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ENVIRONMENT CANADA  
CONSERVATION AND PROTECTION  
ENVIRONMENTAL PROTECTION  
PACIFIC AND YUKON REGION

BASELINE MONITORING  
QUESNEL RIVER PROJECT  
- June 27, 1989 -

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ENVIRONMENT CANADA  
PACIFIC REGION

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222

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TABLE OF CONTENTS

	Page
TABLE OF CONTENTS .....	i
List of Figures .....	ii
List of Tables .....	ii
INTRODUCTION .....	1
MATERIALS AND METHODS .....	3
RESULTS .....	4
REFERENCE .....	11

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Sampling Stations .....	2

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Water Quality - Quesnel River Project - June 27, 1989 .....	6
2	Water Quality - Immediates - Quesnel River Project - June 27, 1989 .....	10
3	Sediment Quality - Quesnel River Project - June 27, 1989 ....	11

### INTRODUCTION

The Quesnel River gold property is located in the Quesnel River valley 58 km southeast of Quesnel and 10 km west of Quesnel Forks. The mine is at an elevation of 1,100 metres. Drainage is south via Creeks 1, 2, and 3 into the Quesnel River, and north via Geoff Creek and Rudy Creek to Maud Creek. Maud Creek flows southeast into the Quesnel River upstream of the Creek 1, 2, and 3 confluences (Figure 1). The Quesnel River system is an important part of the Fraser River salmon resource. All four species of salmon are present in the Quesnel River, as are Rainbow trout, Dolly Varden char, and mountain whitefish. Waterfalls and rapids on Maud Creek below the Ruby Creek confluence restrict salmon use to the lower 1 km. Trout and char are present in the upper part of Maud Creek, Maud Lake has been stocked with trout. The other creeks in the area are small and intermittent, and probably do not contain any fish.

The company is planning open pit and underground works, though exploration and development is inactive now. The gold will be recovered by cyanidation followed by a carbon-in-pulp process. The expected mine life is 9 years. The tailings will be discharged to a tailings pond at the headwaters of Geoff Creek.

### SAMPLING SITE DESCRIPTION

<u>Station</u>	<u>Location</u>	<u>Remarks</u>
1	Maud Creek upstream of Rudy Creek	
2	Maud Creek downstream of Rudy Creek, upstream of the gorge	
3	Rudy Creek downstream of Sandy Lake	
4	Creek 1 two kilometres upstream from the Quesnel River	
5	Creek 3 one kilometre upstream from the Quesnel River	

