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ENVIRONMENT CANADA  
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PACIFIC AND YUKON REGION

BASELINE MONITORING  
CATEAR RESOURCES LTD.  
- August 9, 1988 -  
REGIONAL DATA REPORT DR 90-08

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## Introduction

The Catear Resources Ltd. pilot mill is located in the Unuk Valley drainage system. The mine is surrounded by ice and snowfields at an elevation of 5000 feet. Goldpan Lake adjacent to the mine, flows eastward towards Brucejack Lake. Brucejack lake flows westward towards the Unuk River via Sulphurets Creek. Coho salmon are present in the Unuk River. Dolly Varden char were collected at the mouth of Sulphurets Creek. There is no indication that the salmon could not utilise the mouth of the creek for rearing purposes even though salmon catches have not been reported. A canyon located 1 km from the mouth of Sulphurets Creek would prevent further migration of the salmon.

The company is developing an underground mine. The gold and silver extraction will be performed by gravity separation. The tailings will be discharged under water to Goldpan Lake. The lake is devoid of fish resources and will be dammed to retain the mining tailings residues and increase the tailings pond volume. The pilot mill was not operating at the time of the survey.

## Site description

<u>Station</u>	<u>Location</u>	<u>Remarks</u>
1	Emerald Creek	Upstream of Catear Camp
2	Goldpan Lake	Outlet of the lake
3	Catear Creek	Upstream of Brucejack Lake
4	Mine adit	

## Material and Methods

The site was visited on August 8, 1988. No flow measurements were taken at the sites. Water chemistry and sediments data were collected at the three creek stations but only water at the mine adit. The following chemical parameters were analysed : alkalinity, pH, conductivity, total residue, non filterable residue, and sulphate. These samples were kept cool with ice until analysed. Dissolved metals were filtered the same day through a 0.45 micron cellulose nitrate membrane filter. Total and dissolved metals were preserved with nitric acid (0.5 ml/100 ml of sample ). All samples were collected with clean polyethelene bottles. The bottles for metal samples were previously acid

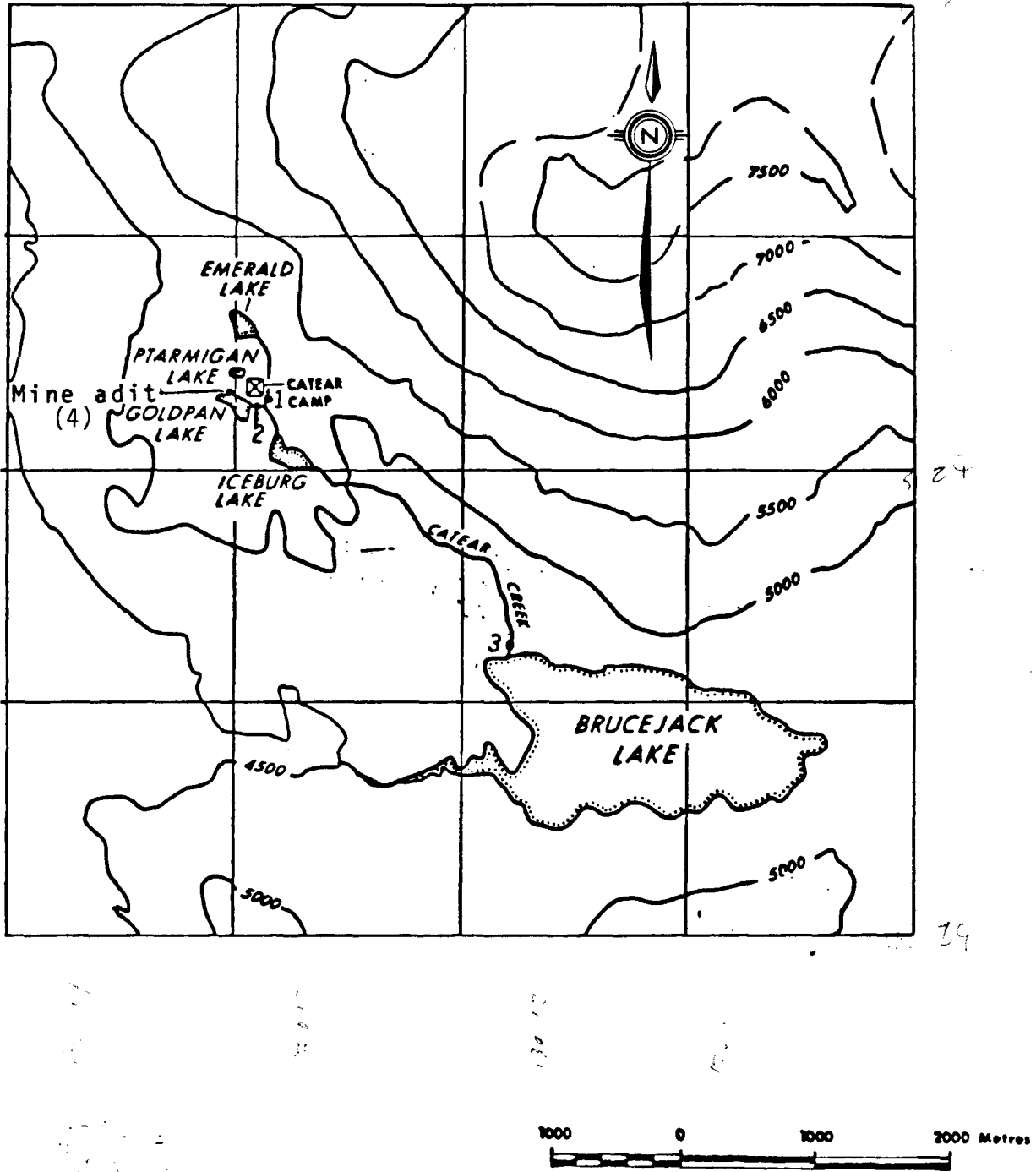


Figure 1 Catear Resources Ltd. - Sampling Sites

washed. The hardness was determined from the dissolved metal sample.

