ENVIRONMENT CANADA
CONSERVATION AND PROTECTION
ENVIRONMENTAL PROTECTION
PACIFIC AND YUKON REGION

BASELINE MONITORING
GOLDEN BEAR PROJECT
- AUGUST 11, 1987 -

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ENVIRONMENT CANADA
PACIFIC REGION

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INTRODUCTION

The Golden Bear property is located on Bearskin Lake approximately 50 km north-west of Telegraph Creek and 135 km west of Dease Lake. Bearskin Lake drains into the Samotua River, a tributary of the Sheslay River which is part of the Taku River drainage system (Figure 1).

Fisheries values are moderate to high for the Sheslay River, low to moderate for the Samotua River, and very low for Bearskin Creek. Impassable falls limit the fisheries value of Bearskin Creek to a 200-metre stretch at the mouth of the creek. Only Dolly Varden were found in the lower part of Bearskin Creek.

The project involves the development of open pit and underground workings with an overall production of 360 tonnes per day for 5.5 years. There is an excellent potential for additional reserves. Golden Bear Operating Company will be responsible for the mine development. Mining started in 1990.

TABLE 1: STATION DESCRIPTION

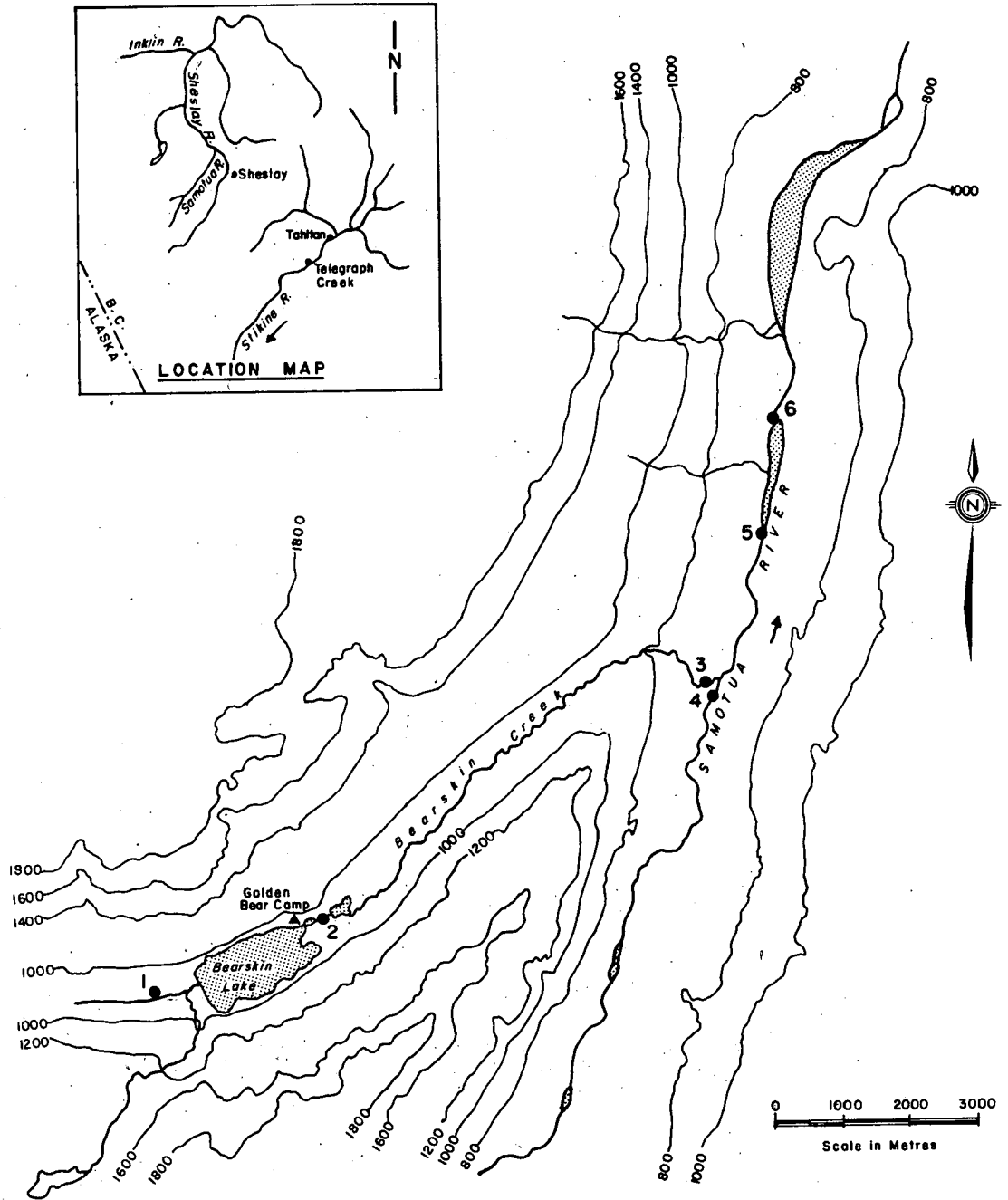| Station	Location	Remark
1	Bearskin Creek	200 metres upstream of Bearskin Lake
2	Bearskin Creek	30 metres downstream of Bearskin Lake, water very turbid and milky looking
3	Bearskin Creek	Downstream of Bearskin falls, 20 metres upstream of Samotua River, darker colour than station 2
4	Samotua River	30 metres upstream of Bearskin Creek, water grayish-green colour
5	Samotua River	2.5 kilometres downstream of Bearskin Creek, water grayish-green colour
6	Samotua River	4.3 kilometres downstream of Bearskin Creek, water grayish-green colour

FIGURE I   RECEIVING WATER SAMPLING STATIONS AT THE
GOLDEN BEAR MINE SITE

MATERIALS AND METHODS

The site was visited on August 11, 1987. Water chemistry and sediment samples were collected at six stations. Water quality analysis included alkalinity, pH, conductivity, total residues, filterable residues, non-filterable residues, ammonia, nitrite, nitrate, and sulphate. The samples were packed with ice until analysed. Total cyanide and thiocyanide were preserved with sodium hydroxide to raise the pH above 12. A single grab sample for total organic carbon (TOC) and inorganic carbon (TIC) was taken at three sites (Stations 3, 4, and 5). Dissolved metals were filtered the same day through a 0.45 micron cellulose nitrate membrane filter. Total and dissolved metals were preserved with 0.5 ml nitric acid per 100 ml of sample. All samples were collected with clean polyethylene bottles. The bottles for metal analysis were previously acid washed. Hardness was determined from the dissolved metal sample.

Inductively Coupled Argon Plasma (ICAP) was used for the total and dissolved metal analysis and gave a reading of twenty-six metals. Silver was analysed with the graphite furnace. Cadmium, copper, and lead samples were re-analysed with the graphite furnace when the values were below two times the detection limit of the ICAP procedure. Extractable metals were analysed without prior digestion. The pH of the samples were below 2 relative units. Analytical methods were in accordance with the Environment Canada, Pacific Region, Laboratory Manual (Anon., 1979).

