mouth of Bruntland Brook.		
CMC-4	Boland Brook, mouth, at Upsalquitch River.		
CMC-5	Upsalquitch River, above mouth of Boland Brook.		
CMC-6	Upsalquitch River, below mouth of Boland Brook.		
CMC-7	Upsalquitch River, at Robinsonville, at bridge		


AREA CMC
COPPERFIELDS MINING CORP.
SAMPLING STATIONS...●
DRILLING SITES...▲
RESTIGOUCHE
RIVER
17
SQUAW CAP SETT.
ROBINSONVILLE
GLENWOOD
COX BK.
ADAMS GULCH
AIR STRIP
GROG BK.
UPSALQUITCH
BERRY BK.
UPSALQUITCH
RIVER
JEAN BAPTISTE
BOLAND BK.
McKENZIE GULCH
ROCKY GULCH
BURNTLAND BK.
BURNTLAND LAKE
UPSALQUITCH
RIVER
N. W.

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	COPPERFIELDS MINING CORPORATION	CMC-1

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 5	20	23.6	7.10	7.6		1.0	59.4	0.003	0.024	0.004			0.04		
Aug.21	15	13.1	7.60	7.9		<1.0	64.8	<0.002	<0.002	0.004			0.02		
Med.	17.5	18.35	7.35	7.75		<1.0	62.1	<0.002	<0.013	0.004			0.03		
Max.	20	23.6	7.60	7.9		1.0	64.8	0.003	0.024	0.004			0.04		
Min.	15	13.1	7.10	7.6		<1.0	59.4	<0.002	<0.002	0.004			0.02		

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	COPPERFIELDS MINING CORPORATION	CMC-2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 5	21	114.8	7.20	7.7		<1.0	59.4	0.002	0.006	0.005			0.02		
Aug.21	18	119.2	7.90	7.8		1.0	72.7	<0.002	<0.002	0.005			0.02		
Med.	19.5	117.0	7.55	7.75		<1.0	66.05	<0.002	<0.004	0.005			0.02		
Max.	21.0	119.2	7.90	7.80		1.0	72.7	0.002	0.006	0.005			0.02		
Min.	18.0	114.8	7.20	7.70		<1.0	59.4	<0.002	<0.002	0.005			0.02		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	COPPERFIELDS MINING CORPORATION	CMC-3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 5	21	138.0	7.15	7.6		1.0	60.6	0.005	0.033	0.005			0.07		
Aug.21	18	110.0	7.70	7.9		<1.0	66.9	<0.002	<0.002	0.006			0.02		
Med.	19.5	124.0	7.42	7.75		<1.0	63.75	0.003	0.017	0.005			0.045		
Max .	21.0	138.0	7.70	7.90		1.0	66.9	0.005	0.033	0.006			0.07		
Min.	18.0	110.0	7.15	7.60		<1.0	60.6	<0.002	<0.002	0.005			0.02		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	COPPERFIELDS MINING CORPORATION	CMC-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 4	20	90.2	7.30	8.1		<1.0	67.3	0.002	0.009	0.006			0.02		
Aug.20	17	17.2	7.81	7.8		1.0	85.4	<0.002	0.016	0.006			0.03		
Med.	18.5	53.7	7.55	7.95		<1.0	76.35	<0.002	0.012	0.006			0.025		
Max.	20.0	90.2	7.81	8.10		1.0	85.4	0.002	0.016	0.006			0.030		
Min.	17.0	17.2	7.30	7.80		<1.0	67.3	<0.002	0.009	0.006			0.020		

EPS 1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	COPPERFIELDS MINING CORPORATION	CMC-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 4	22	615.4	7.40	7.8		2.0	77.2	0.005	0.037	0.004			0.06		
Aug. 20	18	235.8	7.60	7.5		<1.0	69.8	<0.002	<0.002	0.005			0.02		
Med.	20.0	425.6	7.50			<1.5	73.5	<0.003	<0.019	0.004			0.04		
Max.	22.0	615.4	7.60			2.0	77.2	0.005	0.037	0.005			0.06		
Min.	18.0	235.8	7.40			<1.0	69.8	<0.002	<0.002	0.004			0.02		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
6	COPPERFIELDS MINING CORPORATION	CMC-6

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 4	21	690.3	7.40	7.9		1.0	71.8	0.003	0.084	0.009		0.002	0.08		
Aug.20	.18	251.5	7.50	7.1		2.0	83.8	0.002	0.008	0.006		0.001	0.02		
Med.	19.5	470.9	7.45	7.50		1.5	77.3	<0.002	0.046	0.007		0.001	0.05		
Max.	21.0	690.3	7.50	7.90		2.0	82.8	0.003	0.084	0.009		0.002	0.08		
Min.	18.0	251.5	7.40	7.10		1.0	71.8	<0.002	0.008	0.006		0.001	0.02		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
7	COPPERFIELDS MINING CORPORATION	CMC-7

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
July 4	22		7.55	7.9		2.0	78.9	0.005	0.90	0.022			0.64		
Aug.20	19		7.60	7.3		1.0	83.9	0.005	0.034	0.006			0.06		
Med.	20.5		7.575	7.60		1.5	81.4	0.005	0.467	0.014			0.35		
Max.	22.0		7.60	7.90		2.0	83.9	0.005	0.900	0.022			0.64		
Min.	19.0		7.55	7.30		1.0	78.9	0.005	0.034	0.006			0.06		

EP6-1105 (Feb. 1973)

HEATH STEELE MINES LTD.

Heath Steele Mines Ltd.

In 1973 there appeared to be a general decrease in the zinc concentrations at the six control stations: H-4, H-12, H-18, H-19, H-29, H-22. The Little South Tomogonops received an important amount of zinc from the Clearwater bypass, and a further amount from the drainage above the old adit in the section between H-12 and H-13. The average zinc concentration was higher at H-13 than at H-10A, although there appeared to be little difference between the values recorded at H-13 and H-16. The range of toxicity in the Little South Tomogonops at H-16 was 2.79 - 8.65 TU, but at the mouth of the Tomogonops the water was consistently not acutely toxic and the highest value recorded was 0.64 TU. The average condition at the mouth of the Tomogonops was the same in 1973 as it was in 1972, although the maximum recorded value was higher. The quality of the South Tomogonops River above the main branch continued to be high.

The Northwest Miramichi River at the Curventon Fence has improved in quality to the point where the difference in toxicity above and below the confluence of the Tomogonops is negligible.

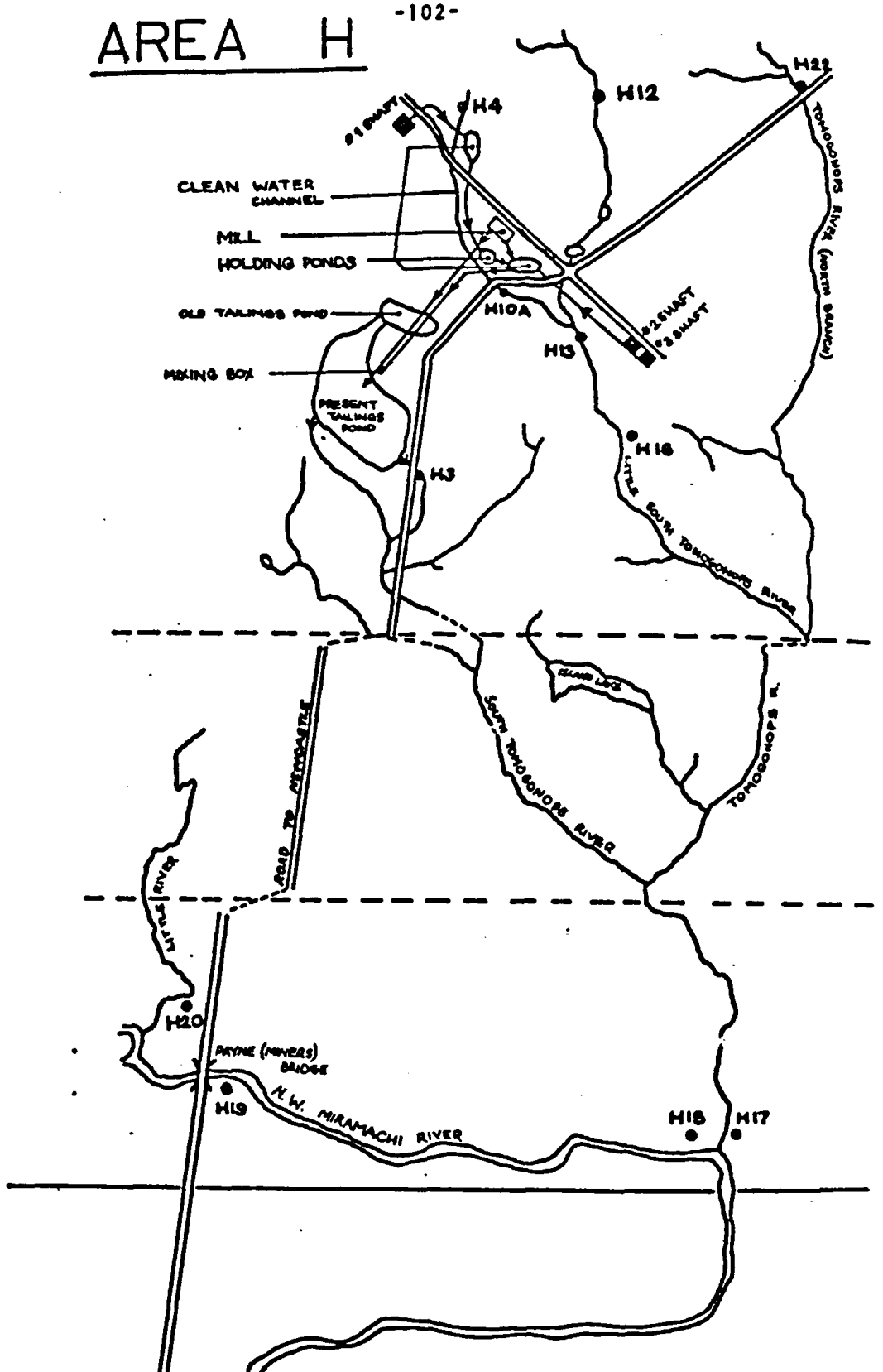
MINE: Heath Steele Mines Limited AREA CODE: "H"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
H-3	South Tomogonops River, below tailings pond at Newcastle Road.		
H-4	Clean water channel, above "A" pit.		
H-10A	Clean water channel, diversion to Little South Tomogonops.		
H-12	Little South Tomogonops above mine property.		
H-13	Little South Tomogonops below adit.		
H-16	Little South Tomogonops, at O'Brien's camp.	NB-48	00NB01BQ0017
H-17	Tomogonops River, at mouth, 9 miles above Wayerton Bridge. 50 ft. above junction of Tomogonops and N.W. Miramichi.	NB-49	00NB01BQ0018
H-18*	N.W. Miramichi, 50 ft. above mouth of Tomogonops. 9 miles above Wayerton Bridge.	NB-50	00NB01BQ0019
H-19	N.W. Miramichi, above mouth of Tomogonops, at Payne (Miner's) Bridge.		
H-20	Little River, one mile upstream of mouth, above mouth of Tomogonops.		
H-21*	N.W. Miramichi, below mouth of Tomogonops, at Wayerton Bridge.	NB-51	00NB01BQ0044
H-22	North Branch Tomogonops, above mine property, (control).		

* Ecological Monitoring Station

AREA H



HEATH STEELE MINES

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Heath Steele Mines Ltd.	H-3

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	9.0	68.4	6.95	6.6		<1.0	336	0.002	0.037	0.004	.00012	<0.001	0.01	100	
July 10	17.0	6.3	6.65	4.0		3.0	467	<0.002	0.033	0.009	.00015	<0.001	0.01	100	
Aug. 14	15.0	10.5	6.70	3.7		3.0	547	<0.002	0.047	0.020	.00005	0.001	0.01	0	31.00
Sept. 19	9.0	10.5	6.30	5.9		2.0	409	0.007	0.175	0.014		<0.001	0.05	100	
Nov. 20	1.0		6.50	3.9		3.0	441	0.013	0.150	0.008	0.4	0.001	0.05		
Dec. 10	0		6.90	3.9		4.0	437	0.030	0.100	0.013		0.002	0.06		
Med.	9.0	10.5	6.675	3.95		3.0	439	0.004	0.073	0.011	.00013	<0.001	0.03	100	31.0
Max.	17.0	68.4	6.95	6.6		3.0	547	0.030	0.175	0.020	0.4	0.002	0.06	100	31.0
Min.	0.0	6.3	6.30	3.7		<1.0	336	<0.002	0.033	0.004	.00005	<0.001	0.01	0	31.0

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Heath Steele Mines Ltd.	H-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	7.0	6.60	5.20	5.4		7.0	4.4	0.002	0.026	0.004			0.12		
July 10	12.0	0.20	5.65	6.2		16.0	6.0	0.005	0.035	0.014			0.18		
Aug. 14	9.0	0.88	6.30	5.7		23.0	5.5	0.002	0.040	0.010			0.14		
Sept. 19	8.0	0.40	5.70	5.4		2.0	5.7	0.002	0.026	0.018			0.19		
Med.	8.5	0.64	5.675	5.55		11.5	5.6	0.002	0.030	0.012			0.16		
Max.	12.0	6.60	6.30	6.2		23.0	6.0	0.005	0.040	0.018			0.19		
Min.	7.0	0.20	5.20	5.4		2.0	4.4	0.002	0.026	0.004			0.12		

EQS-1103 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Heath Steele Mines Ltd.	H-10 A

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	11.0	13.2	4.60	4.6		2.0	66.0	0.18	1.80	0.029			2.65		
July 10	16.0	0.25	4.30	4.4		1.0	224	0.40	1.60	0.058			1.60		
Aug. 14	12.0	0.78	4.60	4.3		2.0	218	0.051	1.90	0.027			0.79		
Sept. 19	7.0	1.60	4.15	3.9		1.0	113	0.40	1.75	0.058			2.89		
Med.	11.5	1.19	4.45	4.35		1.5	165.5	0.40	1.775	0.043			2.215		
Max.	16.0	13.2	4.60	4.6		2.0	224.0	0.51	1.90	0.058			2.89		
Min.	7.0	0.25	4.15	3.9		1.0	66.0	0.18	1.60	0.027			0.79		

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	Heath Steele Mines Ltd.	H-12

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	9.0	43.2	6.00	5.8		6.0	5.1	<0.002	0.004	0.003	.00024	<0.001	0.06		
July 10	19.0	1.75	6.10	6.6		910	9.3	0.007	0.030	0.013	<.00005	0.001	0.17		
Aug. 14	14.0	1.95	6.95	6.4		12.0	9.7	<0.002	0.015	0.008		0.001	0.06		
Sept. 19	9.0	3.90	6.20	6.1		10.0	10.2	<0.002	0.021	0.013		<0.001	0.08		
Dec. 10	0		6.40	6.2		16.0	8.8	<0.002	0.015	0.009		0.001	0.07		
Med.	9.0	2.925	6.20	6.2		10.0	9.3	<0.002	0.015	0.009	<.000145	0.001	0.07		
Max.	19.0	43.2	6.95	6.6		16.0	10.2	0.007	0.030	0.013	.00024	0.001	0.17		
Min.	0	1.75	6.00	5.8		6.0	5.1	<0.002	0.004	0.003	<.00005	<0.001	0.06		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	Heath Steele Mines Ltd.	H-13

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	9.0	58.0	4.50	4.4		3.0	17.6	0.10	1.40	0.012			4.05		
July 10	17.0	3.14	4.40	4.2		2.0	41.9	0.20	4.10	0.023			5.85		
Aug. 14	14.0	3.92	4.60	4.0		2.0	50.4	0.02	3.55	0.018			3.10		
Sept. 19	9.0	5.10	3.90	3.7		2.0	27.4	0.35	3.85	0.015			10.18		
Nov. 20	0		3.80	4.4		3.0	49.8	0.20	3.60	0.011			4.44		
Dec. 10	0		4.00	4.1		4.0	32.5	0.30	2.57	0.017			5.17		
Med.	9.0	4.51	4.20	4.15		2.5	37.2	0.20	3.575	0.016			4.805		
Max.	17.0	58.0	4.60	4.4		4.0	50.4	0.35	4.10	0.023			10.18		
Min.	0	3.14	3.80	3.7		2.0	17.6	0.02	1.40	0.011			3.10		

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ATLANTIC REGION

TABLE	COMPANY	STATION
6	Heath Steele Mines Ltd.	H-16

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	9.0	82.0	5.30	4.7		2.0	15.0	0.10	0.95	0.008			4.28		
July 10	17.0	3.14	4.50	4.4		2.0	39.5	0.20	3.50	0.015			5.56		
Aug. 14	14.0	9.43	5.60	4.2		2.0	47.8	0.02	3.10	0.016			2.79		
Sept. 19	9.0	3.00	4.20	4.0		2.0	24.5	0.25	3.30	0.031			8.65		
Med.	11.5	6.285	4.90	4.3		2.0	32.0	0.15	3.20	0.015			4.92		
Max.	17.0	82.0	5.60	4.7		2.0	47.8	0.25	3.50	0.031			8.65		
Min.	9.0	3.0	4.20	4.0		2.0	15.0	0.02	0.95	0.008			2.79		

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ATLANTIC REGION

TABLE	COMPANY	STATION
7	Heath Steele Mines Ltd.	H-17

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	10.0	882.0	6.65	6.4		4.0	47.5	0.016	0.020	0.003	.00043	<0.001	0.26	90	
July 10	20.0	46.0	6.95	6.9		5.0	130.0	0.012	0.010	0.005	<.00005	<0.001	0.10	100	
Aug. 14	15.0	54.9	7.40	6.7		9.0	193.0	0.007	0.20	0.006	<.00005	0.001	0.10	100	
Sept. 19	10.0	45.9	6.65	6.5		4.0	80.2	0.042	0.55	0.017		<0.001	0.64	100	
Nov. 20	0		6.65	6.3		6.0	102.0	0.016	0.25	0.011	<0.05	0.001	0.23		
Dec. 10	0		6.70	6.4		10.0	90.3	0.017	0.027	0.007		0.001	0.27		
Med.	10.0	50.45	6.675	6.45		5.5	96.15	0.016	0.225	0.006	<.00024	<0.001	0.245	100	
Max.	20.0	882.0	7.40	6.9		10.0	193.0	0.042	0.55	0.017	<0.05	0.001	0.64	100	
Min.	0	45.9	6.65	6.3		4.0	47.8	0.007	0.10	0.003	<.00005	<0.001	0.10	90	