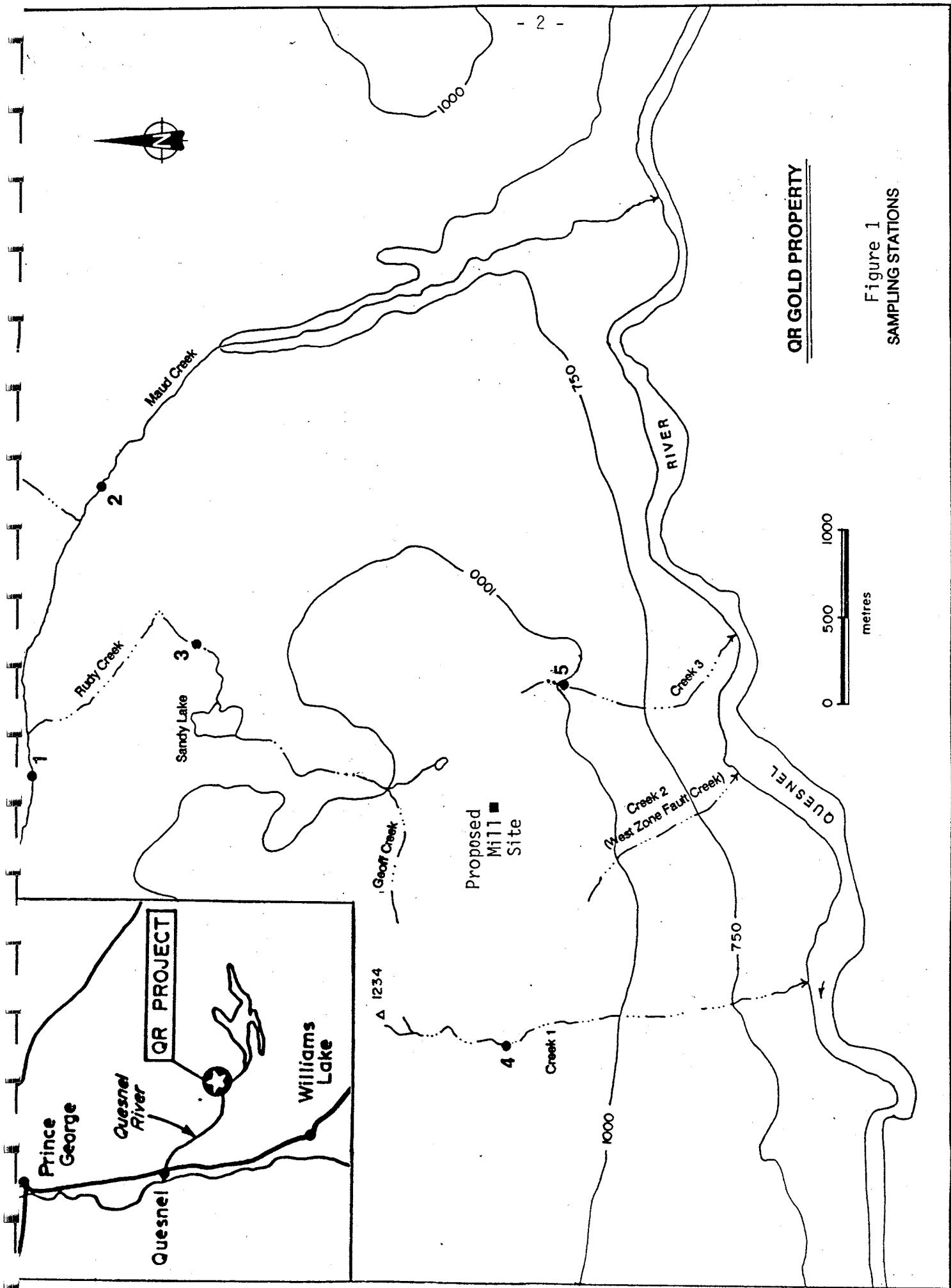


Figure 1  
SAMPLING STATIONS

#### MATERIAL AND METHODS

The site was visited on June 27, 1989. Both water chemistry and sediment samples were collected at four stations and sediment samples only were collected at Station 2. Water quality analysis included alkalinity, pH, conductivity, total organic and inorganic carbon, total residue, non-filterable residue, and sulphate. Samples were packed 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 0.5 ml nitric acid per 100 ml of sample. All samples were collected with clean polyethylene bottles. The bottles for metal samples 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-eight metals. Cadmium and copper samples were re-analysed with the graphite furnace when the values were below two times the detection limit of the ICAP procedure. 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 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 ICAP. A portion of the sediments were ignited at 550° C in a muffle furnace. The loss of weight was reported as volatile residue and the remainder 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 in Table 3.

Water sample metal concentrations were all near or below the detection limit except for calcium, iron, magnesium, manganese, silicon, strontium, and zinc. Total aluminium (0.58 mg/l), iron (1.073 mg/l), manganese (0.159 mg/l), and zinc (0.016 mg/l) were highest in water samples from Rudy Creek (Station 3). Magnesium (7.1 mg/l) and silicon (6.25 mg/l) were highest in samples from Creek 1 (Station 4). Total calcium (86.6 mg/l) and strontium (0.099 mg/l) were highest in samples from Creek 3 (Station 5). Non-filterable residues were also highest at Station 5, as were hardness and sulphate levels, possibly reflecting the presence of the ore body.