Sediment samples were collected from the streambed with a clean acrylic corer. Four replicates were taken at each site. The samples were placed in 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 were ignited at 550° C in a muffle furnace. The loss of weight was reported as volatile residues and the remainder as fixed residues. The total nitrogen was determined by autoclaving the sediments with potassium persulphate in a basic environment, the process converts all forms of nitrogen into nitrate. The results are obtained using a colorimetric method.

RESULTS

The sampling locations are described in Table 1, the water metal results in Table 2 , immediates in Table 3, extractable metals in Table 4, and sediments in Table 5.

The water quality of Bearskin Creek and Samotua River for aluminium, copper, iron, lead, silver, and zinc were above the Canadian Council of Resource and Environment Ministers (CCREM, 1987) guidelines for the protection of aquatic life. All the dissolved values were below the above guidelines for waters with hardness between 0 and 120 mg/l.

There were no apparent differences between Bearskin Creek (Station 3) and the Samotua River (Station 4) before mixing for total aluminium, antimony, arsenic, barium, beryllium, calcium, chromium, lead, magnesium, molybdenum, nickel, selenium, silicon, silver, sodium, tin, vanadium, or zinc. The levels were higher in Bearskin Creek (Station 3) for copper, and hardness, while the Samotua River was higher for iron, manganese, phosphorus, strontium, titanium, and zinc. For most metals, there was an increase of the metal concentrations between Station 1 and Station 2. The relationship is reversed only for the calcium content, while no difference could be found for arsenic, beryllium, cadmium, nickel, silicon, and tin, mostly because these metals were below detection limits. The increase below Bearskin Lake is related to the non-filterable residue which averaged 63 mg/l at Station 1 and 229 mg/l at Station 2.

The Samotua River metal levels were constant for the three stations sampled except for cadmium, magnesium, and manganese where significant differences were found ($p < 0.05$). Cadmium was higher at Station 4 than Station 5 and 6, magnesium was higher at Station 5, and manganese was lower at Station 6 than Station 4 and 5.

Table 2   Water Quality Data

Water quality - Golden Bear-
August 11, 1987

Station		TOTGF AG MG/L	DISGF AG MG/L	TOTICP AL MG/L	DISICP AL MG/L	TOTICP AS MG/L	DISICP AS MG/L	TOTICP BA MG/L	DISICP BA MG/L	TOTICP BE MG/L	DISICP BE MG/L	TOTICP CA MG/L	DISICP CA MG/L	TOTICP CD MG/L	TOTGF CD MG/L	DISICP CD MG/L	DISGF CD MG/L
1	Repl. 1	0.0002	0.0002	4.25	<.05	<.05	<.05	0.099	0.018	<.001	<.001	23.6	21.6	<.002	<0.0001	<.002	<0.0001
	Repl. 2	0.0004	0.0002	4.23	0.07	<.05	<.05	0.098	0.019	<.001	<.001	23.5	22.1	<.002	0.0001	<.002	<0.0001
	Repl. 3	0.0003	0.0002	4.42	0.06	<.05	<.05	0.100	0.019	<.001	<.001	23.4	21.9	<.002	<0.0001	<.002	<0.0001
	Average	0.0003	0.0002	4.30	0.07	---	---	0.099	0.019	---	---	23.5	21.9	---	---	---	---
	Std	0.0001	0.0000	0.10	0.01	---	---	0.001	0.001	---	---	0.1	0.3	---	---	---	---
2	Repl. 1	0.0008	<0.0001	17.00	0.20	<.05	<.05	0.293	0.014	<.001	<.001	16.6	13.5	<.002	<0.0001	<.002	<0.0001
	Repl. 2	0.0007	<0.0001	16.90	0.30	<.05	<.05	0.295	0.016	<.001	<.001	16.7	13.6	<.002	<0.0001	0.003	<0.0001
	Repl. 3	0.0009	<0.0001	16.90	<.05	<.05	<.05	0.298	0.012	<.001	<.001	16.9	13.5	0.002	<0.0001	<.002	<0.0001
	Average	0.0008	---	16.93	0.25	---	---	0.295	0.014	---	---	16.7	13.5	---	---	---	---
	Std	0.0001	---	0.06	0.07	---	---	0.003	0.002	---	---	0.2	0.1	---	---	---	---
3	Repl. 1	0.0009	<0.0001	15.90	0.06	<.05	<.05	0.278	0.015	<.001	<.001	18.4	15.1	<.002	<0.0001	<.002	<0.0001
	Repl. 2	0.0008	0.0001	15.90	<.05	<.05	<.05	0.275	0.014	<.001	<.001	17.9	15.0	<.002	<0.0001	<.002	<0.0001
	Repl. 3	0.0007	<0.0001	16.30	<.05	<.05	<.05	0.282	0.014	<.001	<.001	18.3	14.9	<.002	<0.0001	<.002	<0.0001
	Average	0.0008	---	16.03	---	---	---	0.278	0.014	---	---	18.2	15.0	---	---	---	---
	Std	0.0001	---	0.23	---	---	---	0.004	0.001	---	---	0.3	0.1	---	---	---	---
4	Repl. 1	0.0008	<0.0001	16.40	0.09	<.05	<.05	0.250	0.013	<.001	<.001	19.3	12.6	<.002	0.0001	<.002	<0.0001
	Repl. 2	0.0010	<0.0001	17.00	0.08	<.05	<.05	0.256	0.013	<.001	<.001	19.8	12.8	<.002	0.0003	<.002	<0.0001
	Repl. 3	0.0010	<0.0001	17.00	0.07	<.05	<.05	0.260	0.013	<.001	<.001	19.9	12.8	<.002	0.0002	<.002	<0.0001
	Average	0.0009	---	16.80	0.08	---	---	0.255	0.013	---	---	19.7	12.7	---	0.0002	---	---
	Std	0.0001	---	0.35	0.01	---	---	0.005	0.000	---	---	0.3	0.1	---	0.0001	---	---
5	Repl. 1	0.0008	<0.0001	17.10	0.07	<.05	<.05	0.268	0.014	<.001	<.001	20.4	13.3	<.002	0.0001	<.002	<0.0001
	Repl. 2	0.0008	<0.0001	17.00	0.06	<.05	<.05	0.272	0.014	<.001	<.001	21.1	13.2	0.003	0.0002	<.002	<0.0001
	Repl. 3	0.0007	<0.0001	17.20	0.06	<.05	<.05	0.281	0.014	<.001	<.001	20.9	13.2	0.002	0.0001	<.002	<0.0001
	Average	0.0008	---	17.10	0.06	---	---	0.274	0.014	---	---	20.8	13.2	---	0.0001	---	---
	Std	0.0001	---	0.10	0.01	---	---	0.007	0.000	---	---	0.4	0.1	---	0.0001	---	---
6	Repl. 1	0.0010	<0.0001	16.00	0.07	<.05	<.05	0.249	0.014	<.001	<.001	19.4	13.6	<.002	0.0001	<.002	<0.0001
	Repl. 2	0.0007	<0.0001	16.10	<.05	<.05	<.05	0.258	0.014	<.001	<.001	19.5	13.5	<.002	<0.0001	<.002	<0.0001
	Repl. 3	0.0006	<0.0001	16.20	<.05	<.05	<.05	0.249	0.015	<.001	<.001	19.5	13.6	<.002	<0.0001	<.002	<0.0001
	Average	0.0008	---	16.10	---	---	---	0.252	0.014	---	---	19.5	13.6	---	---	---	---
	Std	0.0002	---	0.10	---	---	---	0.005	0.001	---	---	0.1	0.1	---	---	---	---
	Min	0.0002	<0.0001	4.23	<.05	<.05	<.05	0.098	0.012	<.001	<.001	16.6	12.6	<.002	<0.0001	<.002	<0.0001
	Max	0.0010	0.0002	17.20	0.30	<.05	<.05	0.298	0.019	<.001	<.001	23.6	22.1	0.003	0.0003	0.003	<0.0001