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ATLANTIC REGION

TABLE	COMPANY	STATION
8	Heath Steele Mines Ltd.	H-18

MINE WATER QUALITY

	DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	May 28	10.0	1158.0	6.5	6.5		5.0	11.3	<0.002	0.004	0.004			0.05	70	
*	June 11	14.0		6.90				15.7	0.002	0.012						
	July 10	18.0	195.0	7.00	7.2		7.0	14.2	0.003	0.023	0.006			0.07	100	
*	July 17	24.0		5.80				18.8	0.001	0.002						
*	Aug. 13	17.0		6.20				21.1	0.002	0.080						
	Aug. 14	15.0	144.0	7.25	7.2		8.0	18.1	<0.002	<0.002	0.006			0.03	100	
	Sept. 19	10.0	149.7	6.70	7.1		3.0	22.4	<0.002	0.011	0.020			0.06	100	
	Nov. 20	0		6.80	6.8		4.0	19.6	<0.002	0.003	0.004			0.03		
	Dec. 10	0		6.60	6.6		99.0	18.2	<0.002	0.002	0.004			0.002		
		* - Ecological Monitoring Samples.														
	Med.	14.0	172.35	6.70	6.95		6.0	18.8	<0.002	0.004	0.005			0.04	100	
	Max.	24.0	1158.0	7.25	7.2		9.0	22.4	0.003	0.080	0.020			0.07	100	
	Min.	0	144.0	5.80	6.5		3.0	11.3	0.001	<0.002	0.004			0.002	70	

EPS-1103 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : H-18

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	18.3
2.	pH	6.3
3.	Total Hardness mg/l	18.5
4.	Dissolved oxygen	
	% SAT.	105.3
5.	Total Carbon mg/l	15.0
6.	Organic Carbon mg/l	12.2
7.	B.O.D.$_5$ mgO_2/L	0.38
8.	NO_3-N mg/L	0.142
9.	Total PO_4 mg/L	0.97
10.	Toxic Units	0.15

	PHYSICAL FACTORS	
1.	Depth cm	36.3
2.	Substrate	Cobble
3.	Velocity cm/sec	48

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		173
2.	Total Number of Taxa		13
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	46.4
4.	Second	Baetidae	18.3
5.	Third	Heptageniidae	13.8
6.	Fourth	Hydropsychidae	12.9
7.	Diversity	1.6	

BIOLOGICAL RESULTS

CODE : H-18

TAXA	Sampling Period 11/6/73 - 17/7/73		Sampling Period 17/7/73 - 13/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	19.0	12.18	44.0	23.28	31.5	18.26
Heptageniidae	17.0	10.90	30.5	16.14	23.75	13.77
Plecoptera						
Pteronarcidae	----	-----	0.5	0.26	0.25	0.14
Trichoptera						
Hydropsyehidae	8.0	5.13	36.5	19.31	22.25	12.90
Lepidostomatidae	1.0	0.64	3.5	1.85	2.25	1.30
Philopotamidae	8.0	5.13	-----	-----	4.0	2.32
Psychomyiidae	10.0	6.41	1.5	0.79	5.75	3.33
Diptera						
Ceratopoganidae	------	-----	0.5	0.26	0.25	0.14
Simuliidae	------	-----	0.5	0.26	0.25	0.14
Tendipedidae	91.0	58.33	69.0	36.51	80.0	46.38
Rhagionidae	1.0	0.64	1.0	0.53	1.0	0.58
Coloptera						
Elmidae	1.0	0.64	0.5	0.26	0.75	0.43
Gastropoda						
Neritidae	-----	------	1.0	0.53	0.5	0.29
TOTAL	156.0		189.0		172.5	

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ATLANTIC REGION

TABLE	COMPANY	STATION
9	Heath Steele Mines Ltd.	H-19

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	8.0	825.0	6.60	6.5		5.0	9.6	<0.002	0.004	0.004			0.05	80	
July 10	16.0	162.3	7.10	7.2		7.0	16.4	0.004	0.011	0.004			0.06	100	
Aug. 14	13.0	131.0	7.60	7.1		7.0	15.4	<0.002	0.003	0.006			0.03	100	
Sept. 19	8.0	78.0	6.90	7.1		3.0	17.7	<0.002	0.007	0.004			0.05	100	
Med.	10.5	146.65	7.00	7.1		6.0	15.9	<0.002	0.005	0.004			0.05	100	
Max.	16.0	825.0	7.60	7.2		7.0	17.7	0.004	0.011	0.006			0.06	100	
Min.	8.0	78.0	6.60	6.5		3.0	9.6	<0.002	0.003	0.004			0.03	80	

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ATLANTIC REGION

MINE WATER QUALITY

TABLE	COMPANY	STATION
10	Heath Steele Mines Ltd.	H-20

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	7.0	230.0	6.60	6.7		5.0	16.3	<0.002	0.019	0.004			0.06		
July 10	15.0	47.3	7.00	7.4		4.0	34.0	0.009	0.011	0.005			0.08		
Aug. 14	13.0	31.4	6.80	7.4		6.0	29.3	<0.002	0.002	0.006			0.02		
Sept. 19	8.0	17.6	6.80	7.2		3.0	40.3	<0.002	0.008	0.016			0.04		
Med.	10.5	39.35	6.80	7.3		4.5	31.65	<0.002	0.009	0.005			0.05		
Max.	15.0	230.0	7.00	7.4		6.0	40.3	0.009	0.019	0.016			0.08		
Min.	7.0	17.6	6.60	6.7		3.0	16.3	<0.002	0.002	0.004			0.02		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
11	Heath Steele Mines Ltd.	H-21

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	8.0	1237.0	6.0	6.4		6.0	17.0	0.002	0.019	0.003			0.05	90	
* June 11	14.0		6.90				18.9	0.004	0.014						
July 10	16.0	264.5	7.05	7.0		10.0	33.3	0.007	0.027	0.005			0.06	100	
* July 17	23.0		5.50				38.4	0.002	0.009						
* Aug. 13	19.0		6.00				38.1	0.004	1.190						
Aug. 14	14.0	354.6	7.30	7.0		15.0	30.8	<0.002	0.031	0.008			0.05	90	
Sept. 19	9.0	339.5	6.85	7.1		3.0	29.0	<0.002	0.026	<0.002			0.06	100	
Nov. 20	0		6.80	6.7		9.0	38.0	<0.002	0.046	0.006			0.06		
	* - Ecological Monitoring Samples.														
Med.	14.0	347.05	6.825	7.0		9.0	32.05	0.002	0.026	0.005			0.06	95	
Max.	23.0	1237.0	7.30	7.1		15.0	38.4	0.007	1.190	0.008			0.06	100	
Min.	0	264.5	5.50	6.4		3.0	17.0	<0.002	0.009	<0.002			0.05	90	

EPG-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : H-21

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	18.7
2.	pH	6.1
3.	Total Hardness mg/l	31.8
4.	Dissolved oxygen	
	% SAT.	105.0
5.	Total Carbon mg/l	17.0
6.	Organic Carbon mg/l	12.1
7.	B.O.D.$_5$ mgO_2/L	0.99
8.	NO_3-N mg/L	0.011
9.	Total PO_4 mg/L	0.120
10.	Toxic Units	0.53

	PHYSICAL FACTORS	
1.	Depth cm	26
2.	Substrate	Pebble
3.	Velocity cm/sec	59.5

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		305
2.	Total Number of Taxa		9
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	71.8
4.	Second	Hydropsychidae	20.8
5.	Third	Baetidae	4.7
6.	Fourth	Heptageniidae	1.8
7.	Diversity	0.81	

BIOLOGICAL RESULTS

CODE : H-21

TAXA	Sampling Period 11/ 6/73 - 17/7/73		Sampling Period 17/7/73 - 13/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	11.5	3.08	17.0	7.22	14.25	4.68
Heptageniidae	----	-----	11.0	4.67	5.5	1.81
Plecoptera						
Pteronarcidae	----	-----	0.5	0.21	0.25	0.08
Trichoptera						
Hydropsychidae	87.0	23.29	39.5	16.77	63.25	20.77
Philopotamidae	0.5	0.13	-----	-----	0.25	0.08
Psychomyiidae	----	------	1.0	0.42	0.5	0.16
Diptera						
Ceratopoganidae	-----	------	3.0	1.27	1.5	0.49
Tendipedidae	274.0	73.36	163.5	69.43	218.75	71.84
Coleoptera						
Elmidae	0.5	0.13	-----	------	0.25	0.08
TOTAL	373.5		235.5		304.5	

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ATLANTIC REGION

TABLE	COMPANY	STATION
12	Heath Steele Mines Ltd.	H-22

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 28	10.0	82.6	6.40	6.0		6.0	6.1	<0.002	0.011	0.004			0.8		
July 10	20.0	2.95	6.85	6.6		15.0	10.7	0.007	0.017	0.005			0.11		
Aug. 14	13.0	9.84	6.90	6.3		15.0	11.6	0.002	0.012	0.006			0.05		
Sept. 19	9.0	5.80	6.75	7.2		6.0	11.0	<0.002	0.007	0.007			0.05		
Med.	11.5	7.82	6.80	6.45		10.5	10.85	<0.002	0.011	0.005			0.065		
Max.	20.0	82.6	6.90	7.2		15.0	11.6	0.007	0.017	0.007			0.11		
Min.	9.0	2.95	6.40	6.0		6.0	6.1	<0.002	0.007	0.004			0.05		

KEEWAY MINES

Keeway Mines

Keeway has not been in production since 1956. Monitoring began in 1971, and continued in 1973. The quality of the Elmtree River has been good in spite of high background zinc readings on occasion, and fish have been reported in the river. Stations K-1 to K-4 will be dropped in 1974, and sampling will continue only near the mouth of the Elmtree.

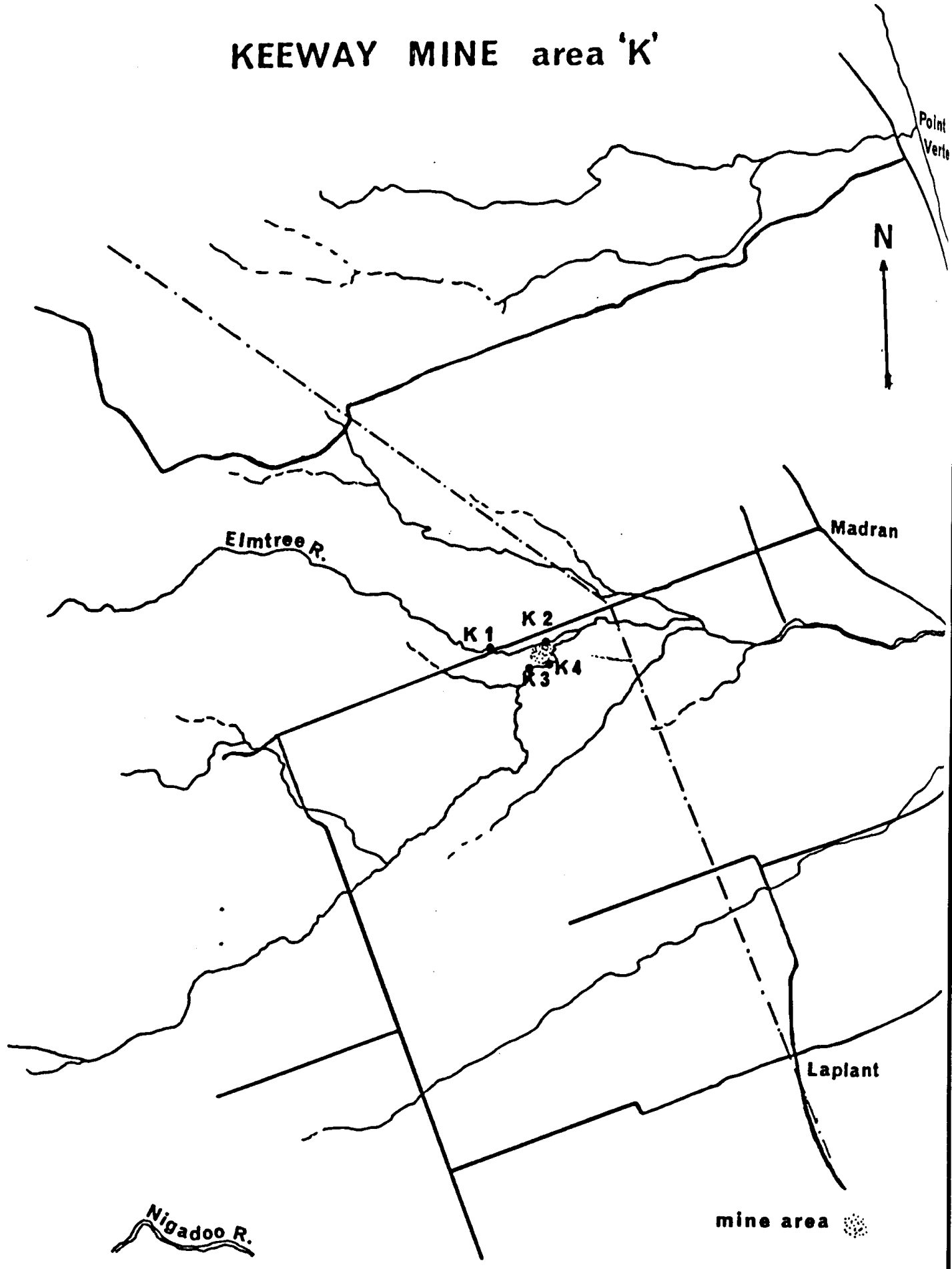
MINE: Keeway Mines (abandoned) AREA CODE: "K"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
K-1*	Elmtree River, at bridge on main road above minesite.		
K-2	Elmtree River, at washed out bridge, below mine concentrator site.		
K-3	Elmtree River, above tailings impoundment		
K-4*	Elmtree River, below tailings pond, at small bridge		

* Ecological Monitoring Station

KEEWAY MINE area 'K'



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ATLANTIC REGION

TABLE	COMPANY	STATION
1	KEEWAY MINES	K-1

MINE WATER QUALITY

	DATE 1973	TEMP. °C	FLOW c.f.s	pH field	PH LAB.		HUMIC ACIDS	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	May 21	5.0	120.0	6.50	5.60		18.0	5.2	0.003	0.058	0.023			0.23		
*	Jun 12	15.0		6.90				7.67	<0.001	0.002						
*	Jul 19	19.0		6.30				29.2	<0.010	0.013						
	Jul 20	19.0	3.9	7.00	6.80		11.0	25.6	0.003	0.030	0.004			0.06		
*	Aug 14	15.0		6.20				19.2	0.003	0.030						
	Med.	15.0	61.95	6.50	6.20		14.5	19.2	0.003	0.030	0.013			0.145		
	Max.	19.0	120.0	7.00	6.80		18.0	29.2	0.010	0.058	0.023			0.23		
	Min.	5.0	3.9	6.20	5.60		11.0	5.2	<0.001	<0.002	0.004			0.06		

* = Ecological Monitoring Samples.

EPG-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : K-1

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	16.3
2.	pH	6.5
3.	Total Hardness mg/l	18.69
4.	Dissolved oxygen	
	% SAT.	97.7
5.	Total Carbon mg/l	14.4
6.	Organic Carbon mg/l	12.6
7.	B.O.D.$_5$ mgO_2/L	1.73
8.	NO_3-N mg/L	0.067
9.	Total PO_4 mg/L	0.072
10.	Toxic Units	0.24

	PHYSICAL FACTORS	
1.	Depth cm	29.0
2.	Substrate	Granule & bedrock
3.	Velocity cm/sec	63.8

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		47
2.	Total Number of Taxa		15
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	29.6
4.	Second	Heptageniidae	25.3
5.	Third	Baetidae	16.1
6.	Fourth	Chironomidae	6.5
7.	Diversity	1.5	

BIOLOGICAL RESULTS

CODE : K-1

TAXA	Sampling Period 12/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	9.0	25.35	6.0	10.43	7.5	16.13
Heptageniidae	1.0	2.82	22.5	39.13	11.75	25.27
Plecoptera						
Perlidae	----	-----	2.0	3.48	1.0	2.15
Pteronarcidae	0.5	1.41	1.0	1.74	0.75	1.61
Trichoptera						
Lepidostomatidae	1.0	2.82	1.0	1.74	1.0	2.15
Limnephilidae	----	-------	1.0	1.74	0.5	1.08
Psychomyiidae	----	-------	3.5	6.09	1.75	3.76
Diptera						
Chironomidae	6.0	16.90	----	------	3.0	6.45
Rhagionidae	0.5	1.41	------	------	0.25	0.54
Simuliidae	1.0	2.82	-----	------	0.5	1.08
Tendipedidae	12.0	33.80	15.5	26.96	13.75	29.57
Tipuliidae	2.0	5.63	1.0	1.74	1.5	3.23
Coleoptera						
Elmidae	-----	------	2.0	3.48	1.0	2.15
Lepidoptera	0.5	1.41	-----	-----	0.25	0.54
Collembola						
Isolomidae	2.0	5.63	----	-----	1.0	2.15
TOTAL	35.5		57.5		46.5	

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	KEEWAY MINES	K - 2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		HUMIC ACIDS	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 21	5.0	120.0	5.70	5.70		11.0	5.2	0.002	0.030	0.008			0.12		
July20	19.0	3.9	6.95	6.70		10.0	27.2	0.002	0.032	<0.002			0.05		
Med.	12.0	61.95	6.325	6.20		10.5	16.35	0.002	0.031	<0.005			0.085		
Max.	19.0	120.0	6.95	6.70		11.0	27.2	0.002	0.032	0.008			0.12		
Min.	5.0	3.9	5.70	5.70		10.0	5.5	0.002	0.030	<0.002			0.05		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	KEEWAY MINES	K - 3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab.		HUMIC ACIDS	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 21	5.0	57.6	5.62	5.5		11.0	5.5	0.004	0.026	0.009			0.14		
July20	.18.0	0.25	7.10	6.9		5.0	25.7	<0.002	0.004	0.002			0.02		
Med.	11.5	28.92	6.361	6.20		8.0	15.6	<0.003	0.015	0.005			0.08		
Max.	18.0	57.6	7.10	6.90		11.0	25.7	0.004	0.026	0.009			0.14		
Min.	5.0	0.25	5.62	5.50		5.0	5.5	<0.002	0.004	0.002			0.02		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	KEEWAY MINES	K-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	PH LAB.		HUMIC ACIDS	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 21	5.0	54.0	5.62	4.80		10.0	5.9	0.003	0.031	0.007			0.14		
* Jun 12	14.0		6.90				16.7	0.003	0.003						
* Jul 19	22.0		5.70				23.1	0.005	0.002						
Jul 20	18.0	0.25	7.15	6.80		4.0	29.5	0.016	0.082	0.030			0.26		
* Aug 14	17.0		5.80				8.35	0.001	<0.010						
* * Ecological Monitoring Samples.															
Med.	17.0	27.12	5.80	5.80		7.0	16.7	0.003	<0.010	0.018			0.20		
Max.	22.0	54.0	7.15	6.80		10.0	29.5	0.016	0.082	0.030			0.26		
Min.	5.0	0.25	5.62	4.80		4.0	5.9	0.001	0.002	0.007			0.14		

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : K-4

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	17.7
2.	pH	6.1
3.	Total Hardness mg/l	16.1
4.	Dissolved oxygen	
	% SAT.	102.0
5.	Total Carbon mg/l	17.3
6.	Organic Carbon mg/l	16.1
7.	B.O.D.$_5$ mgO_2/L	0.94
8.	NO_3-N mg/L	0.029
9.	Total PO_4 mg/L	0.061
10.	Toxic Units	0.008

	PHYSICAL FACTORS	
1.	Depth cm	18.3
2.	Substrate	Pebble
3.	Velocity cm/sec	16.1

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		340
2.	Total Number of Taxa		14
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	66.4
4.	Second	Chironomidae	21.2
5.	Third	Simuliidae	2.9
6.	Fourth	Perlidae	2.6
7.	Diversity	1.1	

BIOLOGICAL RESULTS

CODE : K-4

TAXA	Sampling Period 12/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	11.5	3.36	2.0	0.59	6.75	1.98
Heptageniidae	----	----	2.5	0.74	1.25	0.37
Plecoptera						
Perlidae	13.0	3.80	4.5	1.33	8.75	2.57
Trichoptera						
Hydropsychidae	11.0	3.22	6.0	1.77	8.5	2.50
Limnephilidae	0.5	0.15	----	-----	0.25	0.07
Philopotamidae	----	-----	1.5	0.44	0.75	0.22
Psychomyiidae	0.5	0.15	2.5	0.74	1.5	0.44
Diptera						
Ceratopogonidae	-----	-----	3.5	1.03	1.75	0.51
Chironomidae	144.0	42.11	-----	-----	72.0	21.16
Rhagionidae	3.5	1.02	0.5	0.15	2.0	0.59
Simuliidae	14.0	4.09	5.5	1.62	9.75	2.87
Tendipididae	142.5	41.67	309.0	91.29	225.75	66.35
Odonata						
Gomphidae	-----	------	0.5	0.15	0.25	0.07
Coleoptera						
Elmidae	1.5	0.44	0.5	0.15	1.0	0.29
TOTAL	342.0		338.5		380.25	

LAKE GEORGE ANTIMONY

Lake George Antimony

This mine was in production during the latter half of 1973. Copper, lead, and zinc are not the significant toxicants in the settling pond effluent, and for this reason no values are shown for total toxicity. The LC 50 for arsenic may be as low as 1.1 mg/l, but arsenic is quite insoluble and does not appear at significant levels in the receiving water below the outfall. The halides of antimony are toxic and soluble, but the oxides are not. The 96 - hour LC 50 to fathead minnows is 9 mg/l for SbF_3 in soft water.