Sediment metal levels were generally highest in samples from Maud Creek upstream of Rudy Creek (Station 1). Cadmium was below the detection limit in sediment from upstream Maud Creek and Creek 1 (Stations 1 and 4), but ranged between 1.9 and 2.6 ug/g at the other stations. Copper (76.9 ug/g) and phosphorus (2030 ug/g) were highest in sediment from Rudy Creek (Station 3), while boron was lowest (71.9 ug/g). Silicon (827 ug/g) was highest in sediment from Creek 1 (Station 4). Calcium (31.5 mg/g) and manganese (3660 ug/g) were highest in sediment from Creek 3 (Station 5). At both Stations 3 and 5 about half the sediment residues were volatile, otherwise about 4 - 8 % of the residues were volatile.

Table 1  
Water Quality - Quesnel River Gold Mine

June 27, 1989

Station Number	TOTICP AG MG/L	DISICP AG MG/L	TOTICP AL MG/L	DISICP AL MG/L	TOTICP AS MG/L	DISICP AS MG/L	TOTICP CA MG/L	DISICP CA MG/L	TOTICP CD MG/L	DISICP CD MG/L	TOTGFF CD MG/L	DISGFF CD MG/L	TOTICP CO MG/L	DISICP CO MG/L	TOTICP CR MG/L	DISICP CR MG/L
1	Repl. 1 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	33.2	33.0	<0.005	<0.0001	0.006	<0.005	0.005	0.005	0.007	5
	Repl. 2 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	32.8	32.2	<0.005	<0.0001	0.005	<0.005	<0.005	<0.005	<0.005	-
	Repl. 3 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	32.1	32.2	<0.005	<0.0001	0.005	<0.005	<0.005	<0.005	<0.005	-
	Average ---	---	---	---	---	---	32.7	32.5	---	---	0.005	---	---	---	---	-
	S.D. ---	---	---	---	---	---	0.6	0.5	---	---	0.001	---	---	---	---	-
2	Repl. 1 <0.01	<0.01	0.61	<0.05	<0.05	<0.05	45.4	43.5	<0.005	<0.0001	0.007	<0.005	0.006	0.006	0.005	5
	Repl. 2 <0.01	<0.01	0.58	<0.05	<0.05	<0.05	45.8	42.6	<0.005	<0.0001	0.005	<0.005	<0.005	<0.005	<0.005	-
	Repl. 3 <0.01	<0.01	0.55	<0.05	<0.05	<0.05	44.8	42.9	<0.005	<0.0001	0.007	<0.005	0.007	0.007	0.007	-
	Average ---	---	0.58	---	---	---	45.3	43.0	---	---	0.007	---	---	0.007	---	-
	S.D. ---	---	0.03	---	---	---	0.5	0.5	---	---	0.000	---	---	0.001	---	-
3	Repl. 1 <0.01	<0.01	0.61	<0.05	<0.05	<0.05	45.4	43.5	<0.005	<0.0001	0.007	<0.005	0.006	0.006	0.005	5
	Repl. 2 <0.01	<0.01	0.58	<0.05	<0.05	<0.05	45.8	42.6	<0.005	<0.0001	0.005	<0.005	<0.005	<0.005	<0.005	-
	Repl. 3 <0.01	<0.01	0.55	<0.05	<0.05	<0.05	44.8	42.9	<0.005	<0.0001	0.007	<0.005	0.007	0.007	0.007	-
	Average ---	---	0.58	---	---	---	45.3	43.0	---	---	0.007	---	---	0.007	---	-
	S.D. ---	---	0.03	---	---	---	0.5	0.5	---	---	0.000	---	---	0.001	---	-
4	Repl. 1 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	61.2	60.2	<0.005	<0.0001	0.006	<0.005	0.006	0.006	0.005	5
	Repl. 2 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	60.2	43.9	<0.005	<0.0001	0.005	<0.005	0.005	0.005	0.005	-
	Repl. 3 <0.01	<0.01	<0.05	<0.05	<0.05	<0.05	62.4	50.7	<0.005	<0.0001	0.005	<0.005	0.005	0.005	0.005	-
	Average ---	---	---	---	---	---	51.9	51.9	---	---	0.006	---	---	0.006	---	-
	S.D. ---	---	---	---	---	---	1.1	0.6	---	---	0.001	---	---	0.001	---	-