Table 2   Water Quality Data

Water quality - Golden Bear -
August 11, 1987

Station		TOTICP CO MG/L	DISICP CO MG/L	TOTICP CR MG/L	DISICP CR MG/L	TOTICP CU MG/L	TOTGF CU MG/L	DISICP CU MG/L	DISGF CU MG/L	TOTICP FE MG/L	DISICP FE MG/L	TOTHG HG MG/L	TOTICP MG MG/L	DISICP MG MG/L	TOTICP MN MG/L	DISICP MN MG/L
1	Repl. 1	0.022	<.005	0.006	<.005	<.005	0.0043	<.005	<0.0005	3.12	0.010	0.00020	2.8	1.5	0.109	0.014
	Repl. 2	0.022	<.005	0.005	<.005	0.005	0.0049	<.005	<0.0005	3.10	0.038	<0.00005	2.8	1.5	0.109	0.015
	Repl. 3	0.020	<.005	0.006	<.005	<.005	0.0047	<.005	<0.0005	3.18	0.031	0.00017	2.8	1.5	0.113	0.014
	Average	0.021	---	0.006	---	---	0.0046	---	---	3.13	0.026	0.00019	2.8	1.5	0.110	0.014
	Std	0.001	---	0.001	---	---	0.0003	---	---	0.04	0.015	0.00002	0.0	0.0	0.002	0.001
2	Repl. 1	0.098	<.005	0.038	<.005	0.032	---	<.005	<0.0005	13.70	0.138	0.00016	7.8	1.4	0.362	0.011
	Repl. 2	0.102	<.005	0.041	<.005	0.034	---	<.005	0.0008	13.70	0.211	0.00016	7.7	1.4	0.365	0.014
	Repl. 3	0.106	<.005	0.042	<.005	0.037	---	<.005	<0.0005	13.90	0.006	<0.00005	7.8	1.3	0.370	0.007
	Average	0.102	---	0.040	---	0.034	---	---	---	13.77	0.118	0.00016	7.8	1.4	0.366	0.011
	Std	0.004	---	0.002	---	0.003	---	---	---	0.12	0.104	0.00000	0.1	0.1	0.004	0.004
3	Repl. 1	0.093	<.005	0.037	<.005	0.032	---	<.005	0.0005	13.10	0.036	<0.00005	8.2	2.0	0.342	0.005
	Repl. 2	0.092	<.005	0.037	<.005	0.032	---	<.005	<0.0005	12.90	0.017	0.00006	8.1	2.0	0.338	0.006
	Repl. 3	0.090	<.005	0.036	<.005	0.030	---	<.005	<0.0005	13.20	0.019	0.00016	8.3	2.0	0.344	0.005
	Average	0.092	---	0.037	---	0.031	---	---	---	13.07	0.024	0.00011	8.2	2.0	0.341	0.005
	Std	0.002	---	0.001	---	0.001	---	---	---	0.15	0.010	0.00007	0.1	0.0	0.003	0.001
4	Repl. 1	0.122	<.005	0.030	<.005	0.021	---	<.005	<0.0005	16.30	0.040	<0.00005	8.6	2.2	0.428	0.021
	Repl. 2	0.118	<.005	0.028	<.005	0.019	---	<.005	<0.0005	16.70	0.030	<0.00005	8.9	2.2	0.438	0.021
	Repl. 3	0.117	<.005	0.028	<.005	0.019	---	<.005	<0.0005	16.60	0.025	<0.00005	8.9	2.2	0.437	0.022
	Average	0.119	---	0.029	---	0.020	---	---	---	16.53	0.032	---	8.8	2.2	0.434	0.021
	Std	0.003	---	0.001	---	0.001	---	---	---	0.21	0.008	---	0.2	0.0	0.006	0.001
5	Repl. 1	0.119	<.005	0.031	<.005	0.025	---	<.005	<0.0005	16.70	0.023	0.00012	9.2	2.3	0.440	0.018
	Repl. 2	0.124	<.005	0.032	<.005	0.026	---	<.005	<0.0005	17.10	0.024	0.00013	9.2	2.3	0.457	0.018
	Repl. 3	0.124	<.005	0.035	<.005	0.028	---	<.005	<0.0005	17.00	0.022	<0.00005	9.2	2.3	0.451	0.018
	Average	0.122	---	0.033	---	0.026	---	---	---	16.93	0.023	0.00013	9.2	2.3	0.449	0.018
	Std	0.003	---	0.002	---	0.002	---	---	---	0.21	0.001	0.00001	0.0	0.0	0.009	0.000
6	Repl. 1	0.109	<.005	0.030	<.005	0.024	---	<.005	<0.0005	15.50	0.026	0.00011	8.6	2.3	0.397	0.018
	Repl. 2	0.107	<.005	0.030	<.005	0.022	---	<.005	<0.0005	15.40	0.005	<0.00005	8.7	2.3	0.394	0.017
	Repl. 3	0.108	<.005	0.030	<.005	0.023	---	<.005	<0.0005	15.60	0.021	<0.00005	8.7	2.3	0.398	0.018
	Average	0.108	---	0.030	---	0.023	---	---	---	15.50	0.017	---	8.7	2.3	0.396	0.018
	Std	0.001	---	0.000	---	0.001	---	---	---	0.10	0.011	---	0.1	0.0	0.002	0.001
	Min	0.020	<.005	0.005	<.005	<.005	0.0043	<.005	<0.0005	3.10	0.010	<0.00005	2.8	1.3	0.109	0.005
	Max	0.124	0.000	0.042	0.000	0.037	0.0049	0.005	0.0008	17.10	0.211	0.00020	9.2	2.3	0.457	0.022

