

APPENDIX D
2003 3rd Quarter Nanisivik Mine Water Quality Data

NANISIVIK MINE

A division of CanZinco Ltd.

P.O. Box 225
Nanisivik, NU
X0A 0X0

Phone: (867) 436 - 7376

Fax: (867) 436 -7435

Nov. 12, 2003

Peter Blackall
Regional Director of Environmental Protection
Environment Canada
Prairie & Northern Region
Room 200, 4999 – 98 Avenue
Edmonton, AB
T6B 2X3
Attention: Peter Blackall

RE: 2003 3rd QUARTER SUBMISSION.

In accordance with the MMER please accept this report as Nanisivik Mine's 2003 3rd Quarter effluent monitoring submission.

During the period of July 8th to September 30th, effluent was released from the identified final deposition point 159-4. Monitoring of the effluent was conducted as per the guidelines set forth in the MMER. The following tables show the results of the testing conducted during the quarter.

If further information is required please do not hesitate to contact me.

Regards,

Murray Markle
Site Manager

Phone: 867-436-7376
email: mmarkle@nu.breakwater.ca

c.c. B. Heath
R. Carreau
File

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m³)
1-Aug	4.6	7.77	2.10	0.8	0.0005	0.010	0.002	0.026			0.087	1.74	3693.6
2-Aug	5.5	7.80	2.27	3.2	0.0003	0.010	0.002	0.027	<0.005	0.060	0.091	1.88	3365.3
3-Aug	6.2	7.79	2.23	2.0	0.0006	0.009	0.001	0.026	0.006		0.111	1.8	1805.8
4-Aug	6.2	7.48	2.06	65.2	0.0006	0.014	0.002	0.025	0.007		0.113	1.7	5456.2
5-Aug	7.7	7.75	2.30	3.6	0.0009	0.010	0.001	0.037	0.007		0.136	1.92	6842.9
6-Aug	8.2	7.72	2.31	0.0	0.0022	0.012	0.001	0.045	0.007		0.230	2.14	7041.6
7-Aug	8.2	7.84	2.48	5.2	0.0008	0.015	0.001	0.051	0.008		0.163	2.11	7050.2
8-Aug	7.30	7.40	2.48	4.0	0.0007	0.015	0.001	0.052	0.008		0.197	2.18	6609.6
9-Aug	6.3	7.58	2.5	2.4	0.0006	0.014	0.001	0.053	0.008		0.219	2.13	8298.7
10-Aug	7.8	7.47	2.6	1.2	0.0008	0.016	0.001	0.058	0.007	0.080	0.155	2.46	6644.2
11-Aug	7.0	7.45	2.72	0.0	0.0005	0.016	0.001	0.059	0.007	0.100	0.167	2.32	6812.6
12-Aug	5.6	7.36	2.7	1.6	0.0005	0.018	0.001	0.061	0.007	0.120	0.165	2.7	7884.0
13-Aug	2.5	7.40	2.79	29.2	0.0006	0.022	0.002	0.063	0.008	0.130	0.189	2.7	7236.0
14-Aug	3.0	7.30	2.92	9.2	0.0006	0.015	0.002	0.065	0.007	0.100	0.171	2.89	7564.3
15-Aug	2.9	7.21	2.98	5.2	0.0006	0.016	0.002	0.067	0.008	0.140	0.188	2.83	7443.4
16-Aug	2.3	7.58	2.9	4.8	0.0005	0.016	0.002	0.067	0.008	0.070	0.184	2.86	6769.4
17-Aug	3.1	7.78	2.96	0.4	0.0005	0.015	0.002	0.073			0.195	2.83	6566.4
18-Aug	3.6	7.32	3.09	8.0	0.0006	0.017	0.002	0.072			0.182	2.89	4600.8
19-Aug	3.0	7.58	2.56	0.4	0.0005	0.017	0.002	0.073			0.184	2.83	3801.6
20-Aug	2.1	7.78	2.9	1.2	0.0005	0.018	0.002	0.077			0.189	2.94	4384.8
21-Aug	3.6	7.30	3.14	2.8	0.0006	0.021	0.002	0.077			0.179	3.1	3931.2
22-Aug	2.5	7.16	2.98	0.8	0.0006	0.019	0.002	0.079			0.180	3.05	4272.5
23-Aug	3.5	7.20	3.09	1.6	0.0006	0.019	0.002	0.079	0.010	0.090	0.181	3.13	4462.6
24-Aug	4.9	7.38	3.24	0.8	0.0007	0.020	0.002	0.083			0.230	2.89	4929.1
25-Aug	4.9	7.30	3	0.0	0.0007	0.020	0.002	0.080			0.220	2.82	4181.8
26-Aug	4.9	7.28	3.14	0.4	0.0007	0.019	0.002	0.082			0.220	3.01	2885.8
27-Aug	10.4	7.59	2.48	0.4	0.0007	0.018	0.002	0.079			0.220	2.92	2903.0
28-Aug	7.2	7.80	2.5	1.6	0.0007	0.019	0.002	0.082			0.230	2.94	2579.0
29-Aug	6.3	7.77	2.97	0.4	0.0006	0.019	0.002	0.084			0.210	2.94	2021.8
30-Aug	6.6	7.33	2.82	0.4	0.0007	0.021	0.002	0.077	0.011	0.110	0.220	2.92	1417.0
31-Aug	9.7	7.90	3.09	0.0	0.0007	0.019	0.002	0.077			0.230	2.94	1201.0

