October 2, 2007

Nunavut Water Board
Box 119
Gjoa Haven, NU
X0B 0J0
Attention: Phyllis Beaulieu, Manager of Licensing

Indian and Northern Affairs Canada
P.O. Box 100
Iqaluit, Nunavut
X0A 0H0
Attention: Spencer Dewar, Manager, Lands Administration

Dear Ms. Beaulieu and Mr. Dewar;

Re: Polaris Mine Water Licence NWB1POL0311 – 2006 4th Quarter and Annual Water Licence and Decommissioning and Reclamation Plan Reports

Please find attached the Polaris Mine 2006 4th Quarter and 2006 Annual Reports required under Polaris's Water Licence and Decommissioning and Reclamation Plan (DRP). These reports are being submitted late. I have attached paper copies of this report to this letter in addition to an electronic copy (pdf format on CD).

There were no activities or sampling done at the Polaris Mine site during the 4th Quarter of 2006 as the site was snow covered and there were no effluent discharges due to the freezing temperatures. Apart from the sampling of Garrow Lake in the 2nd Quarter of 2006, all monitoring was conducted during the 3rd Quarter of 2006 which was previously reported. It has now been four years since the mine ceased production and closed and two years since reclamation was completed (with the exception of a few minor items). The mine is now a Recognized Closed Mine under the Metal Mining Effluent Regulations

(MMER). And on July 27, 2006 we received a letter from Environment Canada confirming that the Polaris Mine had no further obligations under the MMER (Attached as Appendix 2).

During 2006, we commissioned Azimuth Consulting to conduct a review of data related to Garrow Lake limnology and chemistry that confirmed that the lake continues to be very stable and highly stratified and that the metals concentrations in the lake continue to gradually decline now that active deposition of tailings has ceased for the past four years. We have presented this data to Environment Canada to obtain their support in simplifying the on-going water quality monitoring requirements at the site. In a letter dated December 12, 2006 Environment Canada states that it is in support of simplifying our water quality monitoring program (Attached as Appendix 6).

If you have any questions regarding this report, please do not hesitate to contact me.

Yours truly,

Bruce J. Donald
Reclamation Manager
Environment and Corporate Affairs
Teck Cominco Limited

POLARIS MINE

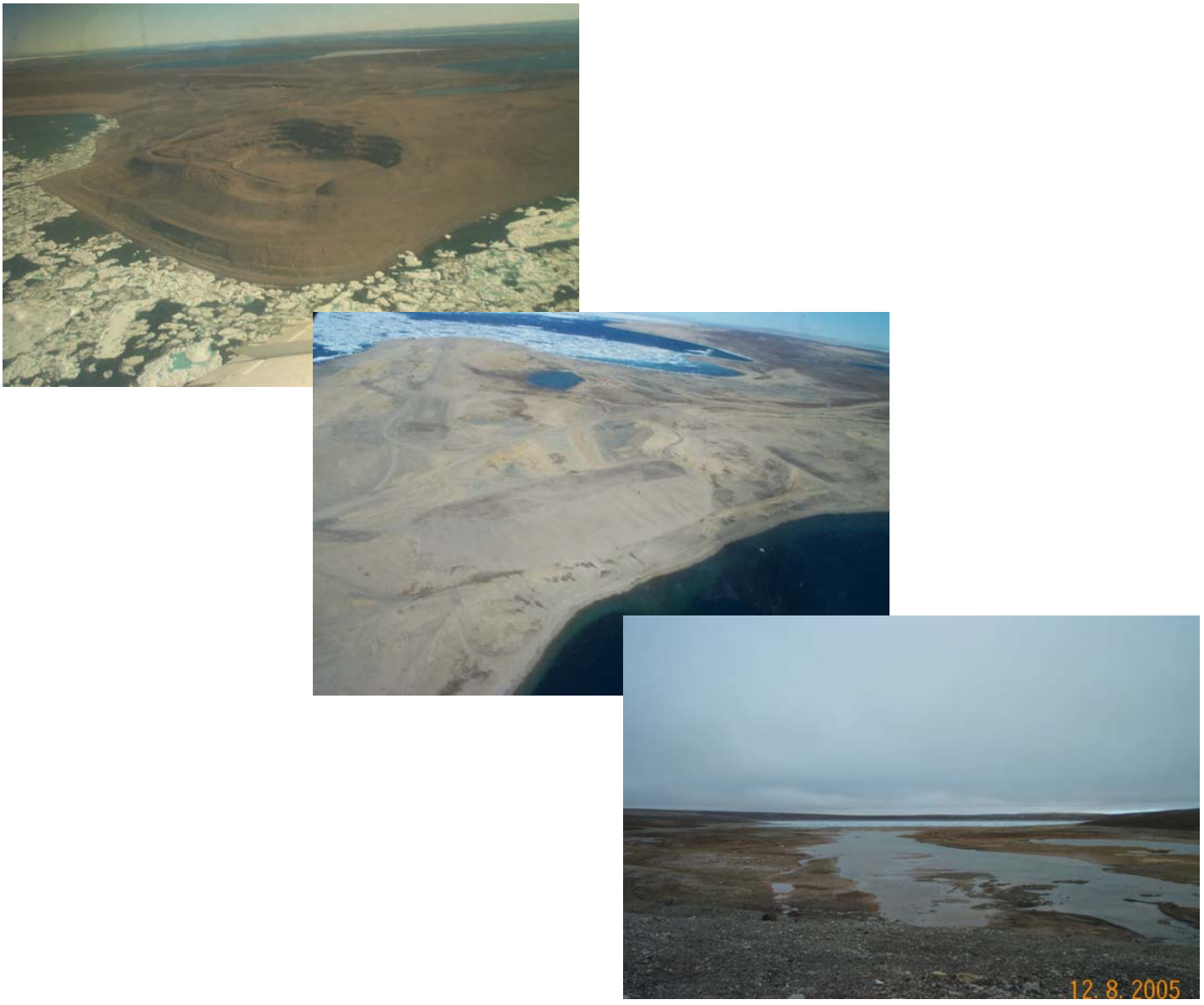
2006 4TH QUARTER & 2006 ANNUAL REPORT

FOR THE

NUNAVUT WATER BOARD

AND

INDIAN AND NORTHERN AFFAIRS CANADA



DISTRIBUTION LIST

1. Nunavut Water Board - 2 copies
   Manager of Licensing
   Nunavut Water Board
   P.O. Box 119
   Gjoa Haven, NU X0B 1J0

2. Indian and Northern Affairs Canada – 1 copy
   Manager, Land Administration
   Department of Indian Affairs and Northern Development
   Box 100
   Iqaluit, NU X0A 0H0

3. Teck Cominco Metals Ltd. – 3 copies
   - Vancouver Office – Walter Kuit
   - Kimberley Office – Bruce Donald
   - File Copy

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

The Polaris Mine ceased operation in September of 2002. Immediately upon mine closure, reclamation activities commenced in accordance with the Decommissioning and Reclamation Plan (DRP) approved by the Nunavut Water Board and Indian and Northern Affairs Canada. The DRP as well as the Water Licence requires reporting of work and monitoring activities on both a quarterly and an annual basis. This document includes both the 2006 4th Quarter and the 2006 Annual Report for the Polaris Mine site.

An executive summary of this report translated into Inuktitut is included as Appendix 1.

2. 2006, 4th QUARTER REPORT

2.1. Reclamation Activities

During the entire 4th Quarter of 2006, the Polaris Mine remained unoccupied by personnel. No reclamation activities were undertaken.

2.2. Site Monitoring

During the entire 4th Quarter of 2006, the Polaris Mine remained unoccupied by personnel and no monitoring events occurred as all surface waters were frozen. As a result there is no effluent water quality data to report.

2.3. Environmental Effects Monitoring

In a letter from Ms. Jenny Ferone, Senior Regional EEM Coordinator, Environment Canada dated July 27, 2006 regarding submission of Polaris's Final EEM Study report. It was confirmed that the Polaris Mine no longer has any MMER requirements (Appendix 2). The letter also indicated that the EEM report had some deficiencies, that have since been resolved (with a minor exception) despite having no legal requirements to do so. Ms. Shauna Sigurdson, Regional Director, MMER Authorization Officer from Environment Canada sent a letter dated September 15th, 2006 (Appendix 2) stating that "The Final EEM Interpretative Report meets EEM Program Requirements".

3. 2006 ANNUAL REPORT

Part B, Section 6 of the Water Licence requires that an Annual Report be filed that includes the following topics.

3.1. Unauthorized Discharges

The Polaris Mine had no unauthorized discharges to report.

3.2. Progress Report of Studies and Plans

Progress on reports and/or revision of any studies or plans requested by the Board is listed below:

- Submission of the very comprehensive 2004 Annual Report was made in September 2005 which included the final reporting of the reclamation activities and of the water quality monitoring program results that occurred during 2004. A number of requested studies and as-built drawings remained outstanding when the report was submitted. The submission of the report clearly identified which materials were absent and at the end of 2005, work on completing these deficiencies was in progress. With the exception of a geotechnical review

of the potential for mine subsidence, the missing reports have been completed and will be submitted with the 2nd Quarter 2007 report.

3.3. Executive Summary of Report Translated into Inuktitut

Included in Appendix 1 is an executive summary of both the 2006 4th Quarter Report and the 2006 Annual Report translated into Inuktitut.

3.4. Summary of Closure and/or Reclamation Work Undertaken

A summary of any closure and reclamation work undertaken during the year and an outline of work anticipated for the next year is outlined below:

- During July a small crew consisting of 5 people was stationed on site to conduct complete re-sloping of a small area in the New Quarry, the former Tank Farm, and Incinerator Pad as identified in the September 2004 site inspection report. After completion of this work, these areas were inspected at the end of July 2006 by INAC during their annual site inspection.
- Clean up of site litter continued throughout the month of July. We will continue to do additional clean up each year when personnel are on site.
- Areas of erosion identified in the 2005 annual geotechnical inspection were repaired as planned. In addition other areas with new erosion features were identified during the July 2006 and repairs were completed as equipment and manpower were available on site.
- In July the final two missing thermistors were installed in the Operational landfill were installed. All thermistor installations were upgraded to make the data more accurate and installation more bear proof. Data loggers were installed so that temperature data in both landfills can be collected all year around.
- During 2007, it is planned to repair a small area of rip-rap that was identified in an annual geotechnical inspection. In addition additional litter clean-up will be conducted while personnel are on site.

3.5. Update of Reclamation and Monitoring Costs

An update of reclamation and monitoring costs is presented in Appendix 3. Costs for 2006 were $332,000 which is significant due to the reclamation work being conducted (re-sloping and erosion control) in addition to the normal monitoring. While the MMER requirements were no longer required at the site, the Water Licence and DRP still include the same intense water quality monitoring program. Until rationalization of water quality monitoring program is achieved, monitoring cost will continue at a higher than forecast level.

3.6. Public Consultation and Participation

- No public consultations were conducted as the site is basically dormant other than for monitoring.
- At least one Inuit resident from Resolute assists with the routine sampling at the site or is part of the team working at the site. In addition to providing local employment, the local knowledge for the safety of workers on site is important. Having a local resident involved with monitoring of the site has the additional benefit of ensuring that the nearest community is aware of site activity and site conditions.

3.7. Work Conducted in Response to Inspection or Compliance Reports

A brief summary of work done to address concerns or deficiencies listed in inspection/or compliance reports were as follows:

- 2006 site activities included clean up of debris that will continue in subsequent years during summer monitoring events.
- In 2006 re-sloping of an area in the New Quarry, the former Tank Farm Pad and the former Incinerator Pad were completed. Overly steep slopes were noted as an action item in the

2004 fall INAC inspection report. Additionally, there were several areas along the road to Frustration Lake where water bar had to be repairs and additional ones added to control erosion. After repairs had been completed, these areas were inspected during the annual INAC site inspection.

3.8. Effluent and water Quality Studies Conducted

3.8.1. Quantities of Fresh Water Pumped From Frustration Lake

The water licence requires the monthly and annual quantities (in cubic metres) of water pumped from Frustration Lake to be reported.

- No water was pumped as the site's freshwater system was demolished and reclaimed in 2004.

3.8.2. Garrow Lake Water Column Monitoring

During 2006, the Water Licence required three monitoring events (at mid-winter, at maximum ice thickness, and at maximum ice melt) in two separate locations of the Garrow Lake water column stratigraphy. The mid-winter monitoring event was not conducted as charter aircraft will not fly to this isolated, abandoned site in the dark. The maximum ice thickness and maximum melt monitoring events took place as required and were reported in the 2nd and 3rd Quarter monitoring reports.

To review the trend of water quality, graphs have been prepared of the zinc concentration by depth in Garrow Lake for each sampling event starting in 2002 (the last year the mine was discharging tailings into the lake), through until August of 2006. The monitoring results from each year are included in Appendix 4 in Table 1 and Table 2 with the data plotted in Figures 1 through 8.

Figure 1 – Station 262-3 Zinc Trends

Figure 1 displays the zinc concentrations by depth below surface of Garrow Lake at monitoring station 262-3 for each monitoring event from 2002 to 2006. There is a clear and consistent trend of reducing zinc concentrations throughout the water column. Between the bottom of the Mixolimnium layer and the top of the Pycnocline layer there is a sharp transition in density. At the top of the Pycnocline it is postulated that due to a thin accumulated layer of bacterial tissue that zinc concentrations are sharply higher. As the layer is very thin, if water samples are collected from even slightly different depths, the resulting measured zinc concentrations change significantly. This would explain the more scattered nature of the zinc data at about the 10 m depth.

Figure 2 – Station 262-3A

Figure 2 at monitoring station 262-3A is a graph of the zinc concentrations from 2004 to 2006 (this is a newer station added into the water licence). This graph displays essentially the identical results as Station 262-3 for the time period that this station has been sampled. There is a clear and consistent trend of reducing zinc concentrations throughout the water column. Similar scattering of results around the 10m depth occurs at this station as seen in Figure 1.

Figures 3 Through 8 – Comparisons Between Stations 262-3 and 262-3A

For each monitoring event between 2004 and 2006, Figures 3 through 8 compares the zinc concentrations by depth for monitoring stations 262-3 and 262-3A. In every monitoring event, the data collected from the two stations mirror each other. The variation in chemistry and limnology of the lake is vertical

in nature, not horizontal. No new or additional information is gained by having two stations sampling the same water sources in Garrow Lake.

3.8.3. Garrow Lake Effluent Monitoring

Reports summarizing the effluent monitoring results as required in Part H of the Water Licence Appendix 5 as follows:

- The Annual water quality monitoring results from the Final Discharge Point of Garrow Lake are presented. Water quality was compliant throughout the period of the year when effluent was discharging.
- A report summarizing the results of effluent characterization and water quality monitoring are presented. There was no acute toxicity in either the Rainbow trout or the Daphnia tests.

The report is a repeat of the report submitted with the 3rd Quarter report and there was no effluent discharged during any other quarters during the year.

3.9. Details of Water Use or Waste Disposal Requested by the Board

- There is no fresh water use at the site. No details of water use have been requested by the board.
- Waste disposal was restricted to collection of site litter that has been stockpiled for future disposal in LRD Quarry Landfill.

3.10. Simplified Water Quality Monitoring Program

On June 1, 2006 Teck Cominco and their consultant Azimuth Consulting Group Inc. met with Stephen Harbicht and Anne Wilson of Environment Canada to discuss the water quality monitoring program for Garrow Lake. At the meeting a presentation of water quality trends since mine closure was presented along with a request for Environment Canada to consider supporting reducing the frequency and intensity of water quality monitoring (Pages 44 and 45 of the June 1st document in Appendix 7). At this meeting Environment Canada expressed willingness to consider the requests based on the data presented but indicated that they preferred to have some additional data to give more confidence to the data.

On November 1st, 2006, Azimuth Consultants forwarded a letter to Environment Canada updated the data presented on June 1st with an additional full summer season of sampling data (Nov 1, 2006 Letter to Environment Canada, Appendix 7).

On December 12, 2006 Anne Wilson of Environment Canada responded to Azimuth Consultants with a number of recommendations of reduced sampling that they would support (Appendix 7).

This information is being submitted for information to the Nunavut Water Board and the Department of Indian and Northern Affairs. This will be followed up with a formal request for changes to the Polaris Monitoring plan in 2007.

APPENDIX 1

EXECUTIVE SUMMARY

TRANSLATED INTO INUKTITUT

APPENDIX 2

CORRESPONDANCE FROM ENVIRONMENT CANADA

- **July 27, 2006 Regarding Polaris 2005 Annual MMER and EEM Report**

- **September 15, 2006 Regarding Polaris Mine Environmental Effects Monitoring (EEM) Interpretative Report Review**

Environment Canada | Environnement Canada

Prairie & Northern Region
Environment Canada
Rm 200, 4999 98th Ave.
Edmonton, AB T6B 2X3

Bruce Donald
Bag 2000
Kimberley, BC
V1A3E1

July 27, 2006

Dear Mr. Donald,

RE: Polaris 2005 Annual MMER and EEM Report

The review of the Polaris 2005 Annual Effluent and Water Quality Report, submitted March 31, 2006, has been completed. In general, the 2005 report demonstrates an improvement in the quality of data collection and reporting over previous years. However, some Environmental Effects Monitoring (EEM) information does not appear to have been provided as required under Metal Mining Effluent Regulations (Schedule 5, Part 1). Please see the appended list of deficiencies relating to effluent characterization, water quality monitoring and sublethal toxicity testing for your facility.

If missing information was collected but not included in the above report, we would appreciate the submission of this information. We recognize that there are no future MMER requirements for this facility; however, we would like to have the correct information on file for the final EEM reports.

Please note that laboratories performing sublethal toxicity tests should address all criteria on the Environment Canada checklists found in Annex C of the Metal Mining Guidance Document (http://www.ec.gc.ca/eem/English/Publications/Sublethal/default.cfm). Failure to meet "must requirements" (indicated by bold font on the checklists) may result in test rejection and a request for re-testing.

Please be reminded that guidance is provided on the National EEM Website to assist you, at http://www.ec.gc.ca/eem/English/Publications/web_publication/ec_water/.
If you have any questions, please do not hesitate to contact me, the regional EEM coordinator for your site [(780) 951-8750; jenny.ferone@ec.gc.ca].

Sincerely,

Jenny Ferone, Senior Regional EEM Coordinator

cc Shauna Sigurdson
Barry Briscoe
Ken Russell
James Noble

Polaris (7834-3-37/C263-9)
2005 Annual Effluent and Water Quality Report

Effluent:

- Holding time was exceeded for alkalinity, mercury (June 29th only) and nitrate for June 29th and July 7th sampling events. However, we acknowledge the letter received from ALS Environmental and recognize samples analyzed since this date were as per recommended QA/QC measures.
- For July 7th sampling: Hg was reported as <0.00001mg/L in the emailed copy and as 0.00005mg/L in RISS. Please advise which is the correct value.
- The method detection limits (MDLs) for hardness, alkalinity and total suspended solids exceeded the recommended effluent MDLs for these parameters. Please see the Guidance Document for the Sampling and Analysis of Metal Mining Effluents.

Water Quality:

- It was noted that water quality analysis method detection limits (MDLs) were often the same as those used for effluent analysis. Please see the EEM Guidance Document for recommended MDLs for water quality analysis for various methodologies (Table 6-4 and 6-5).

Sublethal Testing:

- There is summarized information in Appendices C to E for each of the sublethal tests; some of this information on these summaries was not included in the test reports from the testing laboratory. Was this information obtained from the testing lab?

Champia parvula

'Must Requirement' deficiencies:

- None

Other:

- For the first test completed by Stantec, for Plant Mortality Data, is 'Test Completion' the end of the recovery period?
- Please be advised that the EPA reference method was updated October 2002 (EPA-821-R-02-014, Method 1009.0; Third Edition). The reference method given by SRC for the August 6th sample is the second edition (EPA/600/4-91/003, Method 1009.0); and although the actual methods themselves have not changed, SRC should be asked to update their in-house SOPs to reflect the new EPA reference.

  For the August 6th sample for salinity adjustment, SRC referenced the EC guidance document on salinity adjustment – May 2002. Please be advised that this should be December 2002.

Dendraster excentricus

'Must Requirement' deficiencies:

- None

Other:

- Estimated number of sperm per vessel and sperm:egg ratio were not reported for either test.

Atherinops affinis

'Must Requirement' deficiencies:

- In the August 6th sample, average dry weight for the D-control was reported as 0.7692mg. The test is invalid if average dry weight per surviving control larvae does not attain 0.85mg when fish are dried and weighed immediately after test; or 0.72mg if fish are first preserved in 4% formalin or 70% ethanol. Unless there was a reporting error, it appears the test did not meet the "must requirements" of the method and the test has been rejected.

Other:

- In Appendix C, there is "confirmation that larvae are actively feeding and swimbladders are not inflated" upon arrival of imported fish. Please be advised that the requirement is that swimbladders must be inflated.

Environment Canada | Environnement Canada

Environmental Protection Operations
Prairie and Northern
Twin Atria #2, Room 200
4999 – 98 Avenue
Edmonton, Alberta T6B 2X3

September 15, 2006 File: 7834-3-37/C263-9

Bruce Donald
Reclamation Manager, Environment and Corporate Affairs
Teck Cominco Mining Partnership & Teck Cominco Metals Ltd
Bag 2000
Kimberley, BC
V1A 3E1

Dear: Mr. Donald,

RE: Polaris Mine Environmental Effects Monitoring (EEM) Interpretative Report Review

The Recognized Closed Mine report submission entitled 'Environmental Effects Monitoring (EEM) Teck Cominco Polaris Mine, Nunavut, Interpretative Report' was received December 15, 2005, as per the Metal Mining Effluent Regulations (MMER) of the *Fisheries Act*. It has been reviewed by a Technical Advisory Panel (TAP) consisting of representatives from Environment Canada, Fisheries and Oceans Canada, Indian and Northern Affairs Canada, and the Nunavut Water Board. The Final EEM Interpretative Report meets EEM Program requirements. Please see the appended review comments.

If you have any questions concerning the evaluation of your EEM Interpretative Report, please contact Jenny Ferone at (780) 951-8750.

Yours truly,

Shauna Sigurdson
Regional Director
MMER Authorization Officer

Enclosure

cc:	Jenny Ferone	Environment Canada, Edmonton
	Barry Briscoe	Environment Canada, Winnipeg
	Ken Russell	Environment Canada, Yellowknife
	Stephen Harbicht	Environment Canada, Yellowknife
	Anne Wilson	Environment Canada, Yellowknife
	Chris Baron	Fisheries and Oceans, Winnipeg
	Robert Jenkins	Indian and Northern Affairs, Yellowknife
	Philippe diPizzo	Nunavut Water Board, Gjoa Haven

Technical Advisory Panel (TAP) Review Comments on 'Environmental Effects Monitoring (EEM) Teck Cominco Polaris Mine, Nunavut, Interpretative Report'

General Comments

1. Given that weather and safety concerns prohibited the completion of EEM fieldwork for this study in 2004, the TAP appreciates the inclusion and analysis of other relevant monitoring data for Garrow Lake, Garrow Creek, and Garrow Bay in this Final Interpretative Report. The report includes a comprehensive collection of EEM study design documents, EEM reconnaissance sampling data for Garrow Bay (2003), MMER effluent and water quality monitoring data (2003-2005), as well as the results from the 2003 'Investigation of the Limnology and Ecology of Garrow Lake'.

2. Please note that Polaris Mine MMER effluent, water quality, and sublethal toxicity data have been previously submitted to Environment Canada in annual reports, and have been reviewed in detail by Environment Canada on an annual basis. Although the TAP appreciates that these data were included in the Final EEM Report, the annual Environment Canada review of these data is not repeated in this Interpretative Report review.

Quality Assurance/Quality Control (QA/QC) Data

3. Section 2.4.3. The report states that metal concentrations in blank samples comprised of on-site distilled water were higher than expected for zinc, copper, and lead. This is believed to be associated with on-site distilled water historically stored in metal containers. Due to the potential for sample contamination, the mine should not use distilled water stored within metal containers for the processing of any water samples.

Future Effluent Characteristics and Effects

4. Section 3.2. The report states that Teck Cominco commissioned AXYS (2001) to determine whether lowering mixolimnion depth to 7 m risked turnover and mixing of the lake. It was concluded that no mixing of the mixolimnion and monimolimnion appears possible. TAP members would appreciate a copy of the AXYS (2001) report for information purposes, if this is available.

APPENDIX 3

2006 UPDATE

OF

RECLAMATION AND MONITORING COSTS

POLARIS MINE

POST-RECLAMATION PHASE MONITORING / SITE MAINTENANCE

COST REVIEW and FORECAST

	2006 Monitoring/Mtce Costs[1]		Cost Forecast From 2005 Annual Reclamation Report				
			2007	2008	2009	2010	2011
Garrow Lake Effluent Monitoring							
Field Staff for Sampling Final Discharge Point / travel	$ 51,000						
Charter Aircraft	$ 18,200						
Resolute Hotels / Camp Food / Camp Supplies	$ 5,200						
Laboratory Costs	$ 29,700						
Freight for Samples / Sampling Supplies	$ 19,700						
Coordinating With Labs / Reporting/Planning	$ 19,200						
		$ 143,000	$ 85,000	$ 85,000	$ 85,000	$ 85,000	$ 85,000
Garrow Lake Water Column Monitoring							
Field Staff for Sampling Lake / travel	$ 18,000						
Charter Aircraft	$ 3,200						
Resolute Hotels / Camp Food / Camp Supplies	$ 9,800						
Laboratory Costs - see Garrow Lake Effluent costs							
Freight for Samples / Sampling Supplies - see above							
		$ 31,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000
Annual Geotechnical Inspection							
Field Staff for Inspection	$ 12,000						
Travel	$ 5,200						
Charter Aircraft	$ 1,600						
Resolute Hotels / Camp Food / Camp Supplies	$ 600						
Install data loggers for thermistors	$ 22,100						
Misc. Supply / Survey Costs	$ 400						
		$ 41,900	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Site Support / Site & Equipment Maintenance							
Labour	$ 18,200		$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
Travel	$ 17,400		$ -	$ -	$ -	$ -	$ -
Materials / Camp Supplies	$ 5,500		$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
Site Communications	$ 740		$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
		$ 41,840					
TCML Site Management Costs							
Labour	$ 52,300						
Expenses	$ 6,800						
		$ 59,100	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Studies / Reporting							
Translations	$ 1,200						
Drafting for reports	$ 13,800						
2011 Final Review of Site Closure Performance							
Repoting costs		$ 15,000	$ -	$ -	$ -	$ 100,000	$ 60,000
TOTAL ANNUAL COST		**$ 331,840**	**$ 190,500**	**$ 190,500**	**$ 190,500**	**$ 290,500**	**$ 250,500**

Note 1 : Costs are for monitoring / site maintenance costs that ocurred in 2006
Costs for Garrow Lake Effluent Monitoring and Site Support include costs for completing re-profiling of Tank Farm and remedial erosion control
Costs exclude reclamation project wrap-up costs, financial security, property taxes, lease costs, and insurance costs

APPENDIX 4

GARROW LAKE WATER COLUMN MONITORING DATA

FIGURE 1
GARROW LAKE - Station 262-3
Trend In Zinc Concentrations In The Water Column 2002 to 2006