Table 2   Water Quality Data

Water quality - Golden Bear -
August 11, 1987

Station		TOTICP MO MG/L	DISICP MO MG/L	TOTICP NA MG/L	DISICP NA MG/L	TOTICP NI MG/L	DISICP NI MG/L	TOTICP P MG/L	DISICP P MG/L	TOTICP PB MG/L	TOTGF PB MG/L	DISICP PB MG/L	DISGF PB MG/L	TOTICP SB MG/L	DISICP SB MG/L	TOTICP SE MG/L	DISICP SE MG/L
1	Repl. 1	0.006	<.005	1.9	1.1	<.02	<.02	0.14	<.05	<.02	0.0008	<.02	0.0007	<.05	<.05	<.05	<.05
	Repl. 2	0.007	<.005	1.9	1.0	<.02	<.02	0.16	0.05	<.02	0.0010	<.02	0.0005	<.05	<.05	<.05	<.05
	Repl. 3	<.005	<.005	2.0	1.0	<.02	<.02	0.15	<.05	<.02	0.0009	<.02	0.0008	<.05	<.05	<.05	<.05
	Average	0.007	--	1.9	1.0	--	--	0.15	--	--	0.0009	--	0.0007	--	--	--	--
	Std	0.001	--	0.1	0.1	--	--	0.01	--	--	0.0001	--	0.0002	--	--	--	--
2	Repl. 1	0.033	<.005	3.8	0.8	<.02	<.02	0.29	0.05	<.02	0.0025	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 2	0.035	0.005	3.7	0.8	<.02	<.02	0.30	0.07	<.02	0.0027	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 3	0.033	<.005	3.7	0.8	<.02	<.02	0.33	0.06	<.02	0.0027	<.02	0.0008	<.05	<.05	0.05	<.05
	Average	0.034	--	3.7	0.8	--	--	0.31	0.06	--	0.0026	--	--	--	--	--	--
	Std	0.001	--	0.1	0.0	--	--	0.02	0.01	--	0.0001	--	--	--	--	--	--
3	Repl. 1	0.029	0.006	3.5	0.8	<.02	<.02	0.30	0.06	<.02	0.0025	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 2	0.031	<.005	3.6	0.8	<.02	<.02	0.28	<.05	<.02	0.0024	<.02	0.0005	<.05	<.05	<.05	<.05
	Repl. 3	0.029	<.005	3.7	0.8	<.02	<.02	0.28	<.05	<.02	0.0023	<.02	<0.0005	<.05	<.05	0.06	<.05
	Average	0.030	--	3.6	0.8	--	--	0.29	--	--	0.0024	--	--	--	--	--	--
	Std	0.001	--	0.1	0.0	--	--	0.01	--	--	0.0001	--	--	--	--	--	--
4	Repl. 1	0.041	<.005	3.6	0.7	<.02	<.02	0.66	0.06	<.02	0.0022	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 2	0.037	0.007	3.9	0.7	<.02	<.02	0.68	<.05	<.02	0.0020	<.02	0.0005	<.05	<.05	<.05	<.05
	Repl. 3	0.038	0.005	4.0	0.7	<.02	<.02	0.70	0.05	<.02	0.0024	<.02	<0.0005	<.05	<.05	<.05	<.05
	Average	0.039	0.006	3.8	0.7	--	--	0.68	0.06	--	0.0022	--	--	--	--	--	--
	Std	0.002	0.001	0.2	0.0	--	--	0.02	0.01	--	0.0002	--	--	--	--	--	--
5	Repl. 1	0.042	<.005	3.9	0.7	<.02	<.02	0.68	<.05	<.02	0.0023	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 2	0.035	<.005	3.7	0.7	<.02	<.02	0.68	<.05	<.02	0.0033	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 3	0.045	<.005	3.8	0.7	<.02	<.02	0.66	<.05	<.02	0.0039	<.02	<0.0005	<.05	<.05	0.06	<.05
	Average	0.041	--	3.8	0.7	--	--	0.67	--	--	0.0032	--	--	--	--	--	--
	Std	0.005	--	0.1	0.0	--	--	0.01	--	--	0.0008	--	--	--	--	--	--
6	Repl. 1	0.037	<.005	3.6	0.7	<.02	<.02	0.54	<.05	<.02	0.0021	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 2	0.040	<.005	3.7	0.7	0.02	<.02	0.57	<.05	<.02	0.0022	<.02	<0.0005	<.05	<.05	<.05	<.05
	Repl. 3	0.039	<.005	3.7	0.7	<.02	<.02	0.53	<.05	<.02	0.0022	<.02	<0.0005	<.05	<.05	0.05	<.05
	Average	0.039	--	3.7	0.7	--	--	0.55	--	--	0.0022	--	--	--	--	--	--
	Std	0.002	--	0.1	0.0	--	--	0.02	--	--	0.0001	--	--	--	--	--	--
	Min	<.005	<.005	1.9	0.7	<.02	<.02	0.14	<.05	<.02	0.0008	<.02	<0.0005	<.05	<.05	<.05	<.05
	Max	0.045	0.007	4.0	1.1	0.02	<.02	0.70	0.07	<.02	0.0039	<.02	0.0008	<.05	<.05	0.06	<.05