Average

5.1 0.0007 0.016 0.002 0.063 0.008 0.100 0.182 2.59

Total Effluent Deposited in August **154,656 m³**

Mass Loading (August)

TSS	466.85	Kg	Arsenic	0.24	Kg	Radium 226	15.46	MBq
Cadmium	0.10	Kg	Copper	9.37	Kg	Zinc	26.78	Kg
Lead	2.46	Kg	Nickel	1.39	Kg	NH ₃	394.82	Kg

Effluent Characterization and Water Quality Monitoring Parameters

Date	Location	Aluminum	Cadmium	Iron	Mercury	Molybdenum	Ammonia	Nitrate	Alkalinity	Total Hardness	Dissolved Oxygen
12-Jul	159-4	0.02	0.0002	0.22	<.0001	0.011	0.69	1.16	22	363	
9-Aug	159-4	0.03	0.0006	0.10	<.0001	0.045	2.13	0.03		1210	
9-Aug	159-4A	0.30	0.0003	0.32	<.0001	0.009	0.51	0.30		317	9.05
9-Aug	159-4B	0.16	0.0002	0.11	<.0001	<.005	<.02	0.16		55	9.32
10-Sep	159-4	0.12	0.0007	0.40	<.0001	0.045	2.83	6.55	46	1580	
10-Sep	159-4A	0.38	0.0003	0.52	<.0001	0.016	1.16	2.45	32	727	9.81
10-Sep	159-4B	0.11	0.0001	0.12	<.0001	<.005	<.02	0.11	30	38	9.06
Date	Location	Temperature	pH	Conductivity							
12-Jul	159-4	14.1	6.6	0.84							
9-Aug	159-4	6.3	7.58	2.50							
9-Aug	159-4A	5.9	7.6	0.77							
9-Aug	159-4B	4.8	7.95	0.10							
10-Sep	159-4	3.6	7.24	2.65							
10-Sep	159-4A	4.1	7.3	1.26							
10-Sep	159-4B	4.1	6.9	0.09							

159-4A is located approximately 50 metres downstream from the decant structure at station 159-4

159-4B is located approximately 50 metres upstream from the decant structure at station 159-4

All Samples collected during the Quarter were Grab samples except for 159-4A (Aug 9 and Sept 10), which were composite samples.

No water was pumped from East Twin Lake for industrial purposes during the third quarter.