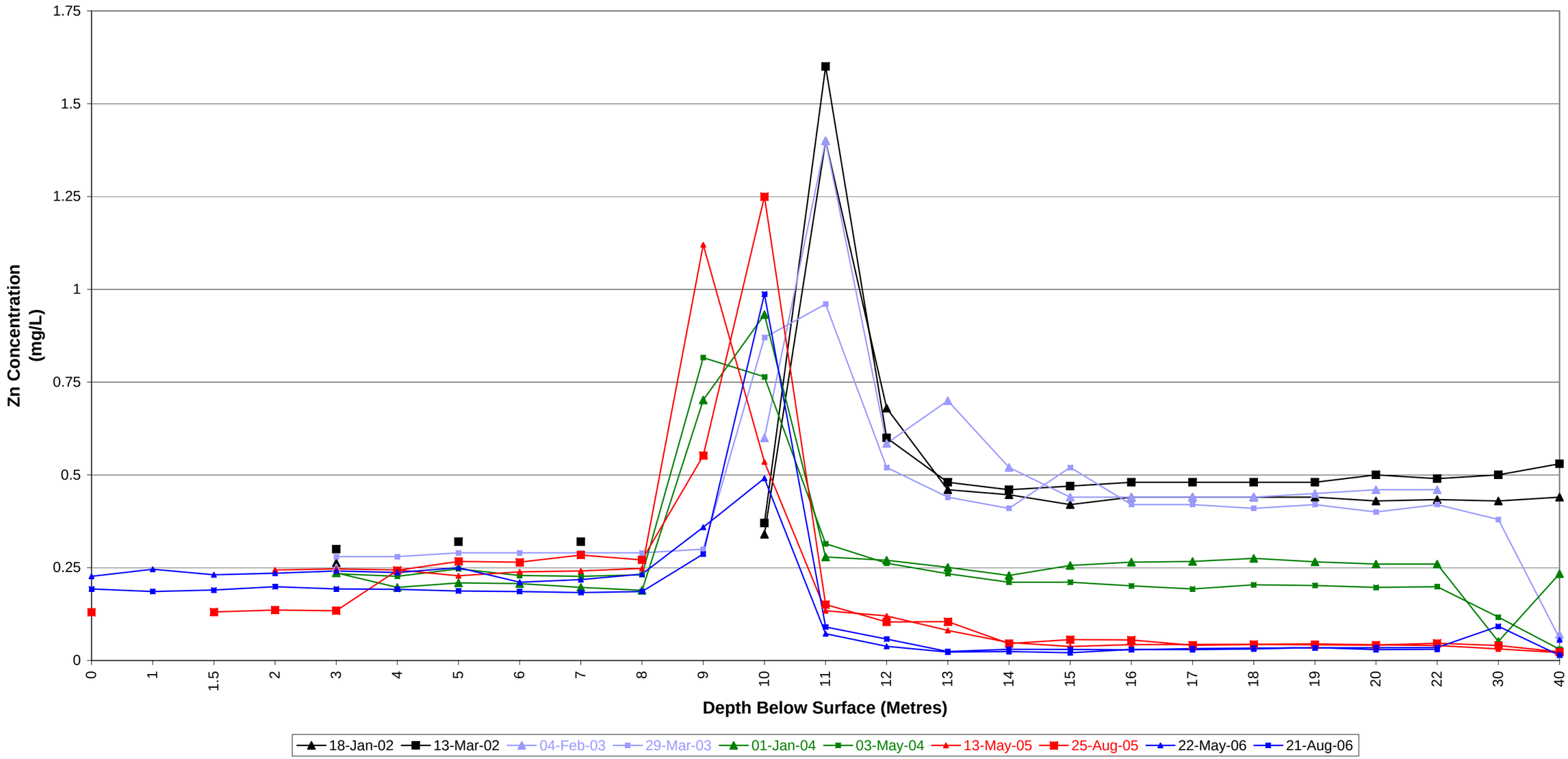


FIGURE 2
GARROW LAKE - Station 262-3A
Zinc Concentrations In The Water Column

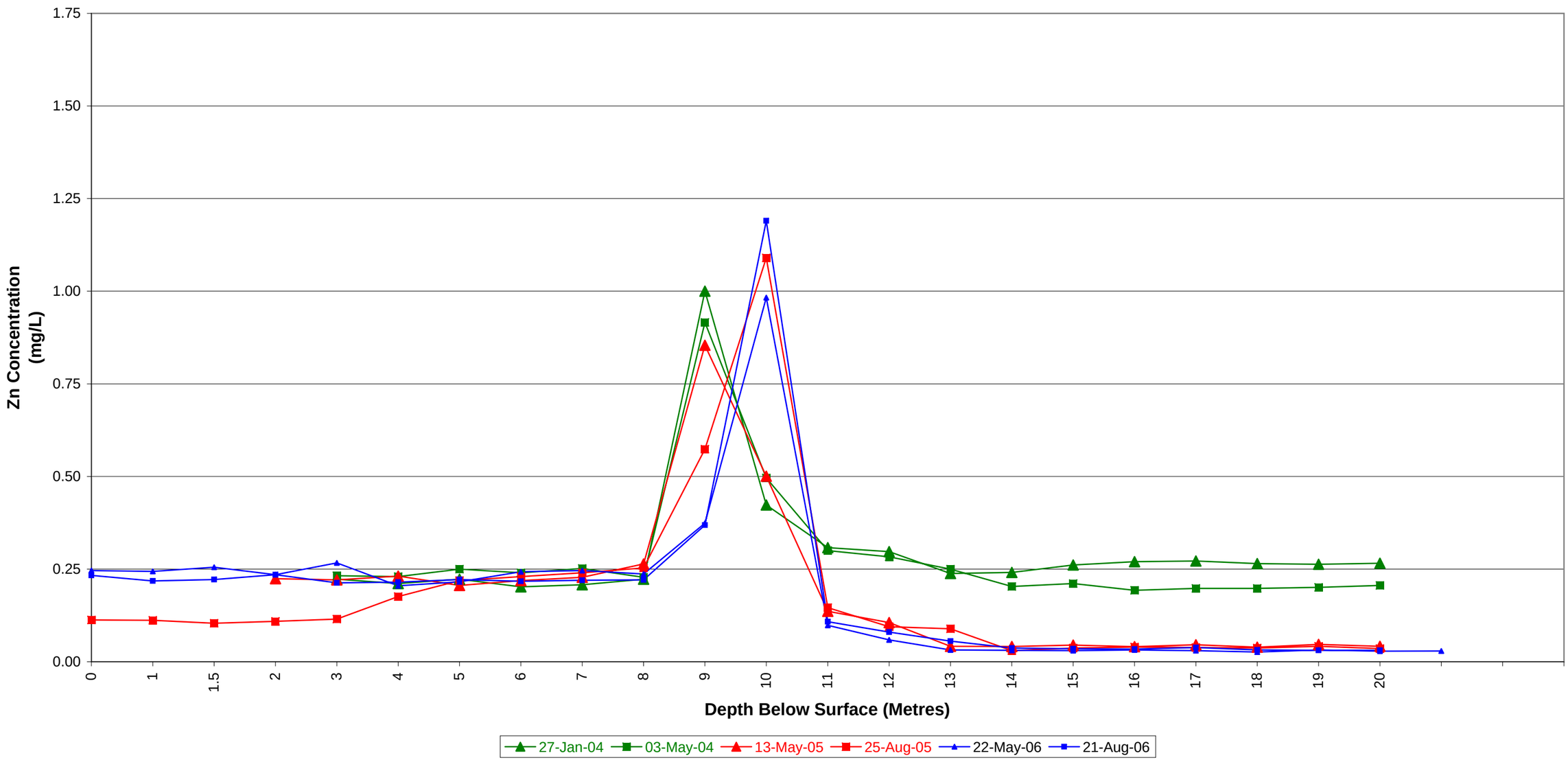


FIGURE 3
GARROW LAKE - January 2004
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

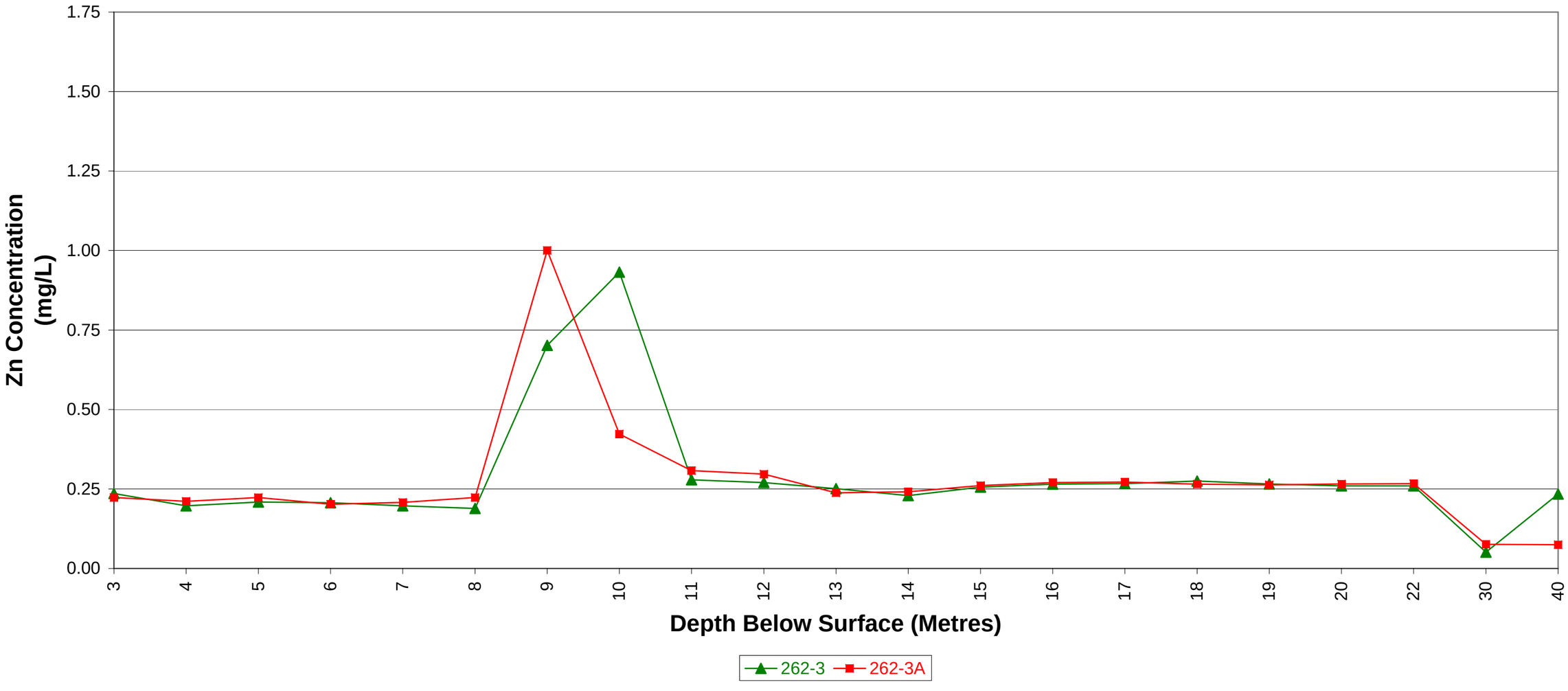


FIGURE 4
GARROW LAKE - May 2004
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

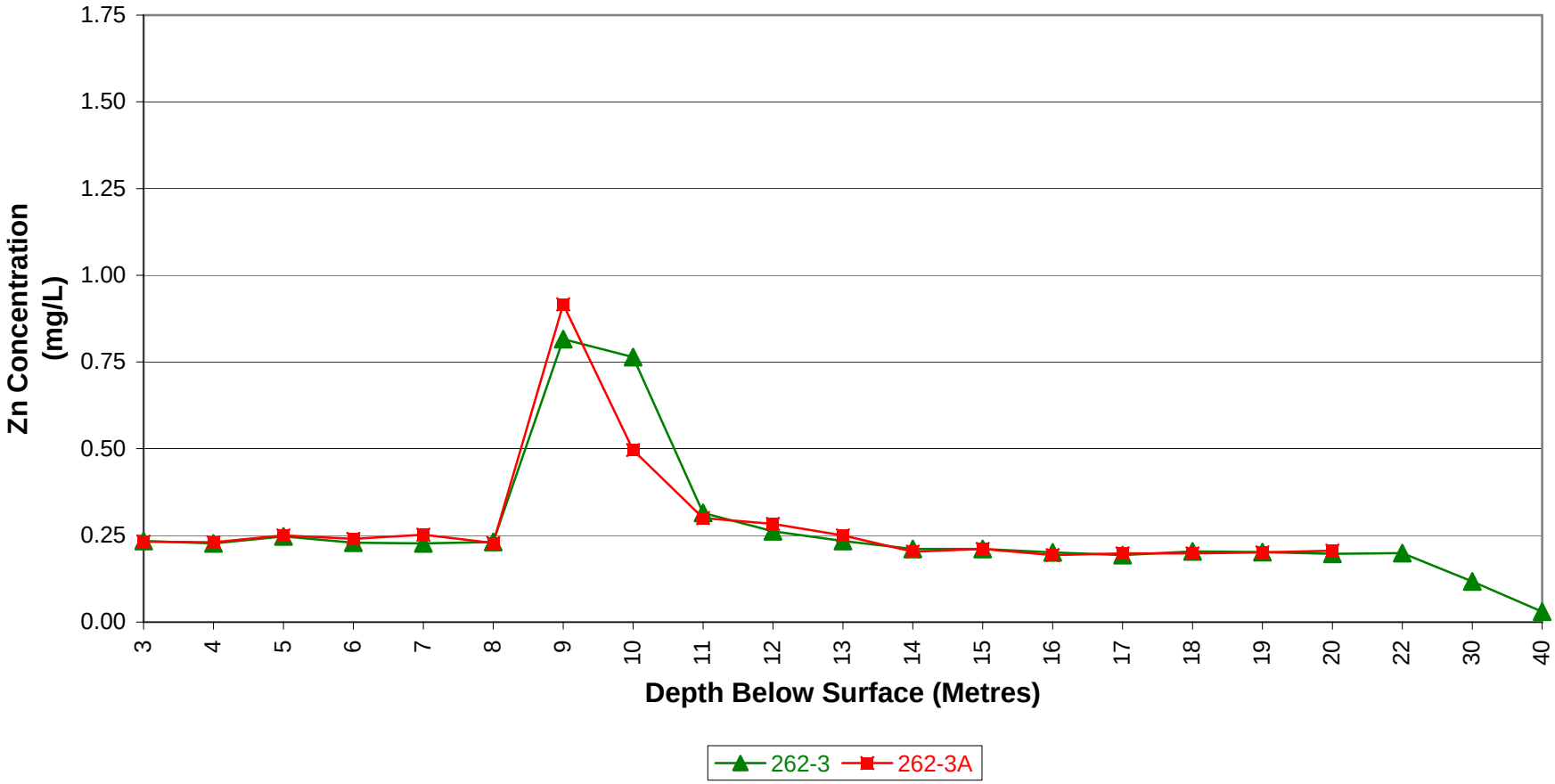


FIGURE 5
GARROW LAKE - May 2005
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

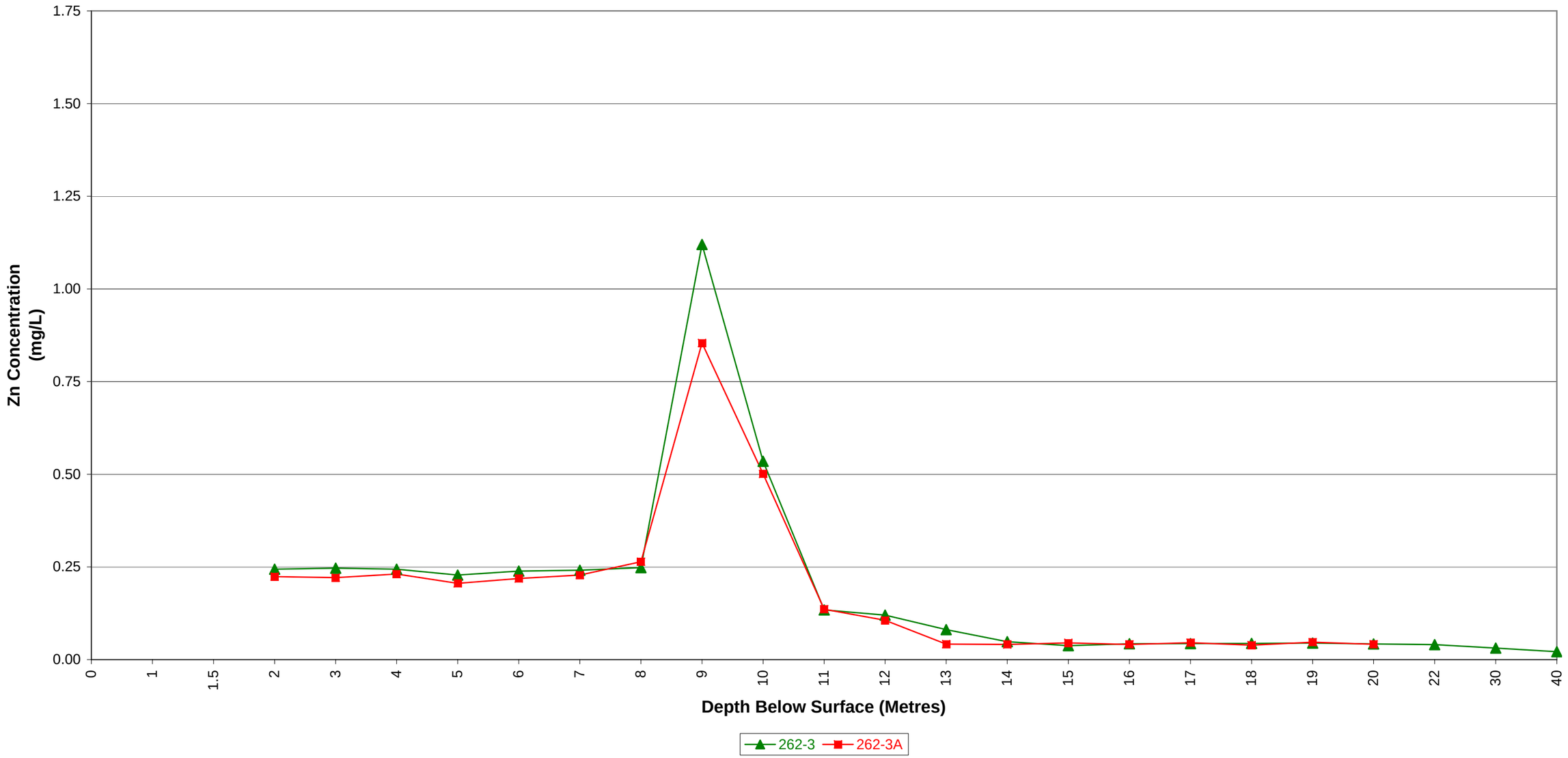


FIGURE 6
GARROW LAKE - August 2005
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

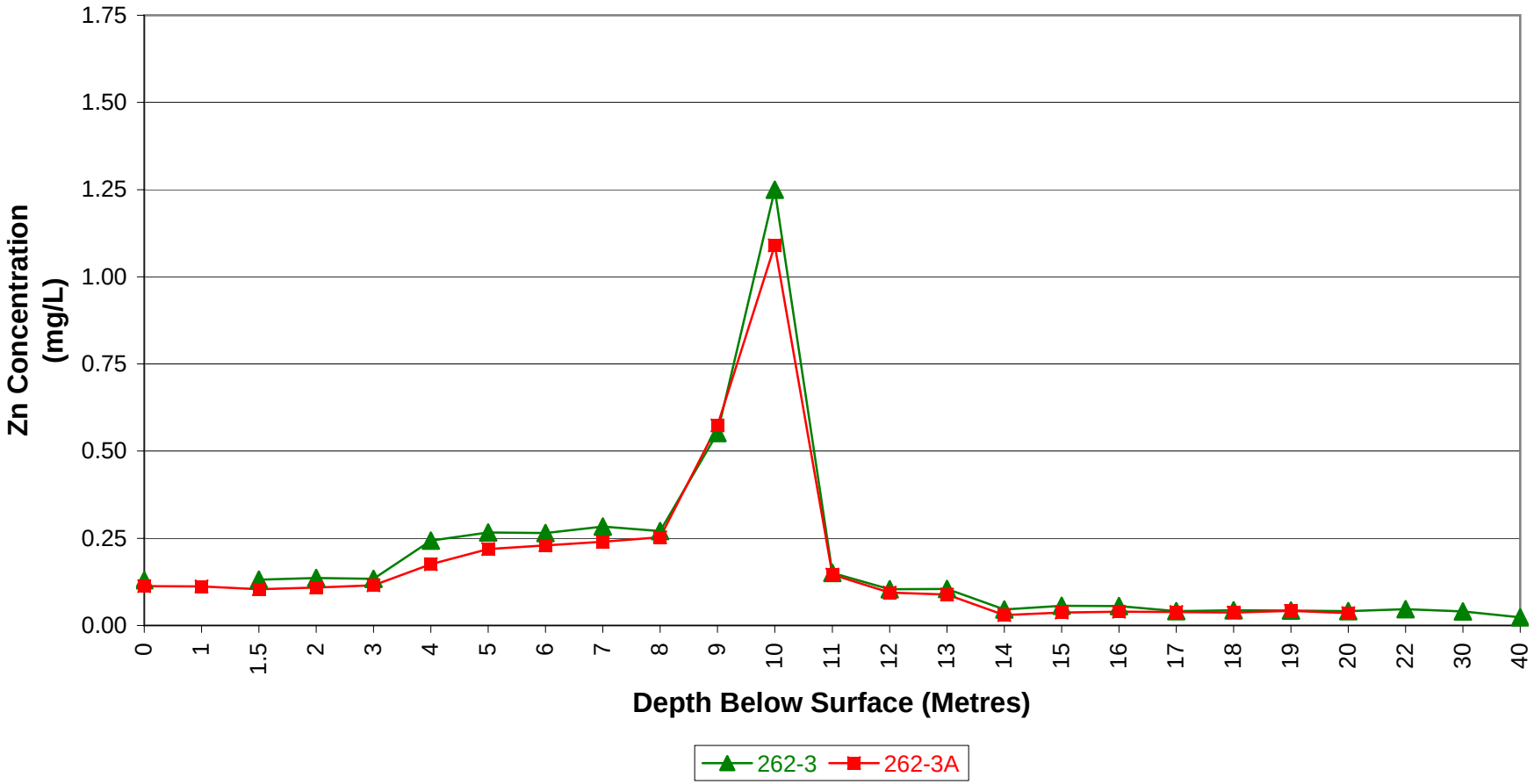


FIGURE 7
GARROW LAKE - May 2006
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

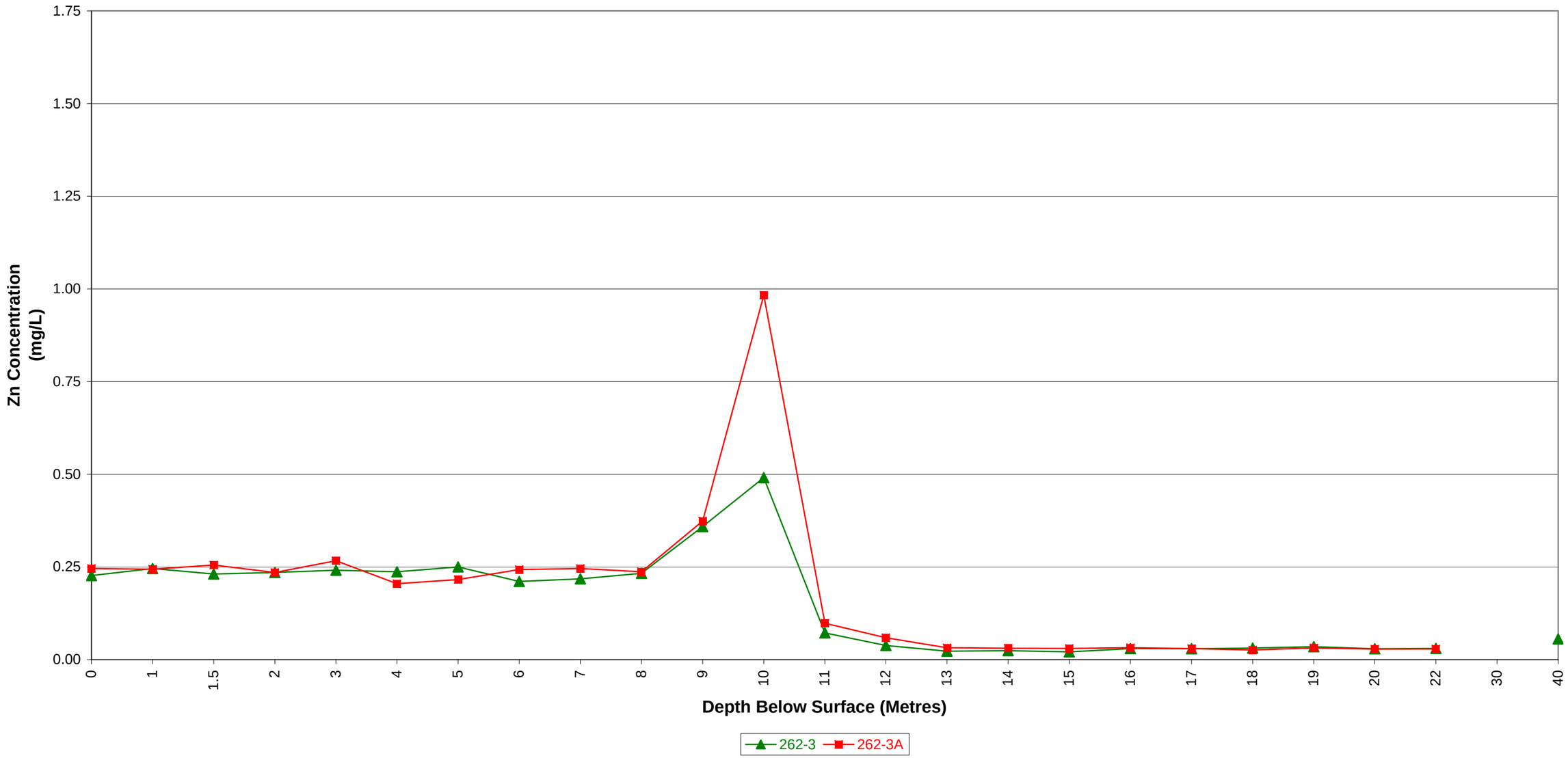


FIGURE 8
GARROW LAKE - August 2006
Comparision of Zinc Concentrations In The Water Column Between Monitoring Stations 262-3 and 262-3A

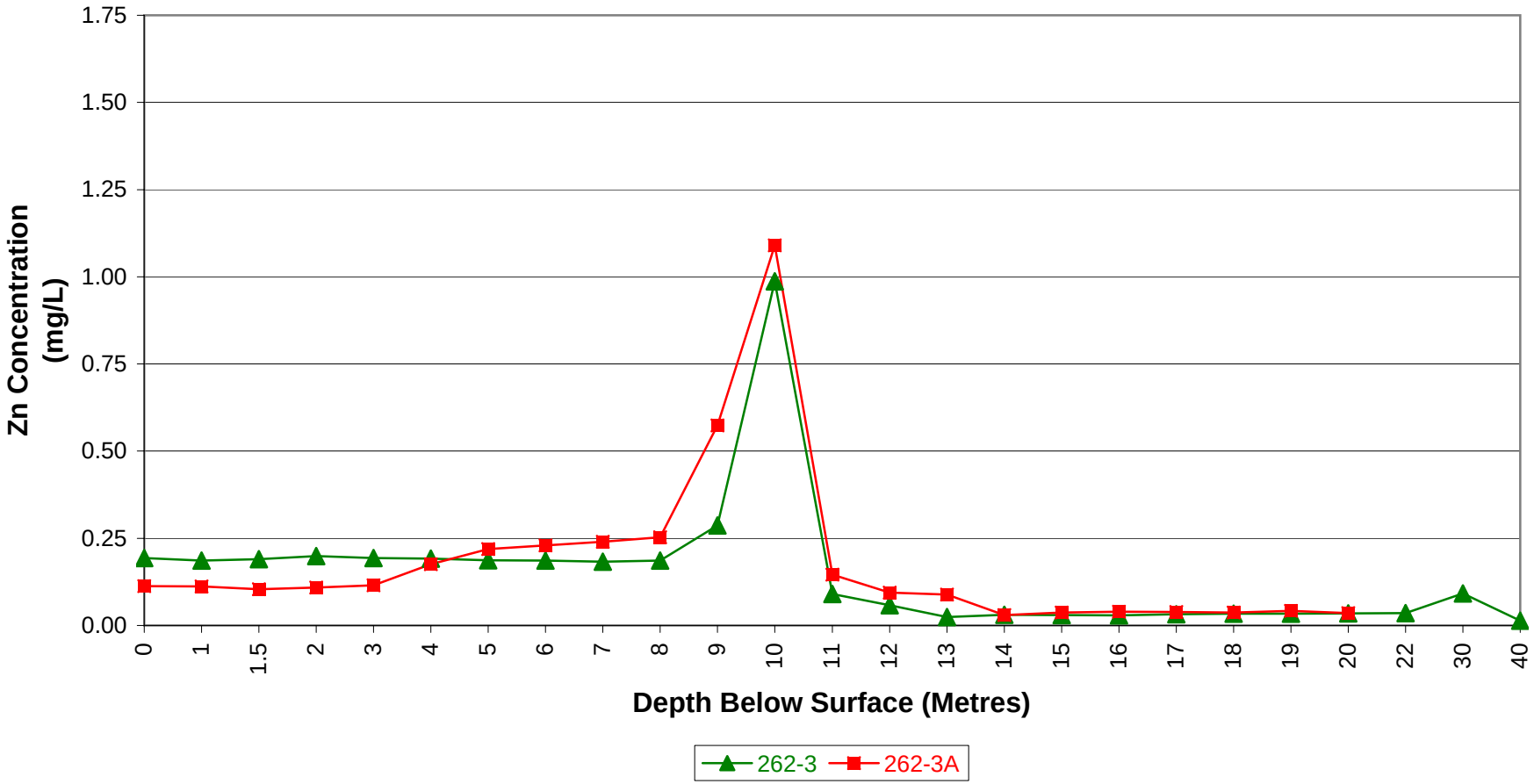


TABLE 1
GARROW LAKE
WATER COLUMN MONITORING
STATION 262-3: Garrow Lake at Centre

Depth	Zinc Concentrations (mg/L)									
	18-Jan-02	13-Mar-02	04-Feb-03	29-Mar-03	01-Jan-04	03-May-04	13-May-05	25-Aug-05	22-May-06	21-Aug-06
0								0.130	0.227	0.193
1									0.246	0.186
1.5								0.131	0.231	0.19
2							0.244	0.136	0.235	0.199
3	0.26	0.30	0.25	0.28	0.236	0.234	0.247	0.134	0.241	0.193
4				0.28	0.197	0.227	0.244	0.243	0.237	0.192
5		0.32		0.29	0.209	0.247	0.228	0.267	0.25	0.187
6				0.29	0.207	0.229	0.239	0.265	0.211	0.186
7		0.32		0.29	0.197	0.227	0.241	0.284	0.218	0.183
8				0.29	0.189	0.231	0.248	0.271	0.233	0.186
9				0.30	0.702	0.816	1.120	0.552	0.359	0.287
10	0.34	0.37	0.60	0.87	0.932	0.764	0.535	1.250	0.491	0.987
11	1.40	1.6	1.40	0.96	0.279	0.315	0.134	0.151	0.0721	0.0903
12	0.68	0.60	0.585	0.52	0.27	0.262	0.120	0.104	0.0383	0.0578
13	0.46	0.48	0.70	0.44	0.251	0.234	0.0812	0.105	0.0226	0.0241
14	0.45	0.460	0.52	0.41	0.229	0.211	0.0482	0.0457	0.024	0.0304
15	0.42	0.47	0.44	0.52	0.256	0.211	0.0378	0.0565	0.021	0.0297
16	0.44	0.48	0.44	0.42	0.265	0.201	0.0429	0.0556	0.03	0.0287
17	0.44	0.48	0.44	0.42	0.267	0.193	0.0435	0.0409	0.0294	0.032
18	0.44	0.48	0.44	0.41	0.275	0.204	0.0440	0.0435	0.0314	0.0336
19	0.44	0.48	0.45	0.42	0.266	0.202	0.0448	0.0425	0.0351	0.034
20	0.43	0.50	0.46	0.40	0.260	0.197	0.0425	0.0413	0.0293	0.0346
22	0.43	0.49	0.46	0.42	0.260	0.199	0.0407	0.0468	0.0301	0.0351
30	0.43	0.50		0.38	0.0514	0.117	0.0310	0.0404		0.092
40	0.44	0.53	0.07	0.06	0.234	0.0301	0.0214	0.0235	0.0558	0.0139

Note: - did not graph the data from 30m depth for May 22/06 as there is clearly a data error. The Zn = 0.561 and the TSS was 111 mg/L. The sample must have been contaminated.