Table 2   Water Quality Data

Water quality - Golden Bear -
August 11, 1987

Station	Lab Sample Number	TOTICP SI MG/L	DISICP SI MG/L	TOTICP SN MG/L	DISICP SN MG/L	TOTICP SR MG/L	DISICP SR MG/L	TOTICP TI MG/L	DISICP TI MG/L	TOTICP V MG/L	DISICP V MG/L	TOTICP ZN MG/L	DISICP ZN MG/L	DISICP HC MG/L	DISICP HT MG/L
1	Repl. 1	10.0	1.5	<.01	<.01	0.081	0.068	0.099	<.002	0.006	<.005	0.004	<.002	60.2	60.5
	Repl. 2	9.9	1.6	<.01	<.01	0.081	0.069	0.097	<.002	0.005	<.005	0.006	<.002	61.5	62.0
	Repl. 3	10.3	1.6	0.02	<.01	0.081	0.069	0.101	<.002	<.005	<.005	0.008	<.002	61.1	61.6
	Average	10.1	1.6	--	--	0.081	0.069	0.099	--	0.006	--	0.006	--	60.9	61.4
	Std	0.2	0.1	--	--	0.000	0.001	0.002	--	0.001	--	0.002	--	0.7	0.8
2	Repl. 1	33.9	1.4	<.01	<.01	0.079	0.047	0.320	0.004	0.028	<.005	0.037	<.002	39.3	40.7
	Repl. 2	33.8	1.7	<.01	<.01	0.079	0.047	0.324	0.007	0.033	<.005	0.030	<.002	39.7	41.8
	Repl. 3	33.7	1.1	<.01	<.01	0.081	0.047	0.331	<.002	0.036	<.005	0.031	<.002	39.2	39.4
	Average	33.8	1.4	--	--	0.080	0.047	0.325	0.006	0.032	--	0.033	--	39.4	40.6
	Std	0.1	0.3	--	--	0.001	0.000	0.006	0.002	0.004	--	0.004	--	0.3	1.2
3	Repl. 1	31.8	1.2	0.01	<.01	0.084	0.054	0.301	<.002	0.028	<.005	0.028	<.002	45.9	46.4
	Repl. 2	31.6	1.2	<.01	<.01	0.083	0.053	0.297	<.002	0.027	<.005	0.027	<.002	45.5	45.8
	Repl. 3	32.2	1.2	<.01	<.01	0.085	0.053	0.304	<.002	0.025	<.005	0.028	<.002	45.4	45.8
	Average	31.9	1.2	--	--	0.084	0.053	0.301	--	0.027	--	0.028	--	45.6	46.0
	Std	0.3	0.0	--	--	0.001	0.001	0.004	--	0.002	--	0.001	--	0.3	0.3
4	Repl. 1	29.6	0.8	<.01	<.01	0.136	0.082	0.699	<.002	0.041	<.005	0.034	<.002	40.7	41.4
	Repl. 2	30.5	0.8	<.01	<.01	0.138	0.082	0.735	<.002	0.037	<.005	0.033	<.002	40.9	41.5
	Repl. 3	30.6	0.8	<.01	<.01	0.141	0.083	0.696	<.002	0.035	<.005	0.034	<.002	41.1	41.7
	Average	30.2	0.8	--	--	0.138	0.082	0.710	--	0.038	--	0.034	--	40.9	41.5
	Std	0.6	0.0	--	--	0.003	0.001	0.022	--	0.003	--	0.001	--	0.2	0.2
5	Repl. 1	31.2	0.9	<.01	<.01	0.134	0.078	0.673	<.002	0.037	<.005	0.036	<.002	42.5	43.1
	Repl. 2	30.7	0.9	<.01	<.01	0.135	0.078	0.695	<.002	0.037	<.005	0.052	<.002	42.2	42.7
	Repl. 3	31.3	0.9	0.03	<.01	0.135	0.078	0.683	<.002	0.043	<.005	0.035	<.002	42.3	42.8
	Average	31.1	0.9	--	--	0.135	0.078	0.684	--	0.039	--	0.041	--	42.3	42.9
	Std	0.3	0.0	--	--	0.001	0.000	0.011	--	0.003	--	0.010	--	0.2	0.2
6	Repl. 1	29.4	0.9	0.01	<.01	0.126	0.079	0.626	<.002	0.036	<.005	0.032	<.002	43.5	44.1
	Repl. 2	29.8	0.8	<.01	<.01	0.127	0.079	0.605	<.002	0.035	<.005	0.032	<.002	43.1	43.2
	Repl. 3	29.9	0.9	0.03	<.01	0.127	0.080	0.615	<.002	0.035	<.005	0.032	<.002	43.4	43.6
	Average	29.7	0.9	0.02	--	0.127	0.079	0.615	--	0.035	--	0.032	--	43.3	43.6
	Std	0.3	0.1	0.01	--	0.001	0.001	0.011	--	0.001	--	0.000	--	0.2	0.5
	Min	9.9	0.8	<.01	<.01	0.081	0.047	0.099	<.002	<.005	<.005	0.004	<.002	40.7	39.4
	Max	33.9	1.7	<.01	<.01	0.141	0.083	0.735	<.002	0.043	<.005	0.052	<.002	61.5	62.0

Table 3   Water Quality Data

Water quality - Golden Bear -
August 11, 1987

Station		ALK MG/L	PH REL.U.	COND UMHO/C	NH3 MG/L	NO2 MG/L	NO23 MG/L	CN MG/L	CNS MG/L	SO4 MG/L	TIC MG/L	TOC MG/L	TR MG/L	NFR MG/L	FR MG/L
1	Repl. 1	58.4	7.6	128	0.030	<.005	0.045	<0.03	<0.5	6	---	---	164	64	100
	Repl. 2	58.9	7.8	128	0.026	<.005	0.046	<0.03	<0.5	4	---	---	152	60	93
	Repl. 3	58.4	7.7	128	0.024	<.005	0.047	<0.03	<0.5	4	---	---	151	65	86
	Average	58.6	7.7	128	0.027	---	0.046	---	---	5	---	---	156	63	93
	Std	0.3	---	0	0.003	---	0.001	---	---	1	---	---	7	3	7
2	Repl. 1	39.6	7.7	88	0.014	<.005	0.020	<0.03	<0.5	3	---	---	283	228	55
	Repl. 2	39.6	7.7	88	0.014	<.005	0.021	<0.03	<0.5	3	---	---	290	228	62
	Repl. 3	39.1	7.7	88	0.014	<.005	0.020	<0.03	<0.5	3	---	---	284	230	54
	Average	39.4	7.7	88	0.014	---	0.020	---	---	3	---	---	286	229	57
	Std	0.3	---	0	0.000	---	0.001	---	---	0	---	---	4	1	4
3	Repl. 1	45.7	7.8	100	0.016	<.005	0.032	<0.03	<0.5	4	11.1	<1.0	286	221	65
	Repl. 2	44.7	7.8	100	0.016	<.005	0.033	<0.03	<0.5	3	---	---	275	216	59
	Repl. 3	44.7	7.8	100	0.033	<.005	0.039	<0.03	<0.5	2	---	---	275	224	51
	Average	45.0	7.8	100	0.022	---	0.035	---	---	3	---	---	279	220	58
	Std	0.6	---	0	0.010	---	0.004	---	---	1	---	---	6	4	7
4	Repl. 1	39.6	7.9	93	0.023	<.005	0.020	<0.03	<0.5	5	9.9	<1.0	414	360	54
	Repl. 2	39.6	7.8	93	0.017	<.005	0.020	<0.03	<0.5	4	---	---	424	368	56
	Repl. 3	40.1	8.1	93	0.017	<.005	0.028	<0.03	<0.5	4	---	---	438	386	52
	Average	39.8	7.9	93	0.019	---	0.023	---	---	4	---	---	425	371	54
	Std	0.3	---	0	0.003	---	0.005	---	---	1	---	---	12	13	2
5	Repl. 1	42.4	8.0	95	0.024	<.005	0.030	<0.03	<0.5	3	10.5	<1.0	382	319	63
	Repl. 2	41.9	8.0	95	0.017	<.005	0.026	<0.03	<0.5	3	---	---	403	320	83
	Repl. 3	42.5	8.0	95	0.018	<.005	0.028	<0.03	<0.5	4	---	---	415	392	23
	Average	42.3	8.0	95	0.020	---	0.028	---	---	3	---	---	400	344	56
	Std	0.3	---	0	0.004	---	0.002	---	---	1	---	---	17	42	31
6	Repl. 1	42.6	7.8	98	0.029	<.005	0.028	<0.03	<0.5	4	---	---	376	330	46
	Repl. 2	43.6	7.9	98	0.023	<.005	0.031	<0.03	<0.5	4	---	---	386	320	66
	Repl. 3	42.6	8.0	98	0.021	<.005	0.031	<0.03	<0.5	4	---	---	367	326	41
	Average	42.9	7.9	98	0.024	---	0.030	---	---	4	---	---	376	325	51
	Std	0.6	---	0	0.004	---	0.002	---	---	0	---	---	10	5	13