Table 1, cont.  
Water Quality - Chueanel River Gold Mine  
June 27, 1984

Parameter	Replicate Number	TOTICP	TOTGFP	DISICP	DISGFP	TOTICP	DISICP											
		CU	CU	MG/L	MG/L	FE	CU	K	MG/L	MN	MG/L	MN	MG/L	NO	NI	NI		
1	Repl. 1	<0.005	<0.005	0.0003	0.0003	0.735	0.432	2	2	5.3	0.199	0.110	<0.01	<0.02	<0.02	<0.02		
1	Repl. 2	<0.005	<0.005	0.0003	0.0003	0.734	0.432	2	2	5.2	0.153	0.108	<0.01	<0.01	<0.01	<0.01		
1	Repl. 3	<0.005	<0.005	0.0005	0.0005	0.734	0.432	2	2	5.2	0.148	0.109	<0.01	<0.01	<0.01	<0.01		
1	Average	---	---	0.0003	0.0003	0.733	0.431	2	2	5.2	0.153	0.109	---	---	---	---		
1	S.D.	---	---	0.0002	0.0002	0.732	0.432	2	2	5.1	0.156	0.112	---	---	---	---		
2	Repl. 1	0.009	0.0034	<0.0005	<0.0005	1.140	0.642	2	2	3.9	0.160	0.112	<0.01	<0.01	<0.01	<0.01		
2	Repl. 2	0.005	0.0048	<0.0005	<0.0007	1.270	0.630	2	2	3.7	0.153	0.115	<0.01	<0.01	<0.01	<0.01		
2	Repl. 3	0.006	0.0041	<0.0006	<0.0005	1.910	0.651	2	2	3.9	0.155	0.112	<0.01	<0.01	<0.01	<0.01		
2	Average	0.007	0.0041	---	---	1.073	0.644	2	2	3.9	0.150	0.110	0.020	---	---	---		
2	S.D.	0.001	0.0007	---	---	0.665	0.595	2	2	0.1	0.074	0.064	---	---	---	---		
3	Repl. 1	<0.005	<0.0005	0.013	0.0006	0.918	<0.005	3	2	6.2	0.201	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	Repl. 2	0.005	<0.0005	0.005	0.0007	0.924	0.777	2	2	6.1	0.205	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	Repl. 3	0.007	<0.0005	<0.005	0.0005	0.917	<0.305	3	2	6.3	0.201	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	Average	0.006	---	0.012	0.0007	0.920	0.777	3	2	6.2	0.200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	S.D.	0.001	---	0.003	0.0001	0.004	---	3	2	6.2	0.200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
4	Repl. 1	<0.005	<0.0005	0.005	<0.0005	0.234	0.055	3	2	4.8	0.096	0.055	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	Repl. 2	0.005	<0.0005	0.005	<0.0005	0.254	0.059	2	2	4.9	0.115	0.065	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	Repl. 3	0.005	<0.0005	<0.0005	<0.0005	0.187	0.058	3	2	4.8	0.115	0.057	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	Average	---	---	---	---	0.225	0.057	3	2	4.8	0.109	0.059	---	---	---	---	---	---
4	S.D.	---	---	---	---	0.034	0.002	0	2	0.1	0.011	0.005	---	---	---	---	---	---

Table 1, cont.