TABLE 2
GARROW LAKE
WATER COLUMN MONITORING
STATION 262-3A: Garrow Lake Near Discharge

Depth	27-Jan-04	03-May-04	13-May-05	25-Aug-05	22-May-06	21-Aug-06
0				0.113	0.246	0.233
1				0.112	0.244	0.218
1.5				0.104	0.255	0.222
2			0.224	0.109	0.235	0.235
3	0.223	0.232	0.221	0.115	0.267	0.213
4	0.211	0.230	0.231	0.176	0.205	0.215
5	0.223	0.250	0.206	0.219	0.216	0.222
6	0.202	0.240	0.219	0.23	0.243	0.217
7	0.208	0.252	0.228	0.24	0.246	0.22
8	0.223	0.228	0.264	0.253	0.237	0.221
9	1.000	0.916	0.854	0.574	0.374	0.369
10	0.423	0.496	0.501	1.09	0.983	1.19
11	0.308	0.300	0.136	0.146	0.0981	0.108
12	0.297	0.283	0.106	0.094	0.059	0.0801
13	0.238	0.250	0.0418	0.0888	0.032	0.0558
14	0.241	0.203	0.0412	0.03	0.0309	0.0371
15	0.261	0.211	0.045	0.037	0.0301	0.0349
16	0.27	0.193	0.0408	0.0398	0.032	0.0344
17	0.272	0.198	0.0458	0.0383	0.0299	0.0383
18	0.265	0.198	0.0391	0.0372	0.0262	0.032
19	0.263	0.201	0.047	0.0417	0.0318	0.0311
20	0.266	0.206	0.0415	0.0354	0.0285	0.031
22	0.267				0.0291	
30	0.076					
40	0.0747					

Note - The Water Licence did not require sampling of this station prior to 2004

APPENDIX 5

2006 ANNUAL REPORT OF FINAL DISCHARGE POINT

WATER QUALITY MONITORING

Azimuth Consulting Group Inc.
218-2902 West Broadway
Vancouver, BC
Canada V6K 2G8

Phone: 604-730-1220
Fax: 604-739-8511
www.azimuthgroup.ca

November 9, 2006

Bruce Donald
Reclamation Manager
Teck Cominco Metals, Ltd.
601 Knighton Road
Bag 2000
Kimberley, BC, V1A 3E1
Canada

Dear Mr. Donald

Re: Polaris Mine 2006 3rd Quarter Report

Please find attached the Polaris Mine report for the 3rd Quarter of 2006. The report format follows the Environment Canada Metal Mining Effluent Regulation (MMER) reporting protocols.

Mining operations at Polaris ceased in 2002 and since 2005 the mine site has been closed, with no staff on site. During this time Teck Cominco has completed a three-year MMER and Environmental Effects Monitoring (EEM) program. Polaris has now achieved “closed mine status” and there are no further monitoring or reporting requirements for Environment Canada. However, monitoring and reporting requirements to meet the terms and conditions of the Water License at the site are similar to MMER requirements.

In 2006, effluent was collected by small field crews stationed temporarily onsite or by flying local residents (who had been trained to do the sampling) into site on a weekly basis. Flow initiated in Garrow Creek channel on approximately June 30, 2006, prior to Garrow Lake opening up. The first effluent sample was collected from the creek on July 6, 2006. Flow continued throughout July and August, and into mid-September. The last sample was collected on September 14, 2006, at which time Garrow Creek was nearly frozen. Due to deteriorating weather conditions and likelihood that the creek was frozen, no further attempts were made to sample after September 14, 2006.

Effluent was characterized on a weekly basis (except July 30 due to lack of a person familiar with the site and trained to sample), for a total of ten samples. All effluent

samples were analyzed as “quarterly” samples that include a wider suite of parameters than “weekly” samples. A chronology of the 2006 sampling season is presented in Appendix E.

There were no exceedences of MMER Schedule 4 Limits for the 2006 season. This is consistent with the previous three years of monitoring. Note that limnological profiles collected from Garrow Lake in May and August 2006 show a very strong vertical stratification at 10 m depth, with surface waters having low metals concentrations.

Acute bioassay testing was also conducted throughout the quarter. Three sets (i.e., rainbow trout and *Daphnia*) of acute toxicity tests were conducted on July 15, 2006, August 23, 2006, and September 9, 2006. There were laboratory issues that affected testing of the July 15, 2006 sample (rainbow trout test affected), and the September 9, 2006 test (issues with both the rainbow trout and *Daphnia magna* tests). An attempt to resample the rainbow trout test for July was made on July 26, 2006. However, the sample container had a puncture and the sample leaked out during transit and shipment was cancelled. There was no opportunity to resample for the September tests, as Garrow Creek was frozen prior to the laboratory issues being reported to Azimuth. These laboratory issues are explained in letters from Golder Associates, Ltd., provided in Appendix F. Despite these issues, there was no acute toxicity in any of the Rainbow trout and *Daphnia* tests. This is also consistent with all historic data as no acute toxicity of Garrow Creek has been observed.

Sublethal toxicity testing and receiving environment monitoring (i.e., Garrow Bay) was not conducted in 2006 because of safety and logistical issues, and because Garrow Lake and Garrow Creek chemistry did not differ in 2006 from previous years. In addition, Environment Canada requires no further monitoring.

The following information is included in the 2006 3rd Quarter MMER Report:

- Table 1a – Concentrations Of Effluent For MMER Schedule 4 Sampled Weekly
- Table 1b – Monthly Mean Concentrations Of Effluent For MMER Schedule 4
- Table 1c – Mass Loading Of Deleterious Substance For Each Day Sampled
- Table 1d – Mass Loading Per Calendar Month For Each Deleterious Substance
- Table 2 – Results of Acute Lethality Tests and *Daphnia magna* Monitoring Tests
- Table 3 – Effluent Characterization Water Quality Results (studies conducted under Part 1, Section 4) (Effluent Characterization) (Table 3)
- Table 4 – Compilation of QAQC Effluent and Water Quality Data from 2003 to 2006.

Additional Appendices

- Appendix A – Information specified by Section 8.1 of Reference Method EPS 1/Rm/13: 96 hr acute rainbow trout test

- Appendix B – Information specified by Section 8.1 of Reference Method EPS 1/Rm/14: 48 hr acute Daphnia magna test
- Appendix C – Results of Effluent Characterization, as per Paragraph 15(1)(a)
- Appendix D – Acute Toxicity Testing Reports
- Appendix E – Polaris 2006 Sampling Event Chronology
- Appendix F – Letters from Golder Associates, Ltd. explaining laboratory issues for July 15, 2006 and September 9, 2006 samples

Please contact the undersigned if you have any questions regarding the Polaris Mine 2006 3rd Quarter Report.

Sincerely,
Azimuth Consulting Group Inc.

[ORIGINAL SIGNED BY]

Cheryl Mackintosh, M.R.M., R.P.Bio.

Polaris Mine 2006 3rd Quarter MMER Report

Prepared for

Teck Cominco Metals, Ltd.
601 Knighton Road
Bag 2000
Kimberley, BC V1A 3E1
Canada

November 9, 2006

Azimuth Consulting Group, Inc.
218-2902 West Broadway
Vancouver, BC, Canada
V6K 2G8

2006 3rd QUARTER MMER REPORT

LOCATION - FINAL DISCHARGE POINT FROM GARROW LAKE (GARROW LAKE DAM SIPHONS)

Table 1a. CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4 SAMPLED WEEKLY

Sample Taken During The Week of	Date Sample Taken	DELETERIOUS SUBSTANCE (mg/L)[1] Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226[1]	pH[1]	Collection Method
2-Jul-06	6-Jul-06	*0.00020*	0.00060	*0.0050*	0.00047	0.00116	0.0173	*3.0*	*0.0050*	8.00	Grab
9-Jul-06	15-Jul-06	*0.00020*	0.00064	*0.0050*	0.00034	0.00129	0.0231	*3.0*	*0.0050*	8.00	Grab
16-Jul-06	21-Jul-06	*0.00020*	0.00105	*0.0050*	0.00087	0.00153	0.0309	*3.0*	0.0200	7.43	Grab
23-Jul-06	26-Jul-06	0.00020	0.00125	*0.0050*	0.00080	0.00194	0.0308	*4.5*	*0.0050*	7.88	Grab
30-Jul-06	no sample[2]	-	-	-	-	-	-	-	-	-	-
6-Aug-06	11-Aug-06	*0.00020*	0.00076	*0.0050*	0.00084	0.00361	0.0539	*3.0*	*0.0050*	7.21	Grab
13-Aug-06	17-Aug-06	*0.00020*	0.00088	*0.0050*	0.00044	0.00435	0.0583	5.8	0.0090	7.98	Grab
20-Aug-06	23-Aug-06	0.00039	0.00106	*0.0050*	0.00111	0.00652	0.0730	3.2	0.0200	8.08	Grab
27-Aug-06	1-Sep-06	*0.00020*	0.00127	*0.0050*	0.00165	0.00630	0.0625	8.4	*0.0050*	7.97	Grab
3-Sep-06	9-Sep-06	*0.00020*	0.00118	*0.0050*	0.00098	0.00730	0.0633	*3.0*	*0.0050*	7.88	Grab
10-Sep-06	14-Sep-06	*0.00020*	0.00127	*0.0050*	0.00104	0.00766	0.0655	5.9	0.01	7.97	Grab
17-Sep-06	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]	nd[3]
24-Sep-06	nd[3]	nd[2]	nd[4]	nd[4]	nd[4]	nd[4]	nd[4]	nd[4]	nd[4]	nd[4]	nd[3]
1-Oct-06	nd[3]	nd[2]	nd[5]	nd[5]	nd[5]	nd[5]	nd[5]	nd[5]	nd[5]	nd[5]	nd[3]

Note[1] - All concentrations are in mg/L except Radium 226 which is Bq/L and pH which is in pH units 0.0730

Note [2] - it was not possible to get a trained technician to sample during the week of July 30, 2006, so a sample could not be collected.

Note [2] - "nd" refers to no effluent discharge to sample

Concentrations in italicized font are less than the detection limit shown.

Table 1b. MONTHLY MEAN CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4

MONTH OF	MONTHLY MEAN CONCENTRATION[1] OF DELETERIOUS SUBSTANCE[2] Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226
July/06	0.0002	0.00089	0.0050	0.00062	0.00148	0.0255	3.4	0.0070
August/06	0.0002	0.00099	0.00500	0.00101	0.00520	0.0619	5.1	0.0098
September/06	0.0002	0.0012	0.0050	0.0010	0.0075	0.0644	4.5	nd[2]

Note[1] - All concentrations are in mg/L except Radium 226 which is Bq/L

Note[2] - Monthly Mean Concentrations - the MEAN value of the concentrations measured in all water samples collected during each month when a deleterious substance is deposited.

Table 1c. MASS LOADING OF DELETERIOUS SUBSTANCE FOR EACH DAY SAMPLED

Sample Taken During The Week of	Date Sample Taken	DAILY MASS LOADING OF DELETERIOUS SUBSTANCE (kg/day)[1]								Average Daily Flow Rate (m^3/day)[4]
		Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226[1]	
2-Jul-06	6-Jul-06	0.001	0.004	0.033	0.003	0.008	0.114	20	32,832	6,566
9-Jul-06	15-Jul-06	0.002	0.008	0.060	0.004	0.015	0.277	36	60,048	12,010
16-Jul-06	21-Jul-06	0.002	0.010	0.046	0.008	0.014	0.282	27	182,582	9,129
23-Jul-06	26-Jul-06	0.002	0.014	0.055	0.009	0.021	0.339	50	55,082	11,016
30-Jul-06	no sample[2]	-	-	-	-	-	-	-	-	-
6-Aug-06	11-Aug-06	0.002	0.009	0.059	0.010	0.043	0.640	36	59,376	11,875
13-Aug-06	17-Aug-06	0.002	0.010	0.058	0.005	0.050	0.672	67	103,690	11,521
20-Aug-06	23-Aug-06	0.002	0.007	0.031	0.007	0.041	0.460	20	125,954	6,298
27-Aug-06	1-Sep-06	0.001	0.008	0.030	0.010	0.038	0.378	51	30,259	6,052
3-Sep-06	9-Sep-06	0.001	0.005	0.019	0.004	0.028	0.246	12	19,422	3,884
10-Sep-06	14-Sep-06	0.000	0.001	0.005	0.001	0.007	0.064	6	9,711	971
17-Sep-06	nd[2]	0	0	0	0	0	0	0	0	0
24-Sep-06	nd[2]	0	0	0	0	0	0	0	0	0
1-Oct-06	nd[2]	0	0	0	0	0	0	0	0	0

Note[1] - Mass Loading is in kilograms per day of the deleterious substance deposited except Radium 226 which is in Bq per day

Note[2] - it was not possible to get a trained technician to sample during the week of July 30, 2006, so a sample could not be collected.

Note[3] - "nd" refers to no effluent discharge to sample

Note[4] - Discharge for September 14 was estimated by the technician as flow was too low to measure with a probe.

Table 1d. MASS LOADING PER CALENDAR MONTH FOR EACH DELETERIOUS SUBSTANCE

CALENDAR MONTH OF	MASS LOADING[1] FOR DELETERIOUS SUBSTANCE (kg/month)[2]								Average Weekly Flow Rate[3] (m^3/week)	Total Monthly Volume[4] (m^3/month)
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226[2]		
July/06	0.06	0.27	1.50	0.19	0.45	7.85	1,028.34	2,561,715	67,763	300,092
August/06	0.06	0.26	1.39	0.25	1.33	16.66	1,344.12	2,474,409	62,555	277,030
September/06	0.01	0.09	0.36	0.07	0.54	4.64	260.74	436,992	16,994	72,832

Note[1] - Total Mass Loading for Calendar month calculated by multiplying the Average Daily Mass Loading for the Month x # days in the month

Note[2] - Mass loading units are in kg per month except Radium 226, which is in Bq per month

Note[3] - Average Weekly Flow Rate calculated by multiplying Average Daily Flow Rate x 7 days per week

Note[4] - Total Monthly Volume calculated by multiplying Average Daily Flow Rate for the month x days in month

Table 2

RESULTS OF ACUTE LETHALITY TESTS AND
DAPHNIA MAGNA MONITORING TESTS

Date Sample Collected	Effluent Acutely Lethal to Rainbow Trout (yes or no)	Effluent Acutely Lethal to *Daphnia magna* (yes or no)
15-Jul-06	No[1]	No
23-Aug-06	No	No
9-Sep-06	n/a[2]	No[3]

[1] July 15, 2006 rainbow trout test was invalid due to a temperature control unit failure (see Appendix F).

[2] September 9, 2006 rainbow trout test had a control failure. No results are available. (See Appendix F).

[3] September 9, 2006 daphnia test was initiated outside holding times due to a laboratory error (see Appendix F).

Non-compliance Information

If effluent was non-compliant with the aurthorized limits set out in Schedule4, indicate the cause(s) of non-compliance and remedial measures planned or implemented. Also indicate remedial meaures planned or implemented in response to the failure of acute lethality tests.

There were no non-compliant concentrations, and no failed acute lethality toxicity tests during 2006 3rd Quarter for Polaris Mine.

Table 3. 2006 3rd Quarter Polaris Mine Effluent Characterization Results (Part 1, Section 4)

Effluent Characterization from Final Discharge Point - Garrow Lake Former Dam / Syphons
Northing: 75°22'32"
Easting: 96°48'37"

Facility Name:				Teck Cominco Metals Limited - Polaris Mine (Little Cornwallis Island)										
FDP Name:				Garrow Lake Syphons										
Sample ID:				G CREEK	G CREEK	G-Creek	G.Creek	G-Creek	G-Creek	G-Creek-	G-Creek 08	G-Creek	G-Creek	
Sampling Date:				6-Jul-06	15-Jul-06	21-Jul-06	26-Jul-06	11-Aug-06	17-Aug-06	23-Aug-06	1-Sep-06	9-Sep-06	14-Sep-06	
Sample Method:		MMER Schedule 4		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	
Parameter	**Units**	**Column 2 - Monthly mean**	**Column 4 - Max in grab sample**											***Detection Limit***
Hardness	mg/L			272	346	411	429	796	1030	1480	1410	1590	1420	*2.7-5.4*
Alkalinity, Total	mg/L			38.6	46.5	47.8	46.2	67.3	98.5	125	126	129	137	*2.0*
Aluminum, Total	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	0.0148	<0.10	<0.50	<0.10	<0.10	*0.10*
Cadmium, Total	mg/L			00.0	00.0	0.000157	0.000099	0.000192	0.000236	0.000333	0.000374	0.000374	0.000404	*0.000020*
Iron, Total	mg/L			0.015	0.015	0.020	0.010	0.027	0.044	0.015	0.018	0.016	0.029	*0.010*
Mercury, Total	mg/L			-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	*0.000010*
Molybdenum, Total	mg/L			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	*0.0050*
Ammonia Nitrogen	mg/L			-	0.007	-	-	-	-	0.027	-	0.027	-	*0.005*
Nitrate Nitrogen	mg/L			0.05	0.04	0.048	0.057	0.116	0.115	0.21	0.212	0.229	0.538	*0.025 - 0.050*
Arsenic, Total	mg/L	0.50	1.00	<0.00020	<0.00020	<0.00020	0.00020	<0.00020	<0.00020	0.00039	<0.00020	<0.00020	<0.00020	*0.00020*
Copper, Total	mg/L	0.30	0.60	0.00060	0.00064	0.00105	0.00125	0.000755	0.000878	0.00106	0.00127	0.00118	0.00127	*0.000050*
Cyanide, Total	mg/L	1.00	2.00	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	*0.0050*
Lead, Total	mg/L	0.20	0.40	0.000468	0.000344	0.000870	0.000803	0.000843	0.000437	0.00111	0.00165	0.000976	0.00104	*0.000050*
Nickel, Total	mg/L	0.50	1.00	0.00116	0.00129	0.00153	0.00194	0.00361	0.00435	0.00652	0.00630	0.00730	0.00766	*0.000050*
Zinc, Total	mg/L	0.50	1.00	0.0173	0.0231	0.0309	0.0308	0.0539	0.0583	0.0730	0.0625	0.0633	0.0655	*0.00050*
Total Suspended Solids	mg/L	15.00	30.00	<3.0	<3.0	<3.0	<4.5	<3.0	5.8	3.2	8.4	<3.0	5.9	*3.0-4.5*
Radium-226 (a)	Bq/L	0.37	1.11	<0.0050	<0.0050	0.0200	<0.0050	<0.0050	0.0090	0.0200	<0.0050	<0.0050	0.0100	*0.0050*
pH	pH units	<6.0 or >9.5		8.00	8.00	7.43	7.88	7.21	7.98	8.08	7.97	7.88	7.97	*0.010*
Field pH	pH units			-	-	8.26	8.33	8.34	8.37	-	-	8.38	-	-
Water Temperature	°C			-	-	6.6	6.3	3.8	2.1	-	-	-0.3	-	-
Salinity	o/oo			<1.0	1.3	1.8	1.9	3.7	4.9	6.7	6.8	7.8	8.1	*1.0*
Calcium, Total	mg/L			30.8	36.9	42.2	43.5	80.2	102	142	127	146	137	*0.25-0.50*
Magnesium, Total	mg/L			47.4	61.6	74.2	77.8	145	187	273	266	296	261	*0.5-1.0*
Manganese, Total	mg/L			-	-	0.00293	-	-	-	-	-	-	0.00957	*0.00005*

Notes:
< = Less than the detection limit indicated.
(a) Results are expressed as Becquerels per litre (Bq/L). This analysis is subcontracted to SRC, Saskatoon.
[1]Original data reports are available upon request
[2]SPR-IDA = Suspended Particulate Resin consisting of immobilized iminodiacetate on a divinyl benzene polymer is used to chelate and preconcentrate metals in seawater (preparation technique).
[3]Instrumental analysis is by ICPMS = Inductively Coupled Mass Spectrometry.
[4]This analysis is carried out using procedures adapted from "StandardMethods for the Examination of Water and Wastewater" 20th Edition 1998, published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the USEPA. The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emissionspectrophotometry ICPOES (EPA Method 6010B).
[5]All radium isotopes in the sample solution are separated by coprecipitation with lead sulfate. The precipitate is redissolved and the radium isotopes are separated by coprecipitation with barium sulfate. The precipitate is filtered and mounted on a stainless steel disk. It is then counted on an alpha spectrometer. The radium 226 alpha energy is distinct and the peak can be clearly identified.
[6]Salinity data is derived from a calculation based on the conductivity data. Conductivity is analyzed by electrode, based on APHA Method 2510 "Conductivity"

Table 3. 2006 3rd Quarter Polaris Mine Effluent Characterization Results (Part 1, Section 4)

Effluent Characterization from Final Di
Northing: 75°22'32"
Easting: 96°48'37"

Facility Name:	
FDP Name:	
Sample ID:	
Sampling Date:	
Sample Method:	

Parameter	Units	Methods[1]
Hardness	mg/L	Calculation - EPA Method 3005A, ICPOES (EPA Method 6010B)[4]
Alkalinity, Total	mg/L	Colourimetry - APHA Method 2320 (potentiometric titration)
Aluminum, Total	mg/L	ICPMS[3]
Cadmium, Total	mg/L	SPR-IDA[2], ICPMS[3]
Iron, Total	mg/L	SPR-IDA[2], ICPMS[3]
Mercury, Total	mg/L	Cold Vapour Atomic Florescence Spectrophotometry
Molybdenum, Total	mg/L	ICPMS[3]
Ammonia Nitrogen	mg/L	APHA Method 4500-NH3 (selective ion electrode)
Nitrate Nitrogen	mg/L	APHA Method 4110 (determination of inorganic ions by ion chromatography)
Arsenic, Total	mg/L	Hydride-Vapour Atomic Absorption Spectrophotometry
Copper, Total	mg/L	Chelation SPR-IDA[2], ICPMS[3]
Cyanide, Total	mg/L	Colourimetry - APHA Method 4500-CN (cynate hydrolosis using an ammonia selective electrode
Lead, Total	mg/L	Chelation SPR-IDA[2], ICPMS[3]
Nickel, Total	mg/L	Chelation SPR-IDA[2], ICPMS[3]
Zinc, Total	mg/L	Chelation SPR-IDA[2], ICPMS[3]
Total Suspended Solids	mg/L	Gravimetry - APHA Method 2540 (filtration through glass fibre filter)
Radium-226 (a)	Bq/L	Radio Chemistry[5]
pH	pH units	APHA Method 4500-H (pH electrode meter)
Field pH	pH units	Field - Hanna Instruments 98126 pH meter, or YSI Meter Model 85
Water Temperature	°C	Field - Campbell Scientific Hydrolab Model H20, or YSI Meter Model 85
Salinity	o/oo	[6]Salinity is calculated from Conductivity - APHA method 2510
Calcium, Total	mg/L	ICPMS[3]
Magnesium, Total	mg/L	ICPMS[3]
Manganese, Total	mg/L	ICPMS[3]

Table 4. Compilation of 2003 - 2006 Polaris Mine QAQC Sample Results[1] Including Field Duplicates, Field Blanks, and Transport Blanks.

Year:							2003				
Sample Type:		Original Sample	Field Duplicate		Original Sample	Field Duplicate		Original Sample	Field Duplicate		Field Blank	Field Blank
Sample ID:		T-Bay-072903	Dup-072903		G-Bay-081903	Dup-081903		G-Creek	DUP		F-Blank-081903	F-Blank
Location:		Tigumiavik Harbour Reference			Garrow Bay Exposure			Garrow Lake Syphons			n/a	n/a
Description:		Final Discharge Point		RPD[2]	Mouth of Garrow Creek Confluence		RPD[2]	Final Discharge Point		RPD[2]	Distilled Water[3]	Distilled Water[3]
Sampling Date:		29-Jul-03		(%)	19-Aug-03		(%)	16-Sep-03		(%)	19-Aug-03	16-Sep-03
Parameters	**Parameter Units**											
Hardness	mg/L	989	1020	3.04	1120	1140	1.75	1540	1470	4.76	-	<10
Alkalinity, Total	mg/L	33	33	0.00	104	104	0.00	122	119	2.52	-	-
Aluminum, Total	mg/L	<0.1	<0.1	n/a	<0.1	<0.1	n/a	<0.1	<0.1	n/a	<0.1	<0.1
Cadmium, Total	mg/L	<0.00002	<0.00002	n/a	0.00038	0.00034	11.76	0.00047	0.00047	0.00	<0.00002	<0.00002
Iron, Total	mg/L	0.01	0.01	0.00	0.05	0.05	0.00	0.04	0.03	33.33	0.01	<0.01
Mercury, Total	mg/L	<0.00005	<0.00005	n/a	<0.00005	<0.00005	n/a	<0.00005	<0.00005	n/a	<0.00005	<0.00005
Molybdenum, Total	mg/L	<0.002	<0.002	n/a	<0.002	<0.002	n/a	<0.005	<0.005	n/a	<0.002	<0.005
Ammonia Nitrogen	mg/L	0.03	0.04	25.00	0.03	0.03	0.00	0.04	0.02	100.00	-	-
Nitrate Nitrogen	mg/L	<0.005	<0.005	n/a	0.229	0.203	12.81	0.217	0.292	25.68	-	-
Arsenic, Total	mg/L	<0.0004	<0.0004	n/a	<0.001	<0.001	n/a	<0.001	<0.001	n/a	<0.001	<0.001
Copper, Total	mg/L	0.00023	0.0003	23.33	0.00106	0.00103	2.91	0.00099	0.00098	1.02	0.00033	0.00033
Cyanide, Total	mg/L	<0.005	<0.005	n/a	<0.005	<0.005	n/a	-	<0.005	n/a	-	-
Lead, Total	mg/L	0.00032	0.00102	68.63	0.00108	0.00213	49.30	0.00046	0.00071	35.21	0.00102	0.00018
Nickel, Total	mg/L	0.00021	0.00024	12.50	0.00304	0.00266	14.29	0.00365	0.00326	11.96	<0.00005	0.00008
Zinc, Total	mg/L	0.001	0.001	0.00	0.149	0.138	7.97	0.186	0.187	0.53	0.0014	0.0007
Total Suspended Solids	mg/L	<3	5	n/a	8	12	33.33	5	5	n/a	-	-
Radium-226 (a,b)	Bq/L	<0.005	<0.005	n/a	<0.005	<0.005	n/a	<0.005	0.008	n/a	<0.005	<0.005
pH	pH units	7.67	7.63	0.52	8.13	8.02	1.37	7.96	7.94	0.25	-	-
Salinity	o/oo	6	6	0.00	6	9	33.33	7	6	16.67	-	-
Calcium, Total	mg/L	68.4	71.2	3.93	98	101	2.97	133	127	4.72	<0.5	<1
Magnesium, Total	mg/L	199	205	2.93	211	216	2.31	294	279	5.38	<1	<2

Notes

[1]QAQC samples were collected during each EEM monitoring event. At least one field duplicate and/or one blank sample was collected during each event.

[2]RPD = Relative Percent Difference = [Absolute value (DUP-ORIG)/ORIG]*100%

Cells in grey shading have RPD values >50% for co-located field duplicates

[3]Commercial distilled water transported to mine site.

2003 QAQC Results

A total of 3 duplicate samples and 2 blank samples were collected during the 2003 EEM program at Polaris mine. All RPD values were less than 50%, with the exception of one measurement of ammonia on September 16, 2003. This data indicate good reproducibility between co-located field duplicates (i.e., low measurement and analytical variability).

Blank samples were typically less than, or slightly higher than detection limits, revealing no background contamination issues.

Table 4. Compilation of 2003 - 2006 Polaris Mine QAQC Sample Results[1] Including Field Duplicates, Field Blanks, and Transport Blanks.

Year:		2004											
Sample Type:		Field Duplicate	Original Sample		Field Duplicate	Original Sample		Field Duplicate	Original Sample		Field Duplicate	Original Sample	
Sample ID:		Dup	G Creek		DUP	G BAY		FIELD DUP	G CREEK		Dup	G Creek	
Location:		Garrow Lake Syphons			Garrow Bay Exposure			Garrow Lake Syphons			Garrow Lake Syphons		
Description:		Final Discharge Point		RPD[2]	Mouth of Garrow Creek Confluence		RPD[2]	Final Discharge Point		RPD[2]	Final Discharge Point		RPD[2]
Sampling Date:		7-Jul-04		(%)	27-Jul-04		(%)	17-Aug-04		(%)	24-Aug-04		(%)
Parameters	**Parameter Units**												
Hardness	mg/L	1400	1400	0.00	532	482	10.37	997	973	2.47	1380	1380	0.00
Alkalinity, Total	mg/L	132	138	4.35	38.6	37.5	2.93	113	111	1.80	128	128	0.00
Aluminum, Total	mg/L	0.26	0.34	23.53	0.031	0.033	6.06	<0.10	<0.1	n/a	<0.10	<0.1	n/a
Cadmium, Total	mg/L	0.000582	0.000588	1.02	0.000062	0.00007	11.43	0.000224	0.00023	2.61	0.000342	0.000335	2.09
Iron, Total	mg/L	0.441	0.487	9.45	0.035	0.046	23.91	0.039	0.042	7.14	0.015	0.014	7.14
Mercury, Total	mg/L	<0.000010	<0.00001	n/a	<0.000050	<0.00005	n/a	<0.000010	<0.00001	n/a	<0.000010	<0.00001	n/a
Molybdenum, Total	mg/L	<0.0050	<0.005	n/a	0.00129	0.00156	17.31	<0.0050	<0.005	n/a	<0.0050	<0.005	n/a
Ammonia Nitrogen	mg/L	0.069	0.071	2.82	<0.020	<0.02	n/a	0.163	0.146	11.64	0.114	0.133	14.29
Nitrate Nitrogen	mg/L	0.284	0.277	2.53	0.0371	0.0372	0.27	0.54	0.525	2.86	0.529	0.531	0.38
Arsenic, Total	mg/L	<0.0010	<0.001	n/a	<0.0010	<0.001	n/a	<0.00020	<0.0002	n/a	<0.00020	<0.0002	n/a
Copper, Total	mg/L	0.00252	0.00265	4.91	0.000342	0.000405	15.56	0.00121	0.00121	0.00	0.00140	0.00134	4.48
Cyanide, Total	mg/L	<0.0050	<0.005	n/a	<0.0050	<0.005	n/a	<0.0050	<0.005	n/a	<0.0050	<0.005	n/a
Lead, Total	mg/L	0.0024	0.00269	10.78	0.000205	0.00026	21.15	0.00187	0.00177	5.65	0.00116	0.00119	2.52
Nickel, Total	mg/L	0.00438	0.00442	0.90	0.000772	0.000979	21.14	0.00676	0.00644	4.97	0.00971	0.00967	0.41
Zinc, Total	mg/L	0.196	0.198	1.01	0.019	0.0242	21.49	0.0418	0.0418	0.00	0.0514	0.0498	3.21
Total Suspended Solids	mg/L	120	117	2.56	7	3.7	89.19	<3.0	5.3	n/a	3.7	4.4	15.91
Radium-226 (a,b)	Bq/L	0.02	0.02	0.00	<0.0050	<0.005	n/a	<0.0050	0.01	n/a	<0.0050	0.008	n/a
pH	pH units	8.06	8.05	0.12	7.76	7.91	1.90	8.02	7.95	0.88	7.93	7.84	1.15
Salinity	o/oo	-	-	-	-	-	-	-	-	-	-	-	-
Calcium, Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium, Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-

Notes

[1]QAQC samples were collected during each EEM monitoring event. At least one field duplicate and/or one blank sample was collected during each event.