Inductively Coupled Argon Plasma (ICP) was used for the total and dissolved metal analysis and gave a reading of twenty-six metals. For cadmium, copper, and lead the samples were reanalysed with the graphite furnace when the values were below two times the detection limit on the ICP procedure. For analytical method details refer to the Environment Canada Pacific Region Laboratory Manual (Anon, 1979).

Sediment samples were collected from the streambed, below the water level, with a clean acrylic corer. Four replicates were taken at each site. The samples were transferred into kraft bags and kept cool until analysed. The samples were air dried, sieved to <150 um, digested with aqua regia, and analysed for heavy metals using ICP. A portion of the sediments was also ignited at 550 °C in a muffle furnace. The loss of weight was reported as volatile residue and the remaining residue were reported as fixed residue.

## Results

The water metal results can be found in Table 1, while the other water quality results are found in Table 2. The sediment data are reported in Table 3.

The high suspended solids at station 2 (431 mg/l) is responsible for the higher metal content at this station. Surface water metal levels were noticeably higher for aluminum, barium, iron, manganese, sodium, silicon, strontium, and zinc. The metal content of the water as analysed, at that time is not considered an environmental problem. However the mine should keep the suspended solid levels low since particulate zinc levels were slightly elevated.

Mine adit water showed low metal concentrations and does not appear to be a concern. Trace metals were not found in significant amount in the effluent.

Metal concentration in the sediments was higher at station 3 for zinc (132 ug/g) and higher at station 2 for mercury (0.592 ug/g).

## Reference

Anon, 1979. Laboratory Manual. Department of the Environment, Environmental Protection Service, Department of Fisheries and Oceans ( Pacific Region ).



Table 2 Water Quality - Catear Resources -  
August 8, 1988

Station	ALK HC MG/L	DISICP HT MG/L	DISICP MG/L	PH	TR MG/L	NFR MG/L	COND	SO4 MG/L
1	27.0	46.3	46.3	7.9	48	45	90	14
2	34.0	53.8	54.8	7.9	556	431	123	19
3	21.5	29.3	29.3	7.4	35	12	58	7
4	78.5	141	144	8.3	213	16	290	68



Table 3

Sediment Quality - Cataract Resources -  
August 8, 1988

Sediment	MO		NA		NI		P		PB		SI		SN		SR		TI		V		Zn		SVR					
	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G	UG/G		MG/KG				
1	1730	20	370	10	1500	23	671	10	37.0	1180	86	66.9	964000	36000	1690	17	520	5	1720	28	717	<8	45.3	1690	92	62.3	955000	44700
	1690	17	370	10	1500	47	654	39	37.2	1260	89	102.0	966000	33800	1640	9	410	9	1640	20	1050	<8	49.0	1670	87	63.0	962000	37800
	2070	20	330	8	1500	18	719	9	38.8	1120	85	70.6	962000	37700	1670	6	500	6	1670	18	693	<8	46.4	1660	90	61.0	956000	44100
	1840	10	370	10	1600	22	688	<8	39.6	1240	87	70.1	962000	37900	1700	20	320	5	1700	20	705	<8	40.2	1540	88	63.4	955000	44600
Average	1833	17	360	10	1525	28	683	19	38.2	1200	87	77.4	963500	36350	1683	6	438	6	1683	22	791	---	45.2	1640	89	62.4	957000	42800
S.D.	171	5	20	1	50	13	28	17	1.3	63	2	16.5	1915	1902	35	2	92	2	35	4	173	---	3.7	68	2	1.1	3367	3344
2	851	17	520	5	1720	28	717	<8	45.3	1690	92	62.3	955000	44700	847	9	410	9	1640	20	1050	<8	49.0	1670	87	63.0	962000	37800
	835	20	500	6	1670	18	693	<8	46.4	1660	90	61.0	956000	44100	811	20	320	5	1700	20	705	<8	40.2	1540	88	63.4	955000	44600
Average	836	17	438	6	1683	22	791	---	45.2	1640	89	62.4	957000	42800	836	17	438	6	1683	22	791	---	45.2	1640	89	62.4	957000	42800
S.D.	18	5	92	2	35	4	173	---	3.7	68	2	1.1	3367	3344	18	5	92	2	35	4	173	---	3.7	68	2	1.1	3367	3344
3	1640	18	280	9	1600	10	786	<8	39.2	954	100	120.0	968000	32300	2080	22	350	33	1780	67	823	71	40.9	799	110	173.0	967000	32600
	2050	18	470	9	1630	21	807	<8	43.4	1020	110	109.0	956000	43700	1870	19	230	10	1600	55	755	19	39.0	818	100	126.0	965000	35100
Average	1910	19	333	15	1653	38	793	45	40.6	898	105	132.0	964000	35925	1910	19	333	15	1653	38	793	45	40.6	898	105	132.0	964000	35925
S.D.	202	2	104	12	86	27	29	37	2.0	107	6	28.2	5477	5333	202	2	104	12	86	27	29	37	2.0	107	6	28.2	5477	5333