Water Quality - Quesnel River Gold Mine  
June 27, 1980

Station Number	TOTICP P		DISICP PB		TOTICP SB		DISICP SE		TOTICP SI		DISICP SN		TOTICP SR		DISICP ZN	
	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
1	Repl. 1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	2.34	2.10	<0.05	0.079	0.017	<0.002		
	Repl. 2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	2.28	2.08	<0.05	0.076	0.014	<0.002		
	Repl. 3	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	2.23	2.07	<0.05	0.074	0.015	<0.002		
	Average	---	---	---	---	---	---	---	2.28	2.09	---	0.076	0.015	---		
	S.D.	---	---	---	---	---	---	---	0.06	0.02	---	0.003	0.001	0.002	---	
3	Repl. 1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	1.70	0.96	<0.05	0.067	0.019	<0.002		
	Repl. 2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	1.68	0.85	<0.05	0.069	0.019	<0.002		
	Repl. 3	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	1.63	0.85	<0.05	0.065	0.017	<0.002		
	Average	---	---	---	---	---	---	---	1.67	0.85	---	0.067	0.018	---		
	S.D.	---	---	---	---	---	---	---	0.04	0.01	---	0.002	0.001	0.001	---	
4	Repl. 1	<0.1	<0.1	<0.05	0.16	<0.05	<0.05	<0.05	6.27	5.90	<0.05	0.088	0.090	0.016	<0.002	
	Repl. 2	<0.1	<0.1	<0.05	0.05	<0.05	<0.05	<0.05	6.13	4.60	<0.05	0.084	1.340	0.015	0.004	
	Repl. 3	<0.1	<0.1	<0.05	0.05	<0.05	<0.05	<0.05	6.36	5.98	<0.05	0.089	0.092	0.014	<0.002	
	Average	---	---	---	---	---	---	---	6.25	5.49	---	0.087	0.507	0.015	---	
	S.D.	---	---	---	---	---	---	---	0.12	0.77	---	0.003	0.721	0.001	---	
5	Repl. 1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	5.32	4.91	<0.05	0.094	0.099	0.017	<0.002	
	Repl. 2	<0.1	<0.1	<0.05	0.05	<0.05	<0.05	<0.05	5.46	4.88	<0.05	0.092	0.097	0.016	<0.002	
	Repl. 3	<0.1	<0.1	0.06	<0.05	<0.05	<0.05	<0.05	5.26	4.94	<0.05	0.094	0.100	0.015	<0.002	
	Average	---	---	---	---	---	---	---	5.35	4.91	---	0.093	0.099	0.016	---	
	S.D.	---	---	---	---	---	---	---	0.10	0.03	---	0.001	0.002	0.001	---	

Table 2 Water Quality - Immediate - Quesnel River Gold Mine  
June 27, 1989

Station Number	ALK MG/L	DISICP		PH HT	COND REL.U.	SO4 UMHO/C	TIC MG/L	TOC MG/L	FR MG/L	NFR MG/L
		HC MG/L	HT MG/L							
1	Rep1. 1	94.6	104	105	7.9	185	5	19	10	140
	Rep1. 2	95.1	102	103	8.1	185	5	23	6	136
	Rep1. 3	95.1	102	103	7.9	185	5	21	7	136
	Average	94.9	103	104	8.0	185	5	21	8	137
	S.D.	0.3	1	1	0.1	0	0	2	2	---
3	Rep1. 1	105	124	124	8.2	225	13	10	25	150
	Rep1. 2	105	122	122	8.1	220	13	9	19	149
	Rep1. 3	105	123	123	8.2	220	13	11	18	150
	Average	105	123	123	8.2	222	13	10	21	150
	S.D.	0	1	1	0.1	3	0	1	4	1
4	Rep1. 1	164	176	176	8.3	285	4	40	1	202
	Rep1. 2	164	145	147	8.3	275	4	39	1	203
	Rep1. 3	164	178	178	8.3	285	4	44	1	202
	Average	164	166	167	8.3	282	4	41	---	202
	S.D.	0	19	17	0.0	6	0	3	1	---
5	Rep1. 1	166	233	233	8.1	375	52	39	7	315
	Rep1. 2	166	230	230	8.2	375	52	40	2	312
	Rep1. 3	165	234	235	8.2	375	54	39	5	311
	Average	166	232	233	8.2	375	53	39	5	313
	S.D.	1	2	3	0.1	0	1	1	2	11