[2]RPD = Relative Percent Difference = [Absolute value (DUP-ORIG)/ORIG]*100%

Cells in grey shading have RPD values >50% for co-located field duplicates

[3]Distilled water from onsite distiller.

2004 QAQC Results

A total of 4 duplicate samples and 3 blank samples were collected during the 2004 EEM program at Polaris mine. All RPD values were less than 50%, with the exception of one measurement of TSS on July 27, 2004. This data indicate good reproducibility between co-located field duplicates (i.e., low measurement and analytical variability).

Blank samples were typically less than, or slightly higher than detection limits, revealing no background contamination issues.

Table 4. Compilation of 2003 - 2006 Polaris Mine QAQC Sample Results[1] Including Field Duplicates, Field Blanks, and Transport Blanks.

Year:		2004				2005					
Sample Type:		Field Blank	Transport Blank	Field Blank	Field Blank	Field Duplicate	Original Sample		Field Duplicate	Original Sample	
Sample ID:		F Blank	T Blank	F BLANK	FIELD BLANK	Dup	G Creek		DUP	G-Creek	
Location:		n/a	n/a	n/a	n/a	Garrow Lake Syphons			Garrow Lake Syphons		
Description:		Distilled Water[3]	Distilled Water[3]	Distilled Water[3]	Distilled Water[3]	Final Discharge Point		RPD[2]	Final Discharge Point		RPD[2]
Sampling Date:		7-Jul-04	7-Jul-04	27-Jul-04	17-Aug-04	6-Jul-05		(%)	16-Jul-05		(%)
Parameters	**Parameter Units**										
Hardness	mg/L	<0.54	<0.54	-	<0.54	140	149	6.0	187	184	1.6
Alkalinity, Total	mg/L	-	-	-	<1.0	28.0	28.1	0.4	29.0	29.2	0.7
Aluminum, Total	mg/L	<0.10	<0.10	<0.0010	<0.0010	<0.10	<0.20	n/a	0.0087	0.0085	2.4
Cadmium, Total	mg/L	<0.000020	<0.000020	<0.000050	<0.00020	0.000040	0.000034	17.6	0.000049	0.000044	11.4
Iron, Total	mg/L	<0.010	<0.010	<0.030	<0.030	0.013	0.012	8.3	0.043	0.043	0.0
Mercury, Total	mg/L	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	n/a	<0.000010	<0.000010	n/a
Molybdenum, Total	mg/L	<0.0050	<0.0050	<0.000050	<0.0010	<0.0050	<0.0050	n/a	<0.0050	<0.0050	n/a
Ammonia Nitrogen	mg/L	-	-	-	0.028	0.032	0.036	11.1	0.044	0.037	18.9
Nitrate Nitrogen	mg/L	-	-	-	<0.0050	0.028	0.032	12.5	<0.050	<0.050	n/a
Arsenic, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.00020	0.00021	<0.00020	n/a	<0.00020	<0.00020	n/a
Copper, Total	mg/L	0.00012	0.00012	0.00023	<0.0010	0.000295	0.000240	22.9	0.000376	0.000424	11.3
Cyanide, Total	mg/L	-	-	-	<0.0050	<0.0050	<0.0050	n/a	0.0058	0.0444	86.9
Lead, Total	mg/L	0.00017	0.00021	0.000209	<0.0010	0.000241	0.000166	45.2	0.000409	0.000415	1.4
Nickel, Total	mg/L	<0.00050	<0.00050	<0.00050	<0.0010	0.000673	0.000601	12.0	0.000819	0.000807	1.5
Zinc, Total	mg/L	0.0012	<0.0010	0.0025	<0.0050	0.0136	0.0127	7.1	0.0185	0.0179	3.4
Total Suspended Solids	mg/L	-	-	-	<3.0	<3.0	4.0	n/a	<3.0	<3.0	n/a
Radium-226 (a,b)	Bq/L	<0.0050	0.006	-	<0.0050	<0.0050	0.0050	n/a	<0.0050	0.009	n/a
pH	pH units	-	-	-	5.51	7.62	7.49	1.7	7.58	7.59	0.1
Salinity	o/oo	-	-	-	-	<1.0	<1.0	n/a	<1.0	<1.0	n/a
Calcium, Total	mg/L	-	-	-	-	16.5	19.1	13.6	21.4	21.1	1.4
Magnesium, Total	mg/L	-	-	-	-	24.0	24.6	2.4	32.3	31.9	1.3

Notes

[1]QAQC samples were collected during each EEM monitoring event. At least one field duplicate and/or one blank sample was collected during each event.

[2]RPD = Relative Percent Difference = [Absolute value (DUP-ORIG)/ORIG]*100%

Cells in grey shading have RPD values >50% for co-located field duplicates

[3]Distilled water from onsite distiller, stored for 1 year in jerry cans onsite.

[4]Commercial distilled water transported to mine site.

2005 QAQC Results

A total of 3 duplicate samples and 5 blank samples were collected during the 2005 EEM program at Polaris mine. All RPD values were less than 50%, with the exception of one measurement of cyanide on July 16, 2005. Cyanide is not used in the process and is typically measured at less than the detection limit. With the exception of the aforementioned cyanide measurement, which is questionable, the data generally indicate good reproducibility between co-located field duplicates (i.e., low measurement and analytical variability).

Blank samples from the on-site distilled water that had been stored indicated relatively high levels of zinc, copper, and lead. This contamination was considred to be a result of the storage procedure and metal leaching from the metal jerry cans that the water was stored in for the year. The transport blanks using commmercial distilled water indicated low concentrations of all paramters (i.e., typically less than, or slightly higher than detection limits), which reveals no background contamination issues with the analysis.

Table 4. Compilation of 2003 - 2006 Polaris Mine QAQC Sample Results[1] Including Field Duplicates, Field Blanks, and Transport Blanks.

Year:		2005			2005					2006		
Sample Type:		Field Duplicate	Original Sample		Field Blank	Field Blank	Field Blank	ALS Travel Blank	ALS Travel Blank	Travel Blank 1	Travel Blank 2	GL- BLANK
Sample ID:		Dup	Ref									
Location:		Garrow Bay Reference			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Description:		~1km NE of confluence with Garrow Creek		RPD[2]	Distilled Water[3]	Distilled Water[3]	Distilled Water[3]	Distilled Water[4]	Distilled Water[4]	Distilled Water[3]	Distilled Water[4]	Distilled Water[3]
Sampling Date:		6-Aug-05		(%)	6-Jul-05	16-Jul-05	6-Aug-05	24-Aug-05	24-Aug-05	22-May-06	22-May-06	21-Aug-05
Parameters	**Parameter Units**											
Hardness	mg/L	852	840	1.4	3.07	<0.54	0.85	<0.50	<0.50	<5.4	<5.4	-
Alkalinity, Total	mg/L	53.8	53.5	0.6	3.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Aluminum, Total	mg/L	<0.10	<0.10	n/a	<0.0010	<0.0050	<0.10	<0.0010	<0.0010	<0.0010	<0.0010	<0.20
Cadmium, Total	mg/L	<0.000020	<0.000020	n/a	<0.000050	<0.000020	<0.000050	<0.000020	<0.000050	<0.000050	<0.000020	<0.000020
Iron, Total	mg/L	0.011	0.011	0.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.030	<0.010	<0.010
Mercury, Total	mg/L	<0.000010	<0.000010	n/a	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum, Total	mg/L	<0.0050	<0.0050	n/a	<0.000050	<0.0050	<0.0050	<0.000050	<0.000050	<0.000050	<0.000050	<0.0050
Ammonia Nitrogen	mg/L	<0.020	<0.020	n/a	<0.020	<0.020	<0.020	-	-	-	-	-
Nitrate Nitrogen	mg/L	0.0348	0.0261	33.3	<0.0050	<0.0050	<0.0050	-	-	-	-	-
Arsenic, Total	mg/L	<0.00020	0.00024	n/a	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Copper, Total	mg/L	0.000321	0.000305	5.2	0.00484	0.00167	0.0244	<0.000050	<0.00010	<0.00010	<0.000050	0.000315
Cyanide, Total	mg/L	<0.0050	<0.0050	n/a	<0.0050	<0.0050	<0.0050	-	-	-	-	-
Lead, Total	mg/L	0.000062	0.000078	20.5	0.00212	0.00607	0.0445	<0.000050	<0.000050	<0.000050	<0.000050	0.000267
Nickel, Total	mg/L	0.000460	0.000412	11.7	<0.00010	<0.000050	<0.00050	<0.000050	<0.00010	<0.00050	<0.000050	0.000111
Zinc, Total	mg/L	0.00165	0.00122	35.2	0.0080	0.00440	0.0040	<0.00050	<0.0010	<0.0010	<0.00050	0.00110
Total Suspended Solids	mg/L	<3.0	<3.0	n/a	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	15.3	-
Radium-226 (a,b)	Bq/L	0.0060	<0.0050	n/a	<0.0050	<0.0050	<0.0050	-	-	-	-	-
pH	pH units	7.80	7.89	1.1	6.27	5.59	6.17	5.51	5.53	5.87	5.84	-
Salinity	o/oo	4.6	4.6	0.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-
Calcium, Total	mg/L	58.1	57.6	0.9	1.23	0.084	0.341	<0.050	<0.050	<0.50	<0.50	0.270
Magnesium, Total	mg/L	172	169	1.8	<0.10	<0.10	<0.10	<0.050	<0.050	<1.0	<1.0	0.50

Notes

[1]QAQC samples were collected during each EEM monitoring event. At least one field duplicate and/or one blank sample was collected during each event.

[2]RPD = Relative Percent Difference = [Absolute value (DUP-ORIG)/ORIG]*100%

Cells in grey shading have RPD values >50% for co-located field duplicates

[3]Distilled water from onsite distiller, stored for 1 year in jerry cans onsite.

[4]Commercial distilled water transported to mine site.

2006 QAQC Results

Blank samples were typically less than, or slightly higher than detection limits, revealing no background contamination issues.

POLARIS MINE – 2006 3rd QUARTER MMER REPORT

APPENDIX A

i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/13: 96 hr acute rainbow trout test

APPENDIX B

i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/14: 48 hr acute *Daphnia magna* test

APPENDIX C

i. Results of Effluent Characterization, as per Paragraph 15(1)(a)

APPENDIX D

i. Acute toxicity testing laboratory reports

APPENDIX E

i. Polaris 2006 Sampling Event Chronology

APPENDIX F

i. Letters from Golder Associates, Ltd. explaining laboratory issues for July 15, 2006 and September 9, 2006 toxicity tests

APPENDIX A

96-h Acute Rainbow Trout Toxicity Test

Section 8.1.1 Effluent

i. Name & location of operation generating the effluent
   - Polaris Mine, Little Cornwallis Island, Nunavut
   - Final Discharge Point for Garrow Lake is geo referenced as 75° 22' 32" N, 97° 48' 37" W.

ii. Date & time of sampling
   - Samples for monthly acute toxicity testing were collected
   - Test 1: Saturday July 15, 2006 – 1600h
   - Test 2: Wednesday August 23, 2006 – 1000h
   - Test 3: Saturday September 9, 2006 – 1030h

iii. Type of sample
   - Final discharge point effluent water

iv. Brief description of sampling point
   - 20m downstream of the siphon discharge point at Garrow Lake dam

v. Sampling method
- Water was collected from at least 15cm below the surface using a water pump with silicon tubing
- Water was collected from the upstream direction
- The pump was flushed with site water for at least one minute prior to sample collection
- 2 x 20L sample bottles were filled

vi. Name of person submitting samples
   - Dennis Lu (Gartner Lee) Test 1, Test 2
   - Rick Gaulton (Narwhal Arctic Services) Test 3

vii. Labeling/coding of sample (Sample IDs)
   - Test 1 – G-CREEK_ACUTE_07142006
   - Test 2 – G-CREEK 08232006
   - Test 3 – G-Creek_09

viii. Date & time of sample receipt
   - Samples for sublethal toxicity testing were received:
     Test 1 – Tuesday July 19, 2006 – 1020h
     Test 2 – Monday August 28, 2006 – 1300h
     Test 3 – Wednesday September 13, 2006 – 1130h

ix. Temperature upon sample receipt at laboratory
   - Test 1 – 18.4 °C
   - Test 2 – 17.0 °C
   - Test 2 – 14.7 °C

Section 8.1.2 Test Facilities and Conditions

i. Test type & method
   - 96-hour Rainbow Trout LC_{50}

ii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13[1]
   - Test 1: Test was invalid due to a temperature control unit failure at the laboratory. Results were not reported. See **Appendix F** for further details.
   - Test 2: No deviations from requirements
   - Test 3: Test was invalid due to a control failure in the test. Results were not reported. See **Appendix F** for further details.

iii. Name and city of testing laboratory
- Golder Associates Ltd., North Vancouver, BC

[1] Results were reported only for Test 2. Both Test 1 and Test 3 had laboratory issues, which rendered them invalid. See **Appendix F** for further details.

iv. Source of test species
- Sun Valley

v. Percent mortality of fish in stock tank(s)
- Test 2: 1.1%

vi. Species of test organism
- Rainbow Trout (*Oncorhynchus mykiss*)

vii. Date and time for start of definitive test
- Test 2: August 28, 2006 – 1440h

viii. Person(s) performing the test and verifying the results
- Test 2: Robert Harrison, Lee Card, Julianna Kalocai

ix. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
- Test 2: pH – 8.0, T - 15.0 °C, DO - 10.3 mg/L, C – 11550 µS/cm

x. Confirmation that no adjustment of sample or solution pH occurred
- Test 2: No pH adjustment

xi. Indication of aeration of test solutions before introduction of fish
- Test 2: 6.5 ± 1 mL/min/L for 30mins

xii. Concentrations and volumes tested
- Concentrations (% effluent volume / total volume) tested and total volumes used were:
- Control (0%) - 10 L
- 6.25% - 10 L
- 12.5% - 10 L
- 25% - 10 L
- 50% - 10 L
- 100% - 10 L

xiii. Measurements of dissolved oxygen, pH and temperature

Sample Collection Date	Test Concentration (% v/v)	Temperature (0hr) (°C)	Temperture (96hr) (°C)	Dissolved Oxygen (0hr) (mg/L)	Dissolved Oxygen (96hr) (mg/L)	pH (0hr) pH units	pH (96hr) pH units	Conductivity (0hr) uS/cm
Test 2	0 (Control)	15	14	10.3	9.8	7.2	6.7	42
23-Aug-06	6.25	15	14	10.3	9.6	7.4	7.0	1480
	12.5	15	14	10.3	9.8	7.7	7.2	2060
	25	15	14	10.3	9.8	7.9	7.3	3630
	50	15	14	10.3	9.6	8.0	7.5	6510
	100	15	14	10.3	9.6	8.0	7.8	11540

xiv. Number of fish added to each test vessel
- Test 2: 10 fish/ 12 L vessel

xv. Mean and range of fork length of control fish at end of test
- Test 2: 36 mm (32 – 44)

xvi. Mean wet weight of individual control fish at end of the test
- Test 2: 0.40 g (0.28 – 0.61)

xvii. Estimated loading density of fish in test solutions
- Test 2: 0.33 g/L

Section 8.1.3 Results

i. Number of mortalities of fish in each test solution
- Test 2:

- Control (0%) - 0
- 6.25% - 0
- 12.5% - 0
- 25% - 1
- 50% - 2
- 100% - 3

ii. Number of control fish showing atypical/stressed behaviour
- None in Test 2

iii. Mean mortality rate in solutions of effluent and control water
- Test 2:
- Control (0%) - 0%
- 6.25% - 0%
- 12.5% - 0%
- 25% - 10%
- 50% - 20%
- 100% - 30%

iv. Estimate of 96-h LC50 in multi-concentration tests
- Test 1: 96hr LC_{50} concentration > 100% effluent[2]
- Test 2: 96hr LC_{50} concentration > 100% effluent

v. Most recent 96-h LC50 for reference toxicity test(s)
- Reference toxicity tests for Toxicant: SDS
- Test 2: (August 21, 2006) 96-h LC_{50} = 27 mg/L SDS, 95% CL = 23-31 mg/L

vi. Reference toxicant warning limits (mean +/- 2SD)
- Reference toxicity tests for Toxicant: SDS
- Test 2: 96-h LC_{50} = 28 +/- 13 mg/L SDS

[2] Although Test 1 was invalid due to a temperature control unit failure, the 96hr LC50 would be estimated to be >100% v/v. See **Appendix F** for further details.

APPENDIX B

48-h Acute *Daphnia magna* Toxicity Test

Section 8.1.1 Effluent

i. Name & location of operation generating the effluent
   - Polaris Mine, Little Cornwallis Island, Nunavut
   - Final Discharge Point for Garrow Lake is geo referenced as 75° 22' 32" N, 97° 48' 37" W.

ii. Date & time of sampling
   - Samples for monthly acute toxicity testing were collected
   - Test 1: Saturday July 15, 2006 – 1600h
   - Test 2: Wednesday August 23, 2006 – 1000h
   - Test 3: Saturday September 9, 2006 – 1030h

iii. Type of sample
   - Final discharge point effluent water

iv. Brief description of sampling point
   - 20m downstream of the siphon discharge point at Garrow Lake dam

v. Sampling method
   - Water was collected from at least 15cm below the surface using a water pump with silicon tubing
   - Water was collected from the upstream direction
   - The pump was flushed with site water for at least one minute prior to sample collection
   - 2 x 20L sample bottles were filled

vi. Name of person submitting samples
   - Dennis Lu (Gartner Lee) Test 1, Test 2
   - Rick Gaulton (Narwhal Arctic Services) Test 3

vii. Labeling/coding of sample (Sample IDs)
   - Test 1 – G-CREEK_ACUTE_07142006
   - Test 2 – G-CREEK 08232006
   - Test 3 – G-Creek_09

viii. Date & time of sample receipt
   - Samples for sublethal toxicity testing were received:
     Test 1 – Tuesday July 19, 2006 – 1020h
     Test 2 – Monday August 28, 2006 – 1300h
     Test 3 – Wednesday September 13, 2006 – 113

ix. Temperature upon sample receipt at laboratory
   i. Test 1 – 18.4 °C
   ii. Test 2 – 17.0 °C
   iii. Test 2 – 14.7 °C

Section 8.1.2 Test Facilities and Conditions

ii. Test type & method
   - 48-hour *Daphnia magna* LC_{50}

iii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13
   - Test 1 and Test 2: No deviations from requirements
   - Test 3: Testing was initiated 7 days outside the holding time, due to a laboratory error. Results have been reported. See **Appendix F** for further details.

iv. Name and city of testing laboratory
   - Golder Associates Ltd., North Vancouver, BC

v. Species of test organism
   - *Daphnia magna*

vi. Date and time for start of definitive test
   - Test 1: July 19, 2006 – 1530h
   - Test 2: August 28, 2006 – 1435h

- Test 3: September 21, 2006 – 0920h

vii. Person(s) performing the test and verifying the results
- Test 1: Jacquelyn Paterson, Marriah Grey, Lee Card, Julianna Kalocai
- Test 2: Jacquelyn Paterson, Mike Brassil, Julianna Kalocai
- Test 2: Jacquelyn Paterson, Lee Card, Jacquelyn Shrimer, Julianna Kalocai

viii. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
- Test 1: pH - 7.7, T – 20.0 °C, DO – 9.1 mg/L, C – 2650 µmhos/cm
- Test 2: pH - 7.9, T – 23.5 °C, DO - 10.5 mg/L, C – 11630 µmhos/cm
- Test 3: pH - 7.9, T – 19.5 °C, DO – 8.5 mg/L, C – 12600 µmhos/cm

ix. Confirmation that no adjustment of sample or solution pH occurred
- Test 1: No pH adjustment
- Test 2: No pH adjustment
- Test 2: No pH adjustment

x. Indication of any adjustment of hardness of effluent sample
- Test 1: No hardness adjustment (initial hardness = 332 mg/L)
- Test 2: No hardness adjustment (initial hardness = 1400 mg/L)
- Test 3: No hardness adjustment (initial hardness = 1588 mg/L)

xi. Indication of any aeration of sample
- Test 1: No aeration
- Test 2: 25-50 mL/min/L for 15mins
- Test 3: No aeration

xii. Concentrations and volumes tested
- Concentrations (% effluent volume / total volume) tested and total volumes used for Test 1, Test 2, and Test 3 were:
- Control (0%) - 200 mL
- 6.25% - 200 mL
- 12.5% - 200 mL
- 25% - 200 mL
- 50% - 200 mL
- 100% - 200 mL

xiii. Measurements of dissolved oxygen, pH and temperature

Sample Collection Date	Test Concentration (% v/v)	Temperature (0hr) (°C)	Temperture (48 hr) (°C)	Dissolved Oxygen (0hr) (mg/L)	Dissolved Oxygen (48hr) (mg/L)	pH (0hr) pH units	pH (48hr) pH units	Conductivity (0hr) umhos/cm	Hardness (0hr) (mg/L)
Test 1	0 (Control)	20	20.5	9.1	8.8	7.8	7.5	322	88
15-Jul-06	6.25	20	20.5	9.1	8.8	7.7	7.5	483	
	12.5	20	20.5	9.1	8.8	7.7	7.5	620	
	25	20	20.5	9.1	8.8	7.7	7.5	933	
	50	20	20.5	9.1	8.8	7.7	7.6	1510	
	100	20	20.5	9.1	8.8	7.7	7.6	2650	332
Test 2	0 (Control)	20	20	9	8.4	7.6	7.3	298	82
23-Aug-06	6.25	20	20	9	8.4	7.6	7.5	1114	
	12.5	20	20.5	9	8.4	7.7	7.6	1886	
	25	20	20.5	9	8.4	7.8	7.6	3370	
	50	20.5	20.5	8.9	8.4	7.8	7.7	6220	
	100	21	20.5	8.9	8.4	7.9	7.9	11630	1400

Sample Collection Date	Test Concentration	Temperature (0hr)	Temperture (48 hr)	Dissolved Oxygen (0hr)	Dissolved Oxygen (48hr)	pH (0hr)	pH (48hr)	Conductivity (0hr)	Hardness (0hr)
Test 3	0 (Control)	20	20	9.1	8.9	7.5	7.4	323	60
9-Sept-06	6.25	20	20	9.1	8.9	7.7	7.6	1093	
	12.5	20	20	9.1	8.9	7.7	7.7	1798	
	25	20	20	9.1	8.9	7.7	7.8	3360	
	50	20	20	9	8.9	7.8	7.9	6190	
	100	19.5	20	8.5	9	7.9	8.0	12600	1588

xiv. Estimates of time to first brood, average number of neonates per brood, and percent mortality during the seven-day period prior to the test

- Test 1: 8 days to brood, >17 neonates/brood, 3% mortality in 7d prior to test
- Test 2: 8 days to brood, >18 neonates/brood, 2.5% mortality in 7d prior to test
- Test 3: 8 days to brood, >26 neonates/brood, 2% mortality in 7d prior to test

xv. Number of neonates per test vessel and milliliters of solution per daphnid

- Methods for all tests and dilution series were the same:
- 10 neonates per vessel
- 200 mL of solution per vessel
- 20 mL of solution per daphnid

Section 8.1.3 Results

i. Number of dead and/or immobile daphnids in each test solution including controls
   - Results were the same for Test 1, Test 2 and Test 3, except where noted
   - Control (0%) - 0 dead / immobile
   - 6.25% - 0 dead / immobile
   - 12.5% - 0 dead / immobile
   - 25% - 0 dead / immobile
   - 50% - 0 dead / immobile
   - 100% - 0 dead / immobile (Test 1); 3 dead / immobile (Test 2); 2 dead / immobile (Test 3)

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.
   - Single concentration test was not conducted, dilution series tests were conducted

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.
   - Test 1: 48-h LC_{50} = > 100% effluent; EC50 >100% (only reported if observed); statistical method not applicable due to lack of toxicity
   - Test 2: 48-h LC_{50} = > 100% effluent EC50 >100% (only reported if observed); statistical method not applicable due to lack of toxicity
   - Test 3: 48-h LC_{50} = > 100% effluent EC50 >100% (only reported if observed); statistical method not applicable due to lack of toxicity

iv. Most recent 48-h LC50 for reference toxicant test(s), reference chemical(s), date test initiated, historic geometric mean LC50 and warning limits.
   - Reference toxicity tests for Toxicant: Zinc
   - Test 1: (Jul-12-06) 48-h LC_{50} = 435 µg/L Zinc, 95% CL = 364 – 521 µg/L
   - Test 2: (Aug-22-06) 48-h LC_{50} = 707 µg/L Zinc, 95% CL = 564 – 887 µg/L
   - Test 3: (Sept-14-06) 48-h LC_{50} = 302 µg/L Zinc, 95% CL = 220 – 414 µg/L

v. Reference toxicant warning limits (mean +/- 2 SD)
   - Reference toxicity tests for Toxicant: Zinc
   - Test 1: 48-h LC_{50} = 782 (+/- 621) µg/L Zinc
   - Test 2: 48-h LC_{50} = 738 (+/- 620) µg/L Zinc
   - Test 3: 48-h LC_{50} = 736 (+/- 599) µg/L Zinc

APPENDIX C

Results of Effluent Characterization as per Paragraph 15(1)(a)

RESULTS OF EFFLUENT CHARACTERIZATION

AS PER PARAGRAPH 15(1)(a)

Ten MMER effluent samples were collected during the 3rd Quarter of 2006 between July 6, 2006 and September 14, 2006. All ten effluent samples were analyzed as "quarterly" and were thus analyzed for a wider suite of elements, as per EEM guidance. Monthly loadings of metals to Garrow Bay were calculated based on average weekly discharge volumes from Garrow Lake to Garrow Bay via the creek outflow.

Due to the high Arctic, remote location of the mine, travel into or out of the mine site can be hazardous due to weather conditions such as fog and snow. As the mine has ceased operations and little infrastructure exists onsite, sampling this season was conducted by small field crews stationed onsite, or by flying technicians in on a weekly basis to collect the MMER samples. No sample was collected the week of July 30, 2006 as it was not possible to transport a trained sampler to site. All other weeks were sampled.

There were no exceedances of any Schedule 4 discharge limits during the quarter.

Water samples for acute and sublethal toxicity testing were collected using a pump system from about 20 m downstream of the historic dam location on Garrow Lake, within the main flow of the creek. Acute lethality toxicity samples (i.e., 96-hr Rainbow Trout and 48-hr *Daphnia magna*) were collected on July 15, 2006, August 23, 2006, and September 9, 2006. Unfortunately there were laboratory issues that affected some of the toxicity tests conducted in the 2006 season. The July 15, 2006 Rainbow Trout test was rendered invalid due to a temperature control unit failure. The test was completed and an LC_{50} of >100% was estimated (**Appendix F**); however, a laboratory report was not produced due to the invalidity of the test. The September 9, 2006 Rainbow Trout test had a control failure, and was also rendered invalid (**Appendix F**). An LC_{50} estimate was not possible for this test, and reporting was not possible. The September 9, 2006 *Daphnia magna* test was initiated 7 days outside the test holding time due to a laboratory oversight (**Appendix F**). Testing and reporting was completed on this sample, and no toxicity was observed. Despite these laboratory issues, there were no adverse effects observed in any of the 96-hr Rainbow Trout toxicity tests, or the 48-hr *Daphnia magna* toxicity tests. LC_{50} values were >100% effluent for both species in all testing events.

Zinc is the primary contaminant of potential concern (COPC) identified in mine effluent. Concentrations of zinc during 2006 averaged 48 µg/L and ranged between 17 and 73 µg/L, which are well below the MMER effluent limit of 500µg/L. These concentrations are also lower than those measured in 2003, 128µg/L (range 48 – 186µg/L), and in 2004, 72 µg/L (range 35 – 198 µg/L), but similar to those measured in 2005, 39 µg/L (range 13 – 91 µg/L). There is an overall decreasing pattern in zinc concentrations between 2003 and 2005, with concentrations apparently leveling off in 2006. Note the CCME guideline for zinc is 30 µg/L and the BC AWQG guidelines are 7.5 and 33 µg/L, for the chronic and acute guidelines, respectively. Concentrations of zinc in Polaris mine effluent were not substantially higher than these guidelines in both 2005 and 2006.

APPENDIX D

Acute Toxicity Testing Laboratory Reports

Golder Associates Ltd.

195 Pemberton Avenue
North Vancouver, British Columbia, Canada V7P 2R4
Telephone 604-986-4331
Fax 604-662-8548

E/06/1023
04-1424-044

August 16, 2006

Azimuth Consulting Group Ltd.
218-2902 West Broadway
Vancouver, BC
V6K 2G8

Attention: Cheryl Mackintosh

RE: TOXICITY TESTING ON THE SAMPLE IDENTIFIED AS G-CREEK-ACUTE-07142006 (COLLECTED JULY 15, 2006) WORK ORDER: 0600324.

Dear Ms. Mackintosh:

We are pleased to provide you with the results of the toxicity tests performed on the effluent sample identified as G-Creek-Acute-07142006 collected July 15, 2006. The sample was tested with the 48-h *Daphnia magna* LC50 toxicity test. Testing was performed according to the Environment Canada protocol for conducting acute toxicity tests using *D. magna* (EPS 1/RM/14, Second Edition, 2000). An independent Golder QA/QC review confirmed that all acceptability criteria specified by the protocol were met. The results are presented in Table 1.

