

May 2, 2003

Prairie & Northern Region  
Environment Canada  
Room 200, 4999 98<sup>th</sup> Ave.  
Edmonton, AB T6B 2X3

**Attention: Peter Blackall, Regional Director of Environmental Protection**

Dear Sir;

**Re: Polaris Mine – 2003 1<sup>st</sup> Quarter Metal Mining Effluent Regulations Report**

Despite having a designated discharge location for effluent identified under Section 9 of the MMER, there was no discharge from the Garrow Lake Tailings Impoundment Area during the period January 1<sup>st</sup> to March 31<sup>st</sup> of 2003. This will be the situation through most of each year. While there is no data to report other than that there was no effluent discharge, I have completed the monitoring report as required by the regulations and have attached it to this letter.

If you have any questions regarding the quarterly report or aspects of the application of the MMER to the Polaris Mine, please feel free to contact me at any time.

Yours truly,

Bruce Donald

Attachments: Quarterly Monitoring Report

cc:

Walter Kuit (Teck Cominco Ltd.)  
John Knapp (Teck Cominco Ltd.)  
Randy Baker (Azimuth Consulting Group)

# **POLARIS MINE – MMER MONITORING REPORT**

## **1<sup>st</sup> QUARTER 2003**

### **APPENDIX A**

- i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/13

### **APPENDIX B**

- i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/14

### **APPENDIX C**

- i. Concentration & monthly mean concentrations of each deleterious substance of Schedule 4
- ii. pH of the effluents samples as required by subsection 12(1)
- iii. Description of sample collection method
- iv. Total volume of effluent deposited during each month of the quarter as per section 19
- v. Mass loading of the deleterious substances set out in Schedule 4 and as per section 20

### **APPENDIX D**

- i. Results of the effluent characterization as per paragraph 15(1)(a)

## **APPENDIX A**

## **Reporting Requirements for Reference Method EPS 1/RM/13**

### **Section 8.1.1 Effluent**

- i. Name & location of operation generating the effluent
  - Polaris Mine, Little Cornwallis Island, Nunavut
- ii. Date & time of sampling
  - No sampling conducted as there was no effluent discharge during the quarter.
- iii. Type of sample
  - No sampling conducted as there was no effluent discharge during the quarter
- iv. Brief description of sampling point
  - Discharge point of siphon at Garrow Lake dam
- v. Sampling method
  - No sampling conducted as there was no effluent discharge during the quarter
- vi. Name of person submitting samples
  - No sampling conducted as there was no effluent discharge during the quarter

### **Section 8.1.2 Test Facilities and Conditions**

- i. Test type & method
  - No testing conducted as there was no effluent discharge during the quarter
- ii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13
  - No deviations to report as there was no testing conducted during the quarter
- iii. Name and city of testing laboratory
  - No laboratory used during the quarter
- iv. Percent mortality of fish in stock tank(s)
  - None to report. There were no tests conducted during the period
- v. Species of test organism
  - None to report as there were no tests conducted during the period
- vi. Date and time for start of definitive test
  - None to report as there were no tests conducted during the period
- vii. Person(s) performing the test and verifying the results
  - No tests performed during the quarter
- viii. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
  - No data to report as there were no tests conducted during the period
- ix. Confirmation that no adjustment of sample or solution pH occurred
  - No adjustment to report as there were no tests conducted during the period
- x. Indication of aeration of test solutions before introduction of fish
  - None to report as there were no tests conducted during the period
- xi. Concentrations and volumes tested
  - No data to report as there were no tests conducted during the period
- xii. Measurements of dissolved oxygen, pH and temperature
  - No data to report as there were no tests conducted during the period
- xiii. Number of fish added to each test vessel
  - No fish added as there were no tests conducted during the period
- xiv. Mean and range of fork length of control fish at end of test
  - No data to report as there were no tests conducted during the period
- xv. Mean wet weight of individual control fish at end of the test
  - No data to report as there were no tests conducted during the period
- xvi. Estimated loading density of fish in test solutions
  - No data to report as there were no tests conducted during the period

## **Reporting Requirements for Reference Method EPS 1/RM/13** - Continued

### **Section 8.1.3 Results**

- i. Number of mortalities of fish in each test solution
  - None to report. No tests conducted during the period
- ii. Number of control fish showing atypical/stressed behaviour
  - None to report. No tests conducted.
- iii. Mean mortality rate in solutions of effluent and control water
  - None to report. No tests conducted
- iv. Estimate of 96-h LC50 in multi-concentration tests
  - No data to report. No tests conducted
- v. Most recent 96-h LC50 for reference toxicity test(s)
  - No data to report. No tests conducted

## **APPENDIX B**

## **Reporting Requirements for Reference Method EPS 1/RM/14**

### **Section 8.1.1 Effluent**

- i. Name & location of operation generating the effluent
  - Polaris Mine, Little Cornwallis Island, Nunavut
- ii. Date & time of sampling
  - No sampling conducted as there was no effluent discharge during the quarter.
- iii. Type of sample
  - No sampling conducted as there was no effluent discharge during the quarter
- iv. Brief description of sampling point
  - Discharge point of siphon at Garrow Lake dam
- v. Sampling method
  - No sampling conducted as there was no effluent discharge during the quarter
- vi. Name of person submitting samples
  - No sampling conducted as there was no effluent discharge during the quarter