Table 4   Water Quality Data

Water quality - Golden Bear :
August 11, 1987

Station		EXTICP AL MG/L	EXTICP AS MG/L	EXTICP BA MG/L	EXTICP BE MG/L	EXTICP CA MG/L	EXTICP CD MG/L	EXTICP CO MG/L	EXTICP CR MG/L	EXTICP CU MG/L	EXTGF CU MG/L	EXTICP FE MG/L	EXTICP MG MG/L	EXTICP MN MG/L	EXTICP MO MG/L	EXTICP NA MG/L	EXTICP NI MG/L
1	Repl. 1	3.80	<.05	0.090	<.001	23.5	<.002	0.005	0.005	<.005	0.0038	3.14	2.9	0.107	<.005	1.6	<.02
	Repl. 2	3.52	<.05	0.083	<.001	23.4	<.002	<.005	<.005	<.005	0.0044	2.95	2.8	0.104	<.005	1.6	<.02
	Repl. 3	3.54	<.05	0.084	<.001	23.4	<.002	<.005	0.005	0.006	0.0038	2.96	2.8	0.107	<.005	1.6	<.02
	Average	3.62	--	0.086	--	23.4	--	0.005	0.005	0.006	0.0040	3.02	2.8	0.106	--	1.6	--
	Std	0.16	--	0.004	--	0.1	--	0.000	0.000	0.001	0.0003	0.11	0.1	0.002	--	0.0	--
2	Repl. 1	9.76	<.05	0.185	<.001	15.4	<.002	0.027	0.023	0.029	--	10.40	6.0	0.300	<.005	2.1	0.03
	Repl. 2	10.10	<.05	0.191	<.001	15.5	<.002	0.028	0.026	0.030	--	10.60	6.1	0.303	<.005	2.2	<.02
	Repl. 3	8.20	<.05	0.153	<.001	15.7	<.002	0.026	0.023	0.030	--	9.57	5.7	0.293	<.005	1.7	0.05
	Average	9.35	--	0.176	--	15.5	--	0.027	0.024	0.030	--	10.19	5.9	0.299	--	2.0	0.04
	Std	1.01	--	0.020	--	0.2	--	0.001	0.002	0.001	--	0.55	0.2	0.005	--	0.3	0.01
3	Repl. 1	7.98	<.05	0.148	<.001	18.0	<.002	0.022	0.020	0.029	--	9.34	6.3	0.280	<.005	1.7	<.02
	Repl. 2	9.65	<.05	0.174	<.001	17.7	<.002	0.027	0.025	0.028	--	10.10	6.7	0.289	<.005	2.1	<.02
	Repl. 3	7.69	<.05	0.144	<.001	17.7	<.002	0.023	0.021	0.028	--	9.17	6.3	0.276	<.005	1.7	<.02
	Average	8.44	--	0.155	--	17.8	--	0.024	0.022	0.028	--	9.54	6.4	0.282	--	1.8	--
	Std	1.06	--	0.016	--	0.2	--	0.003	0.003	0.001	--	0.50	0.2	0.007	--	0.2	--
4	Repl. 1	10.00	<.05	0.160	<.001	18.2	<.002	0.035	0.022	0.019	--	12.70	7.4	0.362	<.005	2.2	<.02
	Repl. 2	9.49	<.05	0.151	<.001	18.6	<.002	0.034	0.020	0.018	--	12.50	7.2	0.360	<.005	2.1	<.02
	Repl. 3	9.15	<.05	0.150	<.001	18.5	<.002	0.035	0.020	0.018	--	12.70	7.3	0.364	<.005	2.0	<.02
	Average	9.55	--	0.154	--	18.4	--	0.035	0.021	0.018	--	12.63	7.3	0.362	--	2.1	--
	Std	0.43	--	0.006	--	0.2	--	0.001	0.001	0.001	--	0.12	0.1	0.002	--	0.1	--
5	Repl. 1	9.07	<.05	0.149	<.001	19.2	0.003	0.039	0.026	0.026	--	12.60	7.5	0.363	<.005	1.9	<.02
	Repl. 2	8.03	<.05	0.132	<.001	19.8	<.002	0.026	0.015	0.021	--	12.00	7.2	0.366	<.005	1.6	<.02
	Repl. 3	10.30	<.05	0.198	<.001	19.7	<.002	0.038	0.024	0.023	--	13.30	7.8	0.381	<.005	2.2	<.02
	Average	9.13	--	0.160	--	19.6	--	0.034	0.022	0.023	--	12.63	7.5	0.370	--	1.9	--
	Std	1.14	--	0.034	--	0.3	--	0.007	0.006	0.003	--	0.65	0.3	0.010	--	0.3	--
6	Repl. 1	8.23	<.05	0.138	<.001	18.5	0.003	0.031	0.021	0.022	--	11.10	6.9	0.321	<.005	1.8	<.02
	Repl. 2	8.50	<.05	0.158	<.001	18.8	<.002	0.030	0.018	0.018	--	11.50	7.1	0.328	<.005	1.9	<.02
	Repl. 3	8.16	<.05	0.138	<.001	18.7	<.002	0.032	0.023	0.024	--	11.10	6.9	0.324	<.005	1.8	<.02
	Average	8.30	--	0.145	--	18.7	--	0.031	0.021	0.021	--	11.23	7.0	0.324	--	1.8	--
	Std	0.18	--	0.012	--	0.2	--	0.001	0.003	0.003	--	0.23	0.1	0.004	--	0.1	--