Should you have any questions or comments regarding this report, please do not hesitate to contact the undersigned at 604-986-4331.

Yours very truly,
GOLDER ASSOCIATES LTD.

Jennifer Young, B.Sc.
Bioassay Team Leader – Cladoceran Team

Verified By:

QA/QC Committee:
Julianna Kalocai, M.Sc.
Barri-Lynn Rudolph, B.Sc.

Attachment: Table 1
JRY/pdk
O:\Data\Final\2004\1424\04-1424-044\LET 0816_06 Tox Test WO 0600324.doc

TABLE 1
Toxicity Test Results

Sample Identification	Collection Date	*Daphnia magna*
		48h LC50 (95% CL) [% (v/v)]
G-Creek-Acute-07142006	July 15, 2006	>100

CL – Confidence Limits

Toxicity testing was carried out in accordance with applicable test methodologies and/or standards of practice. Our liability is limited solely to the cost of re-testing in the event of non-compliance with such test specifications or standards of practice. Golder accepts no responsibility or liability for the interpretation or use of these testing results by others, nor for any delay, loss, damage or interruptions of testing, collection, preparation, and delivery of samples or test results resulting from events or circumstances beyond our control.

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* TOXICITY TEST DATA SUMMARY

Client: Azimuth
Lab Project No.: 04-1424-044
Lab Work Order No.: 0600234324
Lab Analysts: JAP, MJB, LOC
Test Type: 48 Hour LC50
Test Initiation Date: July 19, 2006

SAMPLE INFORMATION

Identification: G-Creek - Acute - 07142006
Amount Received: 2 x 20L
Date Collected: July 15, 2006
Date Received: July 19, 2006
Temperature (°C): 20.0
pH: 7.7
Dissolved Oxygen (mg/L): 9.1
Conductivity (µmhos/cm): 2650
Hardness (mg/L as $CaCO_3$): 332
Alkalinity (mg/L as $CaCO_3$): —
Ammonia (mg/L N): —
Chlorine (mg/L Cl): —

pH adjustment details: none
Pre-aeration rate and duration: none

DILUTION/CONTROL WATER (initial water quality)

Water Type: MHW (July 16 A)
Temperature (°C): 20.0
pH: 7.8
Dissolved Oxygen (mg/L): 9.1
Conductivity (µS/cm): 322
Hardness (mg/L as $CaCO_3$): 88
Alkalinity (mg/L as $CaCO_3$): 58
Other: —

TEST SPECIES INFORMATION

Broodstock Culture ID (in-house culture): June 20 A&B
Age (on Day 0): ≤ 24hrs
Days to First Brood: 8
Avg. Young/Brood (after 1st brood): 17
% Mortality in 7 d Before Test: 3
Reference Toxicant: ZINC
Current Reference Toxicant Result
Reference Toxicant Test Date: July 12, 2006
48-h LC50 and 95% CL: 435 (364 - 521) mg/L Zn
Reference Toxicant Warning Limits (mean ± 2SD) and CV: 782 ± 621 mg/L Zn ; CV = 40

TEST CONDITIONS

Temperature Range (°C): 20.0 - 20.5
pH Range: 7.4 - 7.8
Dissolved Oxygen Range (mg/L): 8.8 - 9.1
Conductivity Range (µS/cm): 322 - 2650
Photoperiod (L:D h): 16:8
No. Organisms/Volume: 10/200ml
Other: —

TEST RESULTS: The 48h LC50 of G-Creek - Acute - 07142006 is >100% (V/V).

Data Verified By: [signature]
Date Verified: Aug. 16/06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* ACUTE TOXICITY TEST DATA

Client Azimuth
Lab Project No. 04-1424-044
Lab Work Order No. 0600~~234~~324
Daphnid Broodstock Batch June 20 A+B

Sample ID G-Creek-Acute-07142006
Date Collected 15-July-06
Test Initiation Date/Time 19-July-06 @ 15:30
No. Organisms/Volume 10/200 mL

Concentration	Number of Survivors (1 to 48 h)					Dissolved Oxygen (mg/L)			Temperature (°C)			pH			Conductivity (µmhos/cm)	
% (v/v)	1	2	4	24	48	0	24	48	0	24	48	0	24	48	0	48
Control				10	10	9.1	9.0	8.8	20.0	20.5	20.5	7.8	7.4	7.5	322	326
6.25				10	10	9.1	9.0	8.8	20.0	20.5	20.5	7.7	7.4	7.5	483	486
12.5				10	10	9.1	8.8	8.8	20.0	20.5	20.5	7.7	7.4	7.5	620	622
25				10	10	9.1	8.8	8.8	20.0	20.5	20.5	7.7	7.4	7.5	933	930
50				10	10	9.1	8.9	8.8	20.0	20.5	20.5	7.7	7.4	7.6	1510	1460
100				10	10	9.1	8.9	8.8	20.0	20.5	20.5	7.7	7.4	7.6	2650	2580
Technician Initials				SM	JC	W	SM	JC	W	SM	JC	W	SM	JC	W	JC

Sample Description Clear, colourless liquid
WQ Instruments Used: Temp. cal Hg thermometer pH #A-026502 DO #A-011201 Cond. #A-990901
Comments

Test Set Up By WC Data Verified By [signature] Date Verified Aug 11/06

CHAIN-OF-CUSTODY/TEST REQUEST FORM

EVS environment consultants
195 Pemberton Avenue
North Vancouver, BC
Canada V7P 2R4
Tel: (604) 986-4331
Fax: (604) 662-8548
www.evsenvironment.com

Client Name: Teck Cominco | Client Contact: Bruce Donald | Ship to: client

Address: Bag 2000 | Phone: 250-427-8405 | email cmackintosh@azimuthgroup.ca
Kimberley | Fax: 250-427-8451 | bruce.donald@teckcominco.com
V1A 3E1 | Sampled by: Dennis Lu | Attn: | Shipping Date: July 15

1 Collection Date (DD/MMM/YYYY)	1 Time (24-h clock)	Sample Identification	2 Type of Each Sample	Material Safety Data Sheet Attached? (√)	Sample Collection Method G = grab; C = composite	Number of Sample Containers x Volume of Sample Container (i.e., 1 x 20 L)	3 Sample Container Type by Code	Test(s) Requested: Acute Toxicity					4 Sample Notes (e.g. preserved, saltwater, freshwater, may contain sewage)
July 15, 2006	1600	G-Creek_Acute_07/4/2006	Fr		G	2x20L	PLC	X					note: 48-h Daphnia LC50
													96h RBT LC50

PO/Reference No.:
Project Title: Polaris
Results Needed By: Routine

Comments/Instructions:

1) Released by: Dennis Lu | Date: July 15
Company: Cartwright Lee | Time:
Courier name: First Air/Fedex

2) Released by: | Date:
Company: | Time:
Courier name:

1) Received: TMS | Date: 19-Jul-06
Company: Golder | Time: 10:20

2) Received by: | Date:
Company: | Time:

Shaded area to be completed by EVS Laboratory upon sample receipt.

EVS Project No.: 04-1424-044
EVS Work Order (WO) No.: 0600323, 0600324
Condition Upon Receipt: good
Receipt Sample Temp. (C): 18.4

1 For composite effluent or water samples, the sample collection date/time is the **end** of the compositing period.
2 Receiving Water (RW); Effluent (E); Elutriate (ELU); Sediment (SED); Chemical (CHEM); Stormwater (SW); Other (Please Specify)
3 Collapsible Carboy (CC); Glass Jar (GJ); Jerry Can (JC); Plastic HDPE (P); Other (Please Specify)
4 Please note any conditions the lab should be aware of for safety and storage concerns

Distribution of copies:
White, yellow - accompany the shipment
Pink - kept by consignor (e.g., shipper)
Yellow - kept by consignee (e.g., receiver)
White - returned to consignor by consignee

Please see instructions for completion on back of form.

Revision Date: March 6, 2004

Golder Associates Ltd.

195 Pemberton Avenue
North Vancouver, British Columbia, Canada V7P 2R4
Telephone 604-986-4331
Fax 604-662-8548

E/06/1071
04-1424-044

September 12, 2006

Azimuth Consulting Group Ltd.
218-2902 West Broadway
Vancouver, BC V6K 2G8

Attention: Cheryl Mackintosh

RE: TOXICITY TESTING ON THE SAMPLE IDENTIFIED AS G-CREEK 08232006 (COLLECTED AUGUST 23, 2006)
WORK ORDERS: 0600374, 375

Dear Ms. Mackintosh:

We are pleased to provide you with the results of the toxicity tests performed on the effluent sample identified as G-Creek_08232006 collected August 23, 2006. The sample was tested with the 48-h *Daphnia magna* and the 96-h rainbow trout LC50 toxicity tests. Testing was performed according to the Environment Canada protocol for conducting acute toxicity tests using *D. magna* (EPS 1/RM/14, Second Edition, 2000) and rainbow trout (EPS 1/RM/13, Second Edition, 2000). An independent Golder QA/QC review confirmed that all acceptability criteria specified by the protocol were met. The results are presented in Table 1.

Should you have any questions or comments regarding this report, please do not hesitate to contact the undersigned at 604-986-4331.

Yours very truly,
GOLDER ASSOCIATES LTD.

Jennifer Young, B.Sc.
Bioassay Team Leader – Cladoceran Team

Verified By:

QA/QC Committee:
Julianna Kalocai, M.Sc., R.P.Bio.
Barri-Lynn Rudolph, B.Sc.

JRY/JGK/pdk
Attachment: Table 1
O:\Data\Final\2004\1424\04-1424-044\LET 0912_06 Azimuth Tox Test WO 0600374, 375.doc

TABLE 1: Toxicity Test Results

Sample Identification	Collection Date (Time)	*Daphnia magna*	Rainbow trout
		48h LC50 (95% CL) [% (v/v)]	96h LC50 (95% CL) [% (v/v)]
G-Creek_08232006	August 23, 2006 (1000h)	>100	>100

CL – Confidence Limits

Toxicity testing was carried out in accordance with applicable test methodologies and/or standards of practice. Our liability is limited solely to the cost of re-testing in the event of non-compliance with such test specifications or standards of practice. Golder accepts no responsibility or liability for the interpretation or use of these testing results by others, nor for any delay, loss, damage or interruptions of testing, collection, preparation, and delivery of samples or test results resulting from events or circumstances beyond our control.

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* TOXICITY TEST DATA SUMMARY

Client: Azimuth
Lab Project No.: 04-1424-044
Lab Work Order No.: 0600374
Lab Analysts: JAP
Test Type: 48h LC50
Test Initiation Date: August 28, 2006

SAMPLE INFORMATION
Identification: G-Creek_08232006
Amount Received: 2 x 20L
Date Collected: August 23, 2006
Date Received: August 28, 2006
Temperature (°C): 23.5①->21.0
pH: 7.9①->7.9
Dissolved Oxygen (mg/L): 10.5①->8.9
Conductivity (µmhos/cm): 11630
Hardness (mg/L as $CaCO_3$): 1400
Alkalinity (mg/L as $CaCO_3$): —
Ammonia (mg/L N): —
Chlorine (mg/L Cl): —

pH adjustment details: none
Pre-aeration rate and duration: @ 15 min

DILUTION/CONTROL WATER (initial water quality)
Water Type: Moderately Hard Water (Ay26)
Temperature (°C): 20.0
pH: 7.6
Dissolved Oxygen (mg/L): 9.0
Conductivity (µS/cm): 298
Hardness (mg/L as $CaCO_3$): 82
Alkalinity (mg/L as $CaCO_3$): 50
Other: —

TEST SPECIES INFORMATION
Broodstock Culture ID (in-house culture): Ay1(B,C)
Age (on Day 0): ≤ 24hrs
Days to First Brood: 8
Avg. Young/Brood (after 1st brood): ~~17.55~~ 18
% Mortality in 7 d Before Test: 2.5
Reference Toxicant: Zinc
Current Reference Toxicant Result
Reference Toxicant Test Date: August 22, 2006
48-h LC50 and 95% CL: 707 (564-887) mg/L Zn
Reference Toxicant Warning Limits (mean ± 2SD) and CV
738 ± 620 mg/L Zn 1. CV = 42

TEST CONDITIONS
Temperature Range (°C): 20.0-21.0
pH Range: 7.3-7.9
Dissolved Oxygen Range (mg/L): 8.2-9.0
Conductivity Range (µS/cm): 298-11630
Photoperiod (L:D h): 16:8
No. Organisms/Volume: 10/200ml
Other: —

TEST RESULTS: The 48h LC50 of G-Creek_08232006 is >100% (V/V).

Data Verified By: [signature]
Date Verified: Sept. 12/06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* ACUTE TOXICITY TEST DATA

Client Azimuth
Lab Project No. 04-1424-044
Lab Work Order No. 0600374
Daphnid Broodstock Batch Aug 1 (B, C)

Sample ID G Creek_08232006
Date Collected August 23, 2006
Test Initiation Date/Time August 28, 2006 @ 14:35
No. Organisms/Volume 10/200ml

Concentration % (v/v)	Number of Survivors (1 to 48 h)					Dissolved Oxygen (mg/L)			Temperature (°C)			pH			Conductivity (µmhos/cm)	
	1	2	4	24	48	0	24	48	0	24	48	0	24	48	0	48
Control				10	10	9.0	8.4	8.4	20.0	20.5	20.0	7.6	7.3	7.3	298	309
6.25				10	10	9.0	8.2	8.4	20.0	20.5	20.0	7.6	7.5	7.5	1114	1113
12.5				10	10	9.0	8.4	8.4	20.0	20.5	20.5	7.7	7.6	7.6	1886	1865
25				10	10	9.0	8.2	8.4	20.0	21.0	20.5	7.8	7.7	7.6	3370	3330
50				10	10	8.9	8.3	8.4	20.5	20.5	20.5	7.8	7.8	7.7	6220	6160
100				10	7	8.9	8.3	8.4	21.0	20.5	20.5	7.9	~~7.8~~ MFB 7.9	~~7.8~~ MFB 7.9	11630	11490
Technician Initials				MFB	MFB	JAP	MFB	MFB	JAP	MFB	MFB	JAP	MFB	MFB	JAP	MFB

Sample Description Clear, Colourless
WQ Instruments Used: Temp. Calibrated Hg Thermometer pH II-A-020502 DO II-A-011201 Cond. II-A-990501
Comments

Test Set Up By JAP Data Verified By [signature] Date Verified Sept 11/06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA SUMMARY

Client: Azimuth
Lab Project No.: 04-1424-044
Lab Work Order No.: 0600375

Lab Analysts: RBA, COC
Test Type: 96-h LC50
Test Initiation Date: Aug 28/06 @ 1440

SAMPLE
Identification: G-Creek
Amount Received: 2 x 20L
Date Collected: Aug 23/06
Date Received: Aug 28/06
Other: —

DILUTION/CONTROL WATER (initial water quality)
Fresh Water (dechlorinated): ✓
Temperature (°C): 15
pH: 7.2
Dissolved Oxygen (mg/L): 10.3
Conductivity (µS/cm): 42
Hardness (mg/L as $CaCO_3$): 16
Alkalinity (mg/L as $CaCO_3$): 14
Other: —

TEST SPECIES INFORMATION
Source: Sun Valley
Collection Date/Batch: 080206
Control Fish Size (mean, SD and range measured at end of test)
Date Measured: Sept 1/06
Fork Length (mm): 36±3 (32 and 42)
Wet Weight (g): 0.40±0.11 (0.28 and 0.61)
Reference Toxicant: SDS
Current Reference Toxicant Result
Reference Toxicant Test Date: Aug 21/06
Duration of Acclimation (days): 19
96-h LC50 (and 95% CL): 27 (23 and 31) mg/L
Reference Toxicant Warning Limits (mean ± 2SD) and CV
28±13 mg/L SDS CV: 22%

TEST CONDITIONS
Dissolved Oxygen Range (mg/L): 9.0 - 10.3
Temperature Range (°C): 14 - 15
pH Range: 6.6 - 8.0
Conductivity Range (µS/cm): 42 - 11560
Aeration Provided? (give rate): 6.5±1 mL/min/L
Photoperiod (L:D h): 16:8
No. Organisms/Volume: 10/12L
Loading Density (g/L): 0.33
Acclimation Before Testing (days): 26
Mortality In Previous Week of Acclimation (%): Nil
Other: —

TEST RESULTS The 96-h LC50 is estimated to be >100% (v/v)

Data Verified By: [signature]
Date Verified: Sept. 12/06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
RAINBOW TROUT ACUTE TOXICITY TEST DATA

WHOLE SAMPLE WATER QUALITY

	Initial	pH Adjustment[1]	After 30-min Pre-aeration
Temp. (°C)	15		15
pH	8.0		8.0
DO (mg/L)	10.3		10.3
Cond. (µS/cm)	11550		11540

1. Document pH adjustment procedure (if used) under "Comments".

Total Pre-Aeration Time 30 min

Client Azimuth
Lab Project No. 04-1424-044
Lab Work Order No. 0600375
Trout Batch No. and 7-d Acclimation Mortality 080206 / 1.1%
No. Fish/Volume 10 / 12L
Sample ID G-Creek
Date/Time Collected Aug 23/06 @ 1000
Test Initiation Date/Time Aug 28/06 @ 1440

Concentration % (v/v)	Number of Survivors (1 to 96 hours)							Dissolved Oxygen (mg/L)					Temperature (°C)					pH					Conductivity (µS/cm)	
	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
control				10	10	10	10	10.3	9.0	9.6	9.6	9.8	15	14	14	14	14	7.2	6.7	6.6	6.8	6.7	42	47
6.25				10	10	10	10	10.3	9.0	9.6	9.6	9.6	15	14	14	14	14	7.4	6.9	7.0	7.1	7.0	1418	1427
12.5				10	10	10	10	10.3	9.1	9.6	9.5	9.8	15	14	14	14	14	7.7	7.2	7.3	7.3	7.2	2060	2070
25				10	10	10	9	10.3	9.1	9.7	9.5	9.8	15	14	14	14	14	7.9	7.5	7.6	7.5	7.3	3630	3640
50				10	10	10	8	10.3	9.1	9.5	9.4	9.6	15	14	14	14	14	8.0	7.8	7.8	7.7	7.5	6510	6520
100				10	9	8	7	10.3	9.1	9.4	9.4	9.6	15	14	14	14	14	8.0	8.0	7.9	7.7	7.8	11540	11562
Technician Initials				RLA	RLA	RLA	n	RLA	RLA	RLA	RLA	n	RLA	RLA	RLA	RLA	n	RLA	RLA	RLA	RLA	n	RLA	n

WQ Instruments Used: Temperature calibrated Hg thermometer pH ID-A-030302 DO ID-A-20 Conductivity ID-A-030306
Sample Description clear
Comments

Test Set Up By RLA Data Verified By [signature] Date Verified Sept. 12/06

CHAIN-OF-CUSTODY / TEST REQUEST FORM

Golder Associates

195 Pemberton Avenue
North Vancouver, B.C.
Canada V7P 2R4
Tel: 604-986-4331
Fax: 604-662-8548
www.golder.com

No 2374

Client Name: Teck Cominco
Address: Box 2000, Kimberley, BC, V1A 3E1
Client Contact: Bruce Donald
Phone: 250-427-8405
Fax: 250.427.8451
Sampled by: A. Idlout
Ship to: client
email: cmackintosh@azimuthgroup.ca, bruce.donald@teckcominco.com
Attn.: Edmundd Canaria
Shipping Date: Aug 24

1 Collection Date (DD/MMM/YYYY)	1 Time (24-h clock)	Sample Identification	2 Type of Each Sample	Material Safety Data Sheet Attached? (✓)	Sample Collection Method G=grab C=composite	Number of Sample Containers x Volume of Sample Containers (1 x 20L)	3 Sample Container Type by Code	Test(s) Requested: Acute Toxicity					4 Sample Notes (preserved, saltwater, freshwater, may contain sewage...)
~~08/Aug/20~~													
23/Aug/2006	10:00	G-Creek_08232006	E	N	G	2x20	CC	X					

PO/Reference No.:
Project Title: Polaris
Results Needed By:

Comments/Instructions:

1) Released by: DL — Date: — Time:
Company: GLL
Courier Name:

2) Released by: — Date: — Time:
Company:
Courier Name:

1) Received by: JMS — Date: Aug-28/06 — Time: 1:00
Company: Golder

1) Received by: — Date: — Time:
Company:

Shaded area to be completed by Golder Laboratory upon sample receipt.

Golder Project No.: 04-1424-044
Golder Work Order No.: 0600374/0600375
Condition Upon Receipt: good
Receipt Sample Temp. (°C): 17.0

1 For composite effluent or water samples, the sample collection date/time is the **end** of the compositing period.
2 Receiving Water (RW): Effluent (E); Elutriate (ELU); Sediment (SED); Chemical (CHEM); Stormwater (SW); Other (Please Specify)
3 Collapsible Carboy (CC); glass jar (GJ); Jerry Can (JC); Plastic HDPE (P); Other (Please Specify)
4 Please note any conditions the lab should be aware of for safety and storage concerns

Distribution of copies: White, Yellow — accompany the shipment
Pink — kept by consignor (e.g. shipper)
Yellow — kept by consignee (e.g. receiver)
White — returned to consignor by consignee

Please see instructions for completion on back of form

Revision Date: November 22, 2004

Golder Associates Ltd.

195 Pemberton Avenue
North Vancouver, British Columbia, Canada V7P 2R4
Telephone 604-986-4331
Fax 604-662-8548

E/06/1134
04-1424-044

October 6, 2006

Azimuth Consulting Group Ltd.
218-2902 West Broadway
Vancouver, BC V6K 2G8

Attention: Cheryl Mackintosh

RE: TOXICITY TESTING ON THE SAMPLE IDENTIFIED AS G-Creek_09 (COLLECTED SEPTEMBER 9, 2006) WORK ORDERS: 0600412

Dear Ms. Mackintosh:

We are pleased to provide you with the results of the toxicity tests performed on the effluent sample identified as G-Creek_09 collected September 9, 2006. The sample was tested with the 48-h *Daphnia magna* and the 96-h rainbow trout LC50 toxicity tests. Due to a control failure, no results are available for the 96-h rainbow trout testing. Testing was performed according to the Environment Canada protocol for conducting acute toxicity tests using *D. magna* (EPS 1/RM/14, Second Edition, 2000) with the exception that testing was set up 7 days outside holding time. An independent Golder QA/QC review confirmed that all other acceptability criteria specified by the protocol were met. The results are presented in Table 1.

Should you have any questions or comments regarding this report, please do not hesitate to contact the undersigned at 604-986-4331.

Yours very truly,
GOLDER ASSOCIATES LTD.

Jennifer Young, B.Sc.
Bioassay Team Leader – Cladoceran Team

Verified By:

QA/QC Committee:
Julianna Kalocai, M.Sc., R.P.Bio.
Barri-Lynn Rudolph, B.Sc.

Attachment: Table 1
JRY/JGK/pdk
O:\Data\Final\2004\1424\04-1424-044\LET 1006_06 Azimuth WO0600412.doc

TABLE 1: Toxicity Test Results

Sample Identification	Collection Date	*Daphnia Magna*
		48h LC50 (95% CL) [% (v/v)]
G-Creek_09	September 9, 2006	>100

CL – Confidence Limits; LC – Lethal Concentration.

Toxicity testing was carried out in accordance with applicable test methodologies and/or standards of practice. Our liability is limited solely to the cost of re-testing in the event of non-compliance with such test specifications or standards of practice. Golder accepts no responsibility or liability for the interpretation or use of these testing results by others, nor for any delay, loss, damage or interruptions of testing, collection, preparation, and delivery of samples or test results resulting from events or circumstances beyond our control.

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* TOXICITY TEST DATA SUMMARY

Client: Aztech
Lab Project No.: 04-1424-044
Lab Work Order No.: 0600412

Lab Analysts: JAP, LOC, JMS
Test Type: 48hr LC50
Test Initiation Date: Sept 21/06

SAMPLE INFORMATION

Identification: G-Creek-09
Amount Received: ~1x2L
Date Collected: ~~8 Sept 06~~ Sept 9, 2006
Date Received: 13 Sept 06
Temperature (°C): ~~Arr~~ 19.5
pH: 7.9
Dissolved Oxygen (mg/L): 8.5
Conductivity (µmhos/cm): 12 600
Hardness (mg/L as $CaCO_3$): 1588
Alkalinity (mg/L as $CaCO_3$): —
Ammonia (mg/L N): —
Chlorine (mg/L Cl): —

pH adjustment details: none
Pre-aeration rate and duration: none

DILUTION/CONTROL WATER (initial water quality)

Water Type: MHW (Sept 19)
Temperature (°C): 20.0
pH: 7.5
Dissolved Oxygen (mg/L): 9.1
Conductivity (µS/cm): 323
Hardness (mg/L as $CaCO_3$): 60
Alkalinity (mg/L as $CaCO_3$): 92
Other: —

TEST SPECIES INFORMATION

Broodstock Culture ID (in-house culture): Aug 29 A3C
Age (on Day 0): 72hr
Days to First Brood: 8
Avg. Young/Brood (after 1st brood): 26 ~~or~~
% Mortality in 7 d Before Test: 2 ~~81~~.
Reference Toxicant: ZnC
Current Reference Toxicant Result
Reference Toxicant Test Date: Sept 14, 2006
48-h LC50 and 95% CL: 302 (220 – 414) mg/L Zn
Reference Toxicant Warning Limits (mean ± 2SD) and CV
736 ± 599 mg/L Zn ~~%~~ CV = 41

TEST CONDITIONS

Temperature Range (°C): 19.5 – 20.5
pH Range: 7.3 – ~~7.9~~ 8.0
Dissolved Oxygen Range (mg/L): 8.5 – 9.1
Conductivity Range (µS/cm): 323 – 12600
Photoperiod (L:D h): 16:8
No. Organisms/Volume: 10/200mL
Other: —

TEST RESULTS

The 48h LC50 of G-Creek-09 is >100% (V/V)

Data Verified By: Ralph
Date Verified: Oct. 10/06

GOLDER ASSOCIATES-NORTH VANCOUVER LABORATORY
48-h *Daphnia magna* ACUTE TOXICITY TEST DATA

Client: Azimuth
Lab Project No.: 04-1424-044
Lab Work Order No.: 0600417
Daphnid Broodstock Batch: Aug 29 A/B/C

Sample ID: 6-Creek-09
Date Collected: ~~Sept 06~~ Sept 9, 2006
Test Initiation Date/Time: 21 Sept 06 @ 920
No. Organisms/Volume: 10/200ml

Concentration	Number of Survivors (1 to 48 h)					Dissolved Oxygen (mg/L)			Temperature (°C)			pH			Conductivity (µmhos/cm)	
% (v/v)	1	2	4	24	48	0	24	48	0	24	48	0	24	48	0	48
Control				10	10	9.1	8.8	8.9	20.0	20.5	20.0	7.5	7.3	7.4	323	328
6.25				10	10	9.1	8.9	8.9	20.0	20.5	20.0	7.7	7.4	7.6	1093	1111
12.5				10	10	9.1	8.9	8.9	20.0	20.5	20.0	7.7	7.6	7.7	1798	1783
25				10	10	9.1	8.9	8.9	20.0	20.5	20.0	7.7	7.8	7.8	3360	3410
50				10	10	9.0	9.0	8.9	20.0	20.5	20.0	7.8	7.9	7.9	6190	6060
100				10	8	8.5	~~8.0~~ 9.2	9.0	~~19.5~~ A.5	20.5	20.0	7.9	7.9	8.0	12600	~~12490~~ 12490
Technician Initials				SM	JM	N	SM	JM	N	SM	DMS	N	SM	JM	N	DMS

Sample Description: clear colourless liquid
WQ Instruments Used: Temp. Calibrated Hg Thermometer pH II-A-020502 DO II-A-011201 Cond. II-A-990901
Comments:

Test Set Up By: DC Data Verified By: [signature] Date Verified: Oct 2/06

CHAIN-OF-CUSTODY / TEST REQUEST FORM

Golder Associates

195 Pemberton Avenue
North Vancouver, B.C.
Canada V7P 2R4
Tel: 604-986-4331
Fax: 604-662-8548
www.golder.com

№ 2375

Client Name: Teck Cominco
Address: Bag 2000, Kimberley BC V1A 3E1
Client Contact: Bruce Donald
Phone: 250 427 8405
Fax: 250 427 8451
Sampled by: A Idland
Ship to: client
bruce.donald@teckcominco.com
cmackintosh@azimuthgroup.ca
Attn.:
Shipping Date:

1 Collection Date (DD/MMM/YYYY)	1 Time (24-h clock)	Sample Identification	2 Type of Each Sample	Material Safety Data Sheet Attached? (✓)	Sample Collection Method G=grab C=composite	Number of Sample Containers x Volume of Sample Containers (1 x 20L)	3 Sample Container Type by Code	Test(s) Requested: Acute Toxicity					4 Sample Notes (preserved, saltwater, freshwater, may contain sewage...)
09/SEP/2006 ①	10:30 ①	G-Creek_09	E	N	G	2 x 20L	CC						① Sample date and time obtained from carboy label (filled in by client).

PO/Reference No.:
Project Title:
Results Needed By:

Comments/Instructions:

1) Released by: [signature] Date: Sept 19/06
Company: Time: 10:30 AM
Courier Name:

1) Received by: JRS Date:
Company: Golder Time: 11:20

2) Released by: Date:
Company: Time:
Courier Name:

1) Received by: Date:
Company: Time:

Shaded area to be completed by Golder Laboratory upon sample receipt.