Table 3

Sediment Quality - Quesnel River Project  
June 27, 1989

Station Number	SEDI CP			SEDI CP			SEDI CP			SEDI CP			SEDI CP			
	AG UG/G	AL UG/G	AS UG/G	BA UG/G	BE UG/G	CA UG/G	CD UG/G	CO UG/G	CR UG/G	CU UG/G	FE UG/G	K UG/G	MN UG/G	MG UG/G	MN UG/G	MG UG/G
1	Repl. 1 <2	25400	<8	155	0.5	14900	<0.8	<20	166	177	45300	2100	14900	2630		
	Repl. 2 <2	28400	<8	136	0.6	15500	<0.8	<20	123	6.1	51200	2100	20000	1960		
	Repl. 3 <2	25300	<8	165	0.6	14600	<0.8	<20	116	16.9	46900	2400	15400	3200		
	Repl. 4 <2	29100	<8	174	0.6	14600	<0.8	<20	107	<0.8	54900	2400	19200	2750		
	Average ---	27200	---	158	0.6	14900	---	---	128	66.7	49575	2250	17375	2635		
	S.D. ---	1824	---	16	0.0	424	---	---	26	95.7	4337	173	2598	513		
2	Repl. 1 <2	17700	<8	171	0.5	9760	<0.8	<20	72.0	23.9	38900	2600	9470	1260		
	Repl. 2 <2	17600	<8	180	0.5	9900	<0.8	<20	68.4	19.4	38000	2800	9280	999		
	Repl. 3 <2	18100	<8	170	0.5	10200	3.0	<20	79.8	24.5	43100	2200	10100	1040		
	Repl. 4 <2	20200	<8	211	0.6	11100	2.2	<20	83.6	31.6	45100	2900	11100	1050		
	Average ---	18400	---	183	0.5	10240	2.6	---	76.0	24.9	41275	2625	9988	1087		
	S.D. ---	1219	---	19	0.0	602	0.6	---	7.0	5.0	3383	310	820	117		
3	Repl. 1 <2	17600	<8	83.3	0.4	29200	1.8	<20	70.1	77.3	30300	1900	7060	2450		
	Repl. 2 <2	16000	<8	75.9	0.4	28500	1.8	<20	68.1	94.2	26200	1800	5780	1850		
	Repl. 3 <2	17800	<8	73.4	0.4	24900	2.0	<20	68.1	72.3	28100	1800	7200	982		
	Repl. 4 <2	12000	<8	54.9	0.3	24500	1.9	<20	48.3	63.8	21200	1000	4610	855		
	Average ---	15850	---	71.9	0.4	26750	1.9	---	63.7	76.9	26450	1625	6163	1534		
	S.D. ---	2690	---	12.1	0.0	2445	0.1	---	10.3	12.8	3880	419	1216	754		
4	Repl. 1 <2	28700	<8	130	0.7	17000	<0.8	<20	67.2	19.7	42800	2400	9270	777		
	Repl. 2 <2	23000	<8	111	0.6	14200	<0.8	<20	61.1	15.0	39300	2000	9030	695		
	Repl. 3 <2	21700	<8	116	0.5	13300	<0.8	<20	56.2	14.0	38400	1900	9400	577		
	Repl. 4 <2	21500	<8	118	0.5	14800	<0.8	<20	55.7	4.6	37600	2400	8790	537		
	Average ---	23725	---	119	0.6	14825	---	---	60.1	13.3	39525	2175	9123	647		
	S.D. ---	3383	---	8	0.1	1576	---	---	5.4	6.3	2291	263	269	110		
5	Repl. 1 <2	11800	<8	167	0.3	29600	2.0	<20	30.5	<0.8	30300	1000	3820	3900		
	Repl. 2 <2	11200	<8	136	0.3	34300	1.0	<20	26.6	<0.8	31000	1000	3340	2780		
	Repl. 3 <2	10600	10	347	0.3	34300	2.1	<20	30.4	<0.8	35700	1000	3430	7080		
	Repl. 4 <2	12500	<8	92	0.4	27300	1.0	<20	31.7	<0.8	28000	1000	3930	878		
	Average ---	11525	---	186	0.3	31375	1.5	---	29.3	---	31400	1000	3630	3660		
	S.D. ---	814	---	112	0.0	3506	0.6	---	2.2	---	3186	0	289	2599		