The concentrations of arsenic and antimony in the effluent were less in 1973 than in 1972. However, the concentration of antimony in the Pokiok river was doubled in the same period. The volume of water discharged from the settling pond continued to be low, as the mine recycles most of the effluent.

MINE: Lake George Antimony (Durham Consolidated)

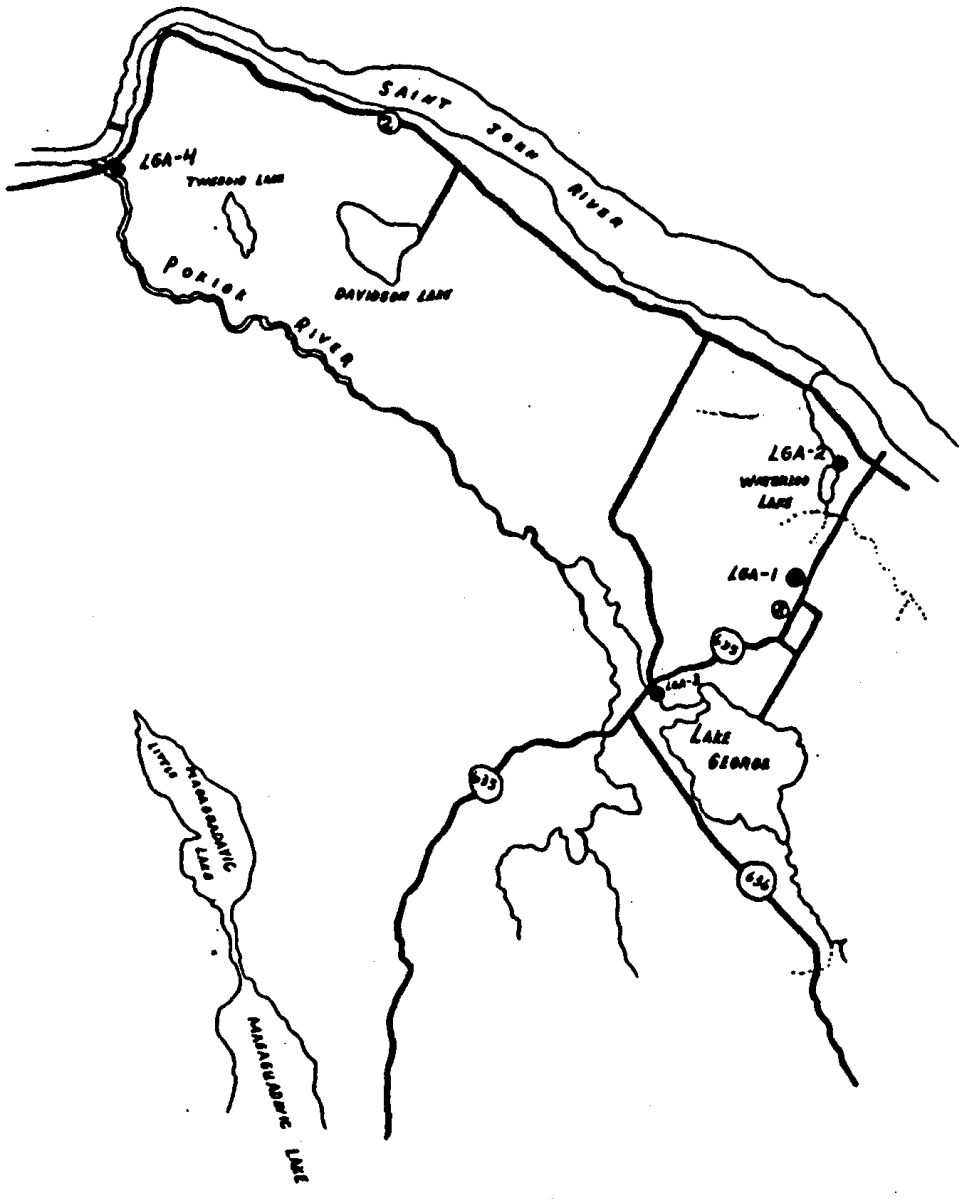
AREA CODE: "LGA"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
LGA-1	Settling pond effluent at outfall.		
LGA-2	Outflow from Waterloo Lake en route Saint John River. - Jocelyn Brook at Hwy. 2	NB-20	00NB01AK0028
LGA-3	Pokiok River, upstream of highway bridge, Route 635, outlet of Lake George.	NB-19	00NB01AK0029
LGA-4	Mouth of Pokiok River, at highway bridge Hwy. 2, near St. John River.	NB-17	00NB01AK0020

LAKE GEORGE ANTIMONY

AREA "L.G.A."



● = MINE SITE

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ATLANTIC REGION

TABLE	COMPANY	STATION
1.	Lake George Antimony	LGA -1

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17	12.0	0.40	6.70	7.0		1.0	177.1	<0.002	0.050	0.007		0.001			
Jun 14	2110	0.20	6.90	6.8		1.0	240.0	0.005	0.026	0.012	0.065	0.10			
Jul 12	20.0	0.12	7.05	6.8		1.0	256.0	0.003	0.012	0.006	0.145	5.50			
Aug 28	19.0	0.10	6.91	6.4		21.0	327.0	0.002	0.012	0.003	0.230	6.90			
Sep 18	12.0		6.60	7.0		2.0	386.0	<0.002	0.013	0.010		8.20			
Oct 27		NO	SAMPLE	COLLECTED.		NO	OUTFALL	FROM	POND.						
Nov 24	2.0		7.10	6.7		2.0	402.0	0.003	0.020	0.009	0.250	6.90			
Dec 13		NO	SAMPLE	COLLECTED.		NO	OUTFALL	FROM	POND.						
Med	15.5	0.16	6.905	6.8		1.5	291.5	0.025	0.016	0.008	0.187	6.20			
Max	21.0	0.40	7.10	7.0		21.0	402.0	0.005	0.050	0.012	0.250	8.25			
Min	2.0	0.10	6.60	6.4		1.0	177.1	<0.002	0.012	0.003	0.065	0.001			

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
2.	Lake George Antimony	LGA -2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH La.		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17	13.0	22.4	6.50	6.7		11.0	13.3	<0.002	0.003	0.005	0.020	0.007			
Jun 14	20.0	2.30	6.95	6.6		11.0	17.6	<0.002	0.010	0.006	0.018	0.017			
Jul 12	20.0	0.60	6.75	6.6		15.0	22.2	0.004	0.013	0.006	0.005	0.015			
Aug 28	23.0	0.50	6.80	7.1		14.0	27.0	<0.002	0.007	0.002		<0.002			
Sep 18	12.0	0.30	6.65	7.0		12.0	27.2	<0.002	0.008	0.003		0.900			
Oct 27	8.0		6.60	6.8		30.0	30.5	<0.002	0.008	0.003	0.011	0.040			
Nov 24	2.0	3.80	6.70	7.2		20.0	28.6	<0.002	<0.002	0.005	0.021	0.070			
Dec 13	1.0		6.20	6.3			24.3	<0.002	0.003	0.005	0.018	0.140			
Med	12.5	1.45	6.675	6.75		14.0	25.65	<0.002	0.007	0.005	0.018	0.028			
Max	23.0	22.4	6.95	7.2		30.0	30.5	0.004	0.013	0.006	0.021	0.400			
Min	1.0	0.30	6.20	6.3		11.0	13.3	<0.002	<0.002	0.002	0.005	<0.002			

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3.	Lake George Antimony	LGA -3

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17	12.0	156.0	6.10	6.3		9.0	8.1	<0.002	0.040	0.005	0.012	0.001			
Jun 14	18.0	23.8	6.65	6.0		10.0	10.4	0.002	0.015	0.010	0.005	0.033			
Jul 12	18.0	1.8	6.80	6.6		26.0	25.3	0.005	0.016	0.006	0.005	0.100			
Aug 28	20.0	9.0	6.70	7.2		7.0	9.5	0.004	0.007	0.003	0.009	<0.002			
Sep 18	10.0	0.26	6.55	7.2		3.0	15.7	<0.002	0.010	0.003		0.160			
Oct 27	8.0	0.19	6.60	6.9		30.0	25.6	<0.002	<0.002	0.030	0.007	0.020			
Nov 24	1.5	10.0	6.30	7.0		20.0	35.9	<0.002	<0.002	0.007	0.005	0.050			
Dec 13	1.0		6.20	6.4		15.0	10.4	<0.002	0.003	0.007	0.012	0.070			
Med	11.0	9.0	6.575	6.75		12.5	13.05	<0.002	0.008	0.006	0.007	0.041			
Max	20.0	156.0	6.80	7.2		30.0	35.9	0.005	0.040	0.030	0.012	0.160			
Min	1.0	0.19	6.10	6.0		3.0	8.1	<0.002	<0.002	0.003	0.005	0.001			

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4.	Lake George Antimony	LGA -4

MINE WATER QUALITY

DATE 19 - 71	TEMP. °C	FLOW g.p.m.	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Sb ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 17	10.0	520.0	6.00	6.5		18.0	9.4	<0.002	0.022	0.007	0.016	0.007			
Jun 14	18.0	217.5	6.90	6.5		18.0	13.5	<0.002	0.015	0.007	0.013	0.015			
Jul 12	19.0	155.0	6.95	6.5		40.0	16.9	0.003	0.010	0.006	0.008	0.300			
Aug 28	20.0	125.5	7.90	6.8		28.0	16.7	0.007	0.160	0.005	0.015	<0.002			
Sep 18	10.0	23.5	6.80	7.4		17.0	21.8	<0.002	0.010	0.003		0.200			
Oct 27	9.0	18.0	6.90	7.1		30.0	21.4	<0.002	<0.002	0.030	<0.005	0.020			
Nov 24	1.0		6.40	6.8		40.0	17.8	<0.002	<0.002	0.005	0.015	0.090			
Dec 13	1.0		5.95	6.1			11.5	<0.002	0.010	0.004	0.010	0.070			
Med	10.0	140.25	6.85	6.65		28.0	16.8	<0.002	0.010	0.005	0.013	0.045			
Max	20.0	520.0	7.90	7.4		40.0	21.8	0.007	0.160	0.030	0.016	0.300			
Min	1.0	18.0	5.95	6.1		17.0	9.4	<0.002	<0.002	0.003	<0.005	0.002			

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : M-1

WATER QUALITY	AVERAGE
Water Temp. C°	18.0
pH	6.6
Total Hardness mg/l	54.4
Dissolved oxygen	
% SAT.	98.7
Total Carbon mg/l	18.7
Organic Carbon mg/l	11.5
B.O.D.$_5$ mgO_2/L	1.05
NO_3-N mg/L	0.029
Total PO_4 mg/L	0.150
Toxic Units	0.11

PHYSICAL FACTORS	
Depth cm	38.7
Substrate	Cobble
Velocity cm/sec	67.5

BOTTOM COMMUNITY		
Total Number/Sampler		77
Total Number of Taxa		12
Numerically Dominant	TAXA	% TOTAL
First	Tendipedidae	49.0
Second	Baetidae	29.9
Third	Perlidae/Hydropsychidae	8.1
Fourth	Rhyacophilidae	1.3
Diversity	1.4	

BIOLOGICAL RESULTS

CODE : M-1

TAXA	Sampling Period 12/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	37.0	40.00	9.0	14.63	23.0	29.87
Heptageniidae	1.5	1.62	-----	------	0.75	0.97
Plecoptera						
Perlidae	7.5	8.11	5.0	8.13	6.25	8.12
Trichoptera						
Hydropsychidae	10.5	11.35	2.0	3.25	6.25	8.12
Limnephilidae	0.5	0.54	-----	------	0.25	0.32
Psychomyiidae	0.5	0.54	-----	------	0.25	0.32
Rhyacophilidae	-----	-----	2.0	3.25	1.0	1.3
Diptera						
Ceratopogonidae	-----	------	0.5	0.81	0.25	0.32
Rhayionidae	0.5	0.54	-----	------	0.25	0.32
Simuliidae	-----	------	1.5	2.44	0.75	0.97
Tendipedidae	34.0	36.76	41.5	67.48	37.75	49.03
Coleoptera						
Psephenidae	0.5	0.54	-----	------	0.25	0.32
TOTAL	92.5		61.5		77.0	

MILLSTREAM MINE

Millstream Mine

The quality of the Millstream River remained good in 1973, although two zinc measurements of over 0.1 mg/l were recorded at the old mine campsite for the first time. EPS has no record of further activity at this mine, and sampling in the area will not be continued in 1974.

MINE: Millstream Mine
(North American Rare Metals)

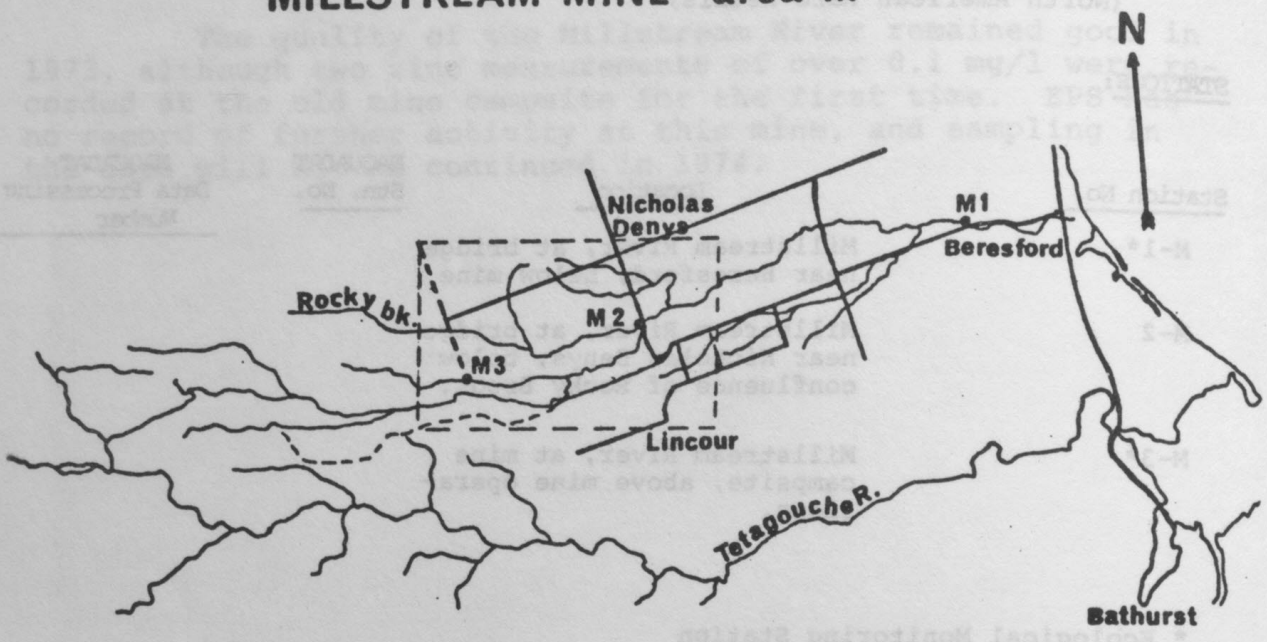
AREA CODE: M

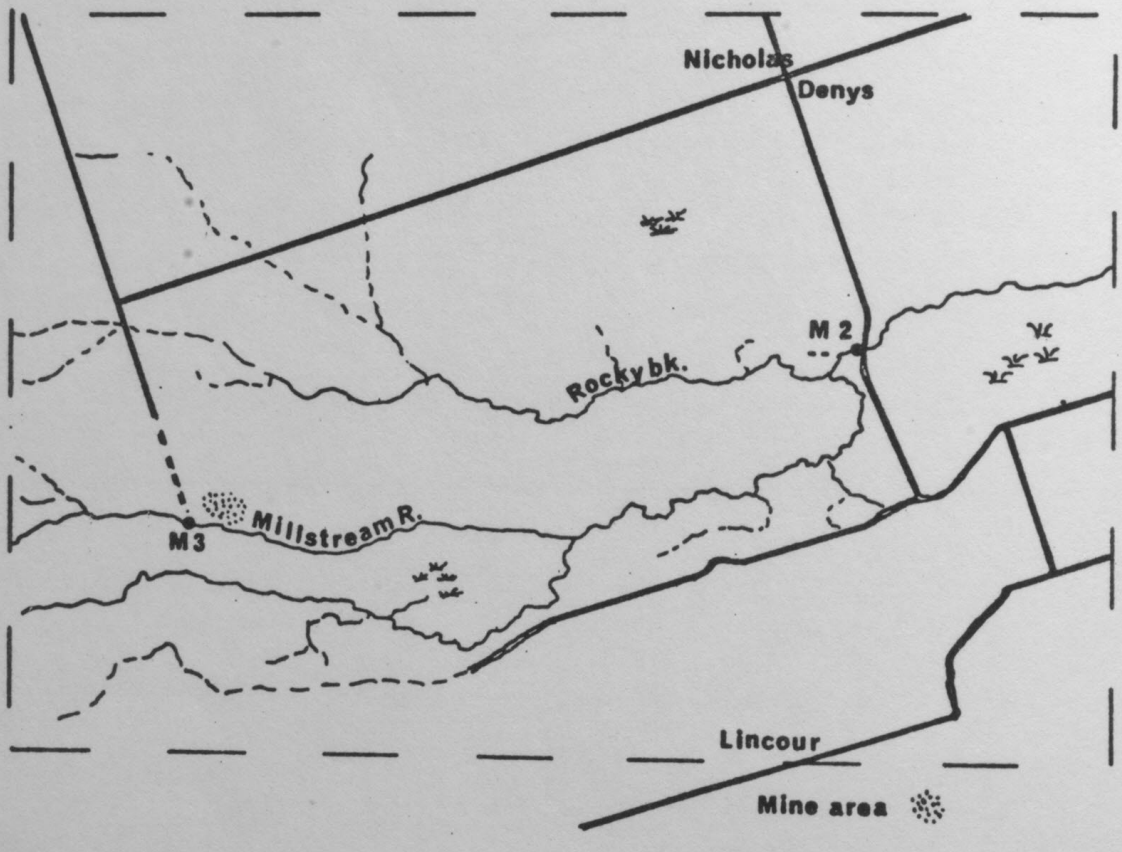
STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
M-1*	Millstream River, at bridge near Beresford, below mine		
M-2	Millstream River, at bridge near Nicholas Denys, below confluence of Rocky Brook.		
M-3*	Millstream River, at mine campsite, above mine operations.		