Golder Project No.: 04-1424-044
Golder Work Order No.: 0600411/12
Condition Upon Receipt: Good
Receipt Sample Temp. (°C): 14.7

1 For composite effluent or water samples, the sample collection date/time is the **end** of the compositing period.
2 Receiving Water (RW): Effluent (E); Elutriate (ELU); Sediment (SED); Chemical (CHEM); Stormwater (SW); Other (Please Specify)
3 Collapsible Carboy (CC); glass jar (GJ); Jerry Can (JC); Plastic HDPE (P); Other (Please Specify)
4 Please note any conditions the lab should be aware of for safety and storage concerns

Distribution of copies: White, Yellow — accompany the shipment
Pink — kept by consignor (e.g. shipper)
Yellow — kept by consignee (e.g. receiver)
White — returned to consignor by consignee

Please see instructions for completion on back of form

Revision Date: November 22, 2004

APPENDIX E

Polaris 2006 Sampling Event Chronology

Appendix E - Polaris 2006 Sample Collection and Testing Chronology

Activities at the Polaris Mine site had ceased during the last season (2005). Thus in 2006, collection of chemistry and toxicity samples from the mine site was conducted by small field crews stationed on-site for limited time periods (early season) and then by flying technicians into the site on a weekly basis in the latter part of the season. Because of the remote location of the high Arctic mine site and the unpredictable weather conditions, sample shipping and transport issues typically arise throughout the season. In the 2006 season, the mine sight was generally accessible by plane, and thus most weeks were sampled successfully. There were however, issues with the laboratory toxicity tests, which are identified below and explained in more detail in **Appendix F**.

Date	Event Type	Observations/Comments
Fri. Jun-30-06	-	Approximate date flow initiated in Garrow Creek
Thu. Jul-06-06	Monthly/Quarterly[1]	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits.
Sat. Jul-15-06	Monthly/Quarterly Acute Toxicity	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits. Sediment chemisty sample collection from Garrow Toxicity samples arrived at the labs on Wednesday July 19, 2006 within holding times for all tests. The *Daphnia magna* test was initiated on Wednesday July 19, 2006 and the Rainbow trout test was initiated on Thursday July 20, 2006 without incident. A temperature control unit failure occurred in the 96-hr rainbow trout test, between 48-hr and 72-hr, rendering the rainbow trout test invalid. See attached letter in **Appendix F** for details. Despite the temperature failure, there was no acute toxicity in the rainbow trout test. Additionally, there was no acute toxicity in *Daphnia magna* test. [Note that the July 15, 2006 samples were dated as July 14, 2006 in the chain-of-custody for the ALS chemistry lab. Samples were originally collected on July 14, but had to be recollected on July 15 due to logistical issues. The chain-of-custody had already been filled out and was not changed to reflect the correct date. Thus, chemistry and toxicity samples were collected at the same time.]
Fri. Jul-21-06	Monthly/Quarterly	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits.
Wed. Jul-26-06	Monthly/Quarterly Failed attempt for Acute Toxicity resample	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits. Toxicity samples were collected from the FDP. However, during transit it was observed that there was a leak in the sample container resulting in the loss of the sample. Sample shipment was aborted.
Mon. Jul-31-06	No sample	No sample was collected this week due to the lack of availability of a trained technician for sampling.
Fri. Aug-11-06	Monthly/Quarterly	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits.
Thu. Aug-17-06	Monthly/Quarterly	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits.
Wed. Aug-23-06	Monthly/Quarterly Acute Toxicity	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits. Toxicity samples arrived at the labs on Monday August 28, 2006 within holding times for all tests and tests were initiated the same day. No acute toxicity was observed in either test.
Fri. Sep-01-06	Monthly/Quarterly	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits.
Sat. Sep-09-06	Monthly/Quarterly Acute Toxicity	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits. Toxicity samples arrived at the labs on Wednesday September 13, 2006 within holding times for all tests. The rainbow trout test was initiated on Wednesday September 13, 2006 without incident. A test control failure occurred in the rainbow trout test, thus, no results are available. Due to a laboratory miscommunication error with the daphnia test, the daphnia test was not initiated until Thursday September 21, 2006 - 7 days outside the holding time, rendering the daphnia test invalid. See attached letter in **Appendix F** for details on both tests. Despite the missed holding times, there was no acute toxicity in the daphnia test. No resample for the September toxicity event was possible due to the onset of winter conditions at the mine site and the freezing of Garrow Creek.
Thu. Sep-14-06	Monthly/Quarterly	Water chemistry sample collection from FDP (Garrow Creek). No exceedances of Schedule 4 limits. Due to the onset of winter conditions there was barely sufficient flow to sample on September 14, 2006 and Garrow Creek was becoming significantly iced over. Therefore, no further sampling was attempted subsequent to September 14, 2006.

[1]"Monthly/Quarterly" sample events include a larger suite of parameters than "Weekly" samples. See Table 3 for details.

APPENDIX F

Letters from Golder Associates, Ltd. explaining laboratory issues for July 15, 2006 and September 9, 2006 samples

Golder Associates Ltd.

195 Pemberton Avenue
North Vancouver, British Columbia Canada V7P 2R4
Telephone 604-986-4331
Fax 604-662-8548

E/06/1108
04-1424-044

October 2, 2006

Azimuth Consulting Group Ltd.
218-2902 West Broadway
Vancouver, BC
V6K 2G8

Attention: Cheryl Mackintosh

RE: TOXICITY TESTING ON SAMPLE "G-CREEK-0714006" (COLLECTED JULY 15, 2006) WORK ORDER: 0600323

Dear Ms. Mackintosh:

We conducted one 96-h LC50 toxicity test using rainbow trout on the above sample, received at Golder Associates Ltd. on July 19, 2006. The test was initiated on July 20, 2006 according to the Environment Canada protocol for conducting acute toxicity tests using rainbow trout (EPS 1/RM/13, Second Edition, 2000). Between the 48-h and 72-h mark of testing, the temperature control unit failed in the controlled environment room where the test was conducted. This resulted in an increase of the room's temperature, and therefore the test solutions' temperature as well, exceeding the acceptable test temperature range and rendering the test invalid.

(Despite the temperature change this did not appear to affect the final LC50 results since there was no change in mortality in the test save for one mortality in the 12.5% [v/v] dilution at 72 h. Were it not for the test being rendered invalid based on temperature, the 96-h LC50 would be estimated to be >100% [v/v]).

Because the juvenile rainbow trout toxicity test performed on this sample was invalid, and it was not possible for a replacement sample to be collected (due to sample container leakage), Golder agreed to cover the shipping costs for transporting the above sample from the Polaris site to Ottawa (by First Air) and from Ottawa to our North Vancouver

laboratory (by Federal Express). This included issuing payment directly to Teck Cominco for First Air invoice 123690 ($648.01) and using Golder's account number to cover the Federal Express charges.

We apologize for the inconvenience that this equipment failure has caused. If you have any questions or comments regarding this matter, please do not hesitate to contact the undersigned at 604-986-4331.

Yours very truly,

GOLDER ASSOCIATES LTD.

Cathy A. McPherson

Cathy A. McPherson, B.Sc.
Laboratory Manager (interim)

CAM/pdk
O:\Data\Final\2004\1424\04-1424-044\LET 1002_06 Azimuth WO 0600323.doc

Toxicity testing was carried out in accordance with applicable test methodologies and/or standards of practice. Our liability is limited solely to the cost of re-testing in the event of non-compliance with such test specifications or standards of practice. Golder accepts no responsibility or liability for the interpretation or use of these testing results by others, nor for any delay, loss, damage or interruptions of testing, collection, preparation, and delivery of samples or test results resulting from events or circumstances beyond our control.

Golder Associates Ltd.

195 Pemberton Avenue
North Vancouver, British Columbia Canada V7P 2R4
Telephone 604-986-4331
Fax 604-662-8548

E/06/1210
November 8, 2006 04-1424-044

Azimuth Consulting Group Ltd.
218-2902 West Broadway
Vancouver, BC
V6K 2G8

Attention: Cheryl Mackintosh

RE: TOXICITY TESTING ON SAMPLE "G-CREEK_09" (COLLECTED SEPTEMBER 9, 2006) WORK ORDER: 0600411, 412

Dear Cheryl:

On September 13, 2006, the Golder North Vancouver Laboratory received a sample identified as "G-Creek_09", which had been collected September 9, 2006. This sample was submitted for 96-h juvenile rainbow trout and 48-h *Daphnia magna* acute toxicity tests.

The rainbow trout test was initiated on September 14, 2006 according to the Environment Canada protocol for conducting acute toxicity tests using juvenile rainbow trout (EPS 1/RM/13, Second Edition, 2000). During the last 24 h of the test, random mortality ranging from 20 to 50% occurred in all treatments, including the negative control. There was no apparent concentration-response relationship; because control survival was less than 90% the test was considered invalid and results were not reported.

Due to a miscommunication between laboratory staff, the *D. magna* toxicity test was not started within the maximum 5-day sample holding time. When this oversight was discovered (approximately September 20, 2006), Azimuth was notified and the decision was made to conduct the 48-h *D. magna* toxicity test even though the holding time had expired. The test was initiated September 21, 2006, which was 7 days outside the

maximum sample holding time. Results of that test were reported to Azimuth separately, and there was no charge for that test due to our error in not setting it up on time. To reduce the chance of a similar error recurring in future, we have implemented a new system for tracking samples that have been received and are awaiting *D. magna* testing (this is in addition to our existing procedures for notifying laboratory staff of sample arrival).

We understand that due to the onset of freeze-up at Polaris, it was not possible for a replacement sample to be collected and tested. We apologize for the inconvenience this has caused. If you have any questions or comments regarding this matter, please do not hesitate to contact me at 604-986-4331.

Yours very truly,

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED BY

Cathy A. McPherson, B.Sc.
Laboratory Manager (interim)

CAM/pdk
O:\Data\Final\2004\1424\04-1424-044\LET Azimuth Explanatory Letter WO0600411,412.doc

Toxicity testing was carried out in accordance with applicable test methodologies and/or standards of practice. Our liability is limited solely to the cost of re-testing in the event of non-compliance with such test specifications or standards of practice. Golder accepts no responsibility or liability for the interpretation or use of these testing results by others, nor for any delay, loss, damage or interruptions of testing, collection, preparation, and delivery of samples or test results resulting from events or circumstances beyond our control.

APPENDIX 6

DISCUSSION WITH ENVIRONMENT CANADA

REQUESTING SUPPORT FOR

REDUCED WATER QUALITY MONITORING

REQUIREMENTS AT POLARIS

Polaris Mine – Water Quality Data Summary 1982 – 2006

Contents

- Present an historical summary of limnology, and chemistry (zinc) data from Garrow Lake
- Compare data from Garrow Lake Center (GLC) and South (GLS) stations
- Compare Garrow Lake and Garrow Creek zinc data
- Summarize MMER/EEM data

Objective

- Based on cumulative results from limnology, lake stability, lake chemistry, “effluent” chemistry of Garrow Creek and Garrow Bay receiving environment (EEM results), propose a reduced environmental sampling program at Polaris Mine
- Address Polaris Water License NWB1POL0311 accordingly

Chronology of Mining History at Garrow Lake

- 1981 – Mining began with tailings deposition to lake bottom
- 1985 – A break in the tailings line caused a significant spill of Zn and Pb contaminated tailings into surface waters of Garrow Lake
- 1989 – A second smaller tailings line break occurred
- 1989/1990 – A dam at outlet of lake was installed to raise lake level
- 1990 to 1994 – No discharge; raising lake elevation by 2.5 m
- 1994 – Initiated siphoning of lake over dam as final discharge point
- 1995 to1999 – Routine siphoning of lake to stabilize lake elevation
- 2000 to 2003 – Siphoning rate increased to restore lake level to pre-dam lake elevation
- 2002 – Active mining and tailings deposition to Garrow Lake ends
- 2003 to 2004 – Dam removed during winter; lake ~ 0.3 m above pre-dam elevation
- >2004 – Garrow Creek discharges from lake naturally; all remedial works completed

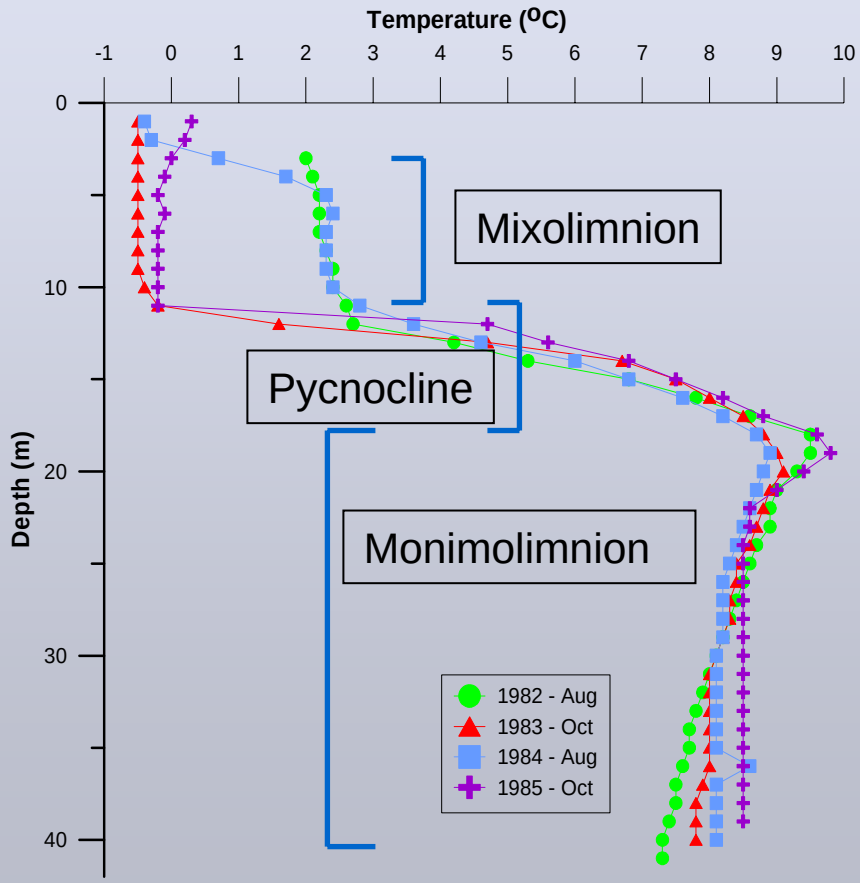
1982 – 2006 Data Summary:

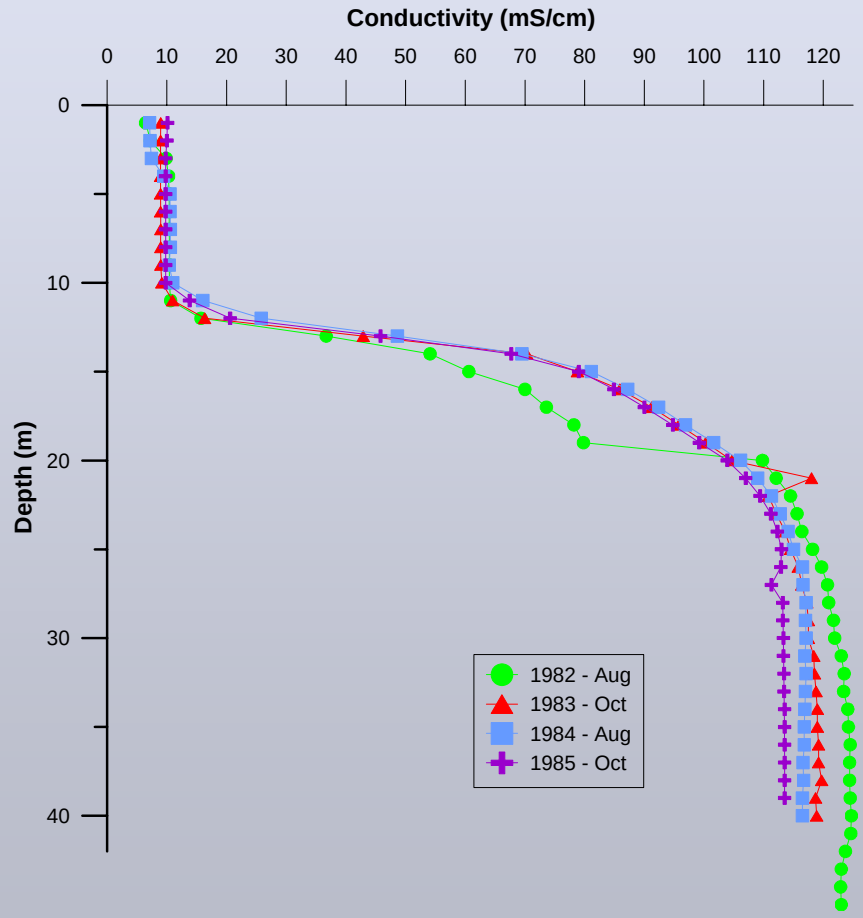
1. Summarize Garrow Lake vertical temperature and conductivity profiles (limnology)
2. Summarize Garrow Lake zinc data
3. Compare Center and South station results
4. Compare Garrow Lake and Garrow Creek zinc concentration data
5. Summarize Toxicity Testing, Receiving Environment Sediment Chemistry, and Clam Tissue results

1) Limnology Data Trends

1982 – 2006

Garrow Lake Temperature/Conductivity: 1982 – 1985

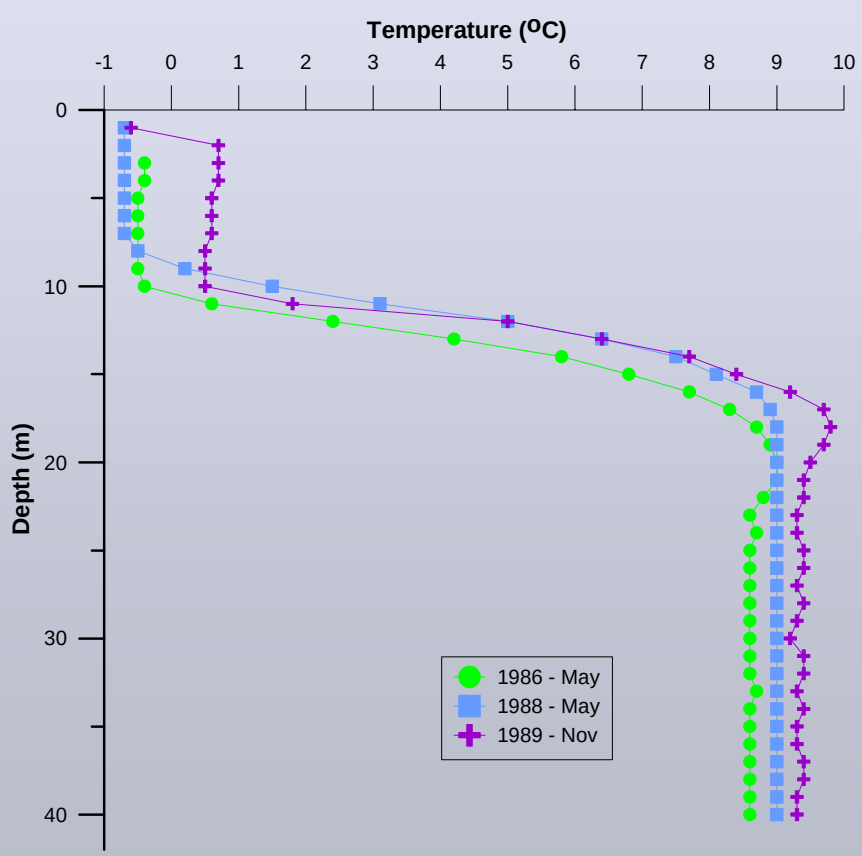


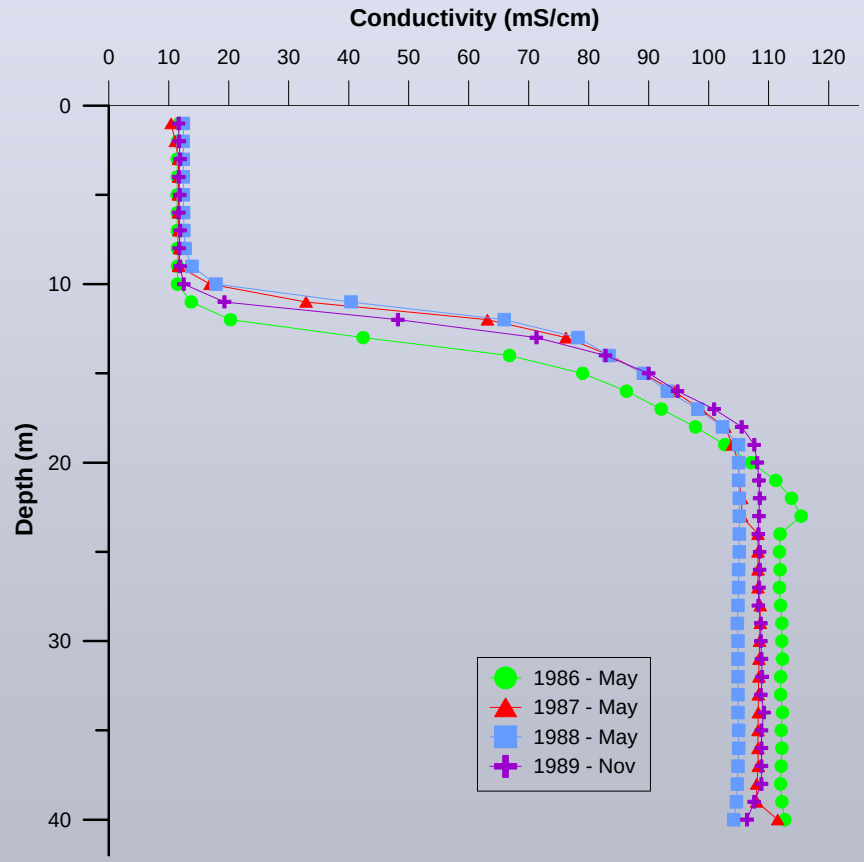


Limnology Data Trends 1982 – 1985

- There is a progression to a uniform conductivity profile in the monimolimnion due to mixing action caused by addition of tailings
- Conductivity of monimolimnion diminishes from ~120 mS in 1982 to ~110 mS in 1985 due to dilution

Garrow Lake Temperature/Conductivity: 1986 – 1989

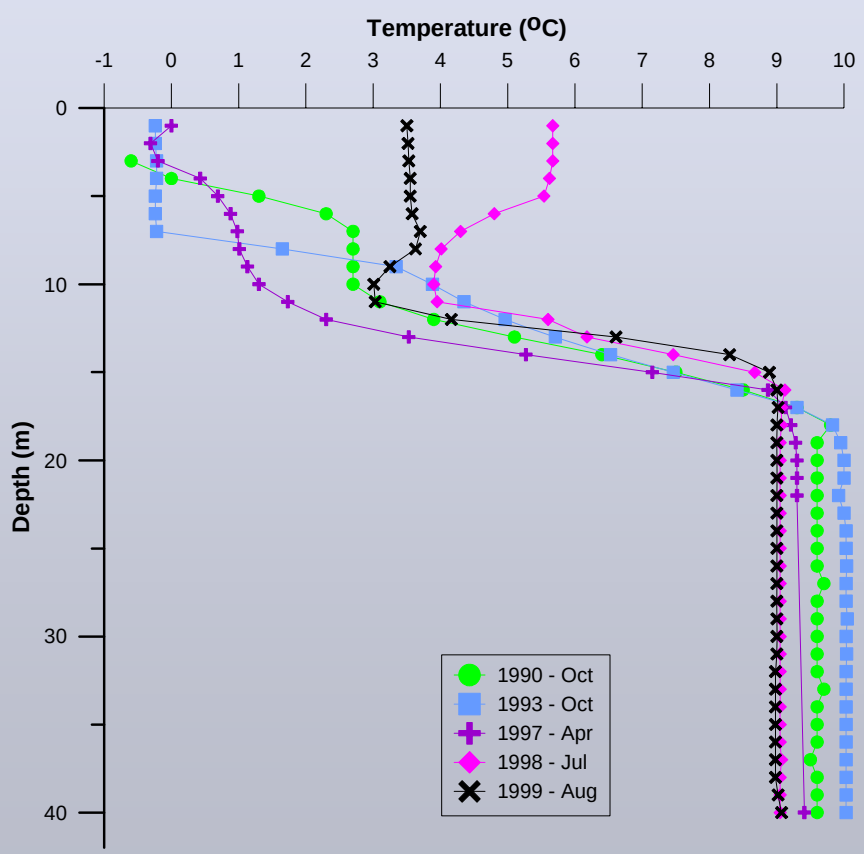


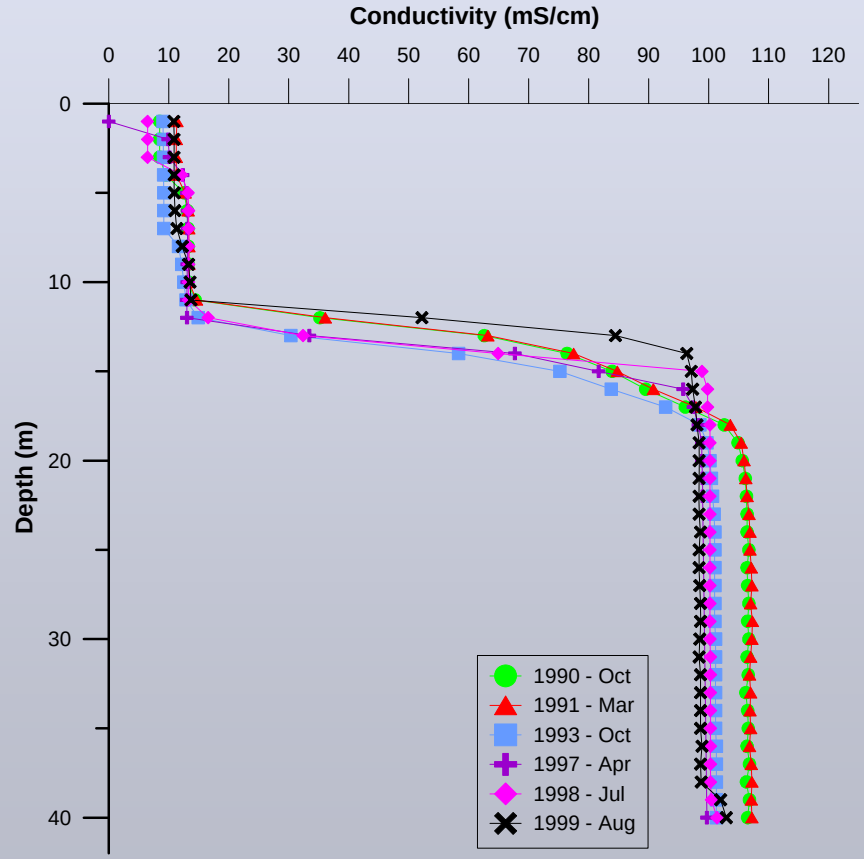


Limnology Data Trends – 1986 – 1989

- In 1985 there was a significant tailings spill in the mixolimnion, resulting in zinc contamination
- Continued small decline in mean conductivity of monimolimnion from ~110 mS in 1986 to ~105 mS in 1989
- The pycnocline diminished in depth from 13 m in 1986 to 12 m in 1989 due to addition of tailings and displacement of water

Garrow Lake Temperature/Conductivity: 1990 – 1999

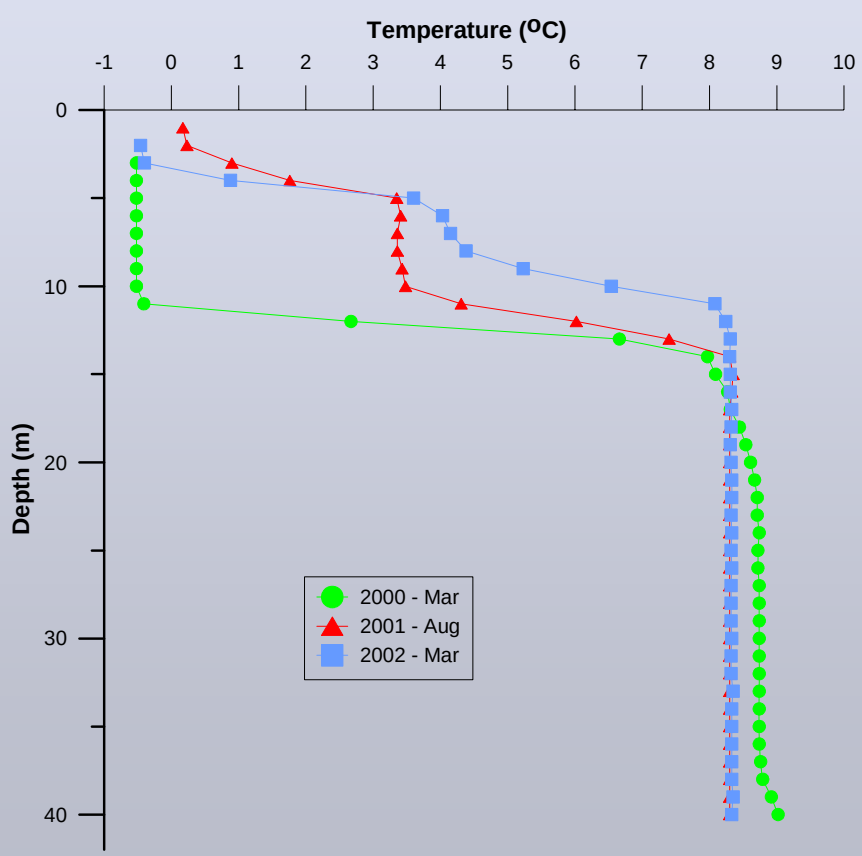


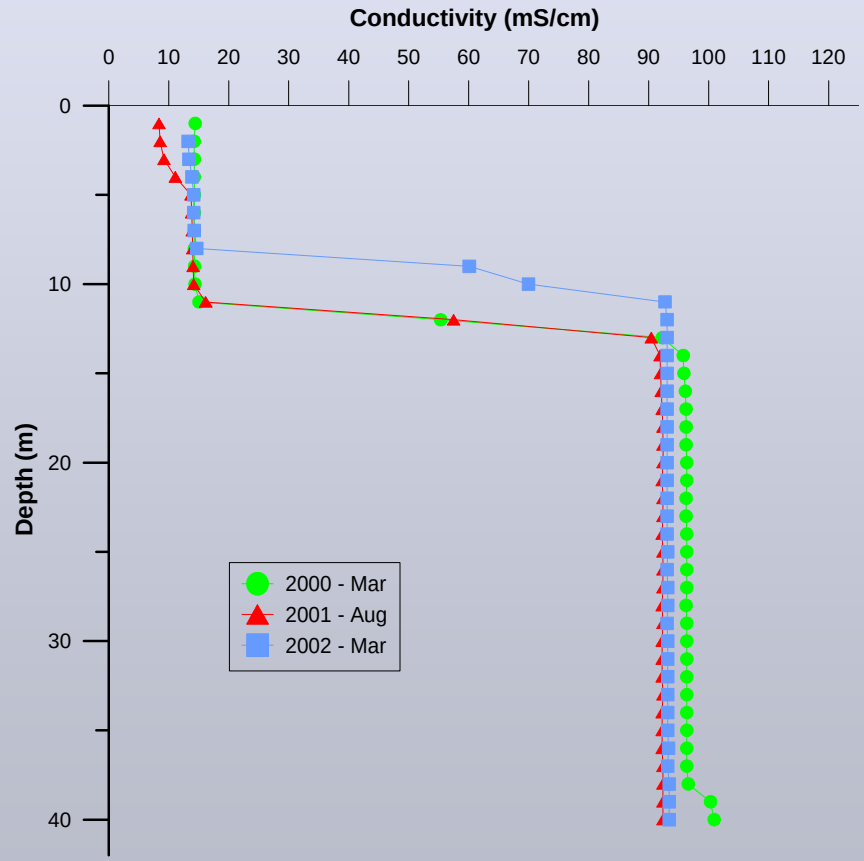


Limnology Data Trends 1990 – 1999

- A continued decline in water temperature in the monimolimnion from 10^{o}C to ~9^{o}C due to addition of cold tailings
- To of pycnocline depth has diminished to 11 m in 1999 from 12 m in 1990, despite rise in water level due to dam installation in 1995
- Depth over which the salinity/temperature gradient occurs has thinned, with a sharper or less gradual change between mixolimnion and monimolimnion layers; occurs over 3 m, not 8 m as in 1985
- Conductivity has continued to decline to 95 mS in 1999 from 105 mS in 1990