### **Section 8.1.2 Test Facilities and Conditions**

- i. Test type & method
  - No testing conducted as there was no effluent discharge during the quarter
- ii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13
  - No deviations to report as there was no testing conducted during the quarter
- iii. Name and city of testing laboratory
  - No laboratory used during the quarter
- iv. Species of test organism
  - None to report as there were no tests conducted during the period
- v. Date and time for start of definitive test
  - None to report as there were no tests conducted during the period
- vi. Person(s) performing the test and verifying the results
  - No tests performed during the quarter
- vii. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
  - No data to report as there were no tests conducted during the period
- viii. Confirmation that no adjustment of sample or solution pH occurred
  - No adjustment to report as there were no tests conducted during the period
- ix. Indication of any adjustment of hardness of effluent sample
  - No adjustment to report as there were no tests conducted during the period
- x. Indication of any aeration of sample
  - No indication to report as there were no tests conducted during the period
- xi. Concentrations and volumes tested
  - No data to report as there were no tests conducted during the period
- xii. Measurements of dissolved oxygen, pH and temperature
  - No data to report as there were no tests conducted during the period
- xiii. Estimates of time to first brood, average number of neonates per brood, and percent mortality during the seven-day period prior to the test
  - No data to report as there were no tests conducted during the period
- xiv. Number of neonates per test vessel and milliliters of solution per daphnid
  - No data to report as there were no tests conducted during the period

## **Reporting Requirements for Reference Method EPS 1/RM/14** - Continued

### **Section 8.1.3 Results**

- i. Number of dead and/or immobile daphnids in each test solution including controls
  - No data to report. No tests conducted during the period.
- ii. For single-concentration test the number of daphnids dead in each of three replicate effluent solutions and in each of three replicate control solutions at end of test. Also report the mean value.
  - No data to report. No tests conducted during the period.
- iii. Estimate of 48-h LC50 and 95% confidence limits in multi-concentration tests, 48-h EC50 for immobilization and 95% confidence limits, indication of statistical method on which results are based.
  - No data to report. No tests conducted during the period
- iv. Most recent 48-h LC50 for reference toxicant test(s), reference chemical(s), date test initiated, historic geometric mean LC50 and warning limits.
  - No data to report. No tests conducted during the period.



## **APPENDIX C**

**2003 1<sup>st</sup> QUARTER MMER REPORT**  
**LOCATION - FINAL DISCHARGE POINT FROM GARROW LAKE (GARROW LAKE DAM SIPHONS)**

**CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4 SAMPLED WEEKLY**

Sample Taken During The Week of	Date Sample Taken	DELETERIOUS SUBSTANCE								pH	Collection Method <sup>1</sup>
		Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226		
30-Dec-02	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
06-Jan-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
13-Jan-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
20-Jan-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
27-Jan-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
03-Feb-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
10-Feb-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
17-Feb-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
24-Feb-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
03-Mar-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
10-Mar-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
17-Mar-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
24-Mar-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>
31-Mar-03	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>

All concentration in mg/L except Radium 226 which is Bq/L

Note <sup>1</sup> - Collection Method is either grab sample or composite sample

Note <sup>2</sup> - No effluent discharge to sample

**MONTHLY MEAN CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4**

MONTH OF	MONTHLY <b>MEAN</b> CONCENTRATION OF DELETERIOUS SUBSTANCE <sup>1</sup>							
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226
January-03	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>
February-03	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>
March-03	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>	na <sup>1</sup>

All concentration in mg/L except Radium 226 which is Bq/L

Note<sup>1</sup> - Monthly Mean Concentrations - the **MEAN** value of the concentrations measured in all composite or grab samples collected from each final discharge measured during each month when a deleterious substance is deposited.

Note <sup>2</sup> - No effluent discharge to sample

**MASS LOADING OF DELETERIOUS SUBSTANCE FOR EACH DAY SAMPLED**

Sample Taken During The Week of	Date Sample Taken	DAILY MASS LOADING OF DELETERIOUS SUBSTANCE <sup>1</sup>								Flow Rate <sup>2</sup> (m <sup>3</sup> /day)
		Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226	
30-Dec-02	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
06-Jan-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
13-Jan-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
20-Jan-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
27-Jan-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
03-Feb-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
10-Feb-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
17-Feb-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
24-Feb-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
03-Mar-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
10-Mar-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
17-Mar-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
24-Mar-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
31-Mar-03	na <sup>3</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Note<sup>1</sup> - Mass Loading is in kilograms per day of the deleterious substance deposited

Note<sup>2</sup> - Flow Rate must be taken at the same time as samples are effluent quality samples are taken

Note<sup>3</sup> - na refers to no effluent sampled due to no discharge of effluent

**MASS LOADING PER CALENDAR MONTH FOR EACH DELETERIOUS SUBSTANCE**

CALENDAR MONTH OF	MASS LOADING FOR DELETERIOUS SUBSTANCE (kg/month) <sup>1</sup>								Average Weekly Flow Rate <sup>2</sup>	Total Monthly Volume <sup>3</sup>
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226		
January-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
February-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
March-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0

Note<sup>1</sup> - Total Mass Loading for Calendar month calculated by multiplying the Total Calendar Month Volume x Average Daily Mass Loading for the Month

- Refer to Section 20.(3)

Note<sup>2</sup> - Average Weekly Flow Rate - Average each of the weekly flow rates taken during the calendar month

- Refer to Section 20.(3)

Note<sup>3</sup> - Total Monthly Volume calculated by multiplying 7 x Average Daily Flow Rate for the month x days in month

## **APPENDIX D**

## **RESULTS OF EFFLUENT CHARACTERIZATION**

### **AS PER PARAGRAPH 15(1)(a)**

No effluent samples were collected during the 1st Quarter of 2003 as there was no discharge.  
No Acute Lethality Testing conducted during the quarter.