* Ecological Monitoring Station

MILLSTREAM MINE area 'M'





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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Millstream	M-1

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 21	7.0	248.0	6.70	6.80		11.0	29.5	<0.002	0.020	0.005			0.04		
* June 12	14.0		6.60				41.6	<0.001	0.009						
* July 19	22.0		6.50				58.1	0.001	0.002						
July 20	19.0	19.6	6.75	6.90		3.0	61.2	0.002	0.019	0.002			0.03		
* Aug. 14	18.0		6.60				63.4	0.001	<0.010						
* =	Ecological Monitoring Samples.														
Med.	18.0	133.8	6.60	6.85		7.0	58.1	0.001	<0.010	0.003			0.035		
Max.	22.0	248.0	6.75	6.90		11.0	63.4	0.002	0.020	0.005			0.04		
Min.	7.0	19.6	6.50	6.80		3.0	29.5	<0.001	0.002	0.002			0.03		

EP6-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Millstream Mine	M - 2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 21	7.0	259.0	6.91	6.9		5.0	31.3	<0.002	0.020	0.005			0.04		
July20	19.0	12.2	6.90	7.2		3.0	63.7	<0.002	0.016	0.010			0.03		
Med.	13.0	135.6	6.905	7.05		4.0	47.5	<0.002	0.018	0.007			0.035		
Max.	19.0	259.0	6.91	7.2		5.0	63.7	<0.002	0.020	0.010			0.04		
Min.	7.0	12.2	6.90	6.9		3.0	31.3	<0.002	0.016	0.005			0.03		

EPC-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Millstream Mine	M-3

MINE WATER QUALITY

	DATE 1974	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	May 21	4.0	32.0	6.90	7.10		22.0	40.7	0.002	0.130	0.005			0.13		
*	June 12	11.0		7.10				54.1	0.001	<0.002						
*	July 19	12.0		6.70				67.6	0.001	0.003						
	July 20	12.0	7.9	7.00	7.20		2.0	68.4	0.007	0.049	0.004			0.09		
*	Aug.14	12.0		6.50				86.3	0.003	0.110						
	* = Ecological Monitoring Samples.															
	Med.	12.0	19.95	6.90	7.15		12.0	67.6	0.002	0.049	0.004			0.11		
	Max.	12.0	32.0	7.10	7.20		22.0	86.3	0.007	0.130	0.005			0.13		
	Min.	4.0	7.9	6.50	7.10		2.0	40.7	0.001	<0.002	0.004			0.04		

EP6-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : M-3

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	12.0
2.	pH	6.8
3.	Total Hardness mg/l	69.3
4.	Dissolved oxygen	
	% SAT.	95.3
5.	Total Carbon mg/l	19.5
6.	Organic Carbon mg/l	8.1
7.	B.O.D.$_5$ mgO_2/L	0.89
8.	NO_3-N mg/L	0.012
9.	Total PO_4 mg/L	0.290
10.	Toxic Units	0.14

	PHYSICAL FACTORS	
1.	Depth cm	31.0
2.	Substrate	Coarse Sand
3.	Velocity cm/sec	37.7

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		60
2.	Total Number of Taxa		15
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	62.8
4.	Second	Perlidae	10.5
5.	Third	Tendipedidae	10.0
6.	Fourth	Chironomidae	7.1
7.	Diversity	1.4	

BIOLOGICAL RESULTS

CODE : M-3

TAXA	Sampling Period 12/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	24.5	45.37	50.5	77.10	37.5	62.76
Heptagenidae	2.0	3.7	2.0	3.05	2.0	3.35
Plecoptera						
Perlodidae	11.5	21.30	1.0	1.53	6.25	10.46
Pteronarcidae	-----	-------	0.5	0.76	0.25	0.42
Trichoptera						
Hydropsychidae	-----	-------	0.5	0.76	0.25	0.42
Limnephilidae	0.5	0.93	0.5	------	0.25	0.42
Psychomyiidae	2.0	3.70	0.5	0.76	1.75	2.93
Diptera						
Chironomidae	4.5	8.33	4.0	6.11	4.25	7.11
Rhagionidae	1.0	1.85	-----	------	0.5	0.84
Simuliidae	0.5	0.93	-----	------	0.25	0.42
Tendipedidae	6.0	11.11	6.0	9.16	6.0	10.04
Ceratopoganidae	-----	------	0.5	0.76	0.25	0.42
Coleoptera						
Dytiscidae	0.5	0.93	-----	------	0.25	0.42
Elmidae	0.5	0.93	-----	------	0.25	0.42
Megaloptera						
Sialidae	0.5	0.93	-----	------	0.25	0.42
TOTAL	54.0		65.5		59.75	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : M-3

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	12.0
2.	pH	6.8
3.	Total Hardness mg/l	69.3
4.	Dissolved oxygen	
	% SAT.	95.3
5.	Total Carbon mg/l	19.5
6.	Organic Carbon mg/l	8.1
7.	B.O.D.$_5$ mgO_2/L	0.89
8.	NO_3-N mg/L	0.012
9.	Total PO_4 mg/L	0.290
10.	Toxic Units	0.14

	PHYSICAL FACTORS	
1.	Depth cm	31.0
2.	Substrate	Coarse Sand
3.	Velocity cm/sec	37.7

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		60
2.	Total Number of Taxa		15
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	62.8
4.	Second	Perlidae	10.5
5.	Third	Tendipedidae	10.0
6.	Fourth	Chironomidae	7.1
7.	Diversity	1.4	

BIOLOGICAL RESULTS

CODE : M-3

TAXA	Sampling Period 12/6/73 - 19/7/73		Sampling Period 19/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	24.5	45.37	50.5	77.10	37.5	62.76
Heptagenidae	2.0	3.7	2.0	3.05	2.0	3.35
Plecoptera						
Perlodidae	11.5	21.30	1.0	1.53	6.25	10.46
Pteronarcidae	-----	-------	0.5	0.76	0.25	0.42
Trichoptera						
Hydropsychidae	-----	-------	0.5	0.76	0.25	0.42
Limnephilidae	0.5	0.93	0.5	------	0.25	0.42
Psychomyiidae	2.0	3.70	0.5	0.76	1.75	2.93
Diptera						
Chironomidae	4.5	8.33	4.0	6.11	4.25	7.11
Rhagionidae	1.0	1.85	-----	------	0.5	0.84
Simuliidae	0.5	0.93	-----	------	0.25	0.42
Tendipedidae	6.0	11.11	6.0	9.16	6.0	10.04
Ceratopoganidae	-----	------	0.5	0.76	0.25	0.42
Coleoptera						
Dytiscidae	0.5	0.93	-----	------	0.25	0.42
Elmidae	0.5	0.93	-----	------	0.25	0.42
Megaloptera						
Sialidae	0.5	0.93	-----	------	0.25	0.42
TOTAL	54.0		65.5		59.75	

MOUNT PLEASANT MINE
(BRUNSWICK TIN LTD.)

Mount Pleasant Mine (Brunswick Tin Ltd.)

Activity at Mount Pleasant began again in 1973 with the preparations for driving an incline. The name of the property has been changed to Brunswick Tin Mines, and it is being operated as a subsidiary of the Sullivan Group.

For the second time in two years an anomalous value was recorded at MP - 2, a lead level of 1 mg/l. In 1972, a zinc value of 1.3 mg/l was recorded at this station. Aside from this, the water quality on the Piskehegan and Magaguadavic Rivers remained good. No data were collected at stations MP-6 to MP-13.

MINE: Mt. Pleasant AREA CODE: "MP"

STATIONS:

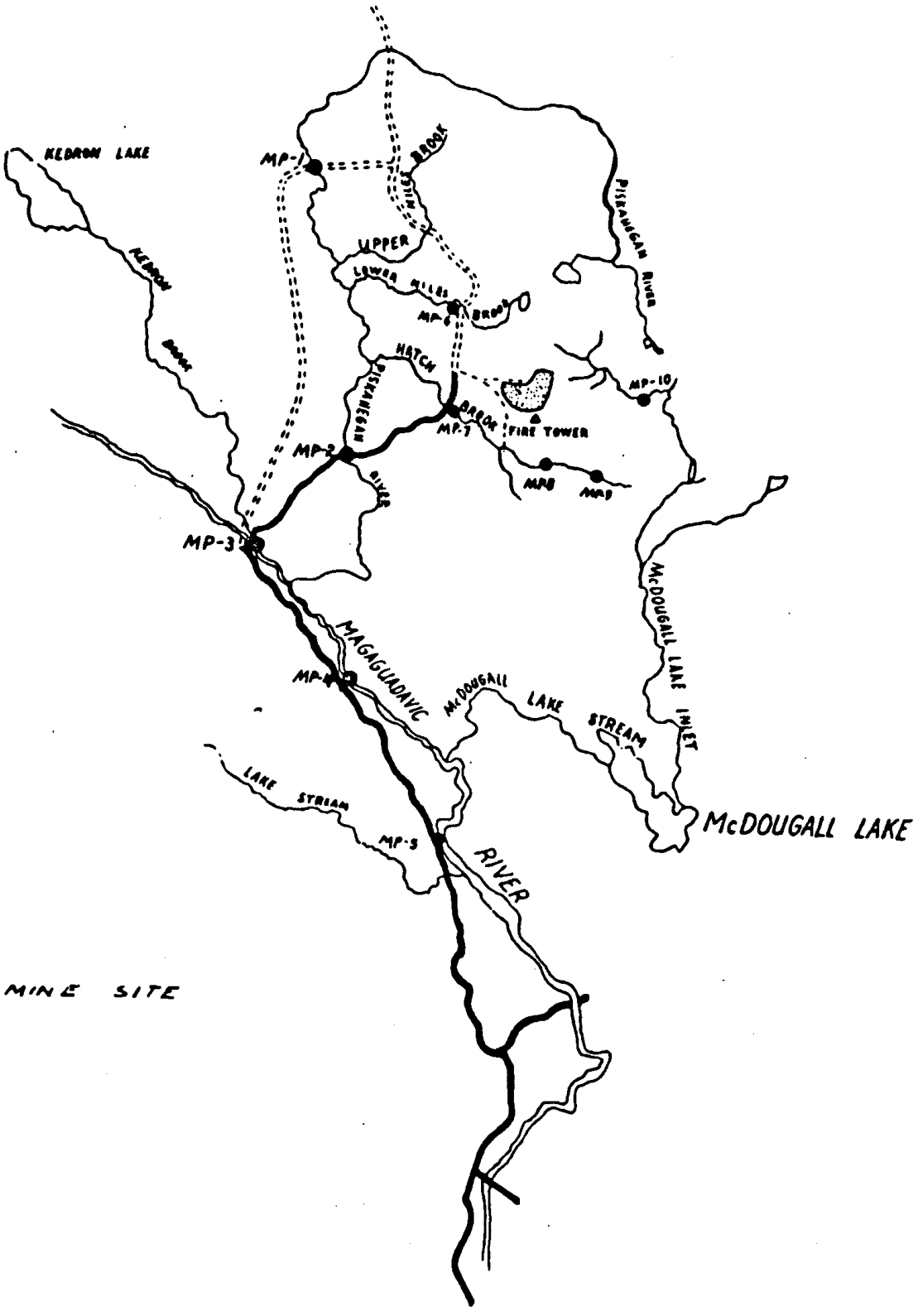
Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
MP-1*	Piskahegan River, at bridge on Old Post Road, approx. 3-4 miles upriver from mouth of Upper Niles Br.		
MP-2	Piskahegan River, at bridge on Old Post Road, approx. 2 miles downriver from mouth of Hatch Brook.	NB-54	00NB01AQ0011
MP-3	Magaguadavic River, at Pomeroy Bridge (Old Post Road), approx. 1 mile above mouth of Piskahegan River.	NB-55	00NB01AQ0012
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.	NB-55A	00NB01AQ0013
MP-5*	Magaguadavic River, at Second Falls above Lake Stream	NB-56	00NB01AQ0002
MP-6	Lower Niles Brook at Bridge		
MP-7	Hatch Brook #2 below bridge on Mt. Pleasant Road.	NB-57	00NB01AQ0016
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.		

Station No.	Location	NAQUADAT STATION#	NAQUADAT DATA PROCESSING #
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.

* Ecological Monitoring Station

AREA "MP"



• MINE SITE

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Mount Pleasant Mine	MP-1

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 29	10.0	198.0	6.10	5.60		15.0	6.0	<0.002	0.086	0.005			0.25		
* June 21	20.0		5.30				9.0	0.003	<0.002						
June21	20.0	52.6	6.15	6.10		20.0	7.4	<0.002	0.008	0.005	.00004	<0.001	0.05		
July26	24.0	1.96	7.10	6.50		18.0	13.2	0.002	0.010	0.002		<0.001	0.04		
* Aug.30	20.0		5.70				9.41	0.001	<0.010						
Sept.6	15.0	39.3	6.60	6.40		30.0	13.9	<0.002	0.011	0.002		<0.001	0.03		
Oct. 4	11.0	21.0	6.75	7.10		19.0	13.6	<0.002	0.018	0.007		<0.001	0.06		
* = Ecological Monitoring Samples.															
Med.	20.0	39.3	6.15	6.40		19.0	9.41	<0.002	0.010	0.005	.00004	<0.001	0.05		
Max.	24.0	198.0	7.10	7.10		30.0	13.9	0.003	0.086	0.007	.00004	<0.001	0.25		
Min.	10.0	1.96	5.30	5.60		15.0	6.0	0.001	<0.002	0.002	.00004	<0.001	0.03		

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : MP-1

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	20.0
2.	pH	5.9
3.	Total Hardness mg/l	9.2
4.	Dissolved oxygen	
	% SAT.	97.3
5.	Total Carbon mg/l	32.1
6.	Organic Carbon mg/l	28.6
7.	B.O.D.$_5$ mgO_2/L	0.87
8.	NO_3-N mg/L	0.015
9.	Total PO_4 mg/L	0.194
10.	Toxic Units	0.18

	PHYSICAL FACTORS	
1.	Depth cm	22.3
2.	Substrate	Very Coarse Sand & bedrock
3.	Velocity cm/sec	42.3

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		116
2.	Total Number of Taxa		8
	Numerically Dominant	TAXA	% TOTAL
3.	First	Heptageniidae	65.4
4.	Second	Baetidae	13.6
5.	Third	Tendipedidae	10.1
6.	Fourth	Hydropsychidae	9.5
7.	Diversity	1.1	

BIOLOGICAL RESULTS

CODE : MP-1

TAXA	Sampling Period		Sampling Period		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
	21/6/73 - 26/7/73		26/7/73 - 30/8/73			
Ephemeroptera						
Baetidae	28.5	21.84	3.0	2.94	15.75	13.55
Heptageniidae	62.0	47.51	90.0	88.24	76.0	65.38
Plecoptera						
Perlidae	0.5	0.38	-----	-----	0.25	0.22
Trichoptera						
Hydropsychidae	17.0	13.03	5.0	4.90	11.0	9.46
Lepidostomatidae	0.5	0.38	-----	-----	0.25	0.22
Diptera						
Rhagionidae	1.0	0.77	-----	------	0.5	0.43
Tendipedidae	19.5	14.94	4.0	3.92	11.75	10.11
Coleoptera						
Elmidae	1.5	1.15	-----	------	0.75	0.65
TOTAL	130.5		102.0		116.25	

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Mount Pleasant Mine	MP-2

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 29	12.0	522.0	6.15	5.80		15.0	7.4	<0.002	0.065	0.006			0.18		
June21	21.0	88.5	6.60	6.10		21.0	9.5	0.014	0.031	1.0	.00008	<0.001	1.53		
July26	24.0	7.86	7.00	6.40		18.0	13.8	0.007	0.035	0.003		0.001	0.12		
Sept.6	15.0	138.0	6.50	6.80		30.0	13.9	<0.002	0.010	<0.002		<0.001	0.03		
Oct. 4	13.0	81.2	6.80	7.00		19.0	13.6	<0.002	0.021	0.005		<0.001	0.06		
Med.	15.0	88.5	6.60	6.40		19.0	13.6	<0.002	0.031	0.005	.00008	<0.001	0.12		
Max.	24.0	522.0	7.00	7.00		30.0	13.4	0.014	0.065	1.000	.00008	0.001	1.53		
Min.	12.0	7.86	6.15	5.80		15.0	7.4	<0.002	0.010	<0.002	.00008	<0.001	0.03		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Mount Pleasant Mine	MP-3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW g.p.m	pH field	pH • lab		Rumic Acidn	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 29	12.0	3024.0	6.25	6.00		11.0	8.9	0.002	0.019	0.004			0.07		
June21	21.0	345.0	6.80	6.50		13.0	11.3	<0.002	0.009	0.006			0.04		
July26	22.0	345.0	6.95	6.50		11.0	12.4	0.006	0.032	<0.002			0.12		
Sept 6	16.0	433.4	6.65	6.70		19.0	13.5	<0.002	0.035	0.002		<0.001	0.08		
Oct. 4	12.0	424.4	6.50	6.90		10.0	14.7	<0.002	0.024	0.007			0.07		
Med.	16.0	424.4	6.65	6.50		11.0	12.4	<0.002	0.024	0.004		<0.001	0.07		
Max.	22.0	3024.0	6.95	6.90		19.0	14.7	0.006	0.035	0.007		<0.001	0.12		
Min.	12.0	345.0	6.25	6.00		10.0	8.9	<0.002	0.009	<0.002		<0.001	0.04		