Garrow Lake Temperature/Conductivity: 2000 – 2002

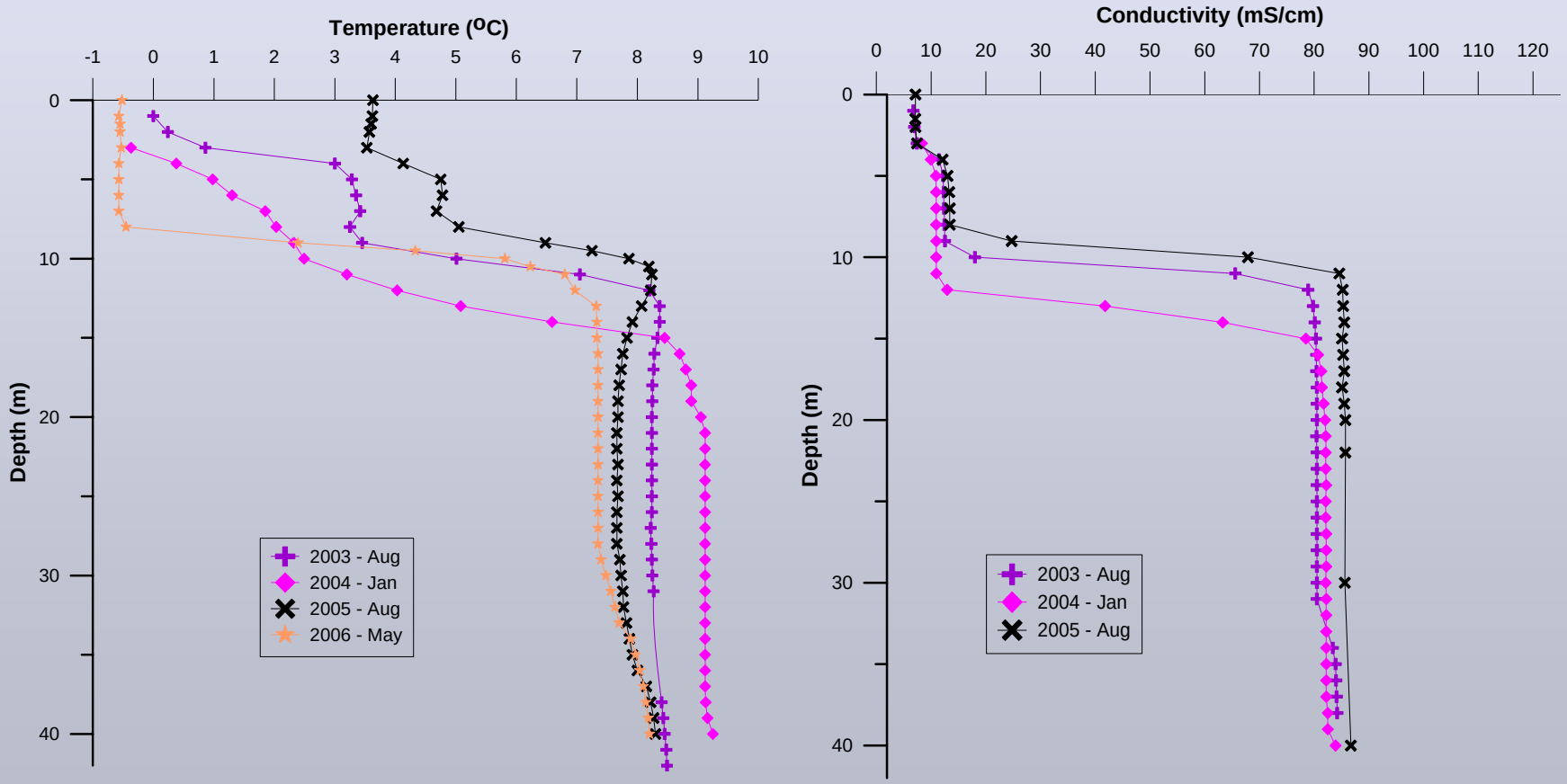




Limnology Data Trends 2000 – 2002

- Very little change in vertical temperature or conductivity profile over the last three years of mine operation
- Very strong stratification and uniform conductivity within mixolimnion and monimolimnion
- Minor differences between years likely due to Hydrolab variation/calibration

Garrow Lake Temperature/Conductivity: 2003 – 2006



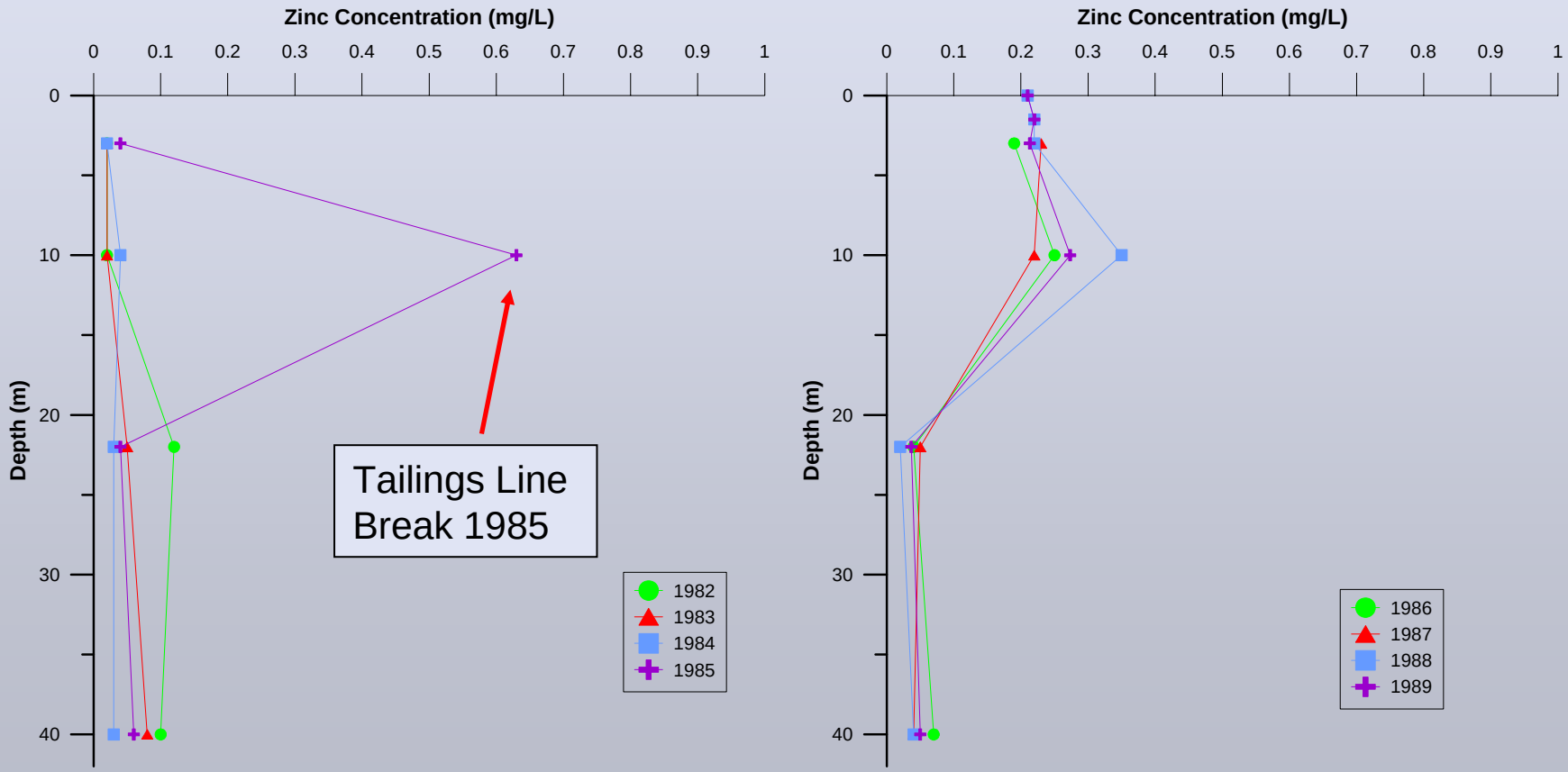
Limnology Data Trends 2003 – 2006

- Tailings deposition to Garrow Lake ceased
- With removal of dam, water level has diminished by 2 m, reducing depth of mixolimnion by same amount
- Thermal/chemical stratification very strong
- Differences in temperature/conductivity of monimolimnion are due to Hydrolab calibration

2) Zinc (mg/L) Data Trends

1982 - 2005

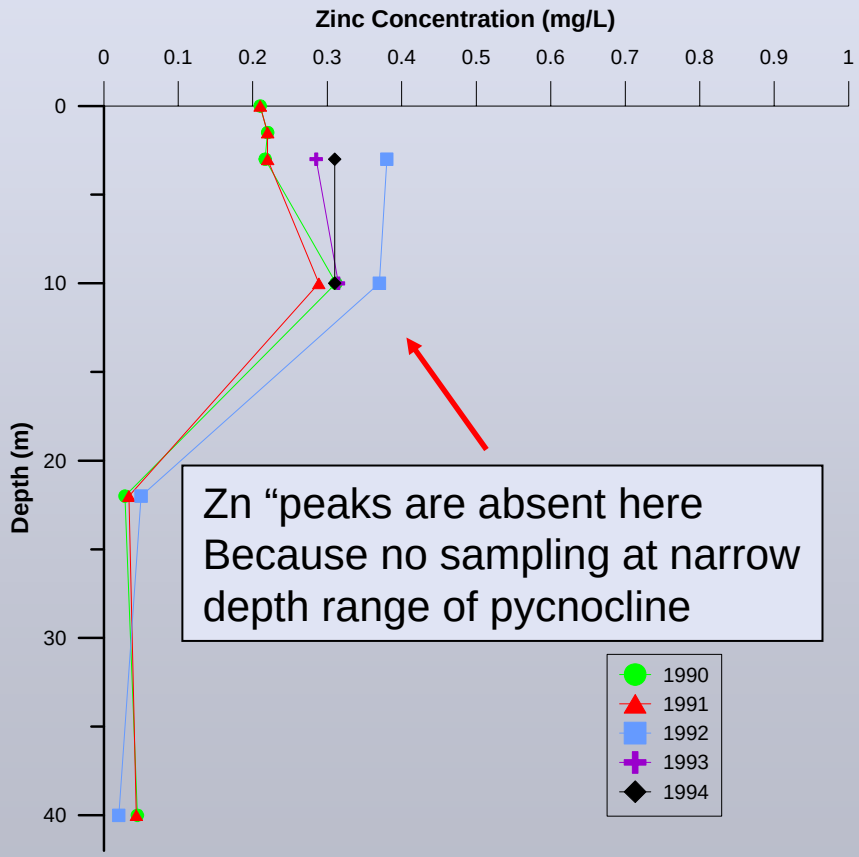
Garrow Lake Zinc (mg/L) Profiles: 1982 – 1989

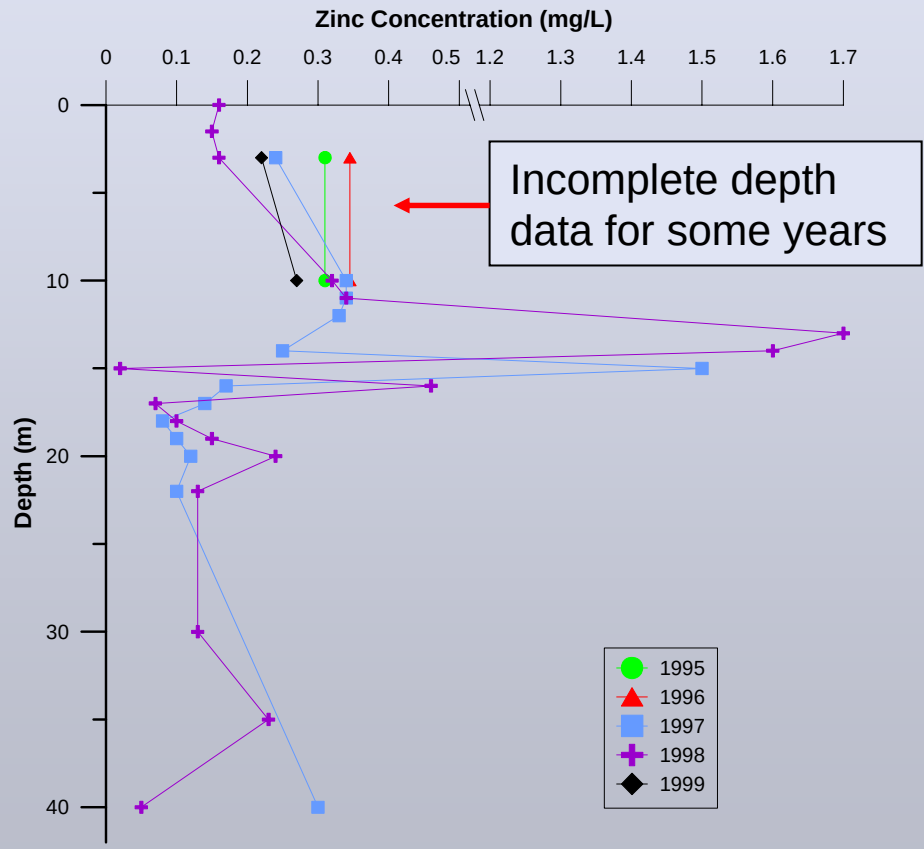


Zinc Data Trends 1982 – 1989

- Zinc concentrations were low (<0.02 mg/L) and uniform in water column in monimolimnion prior to 1985
- A tailings line break in 1985 spilled tailings into the surface waters of Garrow Lake
- Zinc concentrations in mixolimnion increased to 0.2 to 0.3 mg/L
- Zinc is present in low concentrations in monimolimnion because of precipitation by sulfides despite continuous tailings tailings deposition

Garrow Lake Zinc (mg/L) Profiles: 1990 – 1999



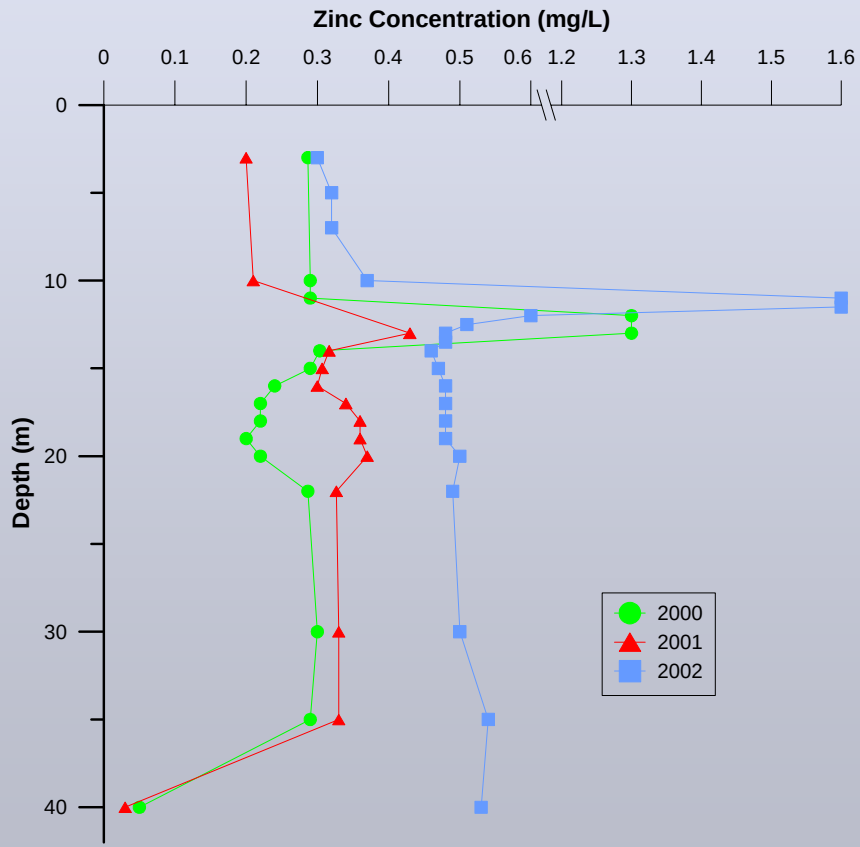


Zinc Data Trends 1990 – 1999

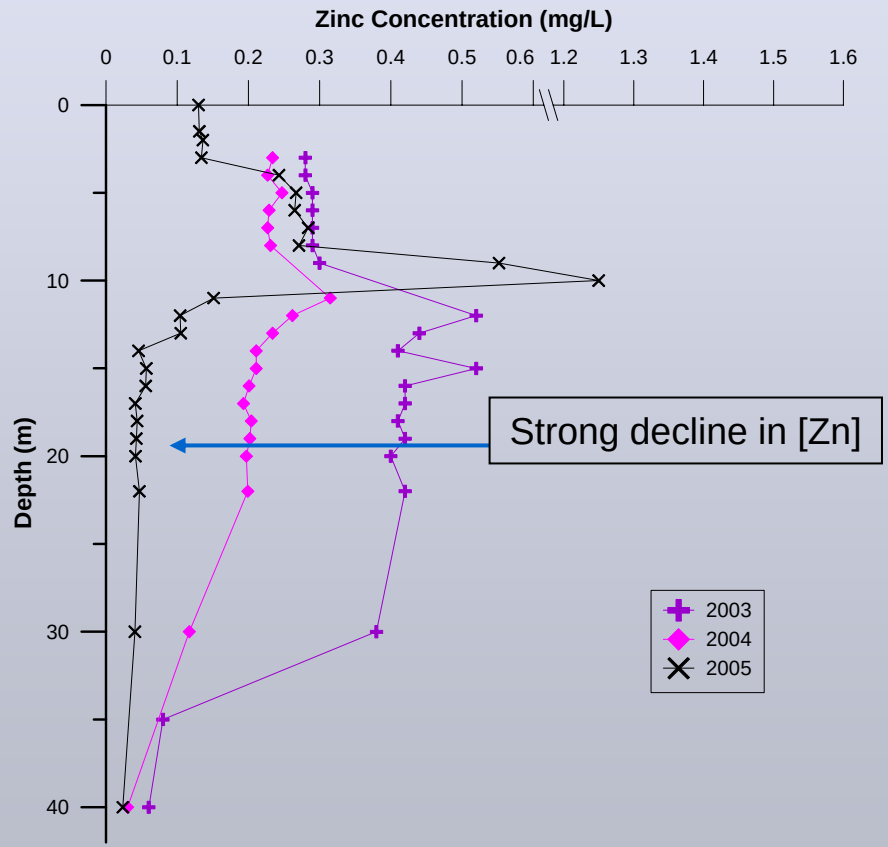
- Zinc concentration in mixolimnion is stable at ~0.3 mg/L
- Through the late 1990s there was a decline in Zn concentration in the mixolimnion with an increase in concentration in the pycnocline; possibly due to accumulation within bacterial tissue accumulated at the top of the density layer

Garrow Lake Zinc (mg/L) Profiles: 2000 – 2005

2000 - 2002



2003 - 2005



Zinc Data Trends 2000 – 2002

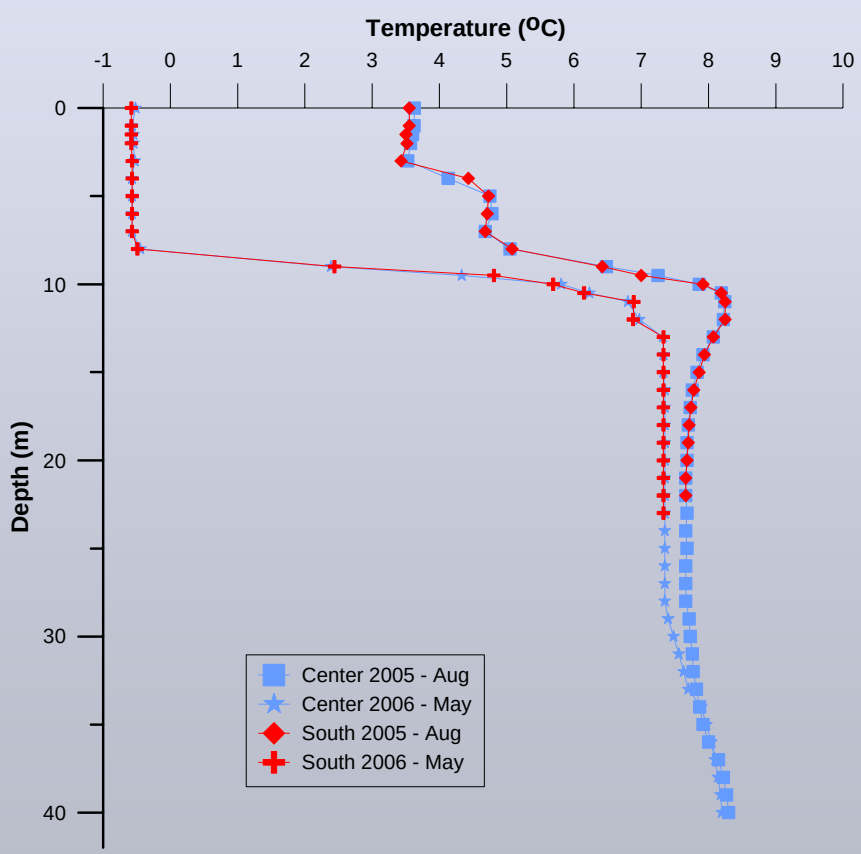
- Zinc concentration in mixolimnion ranged from 0.2 – 0.3 mg/L; 0.2 – 0.5 mg/L in monimolimnion
- Elevated Zn persists in the narrow pycnocline depth and variable among years
- Higher concentrations in 2002 than in previous two years

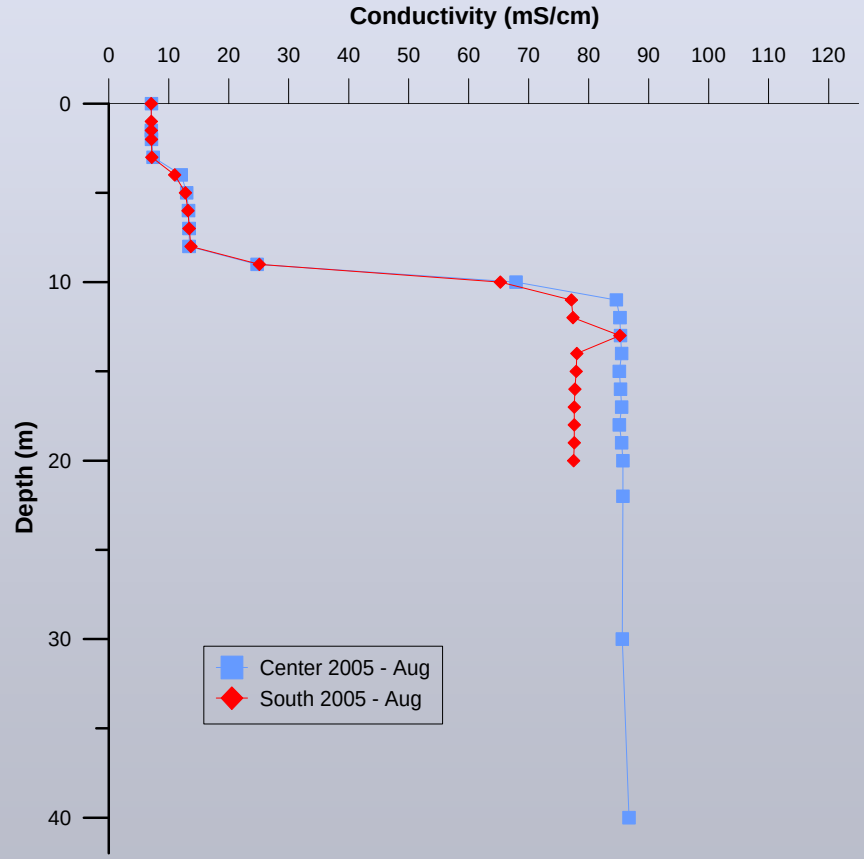
Zinc Data Trends 2003 – 2005

- Zinc concentration in mixolimnion has diminished since mining ceased in 2002
- Elevated Zn persists in the narrow pycnocline depth, probably due to accumulation in plankton and bacteria
- Strong reduction in Zn in monimolimnion from end of mining in 2002 (~0.5 mg/L) to 2005 (~0.04 mg/L)

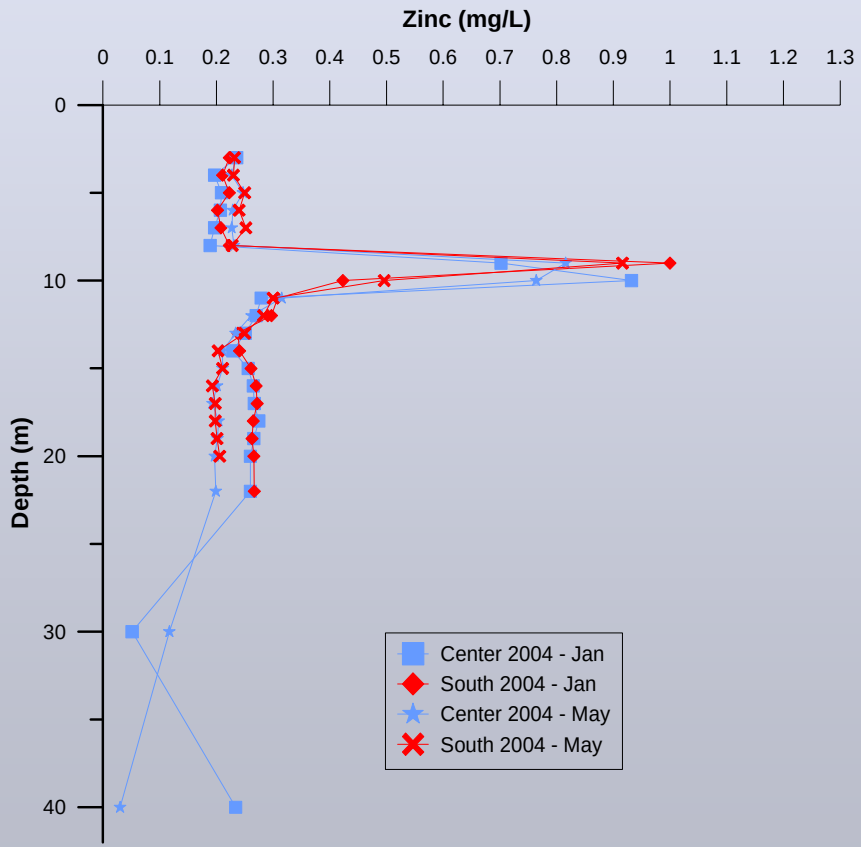
3) Garrow Lake Center versus South Station

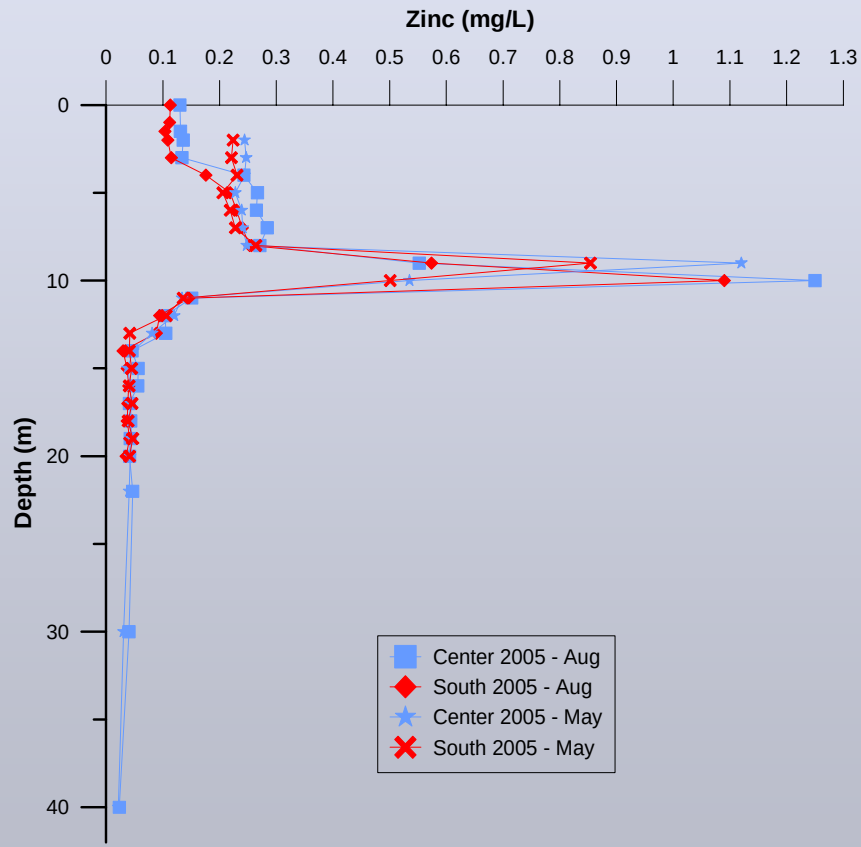
Garrow Lake Center and South: Temperature/Conductivity Profiles