Table 3, cont.

Sediment Quality - Quesnel River Project  
June 27, 1989

Station Number	SEDI CP																	
	MO NA	NI UG/G	P UG/G	MO NI	NI UG/G	P UG/G												
1	Repl. 1	2	400	69	1500	278	606	233	75.1	1820	130	210	904000	960000				
	Repl. 2	4	410	57	1630	31	569	<8	80.3	2310	150	142	938000	62300				
	Repl. 3	4	500	52	1500	30	557	9	77.1	1880	130	248	911000	88900				
	Repl. 4	4	440	53	1600	25	554	<8	83.5	2200	150	210	932000	68400				
	Average	4	438	58	1558	91	572	121	79.0	2053	140	203	921250	78900				
2	S.D.	1	45	8	68	125	24	158	3.7	239	12	44	16317	16106				
	Repl. 1	5	300	50	1100	22	619	<8	60.5	1030	75	151	959000	41400				
	Repl. 2	5	220	50	1100	22	683	<8	58.9	968	72	132	962000	37700				
	Repl. 3	2	220	58	1200	24	693	<8	57.6	1040	78	164	966000	34100				
	Repl. 4	3	260	60	1300	23	667	<8	69.4	1120	89	178	961000	39300				
3	Average	4	250	55	1175	23	666	---	61.6	1040	79	156	962000	38125				
	S.D.	2	38	5	96	1	33	---	5.3	62	7	20	2344	3032				
	Repl. 1	2	380	36	1400	10	405	<8	63.6	882	68	134	500000	500000				
	Repl. 2	2	520	39	1000	20	375	<8	58.3	786	57	253	443000	557000				
	Repl. 3	2	710	45	1100	10	506	<8	58.7	937	67	123	521000	479000				
4	Repl. 4	<2	240	24	830	10	352	<8	47.4	605	48	103	349000	651000				
	Average	2	463	36	1083	13	410	---	57.0	803	60	153	453220	546750				
	S.D.	0	201	9	239	5	68	---	6.8	146	9	68	76917	76917				
	Repl. 1	4	470	36	940	10	899	<8	81.5	1710	140	120	307000	32400				
	Repl. 2	2	320	34	1150	10	849	<8	76.7	1490	110	96	332000	67400				
5	Repl. 3	3	310	35	1000	8	902	<8	69.0	1320	91	117	364000	30000				
	Repl. 4	3	350	39	1000	10	855	<8	76.0	1400	93	105	361000	39000				
	Average	3	36.3	35	1070	10	827	---	75.8	1480	107	110	364100	364100				
	S.D.	1	74	1	64	0	116	---	6.2	16.0	21	11	289.1	708.7				
	Repl. 1	4	670	22	1950	8	459	<8	61.9	805	74	147	556000	444100				
5	Repl. 2	5	380	20	2190	<8	374	<8	62.4	708	67	139	496000	504000				
	Repl. 3	19	470	22	2250	<8	420	<8	74.5	696	63	130	556000	444000				
	Repl. 4	5	310	19	1730	10	429	<8	61.7	941	73	141	597000	403000				
	Average	8	458	21	2030	9	426	---	65.1	788	69	139	551250	448750				
	S.D.	7	156	2	238	1	27	---	6.3	113	5	7	41596	41596				

REFERENCE

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