EPS-1108 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	Mount Pleasant Mine	MP-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 29	12.0	2953.5	6.20	5.9		12.0	8.4	0.002	0.011	0.003			0.05		
June21	20.0	920.5	6.75	6.4		13.0	11.8	<0.002	0.003	0.005			0.03		
July26	22.0		6.90	6.1		11.0	12.9	<0.002	0.008	<0.002			0.04		
Sept 6	19.0		6.20	6.8		20.0	12.5	<0.002	<0.002	<0.002		< 0.001	0.02		
Oct. 4	12.0		6.65	6.8		12.0	15.1	<0.002	0.014	<0.002			0.04		
Med.	19.0	1937.0	6.65	6.40		12.0	12.5	<0.002	0.008	<0.002		<0.001	0.04		
Max.	22.0	2953.5	6.90	6.80		20.0	15.1	0.002	0.014	0.005		<0.001	0.05		
Min.	12.0	920.5	6.20	5.90		11.0	8.4	<0.002	< 0.002	<0.005		<0.001	0.02		

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	Mount Pleasant Mine	MP-5

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 29	12.0	3300.0	6.30	6.1		12.0	8.4	<0.002	0.016	0.003			0.06		
* June21	19.0		5.00				11.7	0.002	<0.002						
June 21	20.0	976.5	6.80	6.4		14.0	11.8	0.006	0.026	0.005			0.11		
July26	22.0	852.8	6.80	6.4		10.0	11.5	<0.002	0.005	0.002			0.03		
* Aug 30	20.0		5.50				12.6	0.002	<0.010						
Sept 6	19.0	920.5	6.40	6.9		21.0	13.7	<0.002	<0.002	0.002		<0.001	0.02		
Oct. 4	12.0	2391.2	6.65	6.8		13.0	14.5	<0.002	0.036	0.002			0.08		
* = Ecological Monitoring Samples															
Med.	19.0	976.5	6.40	6.4		13.0	11.8	<0.002	0.010	0.002		<0.001	0.06		
Max.	22.0	3300.0	6.80	6.9		21.0	14.5	0.006	0.036	0.005		<0.001	0.11		
Min.	12.0	852.8	5.00	6.1		10.0	8.4	<0.002	<0.002	0.002		<0.001	0.02		

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : MP-5

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	20.0
2.	pH	5.6
3.	Total Hardness mg/l	12.1
4.	Dissolved oxygen	
	% SAT.	99.0
5.	Total Carbon mg/l	16.6
6.	Organic Carbon mg/l	16.6
7.	B.O.D.$_5$ mgO_2/L	1.82
8.	NO_3-N mg/L	0.129
9.	Total PO_4 mg/L	0.051
10.	Toxic Units	0.16

	PHYSICAL FACTORS	
1.	Depth cm	43.5
2.	Substrate	Coarse Sand & Boulder
3.	Velocity cm/sec	NIL

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		138
2.	Total Number of Taxa		16
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	57.6
4.	Second	Heptageniidae	18.9
5.	Third	Tendipedidae	14.8
6.	Fourth	Chironomidae	2.4
7.	Diversity	1.3	

BIOLOGICAL RESULTS

CODE : MP-5

TAXA	Sampling Period 21/6/73 - 26/7/73		Sampling Period 26/7/73 - 30/8/75		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	49.0	58.68	110.5	57.25	79.75	57.58
Heptageniidae	6.0	7.19	46.5	24.09	26.25	18.95
Trichoptera						
Helicopsychidae	-----	-----	1.0	0.52	0.5	0.36
Hydropsychidae	-----	-----	1.0	0.52	0.5	0.36
Lepidostomatidae	-----	-----	1.0	0.52	0.5	0.36
Psychomyiidae	0.5	0.5	1.5	0.78	1.0	0.72
Diptera						
Ceratopogonidae	0.5	0.6	1.0	0.52	0.75	0.54
Chironomidae	6.5	7.78	----	------	3.25	2.35
Tendipedidae	17.5	20.96	23.5	12.18	20.5	14.80
Odonata						
Coenagrianidae	1.0	1.20	1.5	0.78	1.25	0.90
Gomphidae	-----	-----	1.0	0.52	0.5	0.36
Coleoptera						
Elmidae	1.0	1.20	2.5	1.30	1.75	1.26
Oligochaeta	----	------	1.0	0.52	0.5	0.36
Turbellaria	----	------	0.5	0.26	0.25	0.18
Gastropoda	1.0	1.20	0.5	0.26	0.75	0.54
Hemiptera	0.5	0.50	-----	-----	0.25	0.18
TOTAL	83.5		193.0		138.25	

NEW BRUNSWICK COAL CORPORATION

New Brunswick Coal Corporation

This area was sampled once in 1973 to test the toxicity of the neutralized effluent from the coal washing plant. While it was not acutely toxic, the pH was low enough to affect the length of Iron Bound Cove Stream. The affected area is also high in hardness and iron.

MINE: New Brunswick Coal Corporation AREA CODE: "NBC"

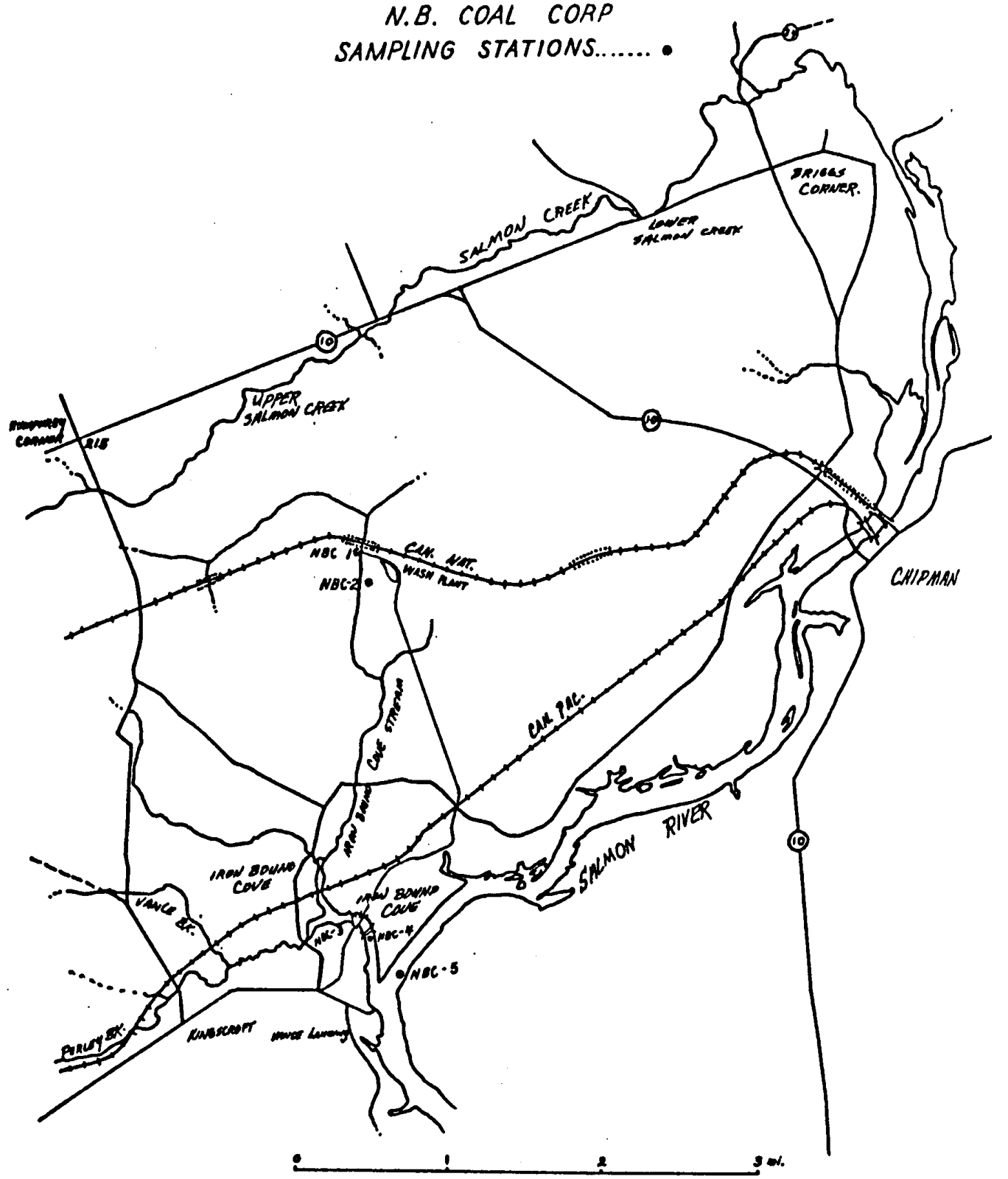
STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
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.	NB-24	00NB01AN0003
NBC-5	Salmon River above Iron Bound Cove Stream.		

AREA NBC

N.B. COAL CORP

SAMPLING STATIONS..... •



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ATLANTIC REGION

TABLE	COMPANY	STATION
1	NEW BRUNSWICK COAL CORPORATION	NBC-1

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab	Fe ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 25	17.0		6.40	6.10	0.4	9.0	7.7	0.002	0.015	0.002			0.07	100	
Med.	17.0		6.40	6.10	0.4	9.0	7.7	0.002	0.015	0.002			0.07	100	
Max.	17.0		6.40	6.10	0.4	9.0	7.7	0.002	0.015	0.002			0.07	100	
Min.	17.0		6.40	6.10	0.4	9.0	7.7	0.002	0.015	0.002			0.07	100	

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	NEW BRUNSWICK COAL CORPORATION	NBC-2

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH, field	pH Lab	Fe ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 25	20.0	8.20	3.70	3.20	74.0	9.0	260.	0.045	0.25	0.009	<.00005	0.001	0.18	100	
Med.	20.0	8.20	3.70	3.20	74.0	9.0	260.	0.045	0.25	0.009	<.00005	0.001	0.18	100	
Max.	20.0	8.20	3.70	3.20	74.0	9.0	260.	0.045	0.25	0.009	<.00005	0.001	0.18	100	
Min.	20.0	8.20	3.70	3.20	74.0	9.0	260.	0.045	0.25	0.009	<.00005	0.001	0.18	100	

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	NEW BRUNSWICK COAL CORPORATION	NBC-3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab	Fe ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 25	22.0	23.6	3.30	3.40	5.5	2.0	114.	0.022	0.065	0.004	<0.005	0.002	0.14		
Med.	22.0	23.6	3.30	3.40	5.5	2.0	114.	0.022	0.065	0.004	<0.005	0.002	0.14		
Max.	22.0	23.6	3.30	3.40	5.5	2.0	114.	0.022	0.065	0.004	<0.005	0.002	0.14		
Min.	22.0	23.6	3.30	3.40	5.5	2.0	114.	0.022	0.065	0.004	<0.005	0.002	0.14		

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	NEW BRUNSWICK COAL CORPORATION	NBC - 4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab	Fe ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 25	22.0	23.6	3.20	3.30	6.5	2.0	116.	0.021	0.076	0.002	<0.005		0.14		
Med.	22.0	23.6	3.20	3.30	6.5	2.0	116.	0.021	0.076	0.002	<0.005		0.14		
Max.	22.0	23.6	3.20	3.30	6.5	2.0	116.	0.021	0.076	0.002	<0.005		0.14		
Min.	22.0	23.6	3.20	3.30	6.5	2.0	116.	0.021	0.076	0.002	<0.005		0.14		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	NEW BRUNSWICK COAL CORPORATION	NBC-5

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH Lab	Fe ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 25	20.0		6.30	6.50	0.97	2.0	13.5	<0.002	0.005	0.005	0.005		0.07		
Med.	20.0		6.30	6.50	0.97	2.0	13.5	<0.002	0.005	0.005	0.008		0.07		
Max.	20.0		6.30	6.50	0.97	2.0	13.5	<0.002	0.005	0.005	0.008		0.07		
Min.	20.0		6.30	6.50	0.97	2.0	13.5	<0.002	0.005	0.005	0.008		0.07		

NIGADOO RIVER MINES

Nigadoo River Mines Ltd.

After a shutdown which began in November 1971, Nigadoo commenced operation again in August 1973 by dewatering their shaft. A vertical profile of the shaft, taken just before dewatering began, showed that the concentration of copper in the shaft water increased from 0.013 mg/l at the 100 ft. level to 0.037 mg/l at the 900 ft. level. The lead concentration increased from 0.54 to 1.67 mg/l and the zinc concentration from 1.21 to 1.85 mg/l at the 100 and 900 ft. levels respectively, while the pH was alkaline throughout the column.

In spite of the resumption of activity, there was an order of magnitude less zinc in the number 2 tailings pond effluent in 1973 than in 1972. This effluent did not appear to raise the zinc concentration in the Nigadoo River however. The drainage from the concentrate shipping area continued to be contaminated in spite of the absence of a concentrate stockpile, but the volume involved is small.

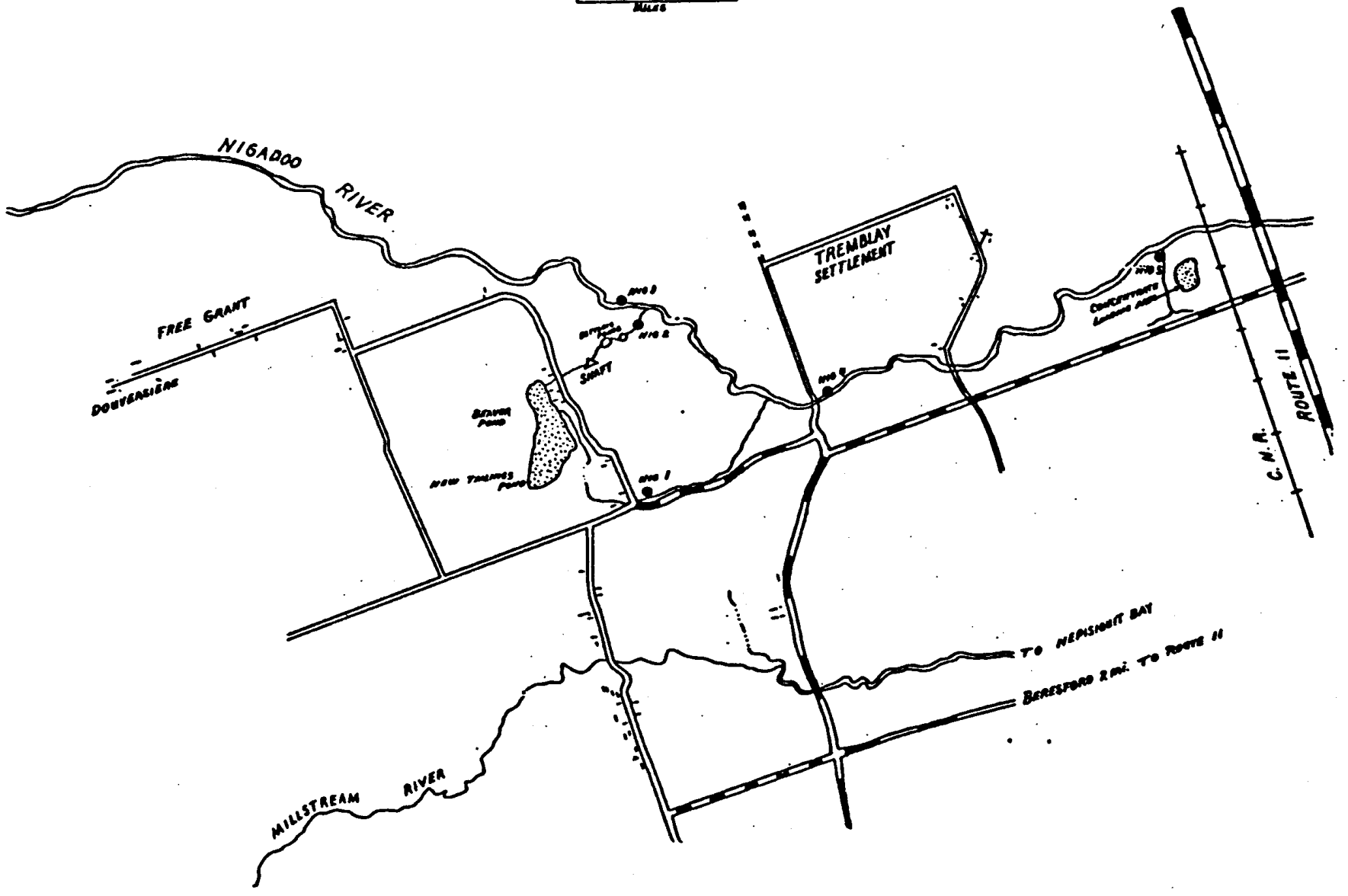
MINE: Nigadoo Mines Ltd. AREA CODE: "NIG"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
NIG-1	Below outfall tailings pond, at bridge.		
NIG-2	Outfall from #2 settling pond enroute Nigadoo River.		
NIG-3	Nigadoo River, 1/4 mi. above mine area.	NB-58	00NB01BJ0012
NIG-4	Nigadoo River, 1 mile below mine area, at bridge on road to Tremblay settlement.	NB-59	00NB01BJ0013
NIG-5	Brook draining concentrate stock pile area at railroad loading site.		