Table 4   Water Quality Data

Water quality - Golden Bear -
August 11, 1987

Station		EXTICP P MG/L	EXTICP PB MG/L	EXTGF PB MG/L	EXTICP SB MG/L	EXTICP SE MG/L	EXTICP SI MG/L	EXTICP SN MG/L	EXTICP SR MG/L	EXTICP TI MG/L	EXTICP V MG/L	EXTICP ZN MG/L	EXTICP HC MG/L	EXTICP HT MG/L
1	1	0.11	<.02	0.0018	<.05	<.05	9.9	<.01	0.077	0.101	<.005	0.008	70.7	97.7
	2	0.10	<.02	0.0017	<.05	<.05	9.2	<.01	0.077	0.088	<.005	0.009	70.0	95.1
	3	0.13	<.02	0.0017	<.05	<.05	9.3	0.04	0.077	0.097	<.005	0.007	69.8	95.1
Average		0.11	---	0.0017	---	---	9.5	---	0.077	0.095	---	0.008	70.2	96.0
Std		0.02	---	0.0001	---	---	0.4	---	0.000	0.007	---	0.001	0.5	1.5
2	4	0.21	<.02	0.0066	<.05	<.05	20.7	<.01	0.066	0.195	0.015	0.028	63.5	137.0
	5	0.23	<.02	0.0077	<.05	<.05	21.6	<.01	0.067	0.214	0.017	0.027	63.8	140.0
	6	0.20	<.02	0.0066	<.05	<.05	16.2	0.01	0.065	0.134	0.017	0.026	62.5	126.0
Average		0.21	---	0.0070	---	---	19.5	---	0.066	0.181	0.016	0.027	63.3	134.3
Std		0.02	---	0.0006	---	---	2.9	---	0.001	0.042	0.001	0.001	0.7	7.4
4	7	0.57	<.02	0.0074	<.05	<.05	19.7	0.02	0.118	0.288	0.025	0.033	75.8	155.0
	8	0.59	<.02	0.0069	<.05	<.05	18.3	<.01	0.118	0.255	0.020	0.032	76.2	152.0
	9	0.62	<.02	0.0069	<.05	<.05	16.2	<.01	0.117	0.201	0.019	0.033	76.1	151.0
Average		0.59	---	0.0071	---	---	18.1	---	0.118	0.248	0.021	0.033	76.0	152.7
Std		0.03	---	0.0003	---	---	1.8	---	0.001	0.044	0.003	0.001	0.2	2.1
3	10	0.20	<.02	0.0060	<.05	<.05	15.9	0.02	0.073	0.132	0.011	0.026	70.9	133.0
	11	0.26	<.02	0.0067	<.05	<.05	20.9	<.01	0.074	0.200	0.014	0.028	72.0	144.0
	12	0.25	<.02	0.0061	<.05	<.05	15.0	0.02	0.073	0.124	0.010	0.026	69.9	130.0
Average		0.24	---	0.0063	---	---	17.3	0.02	0.073	0.152	0.012	0.027	70.9	135.7
Std		0.03	---	0.0004	---	---	3.2	0.00	0.001	0.042	0.002	0.001	1.1	7.4
5	13	0.58	0.03	0.0075	<.05	<.05	16.0	<.01	0.111	0.184	0.030	0.035	78.7	153.0
	14	0.62	<.02	0.0082	<.05	<.05	13.3	<.01	0.112	0.121	0.011	0.049	79.1	146.0
	15	0.63	<.02	0.0110	<.05	<.05	20.1	<.01	0.116	0.256	0.022	0.036	81.4	163.0
Average		0.61	---	0.0089	---	---	16.5	---	0.113	0.187	0.021	0.040	79.7	154.0
Std		0.03	---	0.0019	---	---	3.4	---	0.003	0.068	0.010	0.008	1.5	8.5
6	16	0.53	<.02	0.0051	<.05	<.05	14.8	0.01	0.109	0.172	0.022	0.031	74.6	141.0
	17	0.51	<.02	0.0063	<.05	<.05	15.4	<.01	0.110	0.182	0.016	0.031	76.0	145.0
	18	0.51	0.03	0.0051	<.05	<.05	14.6	<.01	0.111	0.180	0.028	0.031	75.0	141.0
Average		0.52	---	0.0055	---	---	14.9	---	0.110	0.178	0.022	0.031	75.2	142.3
Std		0.01	---	0.0007	---	---	0.4	---	0.001	0.005	0.006	0.000	0.7	2.3

Table 5   Sediment Quality Data

Sediment quality - Golden Bear -
August 11, 1987

Station	Sample Number	SEDICP AL UG/G	SEDICP AS UG/G	SEDICP BA UG/G	SEDICP BE UG/G	SEDICP CA UG/G	SEDICP CD UG/G	SEDICP CO UG/G	SEDICP CR UG/G	SEDICP CU UG/G	SEDICP FE UG/G	SEDHG HG UG/G	SEDICP MG UG/G	SEDICP MN UG/G	SEDICP MO UG/G
1	Repl.1	11200	20	57.3	0.3	11400	<.3	15.0	50.9	53.0	25500	0.018	9150	497	2.7
	Repl.2	11800	31	60.9	0.3	12600	<.3	15.0	51.9	65.2	30100	0.020	9810	505	3.0
	Repl.3	11500	26	66.7	0.3	12000	<.3	7.9	52.6	63.6	27700	0.100	9100	508	<.8
	Repl.4	12500	29	67.1	0.3	14500	---	21.5	54.1	71.2	29800	0.010	10400	533	2.0
	Average	11750	27	63.0	0.3	12625	---	14.9	52.4	63.3	28275	0.037	9615	511	2.6
	Std	557	5	4.7	0.0	1343	---	5.6	1.3	7.6	2136	0.042	615	16	0.5
2	Repl.1	30600	70	194.0	0.8	11800	0.6	18.5	123.0	112.0	45400	0.084	20200	1380	<.8
	Repl.2	31900	45	220.0	0.9	11500	0.4	24.4	122.0	115.0	47700	0.057	20700	2610	2.0
	Repl.3	29200	48	202.0	0.9	11900	0.6	24.2	121.0	110.0	45800	0.082	19400	2090	3.3
	Repl.4	29100	76	246.0	0.9	12200	<.3	27.1	123.0	118.0	47400	0.098	19200	2450	3.7
	Average	30200	60	215.5	0.9	11850	0.5	23.6	122.3	113.8	46575	0.080	19875	2133	3.0
	Std	1324	16	23.1	0.0	289	0.1	3.6	1.0	3.5	1144	0.017	699	547	0.9
3	Repl.1	12900	49	106.0	0.3	16300	1.0	18.6	98.4	68.1	55000	0.027	12000	603	2.0
	Repl.2	14800	45	99.4	0.4	17400	1.0	22.3	111.0	92.1	57000	0.036	14800	662	1.8
	Repl.3	13100	59	107.0	0.3	15800	1.0	17.0	118.0	86.4	69900	0.020	13200	608	1.3
	Repl.4	14700	49	91.2	0.3	18700	1.0	7.0	78.3	77.1	40000	0.019	14500	717	1.0
	Average	13875	51	100.9	0.3	17050	1.0	16.2	101.4	80.9	55475	0.026	13625	648	1.5
	Std	1014	6	7.3	0.0	1287	0.0	6.5	17.4	10.6	12249	0.008	1287	53	0.5
4	Repl.1	12700	58	80.7	0.3	16600	0.4	16.0	67.5	49.1	35300	0.046	11400	608	<.9
	Repl.2	13300	55	94.4	0.3	16500	<.3	19.2	79.1	52.4	41500	0.053	12300	630	2.4
	Repl.3	12900	69	85.9	0.2	16400	1.0	18.2	72.7	51.8	38000	0.038	12300	600	<.8
	Repl.4	13100	33	74.8	0.3	16300	<.3	14.0	66.1	48.0	32400	0.037	11700	615	<.8
	Average	13000	54	84.0	0.3	16450	---	16.9	71.4	50.3	36800	0.044	11925	613	---
	Std	258	15	8.3	0.0	129	---	2.3	5.9	2.1	3879	0.008	450	13	---
5	Repl.1	13700	58	127.0	0.3	19300	0.3	11.0	96.5	60.1	54000	0.021	12800	623	1.0
	Repl.2	13100	60	114.0	0.3	17500	1.0	9.8	94.8	64.6	55500	0.020	12500	617	<.9
	Repl.3	11800	73	126.0	0.3	16500	0.4	17.6	111.0	62.7	72200	0.010	11200	564	2.5
	Repl.4	11100	174	126.0	0.4	16500	0.8	24.0	126.0	63.4	87000	0.018	10600	567	4.2
	Average	12425	91	123.3	0.3	17450	0.6	15.6	107.1	62.7	67175	0.017	11775	593	2.6
	Std	1187	56	6.2	0.0	1320	0.3	6.6	14.6	1.9	15580	0.005	1047	32	1.6
6	Repl.1	14300	40	96.1	0.3	18100	<.3	16.3	79.3	61.2	42200	0.030	12700	671	<.8
	Repl.2	14200	32	96.2	0.4	17600	0.8	11.0	90.9	52.9	49000	0.030	13100	679	<.9
	Repl.3	13300	43	97.1	0.4	16600	1.0	15.0	94.5	57.5	53500	0.031	12400	653	3.3
	Repl.4	14000	34	104.0	0.3	17900	<.3	21.0	79.7	65.7	43000	0.032	12600	662	1.0
	Average	13950	37	98.4	0.4	17550	---	15.8	86.1	59.3	46925	0.031	12700	666	2.2
	Std	451	5	3.8	0.1	666	---	4.1	7.8	5.4	5331	0.001	294	11	1.6