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration	
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L	
Initial Water Chemistry	16.0	7.7	9.5	-	2301		
Chemistry after 30 min air:	16.0	7.7	9.4	98	2303	0:30	
0 Hours							
Date & Time	2003-09-13 13:50						
Technician	RC/TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O2 Sat. (%)*
100	0	0	7.7	9.4	2303	16.0	98
Control	0	0	8.4	9.7	550	16.0	101
24 Hours							
Date & Time	2003-08-14 13:50						
Technician	RF/TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
48 Hours							
Date & Time	2003-08-15 13:50						
Technician	TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
72 Hours							
Date & Time	2003-08-16 13:50						
Technician	DR						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
96 Hours							
Date & Time	2003-08-17 13:50						
Technician	DR						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	8.5	8.0	2295	16.0	
Control	0	0	8.2	8.4	545	16.0	

Notes: # of control organisms showing stress: 0

Trout Batch # T03-07

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O ₂ Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as CaCO ₃	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	19.5	7.6	9.3	104	2341	>1000	None	0:30
0 Hours								
Date & Time	2003-08-13 13:50							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O ₂ Sat. (%)*	Hardness
100A	0	0	7.6	9.0	2341	19.5	102	>1000
100B	0	0	7.6	9.0	2341	19.5		
100C	0	0	7.6	9.0	2341	19.5		
Control A	0	0	8.5	8.8	399	20.0		
Control B	0	0	8.5	8.8	399	20.0		
Control C	0	0	8.5	8.8	399	20.0	101	200
24 Hours								
Date & Time	2003-08-14 13:50							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	0	4	-	-	-	21.0		
100B	0	4	-	-	-	21.0		
100C	0	6	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		
48Hours								
Date & Time	2003-08-15 13:50							
Technician	DH/JL							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	8	2	7.7	7.7	2344	21.0		
100B	10	0	7.6	7.7	2321	21.0		
100C	7	3	7.6	7.9	2300	21.0		
Control A	0	0	8.5	8.6	401	21.0		
Control B	0	0	8.5	8.6	401	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes: # of control organisms showing stress: 0
 Number immobile does not include number of mortalities.

Daphnia Batch # Dm03-15

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration	
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L	
Initial Water Chemistry	14.5	7.6	9.7	-	2741		
Chemistry after 30 min air:	15.0	7.7	9.6	100	2742	0:30	
0 Hours							
Date & Time	2003-09-16 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O2 Sat. (%)*
100	0	0	7.7	9.6	2742	15	100
Control	0	0	8.4	9.2	534	16	97
24 Hours							
Date & Time	2003-09-17 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
48 Hours							
Date & Time	2003-09-18 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
72 Hours							
Date & Time	2003-09-19 12:30						
Technician	JP						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
96 Hours							
Date & Time	2003-09-20 12:30						
Technician	JL						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	7.3	8.4	2712	15.0	
Control	0	0	8.3	9.6	486	15.0	

Notes: # of control organisms showing stress: 0

Trout Batch # T03-09

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O ₂ Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as CaCO ₃	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	20.5	7.7	9.7	112	2732	>1000	None	0:30
0 Hours								
Date & Time	2003-09-16 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	02 Sat. (%)*	Hardness
100A	0	0	7.7	9.1	2729	20.5	105	>1000
100B	0	0	7.7	9.1	2729	20.5		
100C	0	0	7.7	9.1	2729	20.5		
Control A	0	0	8.5	8.9	394	19.5		
Control B	0	0	8.5	8.9	394	19.5		
Control C	0	0	8.5	8.9	394	19.5	101	200
24 Hours								
Date & Time	2003-09-17 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	0	8	-	-	-	21.0		
100B	0	10	-	-	-	21.0		
100C	0	8	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		
48Hours								
Date & Time	2003-09-18 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	10	0	7.8	8.4	2741	21.0		
100B	10	0	7.9	8.5	2753	21.0		
100C	10	0	7.8	8.4	2716	21.0		
Control A	0	0	8.6	8.6	403	21.0		
Control B	0	0	8.6	8.7	398	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes: # of control organisms showing stress: 0
 Number immobile does not include number of mortalities.

Daphnia Batch # Dm03-18