AREA NIG

NIGADOO MINES LTD.
SAMPLING STATIONS. ●



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ATLANTIC REGION

TABLE	COMPANY	STATION
1	NIGADOO MINES LTD.	NIG-1

MINE WATER QUALITY

DATE 19.73	TEMP. °C	FLOW c.f.s	pH field	pH Lab	As ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	2.0	89.2	6.65	6.7	0.017	8.0	29.9	<0.002	0.025	0.010			0.05		
July 9	24.0	0.4	7.00	7.3	0.210	7.0	116.0	0.013	0.043	0.008			0.09		
Sept. 10	13.0	0.08	6.90	7.4		6.0	145.0	<0.002	0.013	0.004		<0.001	0.01		
Oct. 24	8.0	0.20	7.15	7.5	0.045	4.0	191.0	<0.002	0.009	0.005		0.001	0.01		
Nov. 21	1.0		6.35	7.1	0.035	23.0	86.5	<0.002	0.016	0.006			0.03		
Dec. 11	0		6.70	6.9	0.018	40.0	66.5	<0.002	0.015	0.005			0.03		
Med.	5.0	0.30	6.80	7.2	0.035	7.5	101.25	<0.002	0.015	0.005		<0.001	0.03		
Max.	24.0	89.2	7.15	7.5	0.210	40.0	191.0	0.013	0.043	0.010		0.001	0.09		
Min.	0	0.08	6.35	6.7	0.017	4.0	29.9	<0.002	0.009	0.004		<0.001	0.01		

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	NIGADOO MINES LTD.	NIG-2

MINE WATER QUALITY

DATE 19_73	TEMP. °c	FLOW c.f.s	pH field	pH Lab	As ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	5.0	0.40	6.90	7.4	0.018	5.0	644.6	0.005	10.6	0.20			1.49		
July 9	No sample collected. No outflow.														
Sept. 10	7.5	2.74	7.30	8.1	0.009	<1.0	325	0.023	1.1	0.62		0.013	0.47		
Oct. 24	8.0	0.05	7.80	7.8	0.011	<1.0	541	0.002	0.45	0.10		0.004	0.09		
Nov. 21	5.0		7.20	7.9	0.016	2.0	561	0.003	0.60	0.25			0.13		
Dec. 11	2.0		7.75	7.9	0.013	2.0	99.4	0.020	0.92	0.50			0.92		
Med.	5.0	0.40	7.30	7.9	0.013	2.0	541.0	0.005	0.92	0.25		0.008	0.47		
Max.	8.0	2.74	7.80	8.1	0.018	5.0	644.6	0.023	10.6	0.62		0.013	1.49		
Min.	2.0	0.05	6.90	7.4	0.009	<1.0	99.4	0.002	0.45	0.10		0.004	0.09		

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	NIGADOO MINES LTD.	NIG-3

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab	As ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	2.0		6.80	7.3	0.007	6.0	23.0	<0.002	0.024	0.005	.00012	<0.001	0.05	100	
July 9	20.0	73.6	7.30	7.7	<0.005	3.0	51.5	0.004	0.013	0.004		0.002	0.04	100	
Sept. 10	9.0	36.8	7.60	7.9	<0.005	2.0	67.4	<0.002	0.002	<0.002		<0.001	0.02	100	
Oct. 24	6.0	14.4	7.72	8.0	<0.005	1.0	56.9	<0.002	<0.002	<0.002		<0.001	0.02		
Nov. 21	0		7.00	8.0	<0.005	7.0	44.0	<0.002	<0.002	0.004		<0.001	0.01		
Dec. 11	0		7.20	7.5	<0.005	13.0	37.6	<0.002	0.010	0.004		0.001	0.02		
Med.	4.0	36.8	7.25	7.8	<0.005	4.5	47.75	<0.002	0.006	0.004		<0.001	0.02	100	
Max.	20.0	73.6	7.72	8.0	0.007	13.0	67.4	0.004	0.024	0.005		0.002	0.05	100	
Min.	0	14.4	6.80	7.3	<0.005	1.0	23.0	<0.002	<0.002	<0.002		<0.001	0.01	100	

EPS 1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	NIGADOO MINES LTD.	NIG-4

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab	As ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	2.0	1785.0	6.70	7.1	0.007	6.0	25.3	<0.002	0.014	0.005	.00081	<0.001	0.04	100	
July 9	20.0	66.0	7.20	7.7	<0.005	4.0	55.5	0.004	0.008	<0.002		<0.001	0.03	100	
Sept. 10	10.0	68.6	7.45	7.8	<0.005	2.0	82.1	<0.002	0.015	0.005		0.001	0.02	100	
Oct. 24	7.0		7.70	7.8	<0.005	1.0	192.0	<0.002	0.012	0.002		0.002	0.01		
Nov. 21	0		6.80	7.8	0.008	7.0	124.0	<0.002	0.021	0.007		0.001	0.02		
Dec. 11	4.0		6.90	7.4	0.010	14.0	52.4	<0.002	0.010	0.008		0.001	0.02		
Med.	5.5	68.6	7.05	7.75	<0.006	5.0	68.8	<0.002	0.013	0.005	.00081	0.001	0.02	100	
Max.	20.0	1785.0	7.70	7.8	0.010	14.0	192.0	0.004	0.021	0.008	.00081	0.002	0.04	100	
Min.	0	66.0	6.70	7.1	<0.005	1.0	25.3	<0.002	0.008	<0.002	.00081	<0.001	0.01	100	

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	NIGADOO MINES LTD.	NIG-5

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Lab	As ppm	Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	4.0	2.10	6.80	6.9	<0.005	3.0	36.8	<0.002	0.50	0.30			0.077		
July 9	16.0	0.20	6.50	7.0	0.005	5.0	50.5	0.018	0.70	0.65			1.15		
Sept. 10	11.0	0.20	6.60	7.3	<0.005	4.0	64.0	0.026	2.00	0.20		0.02	1.80		
Oct. 24	No sample collected.			No outflow.											
Nov. 21	No sample collected.			No outflow.											
Dec. 11	4.0		6.40	6.8	0.007	10.0	55.7	0.150	2.20	0.40			2.44		
Med.	7.5	0.20	6.55	6.95	<0.005	4.5	53.1	0.022	1.35	0.35		0.02	1.47		
Max.	16.0	2.10	6.80	7.3	0.007	10.0	64.0	0.150	2.20	0.65		0.02	2.44		
Min.	4.0	0.20	6.40	6.8	<0.005	3.0	36.8	<0.002	0.50	0.20		0.02	0.77		

EP6-1105 (Feb. 1973)

KEY ANACON MINES

Key Anacon Mines

No work was carried out on this property in 1973, but the old ore dump continued to be a source of contaminated drainage. The 1972 and 1973 data indicate that zinc leaching results from rainfall, even though the pH of the leachate is near neutral.

Sampling in this area will be discontinued until there is further activity. The property is owned by the Sullivan Group.

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

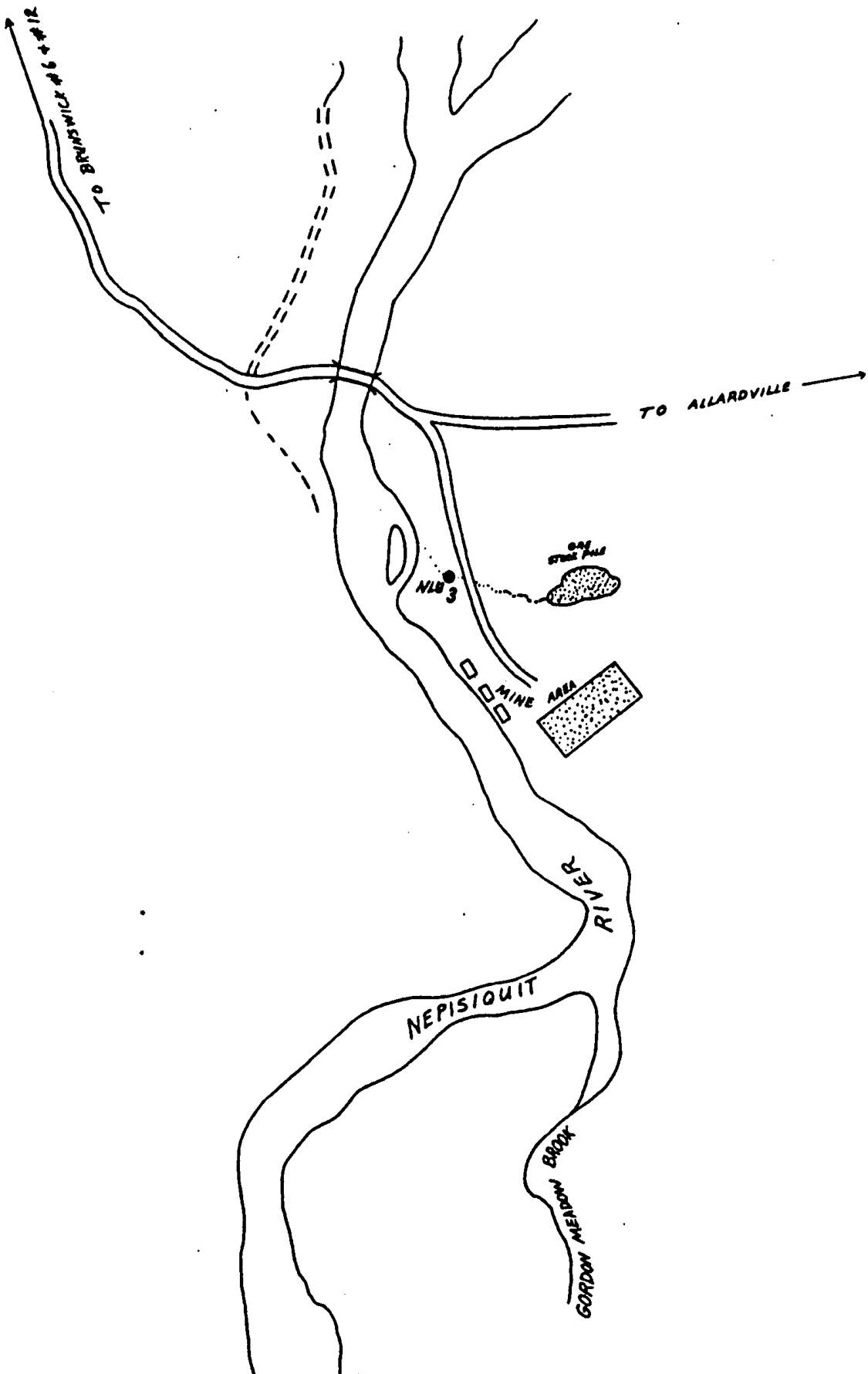
AREA CODE: "NLU"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing
NLU-3	Drainage from ore stockpile area, sample taken at culvert - see map NLU		

AREA NLU

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



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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Key Analon Mines Ltd. (New Lorder U)	NLU-3

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH Labs		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 3	8.0	0.26	6.62	6.80		6.0	129.7	<0.002	4.60	0.005			2.27		
Aug.8	16.0	0.03	6.50	6.50		4.0	216.0	<0.002	0.75	0.006		0.001	0.26		
Med.	12.0	0.145	6.56	6.6[F]		5.0	172.85	<0.002	2.675	0.005		0.001	1.265		
Max.	16.0	0.26	6.62	6.80		6.0	216	<0.002	4.60	0.006		0.001	2.27		
Min.	8.0	0.03	6.50	6.50		4.0	129.7	<0.002	0.75	0.005		0.001	0.26		

RESTIGOUCHE MINING CORP. DEPOSIT

Restigouche Mining Corp. Deposit

No further activity took place on this site during 1973. The background water quality of this area has now been reasonably established to be good, with toxicity in all streams except the Nepisiguit typically being lower than 0.1 TU. Sampling in this area will be discontinued in 1974 except for station R-6 on the Nepisiguit.

MINE: Restigouche (Formerly Tech. Corp.) AREA CODE: "R"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
R-1	Above mine property		
R-2	Below mine property		
R-3	Outfall of last tailings pond..		
R-4	Head of Portage Brook, below mine.		
R-5	Mouth of Portage Brook, at bridge.		
R-6*	Nepisiguit River, above Portage Brook.	NB-27	00NB01BK0035
R-7*	Nepisiguit River, at Popple Depot.		

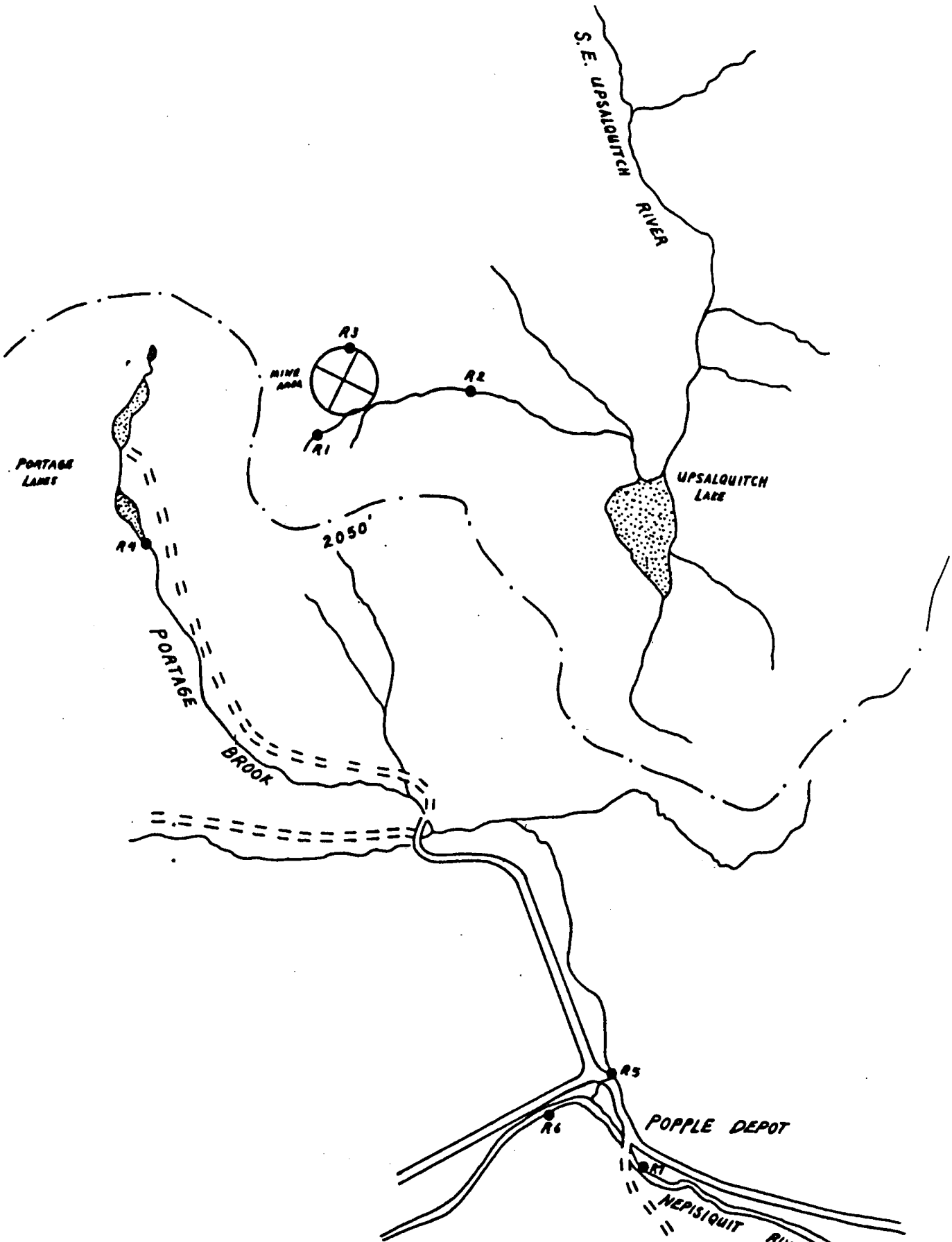
Note: Stn. R-3 was previously located at entrance of new flowage (small brook) into Charlotte Creek, midway between Stations R-1 and R-2. This was during the 1967, 68 and 69 sampling periods. Station R-3 was relocated to the present location at the start of the 1970 sampling season.

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.

* Ecological Monitoring Station

AREA R

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



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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Restigouche Mine -	R-1

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	8.0	7.35	7.00	6.9		<1.0	27.4	<0.002	0.015	0.003			0.05		
July17	10.0	0.66	7.10	7.2		<1.0	66.8	<0.002	0.009	0.003			0.02		
Aug 29	9.0	0.66	7.62	7.2		<1.0	36.3	<0.002	<0.002	0.002			0.03		
Sept20	8.0	0.80	7.20	7.5		<1.0	35.4	<0.002	0.003	<0.002			0.03		
Med.	8.5	0.73	7.15	7.2		<1.0	35.85	<0.002	0.006	0.002			0.03		
Max.	10.0	7.35	7.62	7.5		<1.0	66.8	<0.002	0.015	0.003			0.05		
Min	8.0	0.66	7.00	6.9		<1.0	27.4	<0.002	<0.002	<0.002			0.02		

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Restigouche Mine	R-2

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	8.0	55.2	7.10	6.9		1.0	27.9	<0.002	0.021	0.003			0.06		
July 17	10.0	1.30	7.20	7.3		1.0	28.4	<0.002	0.028	0.043			0.10		
Aug 29	11.0	1.65	7.20	7.5		<1.0	29.1	<0.002	0.004	0.004			0.04		
Sept20	8.0	2.10	7.10	7.7		1.0	31.3	<0.002	0.010	0.003			0.04		
Med	9.0	1.875	7.15	7.4		1.0	28.75	<0.002	0.015	0.003			0.05		
Max	11.0	55.2	7.20	7.5		1.0	31.3	<0.002	0.028	0.043			0.10		
Min	8.0	1.30	7.10	6.9		<1.0	27.9	<0.002	0.004	0.003			0.04		

EPS-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Restigouche Mine	R-3

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field			Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	No samples collected.														
July 17.	No outflow.														
Aug. 29	No tailings pond constructed during 1973.														
Sept.20															
Med.															
Max.															
Min.															