Table 5   Sediment Quality Data

Sediment quality - Golden Bear -
August 11, 1987

Station Number	Lab Sample Number	SEDICP NA UG/G	SEDICP NI UG/G	SEDICP P UG/G	SEDICP PB UG/G	SEDICP SI UG/G	SEDICP SN UG/G	SEDICP SR UG/G	SEDICP TI UG/G	SEDICP V UG/G	SEDICP ZN UG/G	SFR MG/KG	SVR MG/KG	TN UG/G
	Repl.1	180	20	906	8	550	<2	41.6	1010	57.6	49.1	997000	3200	60
	Repl.2	200	10	949	5	530	<2	45.8	1090	69.8	55.9	996000	3800	30
1	Repl.3	200	18	1030	7	540	<2	47.7	1160	61.7	70.5	997000	2900	<40
	Repl.4	210	17	1080	8	510	<2	50.4	1190	69.7	50.1	997000	2900	50
	Average	198	16	991	7	533	--	46.4	1113	64.7	56.4	996750	3200	47
	Std	13	4	78	1	17	--	3.7	80	6.1	9.9	500	424	15
	Repl.1	630	60	1150	17	710	<2	75.2	1670	99.8	102.0	965000	34700	910
	Repl.2	670	58	1130	20	790	<2	74.9	1550	103.0	108.0	967000	32800	780
2	Repl.3	630	60	1240	21	750	<2	71.5	1570	102.0	113.0	956000	44500	1200
	Repl.4	620	64	1230	38	790	<2	71.8	1620	105.0	116.0	958000	41800	1100
	Average	638	61	1188	24	760	--	73.4	1603	102.5	109.8	961500	38450	998
	Std	22	3	56	9	38	--	2.0	54	2.2	6.1	5323	5592	188
	Repl.1	240	37	1210	17	520	<2	57.0	1500	152.0	64.1	996000	4000	40
	Repl.2	430	44	1260	27	600	<2	63.8	1550	153.0	88.3	996000	3700	40
3	Repl.3	180	51	1310	37	720	<2	59.0	1620	202.0	65.6	993000	7400	<50
	Repl.4	210	52	1380	18	530	<2	55.9	1180	77.9	78.9	990000	9500	<50
	Average	265	46	1290	25	593	--	58.9	1463	146.2	74.2	993750	6150	40
	Std	113	7	73	9	92	--	3.5	195	51.2	11.5	2872	2793	0
	Repl.1	240	38	1120	20	540	<2	56.8	1360	83.3	63.8	997000	3300	40
	Repl.2	230	42	1140	31	570	<2	56.6	1340	104.0	61.4	994000	5520	40
4	Repl.3	210	36	1230	18	520	<2	52.8	1250	87.8	57.4	993000	6600	<30
	Repl.4	250	35	1070	19	500	<2	56.2	1320	71.5	62.2	994000	5800	<30
	Average	233	38	1140	22	533	--	55.6	1318	86.7	61.2	994500	5305	40
	Std	17	3	67	6	30	--	1.9	48	13.5	2.7	1732	1413	0
	Repl.1	230	38	1430	20	520	<2	73.9	1730	152.0	61.6	995000	4700	<20
	Repl.2	190	46	1290	19	480	<2	62.5	1680	159.0	63.5	994000	6100	<50
5	Repl.3	190	38	1390	28	510	<2	60.1	1590	219.0	60.0	993000	7400	<30
	Repl.4	170	39	1510	38	500	<2	58.9	1730	279.0	68.5	992000	8200	<40
	Average	195	40	1405	26	503	--	63.9	1683	202.3	63.4	993500	6600	--
	Std	25	4	91	9	17	--	6.9	66	59.3	3.7	1291	1534	--
	Repl.1	280	35	1260	28	470	<2	64.8	1620	105.0	67.5	993000	6800	<30
	Repl.2	250	40	1180	10	590	<2	62.9	1490	128.0	81.2	992000	8400	<30
6	Repl.3	220	35	1240	7	550	<2	57.2	1390	145.0	71.6	991000	8800	<50
	Repl.4	280	30	1270	10	540	<2	62.8	1520	109.0	71.7	990000	9700	<50
	Average	258	35	1238	14	538	--	61.9	1505	121.8	73.0	991500	8425	--
	Std	29	4	40	10	50	--	3.3	95	18.5	5.8	1291	1212	--

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The variability of extractable metal values was greater than for the total or dissolved metal values. The coefficient of variation ranged from 0.4 to 47.6 %. Most extractable metals formed more than 50 % of the total metal value. Only cobalt was more than 70 % in the residual form. More than 80 % of the metal was in the extractable form for calcium, copper, manganese, lead, strontium, and zinc. A higher proportion of most of the extractable metals was found at Station 1 where the level of suspended solids was the lowest.

Sediment content had an increased lead (7 ug/g at Station 1, 24 ug/g at Station 2) and total nitrogen (46 and 998 ug/g) content downstream of Bearskin Lake. However, the difference is not significant ($p < 0.05$). The increase in nitrogen content could be due to blasting from the exploration program. Levels at the other stations are similar to Station 1).

REFERENCE

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

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