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	Restigouche Mine	R-4

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	11.0	26.8	6.90	6.6		4.0	33.2	<0.002	0.026	0.005			0.05		
July17	19.0	1.64	7.20	7.3		2.0	38.3	<0.002	0.018	0.003			0.04		
Aug 29	18.0	0.33	7.50	7.3		1.0	44.1	<0.002	0.008	0.002			0.03		
Sept20	12.0	0.40	7.15	7.5		2.0	45.6	<0.002	0.002	<0.002			0.02		
Med.	15.0	1.02	7.175	7.3		2.0	41.2	<0.002	0.013	0.002			0.035		
Max.	19.0	26.8	7.50	7.5		4.0	45.6	<0.002	0.026	0.005			0.05		
Min.	11.0	0.33	6.90	6.6		1.0	33.2	<0.002	0.002	<0.002			0.02		

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ATLANTIC REGION

TABLE	COMPANY	STATION
5	Restigouche Mine	R-5

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	6.0	187.2	7.15	6.7		3.0	19.3	<0.002	0.029	0.005	.00018	0.001	0.08	90	
July17	9.0	52.4	7.15	8.2		2.0	37.5	<0.002	0.032	0.003		<0.001	0.06	100	
Aug 29	10.0	19.8	7.10	7.4		<1.0	21.8	<0.002	0.002	0.003		0.001	0.04	100	
Sept20	6.0	39.2	6.95	7.6		1.0	23.0	<0.002	0.003	<0.002			0.04	100	
Med.	7.5	45.8	7.125	7.5		1.5	22.4	<0.002	0.016	0.003	.00018	0.001	0.05	100	
Max.	10.0	187.2	7.15	8.2		3.0	37.5	<0.002	0.032	0.005	.00018	0.001	0.08	100	
Min	6.0	19.8	6.95	6.7		<1.0	19.3	<0.002	0.002	<0.002	.00018	<0.001	0.04	90	

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ATLANTIC REGION

TABLE	COMPANY	STATION
6	Restigouche Mine	R-6

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 4	7.0		6.90	6.3		4.0	14.1	0.007	0.068	<0.002			0.23	90	
* June 13	11.0		6.80				12.8	<0.001	<0.002	<0.001					
July 17	11.0		7.25	7.0		3.0	15.2	<0.002	0.016	0.004			0.07	100	
* July18	14.0		5.50				14.1	0.002	0.001	0.044					
* Aug 15	11.0		5.80				13.6	0.002	0.090	0.052					
Aug 29	9.0		7.20	7.4		2.0	16.9	0.015	0.200	0.004			0.68	100	
Sept20	5.5		7.10	7.6		5.0	17.2	<0.002	0.003	<0.002			0.03	100	
* = Ecological Monitoring Samples.															
Med.	11.0		6.90	7.2		3.5	14.1	0.002	0.016	0.004			0.15	100	
Max.	14.0		7.25	7.6		5.0	17.2	0.015	0.200	0.052			0.68	100	
Min.	5.5		5.50	6.3		2.0	12.8	<0.001	0.001	<0.001			0.03	90	

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : R-6

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	12.0
2.	pH	6.0
3.	Total Hardness mg/l	13.5
4.	Dissolved oxygen	
	% SAT.	97.0
5.	Total Carbon mg/l	10.2
6.	Organic Carbon mg/l	8.4
7.	B.O.D.$_5$ mgO_2/L	0.49
8.	NO_3-N mg/L	0.025
9.	Total PO_4 mg/L	0.043
10.	Toxic Units	0.120

	PHYSICAL FACTORS	
1.	Depth cm	41.7
2.	Substrate	Pebble
3.	Velocity cm/sec	102

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		774.25
2.	Total Number of Taxa		15
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	71.6
4.	Second	Baetidae	13.8
5.	Third	Hydropsychidae	5.2
6.	Fourth	Heptageniidae	0.8
7.	Diversity	0.8531	

BIOLOGICAL RESULTS

CODE : R-6

TAXA	Sampling Period 13/6/73 - 18/7/73		Sampling Period 18/7/73 - 15/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	218.5	17.20	102.5	36.80	160.5	13.76
Heptageniidae	4.0	0.31	8.0	2.87	6.0	0.77
Plecoptera						
Perlodidae	0.5	0.04	0.5	0.18	0.5	0.06
Pteronarcidae	1.0	0.08	1.5	0.54	1.25	0.16
Trichoptera						
Hydropsychidae	14.0	1.10	66.5	23.88	40.25	5.2
Lepidostomatidae	---	-----	6.5	2.33	3.25	0.42
Philopotomidae	0.5	0.04	-----	------	0.25	0.03
Psychomyiidae	----	------	0.5	0.18	0.25	0.03
Rhyacophilidae	----	------	2.0	0.72	1.0	0.13
Diptera						
Ceratopoganidae	0.5	0.04	-----	-----	0.25	0.03
Rhagionidae	0.5	0.04	-----	-----	0.25	0.03
Simuliidae	4.5	0.35	6.0	2.15	5.25	0.68
Tendipedidae	1025.0	80.71	84.0	30.16	554.5	71.62
Coleoptera						
Elmidae	0.5	0.04	0.5	0.18	0.5	0.06
Dytiscidae	0.5	0.04	-----	------	0.25	0.03
TOTAL	1270.0		278,5		774.25	

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ATLANTIC REGION

TABLE	COMPANY	STATION
7	Restigouche Mines	R-7

MINE WATER QUALITY

	DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	June 4	7.0	1704.0	7.10	6.4		4.0	13.9	0.007	0.019	0.006			0.15		
*	June 13	10.0		6.70				15.6	<0.001	<0.002	0.004					
	July 17	11.0	236.2	7.20	6.9		3.0	15.5	<0.002	0.015	0.003			0.07		
*	July 18	12.0		5.80				15.8	0.001	<0.001	0.031					
*	Aug 15	11.0		6.30				15.1	0.002	0.050	0.094					
	Aug 29	9.0	183.4	7.10	7.4		2.0	16.9	0.005	0.007	0.003			0.13		
	Sept 20	5.5	275.8	7.15	7.4		5.0	17.8	0.002	0.004	0.003			0.03		
	* = Ecological Monitoring Samples.															
	Med.	10.0	256.0	7.10	7.15		3.5	15.6	0.002	0.007	0.004			0.10		
	Max.	12.0	1704.0	7.20	7.4		5.0	17.8	0.007	0.050	0.094			0.15		
	Min.	5.5	183.4	5.80	6.4		2.0	13.9	<0.001	<0.001	0.003			0.03		

EPS-1105 (Feb. 1973)

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : R-7

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	11.0
2.	pH	6.3
3.	Total Hardness mg/l	15.5
4.	Dissolved oxygen	
	% SAT.	97.3
5.	Total Carbon mg/l	10.3
6.	Organic Carbon mg/l	5.5
7.	B.O.D.$_5$ mgO_2/L	0.32
8.	NO_3-N mg/L	0.043
9.	Total PO_4 mg/L	0.144
10.	Toxic Units	0.105

	PHYSICAL FACTORS	
1.	Depth cm	66.3
2.	Substrate	Pebble
3.	Velocity cm/sec	15.5

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		588.0
2.	Total Number of Taxa		11
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	74.1
4.	Second	Baetidae	15.6
5.	Third	Brachycentridae	8.0
6.	Fourth	Pteronarcidae	0.5
7.	Diversity	0.8502	

BIOLOGICAL RESULTS

CODE : R-7

TAXA	Sampling Period 13/6/73 - 18/7/73		Sampling Period		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	91.5	15.56			91.5	15.56
Heptageniidae	2.5	0.43			2.5	0.43
Plecoptera						
Perlodidae	1.0	0.17			1.0	0.17
Pteronarcidae	3.0	0.51			3.0	0.51
Trichoptera						
Brachycentridae	47.0	7.99			47.0	7.99
Hydropsychidae	2.5	0.43			2.5	0.43
Limnephilidae	1.5	0.26			1.5	0.26
Psychomyiidae	1.0	0.17			1.0	0.17
Diptera						
Rhagionidae	0.5	0.09			0.5	0.09
Simuliidae	2.0	0.34			2.0	0.34
Tendipedidae	435.5	74.06			435.5	74.06
TOTAL	588.0				588.0	

TEXAS GULF SULPHUR DEPOSIT

Texas Gulf Sulfur Deposit

No further work on this property took place during 1973. The background water quality of the area, which is in the headwaters of the N. S. Miramichi River, has been established to be good. Only station T-2 will be retained in the 1974 sampling program, as a control on the N. W. Miramichi.

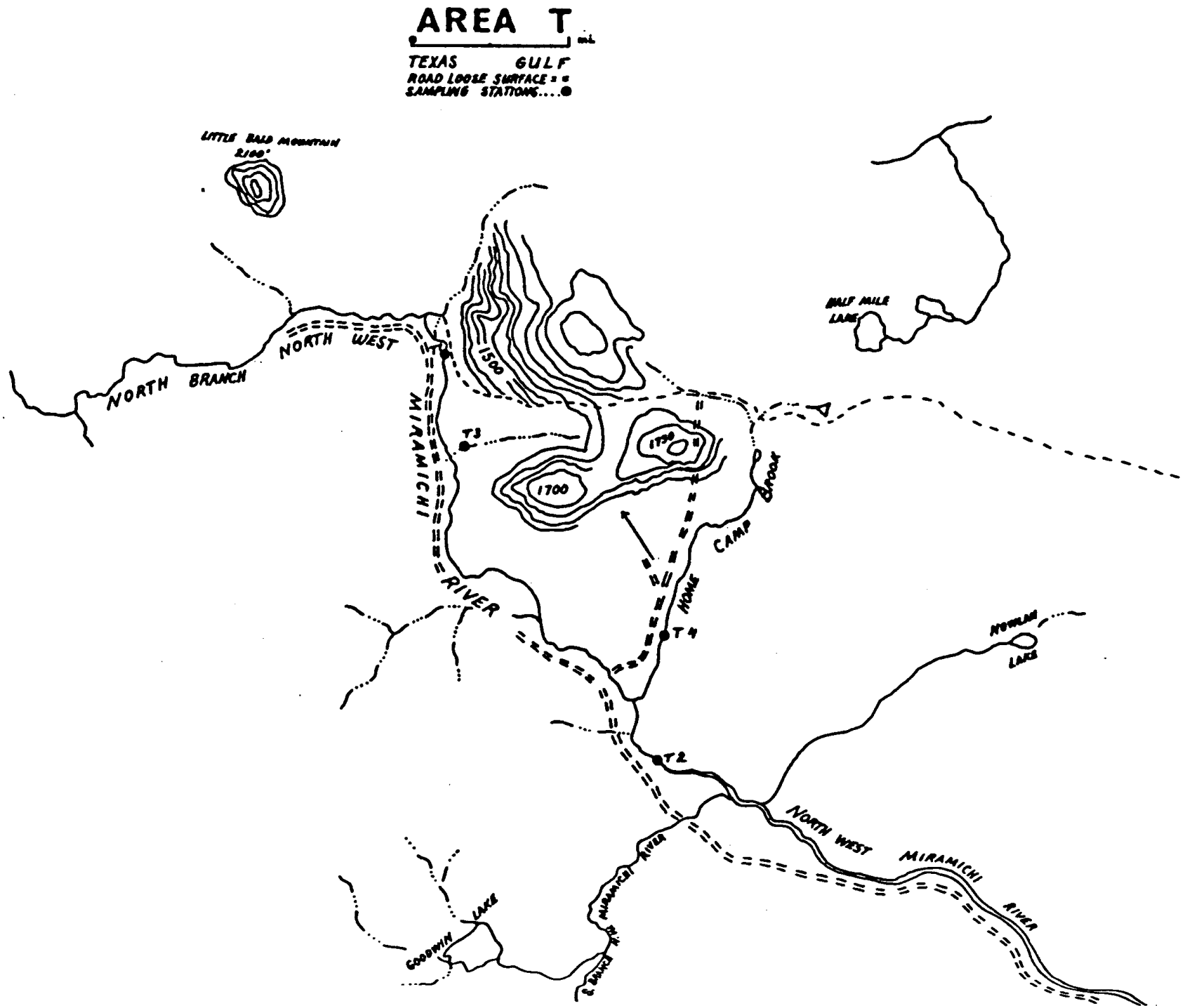
MINE: Texas Gulf

AREA CODE: "T"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
T-1*	North Branch, N.W. Miramichi, above mine.		
T-2*	North Branch, N.W. Miramichi, 1/2 mi. above junction of South Branch N.W. Miramichi.	NB-60	00NB01BQ0056
T-3	Small brook entering North Branch at Trout Pool.		
T-4	Home Camp Brook at bridge above junction with North Branch of N.W. Miramichi.		

* Ecological Monitoring Station


AREA T
TEXAS GULF
ROAD LOOSE SURFACE = =
SAMPLING STATIONS....●
LITTLE BALD MOUNTAIN
NORTH BRANCH
NORTH WEST
MIRAMICHI
RIVER
1500
1700
1750
T3
T4
T2
HALF MILE
LAKE
CAMP
BROOK
HOME
NOWLAN
LAKE
GOODWIN
LAKE
NORTH WEST MIRAMICHI RIVER

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	TEXAS GULF MINE	T-1

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 5	10.0	273.0	6.90	6.50		6.0	10.1	0.003	0.021	0.002			0.09		
* June 13	12.0		6.80				11.6	0.001	0.002						
* July 18	14.0		5.50				14.6	0.001	<0.001						
Aug. 9	12.0	128.0	7.30	6.80		12.0	13.6	<0.002	<0.002	0.004		<0.001	0.03		
* Aug. 15	11.5		6.40				12.8	0.003	0.010						
* = Ecological Monitoring Samples.															
Med.	12.0	200.5	6.80	6.65		9.0	12.8	<0.002	0.002	0.003		<0.001	0.06		
Max.	14.0	273.0	7.30	6.80		12.0	14.6	0.003	0.021	0.004		<0.001	0.09		
Min.	10.0	128.0	5.50	6.50		6.0	10.1	0.001	<0.001	0.002		<0.001	0.03		

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : T-1

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	12.5
2.	pH	6.2
3.	Total Hardness mg/l	13.0
4.	Dissolved oxygen	
	% SAT.	103.0
5.	Total Carbon mg/l	11.7
6.	Organic Carbon mg/l	9.0
7.	B.O.D.$_5$ mgO_2/L	0.467
8.	NO_3-N mg/L	0.019
9.	Total PO_4 mg/L	0.622
10.	Toxic Units	0.102

	PHYSICAL FACTORS	
1.	Depth cm	38
2.	Substrate	Granule
3.	Velocity cm/sec	71

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		664.25
2.	Total Number of Taxa		15
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	65.3
4.	Second	Baetidae	24.6
5.	Third	Chironomidae	5.3
6.	Fourth	Simulidae	1.3
7.	Diversity	0.8719	

BIOLOGICAL RESULTS

CODE : T-1

TAXA	Sampling Period 13/6/73 - 18/7/73		Sampling Period 18/7/73 - 15/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	109.5	22.98	217.5	25.53	163.5	24.61
Heptageniidae	1.5	0.31	1.5	0.18	1.5	0.23
Plecoptera						
Perlidae	1.5	0.31	1.0	0.12	1.75	0.26
Perlodidae	----	------	1.0	0.12	0.5	0.08
Pteronarcidae	1.0	0.21	1.5	0.18	1.75	0.26
Trichoptera						
Hydropsychidae	4.0	0.84	9.0	1.06	6.5	0.98
Lepidostomatidae	----	------	0.5	0.06	0.25	0.04
Psychomyiidae	1.0	0.21	------	------	0.5	0.08
Rhyacophilidae	-----	------	10.0	1.17	5.0	0.75
Diptera						
Rhagionidae	3.0	0.63	5.5	0.65	4.25	0.68
Simuliidae	15.0	3.15	2.5	0.29	8.75	1.32
Tendipedidae	269.5	56.56	597.5	79.13	433.5	56.26
Chironomidae	70.0	14.69	-----	-----	35.0	5.27
Ceratopogonidae	----	------	2.0	0.23	1.0	0.15
Coleoptera						
Elmidae	0.5	0.10	0.5	0.06	0.5	0.08
TOTAL	476.5		852.0		664.25	

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	TEXAS GULF MINE	T-2

MINE WATER QUALITY

	DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
	June 5	10.0	270.0	6.85	6.50		5.0	9.7	<0.002	0.017	0.003	.00020	<0.001	0.08		
*	June 13	14.0		6.80				11.2	<0.001	<0.002						
*	July 18	15.0		5.50				14.3	0.002	<0.001						
	Aug. 9	14.0	216.6	7.35	6.70		11.0	13.4	0.017	0.028	0.008		0.001	0.21		
*	Aug. 15	12.0		6.45				12.8	0.001	<0.010						
	Med.	14.0	243.3	6.80	6.60		8.0	12.8	<0.002	<0.010	0.005	.00020	<0.001	0.145		
	Max.	15.0	270.0	7.35	6.70		11.0	14.3	0.017	0.028	0.008	.00020	0.001	0.21		
	Min.	10.0	216.6	5.50	6.50		5.0	9.7	<0.001	<0.001	0.003	.00020	<0.001	0.08		

* = Ecological Monitoring Samples.

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : T-2

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	14
2.	pH	6.3
3.	Total Hardness mg/l	12.8
4.	Dissolved oxygen	
	% SAT.	100
5.	Total Carbon mg/l	13.7
6.	Organic Carbon mg/l	11.2
7.	B.O.D.$_5$ mgO_2/L	0.51
8.	NO_3-N mg/L	0.005
9.	Total PO_4 mg/L	0.09
10.	Toxic Units	0.054

	PHYSICAL FACTORS	
1.	Depth cm	46.5
2.	Substrate	Granule
3.	Velocity cm/sec	51.5

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		727.0
2.	Total Number of Taxa		12
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	91.2
4.	Second	Baetidae	6.3
5.	Third	Hydropsychidae	0.8
6.	Fourth	Simulidae	0.5
7.	Diversity	0.4036	

BIOLOGICAL RESULTS

CODE : T-2

TAXA	Sampling Period 13/6/73 - 18/7/73		Sampling Period 18/7/73 - 15/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	43.5	16.99	48.0	4.01	45.75	6.29
Heptageniidae	0.5	0.20	3.0	0.25	1.75	0.24
Plecoptera						
Perlidae	0.5	0.20	2.0	0.17	1.25	0.17
Pteronaridae	2.0	0.78	2.0	0.17	2.0	0.28
Trichoptera						
Brachycentidae	-----	------	1.0	0.08	0.5	0.07
Hydropsychidae	8.0	3.13	3.0	0.25	5.5	0.76
Psychomyiidae	0.5	0.20	-----	------	0.25	0.03
Rhyacophilidae	-----	------	4.0	0.33	2.0	0.28
Diptera						
Rhagionidae	2.0	0.78	-----	-----	1.0	0.14
Simuliidae	6.5	2.54	-----	-----	3.25	0.45
Tendipedidae	190.5	74.41	1135.0	94.74	662.75	91.16
Hydracarina	2.0	0.78	-----	-----	1.0	0.14
TOTAL	256.0		1198.0		727.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	TEXAS GULF MINE	T-4

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH Lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 5	7.0	10.4	6.95	6.60		4.0	14.4	0.002	0.025	0.003			0.08		
Aug. 9	14.0	5.9	7.20	7.10		7.0	20.8	<0.002	0.004	0.006			0.03		
Med.	10.5	8.15	7.075	6.85		5.5	17.6	<0.002	0.014	0.004			0.055		
Max.	14.0	10.4	7.20	7.10		7.0	20.8	0.002	0.025	0.006			0.08		
Min.	7.0	5.9	6.95	6.60		4.0	14.4	<0.002	0.004	0.003			0.03		

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	TEXAS GULF MINE	T-3

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	PH LAB.		HUMIC ACIDS	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
June 5	6.0	1.28	7.00	6.00		1.0	4.4	<0.002	0.008	<0.002			0.14		
Aug. 9	10.0	0.25	7.25	6.70		3.0	8.5	<0.002	0.006	0.005		0.001	0.08		
Med.	8.0	0.765	7.125	6.35		2.0	6.45	<0.002	0.007	0.003		0.001	0.11		
Max.	10.0	1.28	7.25	6.70		3.0	8.5	<0.002	0.008	0.005		0.001	0.14		
Min.	6.0	0.25	7.00	6.00		1.0	4.4	<0.002	0.006	<0.002		0.001	0.08		

EPS-1105 (Feb. 1973)

WEDGE MINE

Wedge Mine

Shutdown since 1968, the Wedge property continues to be a threat to the quality of the Nepisiguit River. Water in the pit, formed in 1970 when part of the main slope caved in, continued to rise, and negotiations were initiated with Cominco to plan for remedial action in case of overflow.

Wedge is the most upstream development on the Nepisiguit, and the water quality above the pit continued to be good in spite of high zinc concentrations in May. This increase appears to be an annual or semi-annual phenomenon dependant on high runoff. There has been no difference in the downstream water quality since 1971, when a leaky ventilation raise was sealed.

A vertical profile of the pit water was taken in August, when the indicated depth of water near the tunnel was 92 feet. The results of this profile showed a decrease in copper, lead and apparent colour at the bottom, but an increase in zinc and hardness. The profile is sufficiently interesting to be reproduced below (values in mg/l).

Depth (ft)	Cu	Pb	Zn	TH	SO_4	pH
0	140	0.7	115	266	4800	2.42
5	220	1.1	293	486	7600	2.47
10	220	1.1	314	511	7900	2.55
20	221	1.1	371	562	8800	2.56
50	208	1.1	396	588	9000	2.64
92	55	0.6	643	1096	11,200	2.80

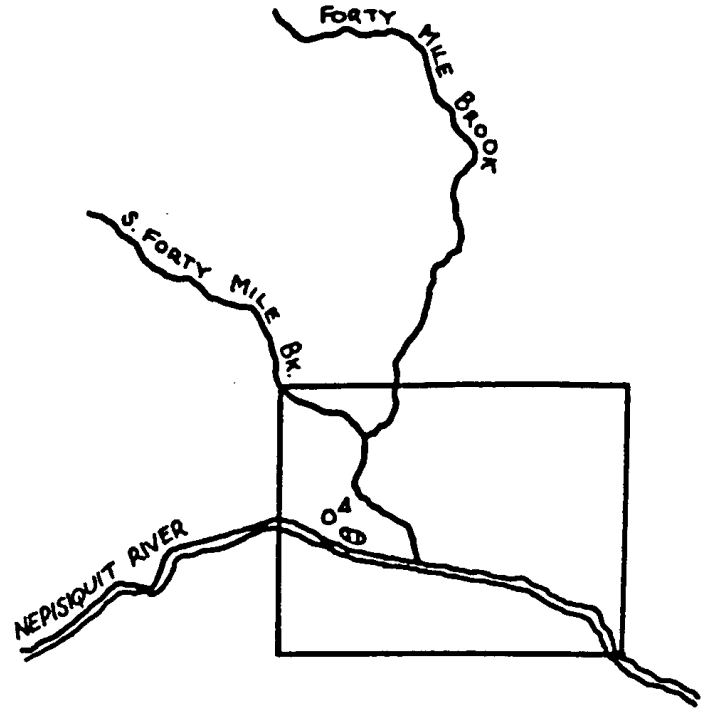
The values of toxicity tabulated for the pit at station WOP are undoubtedly in error, but serve to indicate that a dilution of about 200x is necessary to render the water non-toxic.

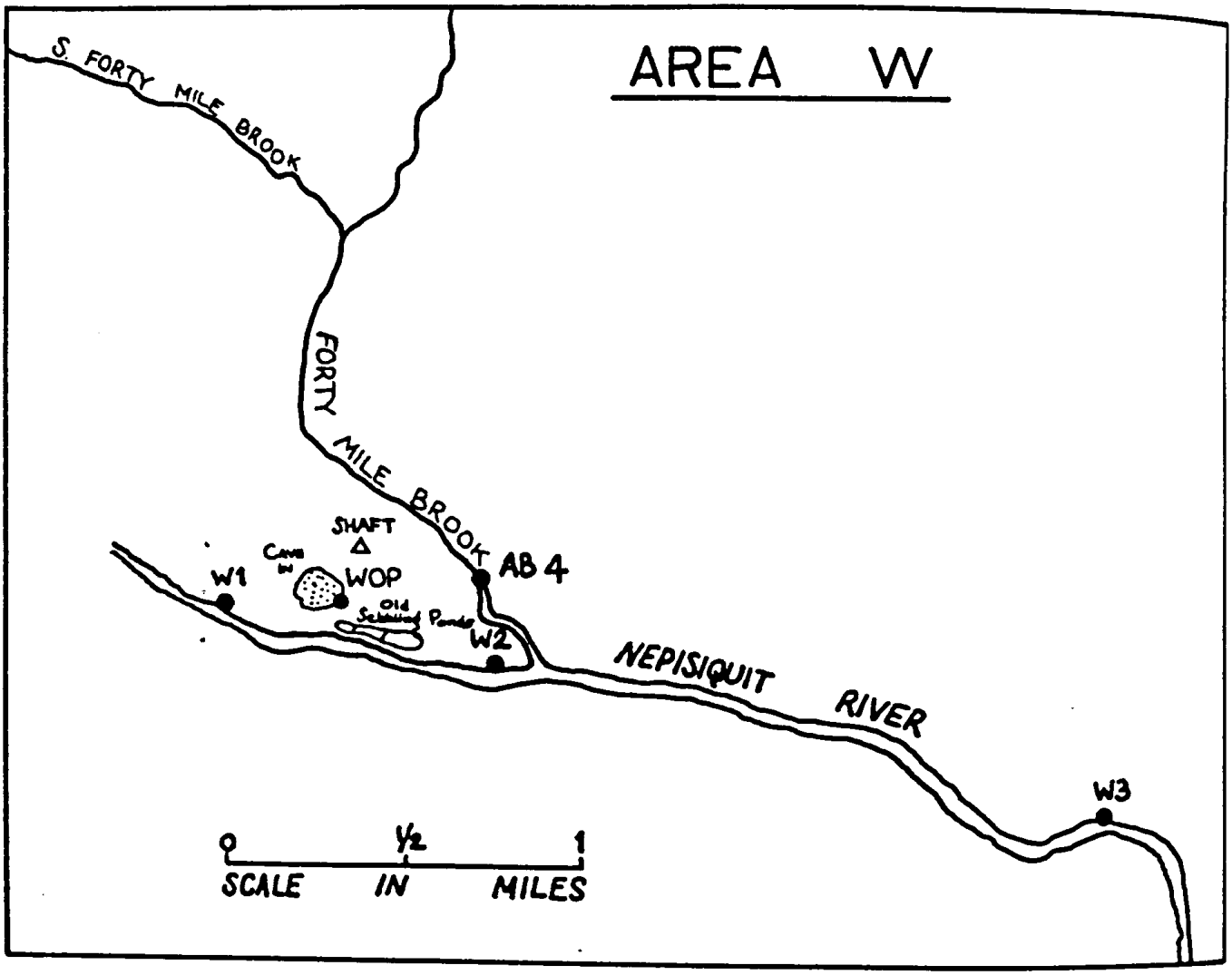
MINE: Wedge (Cominco Corp.) AREA CODE: "W"

STATIONS:

Station No.	Location	NAQUADAT Stn. No.	NAQUADAT Data Processing Number
W-1*	Nepisiguit, above mine, approx. 1/2 mile.	NB-28	00NB01BK0017
W-2*	Nepisiguit, below mine, 50 ft. above mouth Forty Mile Brook.	NB-32	00NB01BK0032
W-3	Nepisiguit, below Forty Mile Brook, at Mines Branch Samp (similar to AB-7).		
W.O.P.	Caved-in section of mine tunnel between shaft and river bank.		

* Ecological Monitoring Station


FORTY MILE BROOK
S. FORTY MILE BK.
NEPISIQUIT RIVER
AB 4


AREA W
S. FORTY MILE BROOK
FORTY MILE BROOK
SHAFT
Cave In
WOP
W1
AB 4
Old Settling Pond
W2
NEPISIQUIT RIVER
W3
0
½
1
SCALE IN MILES

WEDGE MINES

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ATLANTIC REGION

TABLE	COMPANY	STATION
1	Wedge Mine (Cominco Corp)	W-1

MINE WATER QUALITY

DATE 19_73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		6.25	6.6		7.0	10.3	0.002	0.200	0.013			0.45	100	
May 8	3.0		6.65	6.4		6.0	10.0	<0.002	0.300	0.021			0.67	100	
May 23	5.0		6.65	6.3		6.0	8.5	0.003	0.049	0.006			0.17	100	
* Junell	11.0		7.20				12.5	0.002	0.011						
June12	11.0		6.70	6.7		4.0	11.9	<0.002	0.035	0.002			0.11	100	
July 3	17.0		7.00	7.0		3.0	14.18	0.004	0.045	0.006			0.17	100	
* July18	19.0		5.80				14.7	0.002	0.005						
July24	16.0		7.10	6.6		2.0	14.3	<0.002	0.017	0.003			0.09	100	
Aug.7	15.0		7.10	6.6		11.0	15.4	<0.002	0.011	0.005			0.04	100	
* Aug14	12.0		6.40				13.6	0.002	<0.010						
Aug23	14.0		6.60	6.9		3.0	16.1	<0.002	0.029	0.005			0.09	100	
Sept11	10.0		6.75	7.6		2.0	17.5	<0.002	0.021	0.002			0.08	100	
Oct 8	4.0		7.60	7.4		4.0	17.1	<0.002	0.010	<0.002			0.05	100	
Oct 25	3.0		6.70	7.6		1.0	15.8	0.002	0.038	0.004			0.12		
* =	Ecological Monitoring	Samples.													
Med.	11.0		6.70	6.7		4.0	12.24	<0.002	0.025	0.005			0.11	100	
Max.	19.0		7.60	7.6		11.0	17.5	0.004	0.300	0.021			0.67	100	
Min.	2.0		5.80	6.3		1.0	8.5	<0.002	0.005	<0.002			0.04	100	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : W-1

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	14
2.	pH	6.5
3.	Total Hardness mg/l	13.6
4.	Dissolved oxygen	
	% SAT.	94.5
5.	Total Carbon mg/l	33.8
6.	Organic Carbon mg/l	31.5
7.	B.O.D.$_5$ mgO_2/L	0.67
8.	NO_3-N mg/L	0.0
9.	Total PO_4 mg/L	0.093
10.	Toxic Units	0.098

	PHYSICAL FACTORS	
1.	Depth cm	43.6
2.	Substrate	Granule
3.	Velocity cm/sec	118.0

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		268
2.	Total Number of Taxa		13
	Numerically Dominant	TAXA	% TOTAL
3.	First	Baetidae	41.2
4.	Second	Tendipedidae	26.7
5.	Third	Hydropsychidae	22.3
6.	Fourth	Simuliidae	6.5
7.	Diversity	1.3789	

BIOLOGICAL RESULTS

CODE : W-1

TAXA	Sampling Period 11/6/73 - 18/7/73		Sampling Period 18/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	99.0	48.65	122.0	36.69	110.5	41.23
Heptageniidae	2.5	1.23	0.5	0.15	1.5	0.56
Plecoptera						
Perlodidae	-----	-----	0.5	0.15	0.25	0.09
Pteronarcidae	1.5	0.74	0.5	0.15	1.0	0.37
Trichoptera						
Helicopsychidae	7.5	3.69	-----	------	3.75	1.40
Hydropsychidae	1.0	0.49	118.5	35.64	59.75	22.29
Philopotamidae	1.0	0.49	-----	------	0.5	0.19
Psychomyiidae	0.5	0.25	-----	------	0.25	0.09
Rhyacophilidae	-----	------	2.0	0.60	1.0	0.37
Diptera						
Rhagionidae	0.5	0.25	------	-----	0.25	0.09
Simuliidae	1.5	0.74	33.5	10.08	17.5	6.53
Tendipedidae	88.5	43.49	54.5	16.39	71.5	26.68
Oligochaeta	-----	------	0.5	0.15	-.25	0.09
TOTAL	203.5		332.5		268.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
2	Wedge Mine (Cominco Corp)	W-2

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 1	2.0		6.20	6.4		7.0	9.1	0.002	0.048	0.002	.00012	<0.001	0.13	100	
May 8	3.0		6.60	6.7		5.0	9.4	0.009	0.100	0.009	<.00005	<0.001	0.39	100	
May 23	5.0		6.55	6.5		7.0	8.1	<0.002	0.027	0.005	.00001	<0.001	0.10	100	
* June 11	11.0		6.90				12.6	0.004	0.016						
June 12	11.0	907.5	6.68	6.6		4.0	12.3	<0.002	0.044	0.003	.00024	<0.001	0.12	100	
July3	17.0	266.0	6.95	6.9		3.0	14.2	0.002	0.027	<0.002		<0.001	0.09	100	
* July 18	15.0		5.70				15.7	0.006	0.028						
July24	16.0	117.9	7.00	6.8		2.0	14.6	0.002	0.014	0.003		<0.001	0.08	100	
Aug 7	15.0	550.2	7.00	6.6		11.0	15.1	<0.002	0.037	0.008		0.001	0.09	100	
* Aug 14	12.0		6.40				13.6	0.005	0.230						
Aug 23	14.0	372.6	6.60	6.6		3.0	15.6	0.002	0.027	0.006		0.001	0.09	100	
Sept 11	11.0	187.0	6.70	7.5		2.0	15.4	0.002	0.019	0.017		<0.001	0.10	100	
Oct 8	4.0	188.6	7.65	7.4		4.0	16.3	<0.002	0.017	0.018		0.001	0.08	100	
Oct 25	3.0	111.3	6.70	7.6		1.0	14.6	<0.002	0.014	0.002		<0.001	0.08		
* = Ecological Monitoring Samples.															
Med.	11.0	227.3	6.69	6.7		4.0	14.4	0.002	0.027	0.005	<.000085	<0.001	0.09	100	
Max.	17.0	907.5	7.65	7.6		11.0	16.3	0.009	0.230	0.018	.00024	0.001	0.39	100	
Min.	2.0	111.3	5.70	6.4		1.0	8.1	<0.002	0.014	<0.002	.00001	<0.001	0.08	100	

SUMMARY OF BENTHIC BIOLOGICAL DATA

CODE : W-2

	WATER QUALITY	AVERAGE
1.	Water Temp. C°	12.7
2.	pH	6.3
3.	Total Hardness mg/l	13.9
4.	Dissolved oxygen	
	% SAT.	95
5.	Total Carbon mg/l	9.8
6.	Organic Carbon mg/l	7.4
7.	B.O.D.$_5$ mgO_2/L	0.817
8.	NO_3-N mg/L	0.027
9.	Total PO_4 mg/L	0.087
10.	Toxic Units	0.319

	PHYSICAL FACTORS	
1.	Depth cm	43.7
2.	Substrate	Granule
3.	Velocity cm/sec	48.6

	BOTTOM COMMUNITY		
1.	Total Number/Sampler		135.0
2.	Total Number of Taxa		17
	Numerically Dominant	TAXA	% TOTAL
3.	First	Tendipedidae	52.4
4.	Second	Baetidae	22.4
5.	Third	Chironomidae	16.8
6.	Fourth	Hydropsychidae	2.4
7.	Diversity	1.2490	

BIOLOGICAL RESULTS

CODE : W-2

TAXA	Sampling Period 11/6/73 - 18/7/73		Sampling Period 18/7/73 - 14/8/73		AVERAGE	
	Number	% Total	Number	% Total	Number	% Total
Ephemeroptera						
Baetidae	54.5	29.22	6.0	7.19	30.25	22.41
Heptageniidae	1.5	0.80	-----	-----	0.75	0.56
Plecoptera						
Perlidae	1.0	0.54	------	-----	0.5	0.37
Perlodidae	0.5	0.27	------	-----	0.25	0.19
Pteronarcidae	2.5	1.34	3.0	3.59	2.75	2.04
Trichoptera						
Hydropsychidae	6.5	3.49	-----	-----	3.25	2.41
Lepidostomatidae	0.5	0.27	-----	-----	0.25	0.19
Limnephilidae	1.0	0.54	-----	-----	0.5	0.37
Philopotamidae	0.5	0.27	-----	-----	0.25	0.19
Psychomyiidae	0.5	0.27	-----	-----	0.25	0.19
Diptera						
Ceratopogoniidae	2.0	1.07	-----	-----	1.0	0.74
Chironomidae	45.5	24.4	-----	-----	22.75	16.85
Simuliidae	0.5	0.27	-----	-----	0.25	0.19
Tendipedidae	68.0	36.46	73.5	88.02	70.75	52.41
Tipuliidae	0.5	0.27	-----	-----	0.25	0.19
Coleoptera						
Psephenidae	-----	------	1.0	1.20	0.5	0.37
Collembola						
Isotomidae	1.0	0.54	-----	------	0.5	0.37
TOTAL	186.5		83.5		135.0	

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ATLANTIC REGION

TABLE	COMPANY	STATION
3	Wedge Mine (Cominco Corp)	W-3

MINE WATER QUALITY

DATE 19 73	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 8	3.0		6.70	6.7		6.0	10.1	<0.002	0.038	<0.002			0.11		
July24	15.0		7.00	6.8		2.0	17.2	0.003	0.056	0.006			0.17		
Med.	9.0		6.85	6.75		4.0	13.65	0.002	0.047	<0.004			0.14		
Max.	15.0		7.00	6.8		6.0	17.2	0.003	0.056	0.006			0.17		
Min	3.0		6.70	6.7		2.0	10.1	<0.002	0.038	<0.002			0.11		

EPG-1105 (Feb. 1973)

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ATLANTIC REGION

TABLE	COMPANY	STATION
4	Wedge Mine (Cominco Corp)	W. O. P.

MINE WATER QUALITY

DATE 1973	TEMP. °C	FLOW c.f.s	pH field	pH lab		Humic Acids	HARDNESS ppm	Cu ppm	Zn ppm	Pb ppm	Hg ppm	Cd ppm	TOXIC UNITS	SURVIVAL %	LT 50 hrs.
May 8	2.0		2.90	2.70			552.0	125.0	0.002	<0.002	<.00005	<0.001	139.93		
July 24	18.0		2.80	2.60			1058.0	157.5	150.	<0.002		<0.001	196.64		
Med.	10.0		2.85	2.65			805.0	141.25	75.00	<0.002	<.00005	<0.001	123.28		
Max.	18.0		2.90	2.70			1058.0	157.5	150.0	<0.002	<.00005	<0.001	139.93		
Min.	2.0		2.80	2.60			552.0	125.0	0.002	<0.002	<.00005	<0.001	106.64		

1973 NEW BRUNSWICK MINE WATER QUALITY MONITOR
ING PROGRAM DATA
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