Garrow Lake Center and South: Zinc Profiles





Center versus South Station Results

- There is **no** difference in vertical profiles of temperature, conductivity (salinity) or zinc between the center station (40 m) and the south station (22 m) over recent years – lines overlap
- This pattern is consistent with standard limnology of nearly all lakes
- Sampling the south station is redundant

4) Zinc Data Comparison – Garrow Lake and Garrow Creek

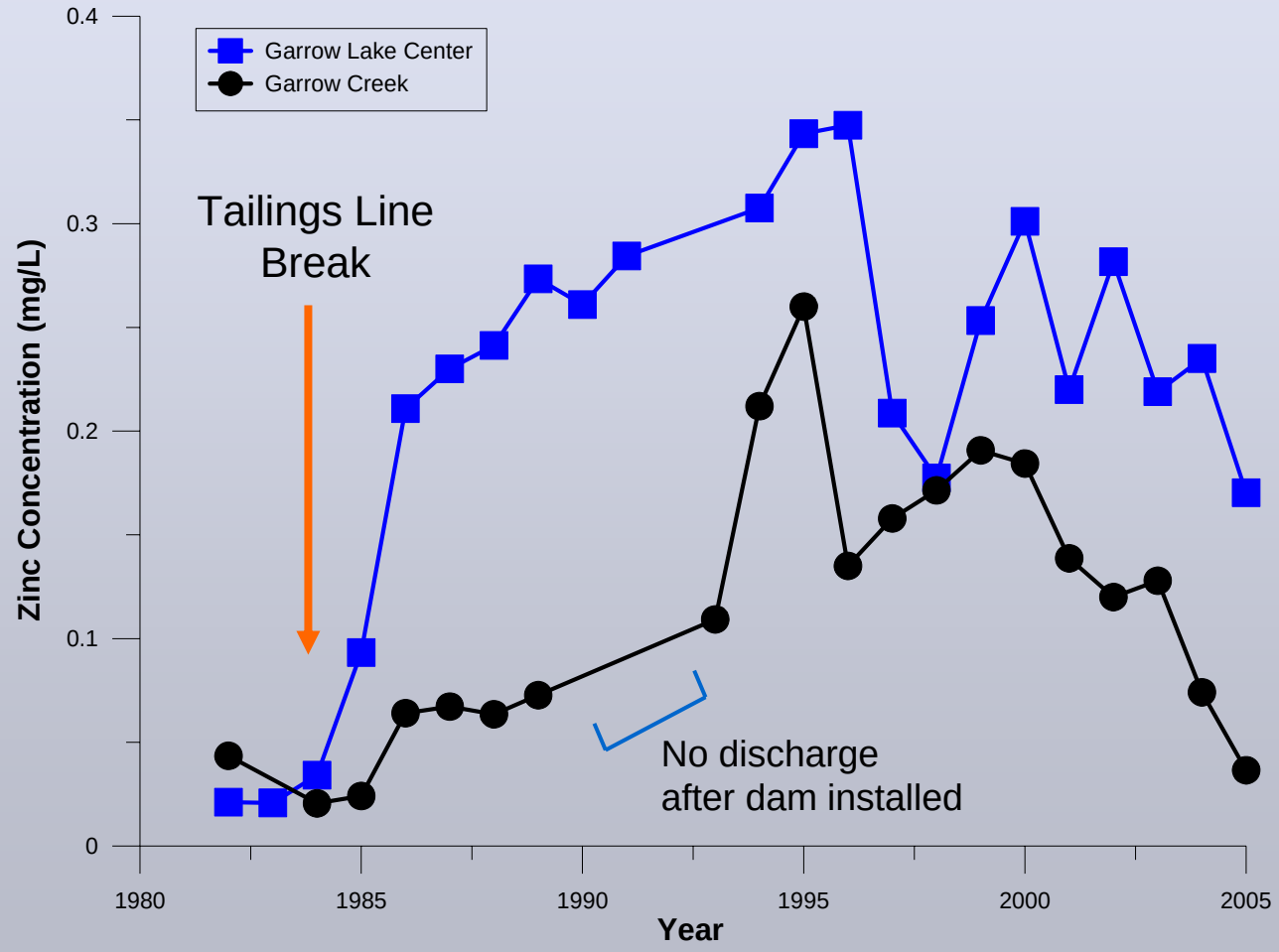
Average Zinc Concentrations in Garrow Lake and Garrow Creek from 1982 to 2005

Zinc Concentration (mg/L)						
	Garrow Lake Center (top 3 m)			Garrow Creek		
Year	Min	Mean	Max	Min	Mean	Max
1982	0.02	0.02	0.05	0.02	0.04	0.35
1983	0.01	0.02	0.03	na	na	na
1984	0.02	0.03	0.04	0.02	0.02	0.03
1985	0.04	0.09	0.20	0.02	0.02	0.04
1986	0.19	0.21	0.34	0.04	0.06	0.12
1987	0.18	0.23	0.28	0.02	0.07	0.14
1988	0.05	0.24	0.34	0.02	0.06	0.12
1989	0.03	0.27	0.40	0.02	0.07	0.28
1990	0.01	0.26	0.49	na	na	na
1991	0.06	0.28	0.42	na	na	na
1992	na	na	0.38	na	na	na
1993	na	na	na	0.05	0.11	0.26
1994	0.29	0.31	0.33	0.10	0.21	0.30
1995	0.31	0.34	0.37	0.09	0.26	0.35
1996	0.35	0.35	0.35	0.08	0.14	0.18
1997	0.19	0.21	0.24	0.09	0.16	0.23
1998	0.15	0.18	0.24	0.07	0.17	0.33
1999	0.22	0.25	0.32	0.02	0.19	0.25
2000	0.29	0.30	0.31	0.06	0.18	0.25
2001	0.20	0.22	0.24	0.05	0.14	0.20
2002	0.26	0.28	0.30	0.05	0.12	0.18
2003	0.13	0.22	0.28	0.05	0.13	0.19
2004	0.23	0.24	0.24	0.03	0.07	0.20
2005	0.13	0.17	0.25	0.01	0.04	0.09

Zinc in Garrow Lake versus Garrow Creek

- Zinc concentration in Garrow Creek is a reflection of zinc in surface waters (top 3 meters) of Garrow Lake
- Concentrations are lower in spring due to ice and snow melt and increase through the summer/fall

Average Zinc Concentrations in Garrow Lake and Garrow Creek from 1982 to 2005



Garrow Lake – Creek Zn Relationship

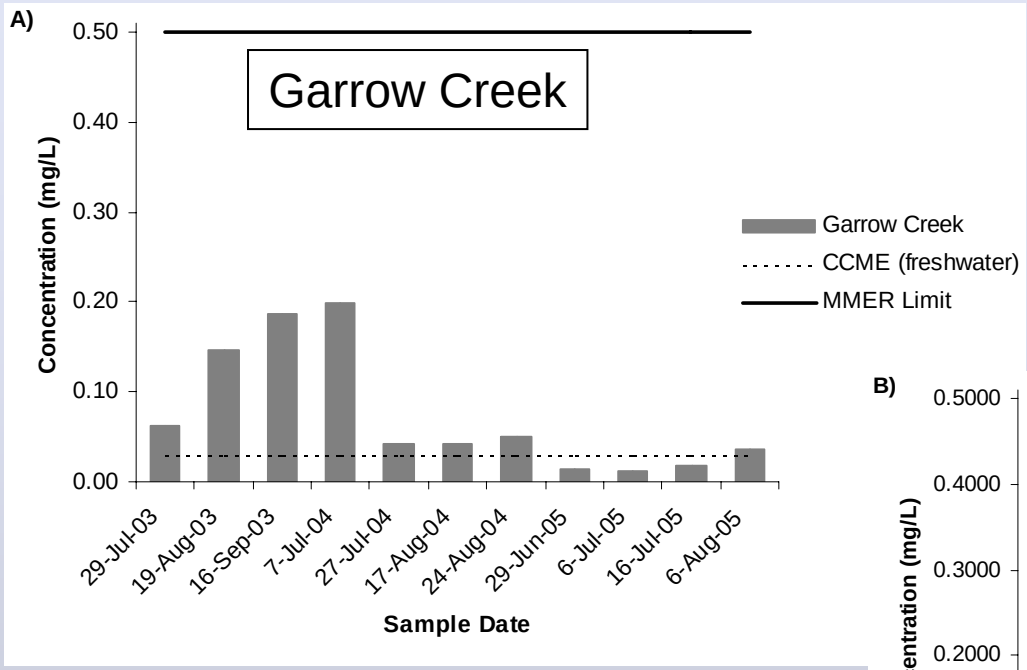
- Zinc concentration in Garrow Creek increased after 1985 tailings line break
- Zinc in Garrow Creek is consistently lower than in the lake because of dilution by ice and snow melt in lake and channel
- The trend of zinc concentrations in the lake and especially the creek are declining
- Mean creek Zn concentration is nearly at pre-mining concentration as of 2005
- Zn in Garrow Creek has never exceeded license value of 0.5 mg/L, even during mining

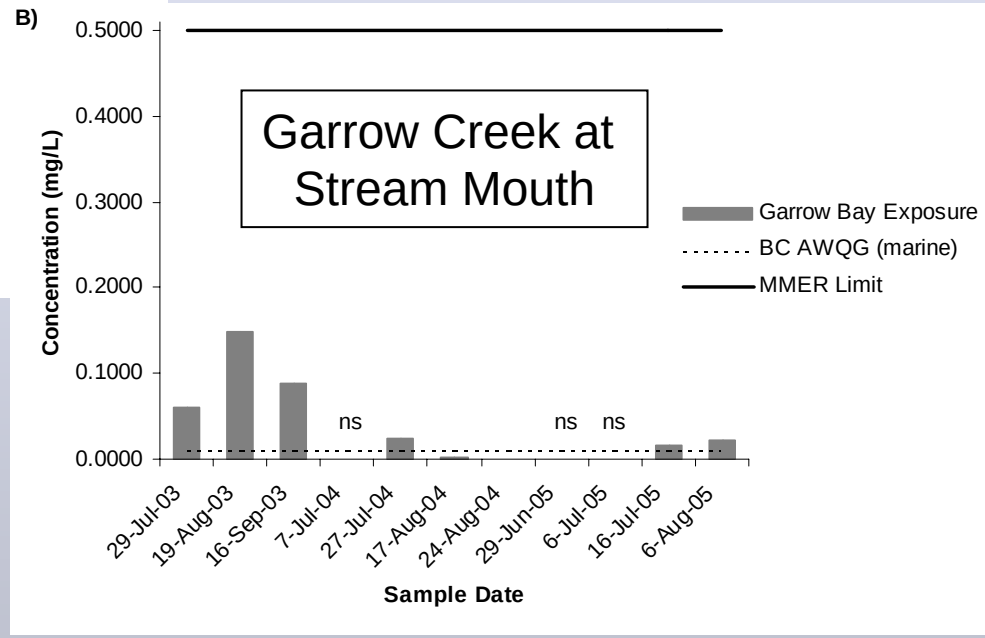
5) Summary of MMER Chemistry, EEM and Receiving Environment Data 2003 – 2005

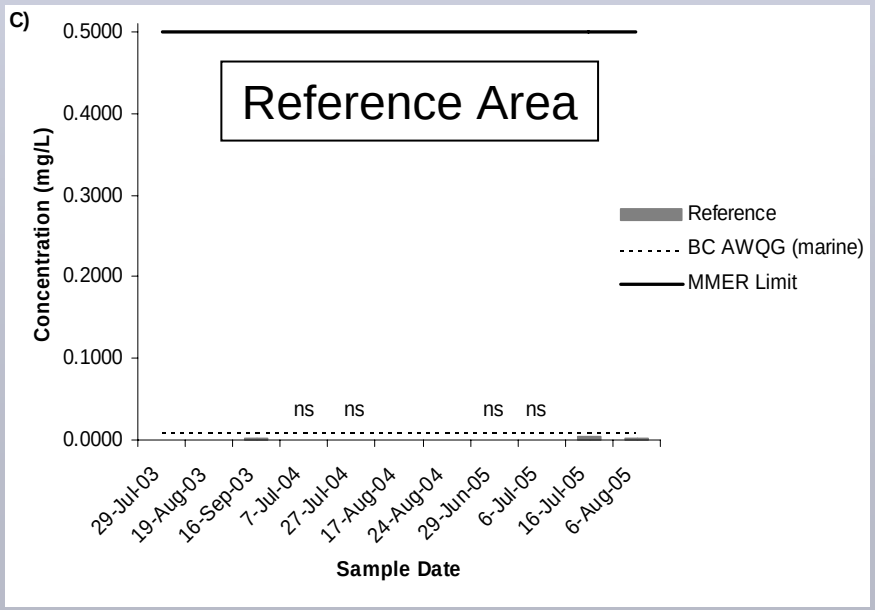
MMER Chemistry – Garrow Creek 2005

Parameter	Units	MMER Schedule 4 Limits		Garrow Creek 2005			
		Column 2 - Monthly mean	Column 4 - Max in grab sample	29-Jun	6-Jul	16-Jul	6-Aug
Aluminum	mg/L			<0.10	<0.20	0.0085	<0.20
Cadmium	mg/L			0.000035	0.000034	0.000044	0.000097
Iron	mg/L			0.024	0.012	0.043	0.014
Mercury	mg/L			<0.00001	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L			<0.005	<0.0050	<0.0050	<0.0050
Ammonia	mg/L			0.089	0.036	0.037	<0.020
Nitrate	mg/L			0.038	0.032	<0.050	0.072
Arsenic	mg/L	0.50	1.00	<0.0002	<0.00020	<0.00020	<0.00020
Copper	mg/L	0.30	0.60	<0.0005	0.000240	0.000424	0.000516
Cyanide	mg/L	1.00	2.00	<0.005	<0.0050	0.0444	<0.0050
Lead	mg/L	0.20	0.40	0.00037	0.000166	0.000415	0.000467
Nickel	mg/L	0.50	1.00	0.00075	0.000601	0.000807	0.00166
Zinc	mg/L	0.50	1.00	0.0137	0.0137	0.0137	0.0137
TSS	mg/L	15.00	30.00	<3	4.0	<3.0	<3.0
Radium 226	Bq/L	0.37	1.11	<0.005	0.0050	0.009	<0.0050
pH	pH units	<6.0 or >9.5		7.98	7.49	7.59	7.65

MMER Zinc Data – Garrow Creek, Garrow Creek at mouth and Reference Area







Toxicity Testing 2003 – 2005

Test Date	Species Tested	Test Type	Sample Method	Consultant Laboratory	LC50 (% effluent)
Rainbow Trout 96-hr LC50					
29-Jul-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
19-Aug-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
16-Sep-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
7-Jul-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
27-Jul-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
24-Aug-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Jul-05	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
6-Aug-05	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
***Daphnia magna* 48-hr LC50**					
29-Jul-03	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
19-Aug-03	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Sep-03	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
7-Jul-04	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
27-Jul-04	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
24-Aug-04	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Jul-05	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
6-Aug-05	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100

Historic Metal Concentrations in Marine Sediment – Garrow Bay

	CCME Sediment Quality Guidelines[1,2]		Pre - Mine Development	Post - Mine Development			
			Fallis 1984 Thomas & Erickson 1983 BC Research 1978,1981	BC Research 1988	AXYS 1991	Gartner Lee 1999	Azimuth 2003
			Subtidal	Subtidal	Subtidal	Subtidal	Subtidal
Metals (mg/kg)	**ISQG**	**PEL**					
Lead	30.2	112	6.0 - 11.6	4.6 - 7.6	3.8 - 4.5	7.5	7 - 11
Zinc	124	271	21 - 45	32 - 41	30 - 37	38	29 - 39

[1]Canadian Council of the Ministers for the Environment Interim Sediment Quality Guideline

[2]Canadian Council of the Ministers for the Environment Probable Effects Level Guideline

Historic Metal Concentrations in Clam Tissue – Garrow Bay

	Pre - Mine Development		Post - Mine Development						
	Fallis	BC Research	AXYS		Gartner Lee	Azimuth			
	1984[a]	1978[b,c]	1991[b,c]		1999[b,c]	2003[b,c]			
Metal						Site 1	Site 2	Site 3	Ref
(mg/kg ww)	n=8	n=33	n=2	Ref (n=1)	n=2	n=3	n=4	n=4	n=3
Lead	0.14	0.19	0.05	0.14	<0.1	0.12	0.11	0.25	0.08
Zinc	9	16.6	14.8	24.2	21	26.5	24.8	29.2	25.0

[a] 1981 Data; converted to wet wt using 85% moisture; depurated clams

[b] Non-depurated clams

[c] Reflects composite from larger number of clams (typically > 5 individuals)

MMER/EEM Data Summary

- All chemistry parameters in Garrow Creek ("effluent") are well below MMER/Water License
- Zinc concentrations in Garrow Creek, Garrow Bay and reference area are low
- No acute toxicity to rainbow trout or *Daphnia* in all testing since 2003
- No change in sediment metals since pre-mining
- No difference in clam tissue metals between exposure and reference areas in 2003
- Allowing for differences due to moisture, depuration of clams, no difference between pre-post-mining

Overall Conclusions

1. Vertical stratification of Garrow Lake persists and is very strong; AXYS (2001) modeling indicates no risk of breakdown
2. As of 2005, zinc concentrations in mixolimnion and monimolimnion water column are low and near pre-mine values
3. No difference between Center and South sampling stations
4. [Zn] of Garrow Creek is always less than in Garrow lake and has never exceeded licensed limit; [Zn] in lake and creek are near pre-mine values in 2005

Overall Conclusions
(Consult Interpretive Report for Details)

5. MMER / EEM Results
   - Garrow Creek chemistry well below MMER/Water License value
   - [Zn] marginally above BC Marine AWQG at creek mouth in ice-scour zone
   - No acute toxicity 2003 – 2005
   - No change in metals in sediments or clam tissue; this combined with plume delineation study demonstrates no exposure
   - There is a healthy biological community and fish population in the mixolimnion of Garrow Lake

Current Status of Polaris

- Mine has achieved recognized closed mine status and Environment Canada requires no further MMER monitoring
- All limnology, chemistry and exposure data (MMER) indicates Garrow Lake is healthy. There is no risk to receiving environment
- Water License stipulates MMER / EEM type monitoring – data indicate this is not necessary nor warranted

Suggested Changes to Monitoring Program at Polaris (1) – Part H

- Discontinue all toxicity testing of creek
- Discontinue routine weekly/monthly water chemistry sampling of creek in open water
- Discontinue requirement to measure “effluent” flow, volume and metals loading
- Drop all EEM requirements for Garrow Bay exposure area and Reference Area (water quality, benthos). The final Interpretive Report provides scientific justification for absence of effects

Suggested Changes to Monitoring Program at Polaris (2) – Part H

- Reduce monitoring of vertical stratification of Garrow Lake to once annual (late May) from lake center station only

- Shift to opportunistic water quality monitoring of Garrow Creek ~ 2 – 3 x per summer maintaining conventional (pH, salinity, alkalinity etc.) and monthly MMER parameters (except radon, cyanide)

Azimuth Consulting Group Inc.
218-2902 West Broadway
Vancouver, BC
Canada V6K 2G8

Phone: 604-730-1220
Fax: 604-739-8511
www.azimuthgroup.ca

Our File #: TC-06-01

November 8, 2006

Steve Harbicht
Anne Wilson
Environment Canada
5204 50th Ave. Suite 301
Yellowknife NWT X1A 1E2

Dear Mr. Harbicht and Ms. Wilson

Re: 2006 Update of Polaris Mine Environmental Data

The purpose of this letter is to fully update the water quality data at Polaris Mine with the recently collected August 2006 data and to reiterate our desire for Environment Canada's support of Teck Cominco's forthcoming request of the Nunavut Water Board to reduce their monitoring requirements at the mine site.

Updated water quality data presented here consists of:

- Vertical temperature and conductivity profiles in Garrow Lake Center (GLC) and south (GLS) stations;
- Vertical profiles of zinc concentrations in Garrow Lake Center (GLC) and South stations (GLS);
- Comparison of temperature, conductivity and zinc concentration data between Garrow Lake South (GLS) and Center (GLC);
- Zinc and salinity concentrations in Garrow Creek; and
- Toxicity testing results from Garrow Lake Center (GLC).

This update builds on previous information presented by Randy Baker and Bruce Donald to Environment Canada in Yellowknife in May 2006. Given that Polaris has achieved closed mine status and MMER monitoring is no longer required, we wish to reduce the monitoring requirements of the Nunavut Water License (which mirror MMER) for this abandoned site, given the stable limnological parameters, low metals chemistry and consistent lack of toxicity. We seek the support of Environment Canada in this. Details of the updated limnology and chemistry are as follows.

Temperature and Conductivity Profiles in Garrow Lake Center

Temperature and conductivity depth profiles for Garrow Lake Center for 2002 to 2006 are presented in Figures 1 and 2, respectively. As evident from the profiles, there is very strong stratification within Garrow Lake. The mixolimnion (from surface to approximately 9 m) and monimolimnion (from approximately 12 m to the bottom) have uniform conductivity, at 10-15 mS/cm and 80-95 mS/cm, respectively. Temperature is uniform in the monimolimnion (7 – 9°C), but varies in the mixolimnion with time of year (-1 in winter to 4°C in summer). Variations in temperature and conductivity are due to differences in Hydrolab calibration. The August 2006 data show exactly the same profiles as all previous sampling episodes since the mine closed in 2002.

Zinc Concentrations in Garrow Lake Center

Vertical zinc concentration profiles for Garrow Lake Center from 2002 to 2006 are shown in Figure 3. Zinc concentrations in the mixolimnion were uniform across all years, ranging from 0.1 to 0.3 mg/L. Concentrations rise at the pycnocline or the top of the density layer where we believe that zinc has accumulated in tissues of phytoplankton and bacteria. Data from August 2005 (1.3 mg/L) through August 2006 (0.3 mg/L) also show a diminishing trend, so perhaps this phenomenon is breaking down.

Beneath the pycnocline, there is a strong reduction in zinc through the monimolimnion from the end of mining in 2002 (approximately 0.5 mg/L) to 2004 (approximately 0.2 mg/L) and 2005/2006 (approximately 0.03 mg/L). The August 2006 data confirm that since mining has ceased, zinc concentrations throughout the water column (except the narrow pycnocline) have diminished considerably and reached pre-mine concentrations, even in deep waters of the tailings deposition area.

Temperature, Conductivity and Zinc Concentrations in Garrow Lake South Compared to Garrow Lake Center

Vertical temperature, conductivity and zinc profiles for Garrow Lake South and Center stations in 2005 and 2006 are presented in Figures 4, 5 and 6, respectively. There are no differences in vertical profiles of temperature, conductivity or zinc concentrations between the two sampling locations. The August 2006 data confirm previously observed trends. As expected, there should not be any differences in physical or chemical limnological parameters at discrete depths from different geographic locations of this lake.

Zinc and Salinity Concentrations in Garrow Creek

Seasonal trends in zinc and salinity concentrations in Garrow Creek from 2002 to 2006, are presented in Table 1 and Figure 7. All data show that zinc concentration

and salinity are low in July and gradually increase throughout the summer open-water season. Low zinc and salinity are typically observed soon after the stream channel opens, due to snowmelt and ice melt on Garrow Lake. Concentrations increase as surface waters of Garrow Lake are discharged and reflect the diminished influence of snow and ice melt and mirror limnological and chemical conditions of the Garrow lake mixolimnion. Zinc and salinity data from 2004, especially in spring and fall are elevated because of active lowering of Garrow Lake elevation to pre-mine levels during removal of the outlet dam.

Toxicity Test Results from Garrow Creek "effluent"

2006 acute toxicity testing results from Garrow Creek are presented in Table 2. Three independent acute tests on rainbow trout (96 hour LC50) and *Daphnia magna* (48 hour LC50) showed no acute toxicity. These results are consistent with all previous toxicity tests conducted on Garrow Creek "effluent".

Summary

August 2006 limnology and chemistry data from Garrow Lake and Garrow Creek show identical patterns to previous sampling episodes.

- Very strong vertical stratification between surface and bottom waters with a pycnocline at about 10 m depth.
- Low zinc in surface waters and a diminishing zinc concentration in bottom waters (monimolimnion) and in the pycnocline.
- Since active tailings deposition ceased in 2002 there has been a progressive decline in zinc concentrations throughout the water column, with a return to pre-mine concentrations, while maintaining stable vertical stratification.
- Consistent seasonal patterns in zinc and salinity in Garrow Creek with no toxicity.

Given that August 2006 data show consistent identical patterns to data collected since 2002 and cessation of mining, we would not expect these patterns to change in the future. Although no further monitoring is required by Environment Canada, the Water License for the site basically mirrors MMER requirements. In light of these data, Teck Cominco seeks support from Environment Canada to reduce the monitoring requirements of the Water Board license requirements as follows:

- Discontinue all toxicity testing of Garrow Creek
- Discontinue "routine" weekly/monthly water chemistry sampling of Garrow Creek during open water
- Discontinue the requirement to measure flow, volume and metals loading
- Drop all EEM requirements for monitoring Garrow Bay exposure and reference areas. Pre- and post-mining studies have shown that there has

been no change in metals concentrations in sediment and biota of Garrow Bay.

- Reduce monitoring of vertical stratification of Garrow Lake to **once** annual during spring and **only** from the deep center station. Should something unusual be observed, this provides ample time to undertake further investigation during summer if necessary.
- Opportunistic sampling of Garrow Creek (2 – 3 times per summer), maintaining monthly" sampling parameters, except radon and cyanide.

We would appreciate a written response to this letter with your comments on the data and whether or not you believe our forthcoming request of the Nunavut Water Board to be reasonable. Please do not hesitate to contact Bruce Donald of Teck Cominco Metals or myself if you have any questions regarding this request.

Sincerely,
Azimuth Consulting Group Inc.

Randy Baker, M.Sc., R.P.Bio.

cc Bruce Donald, Teck Cominco Metals

Figure 1: Garrow Lake Center Temperature Profiles: 2002-2006

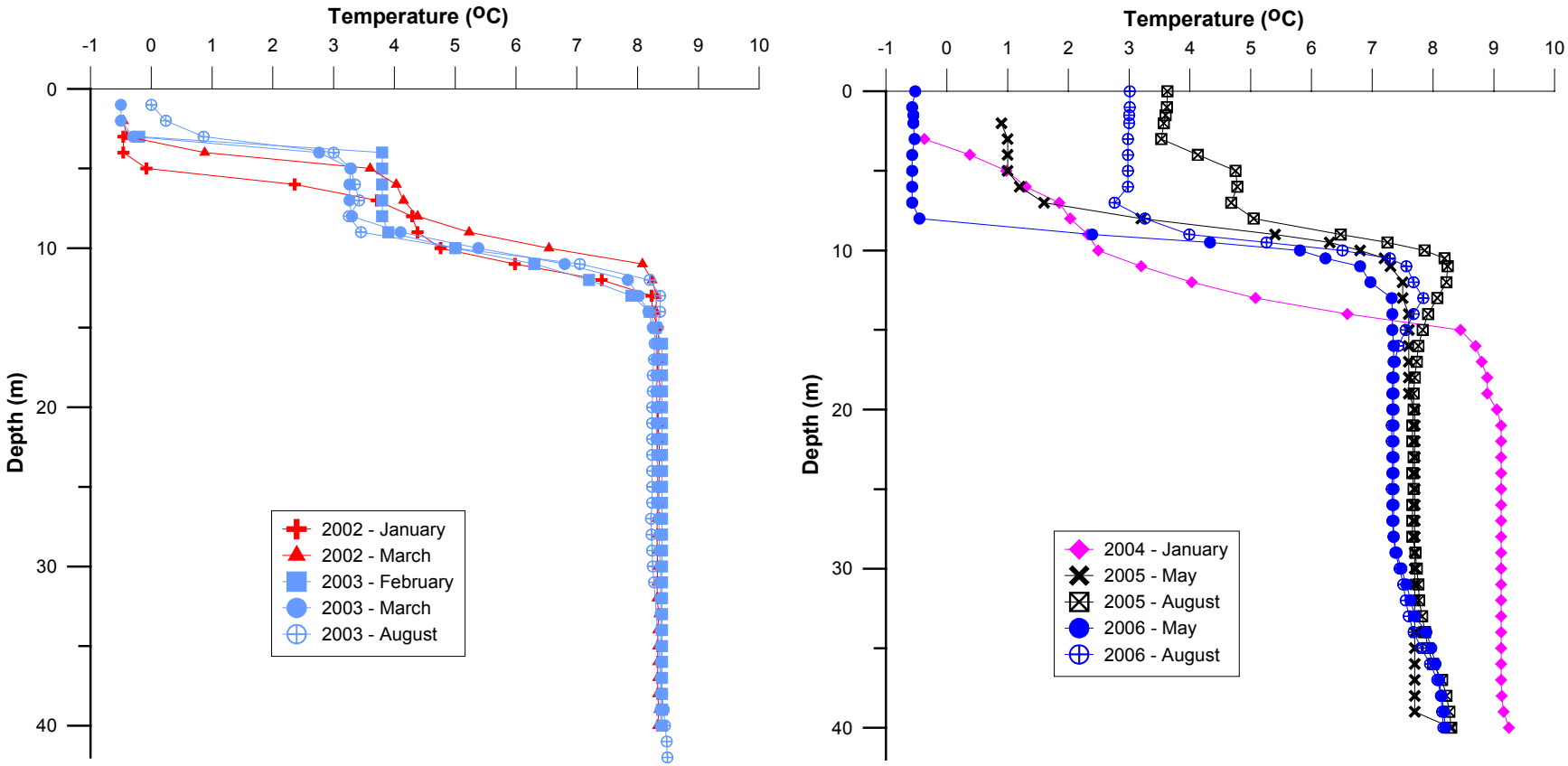


Figure 2: Garrow Lake Center Conductivity Profiles: 2002-2006

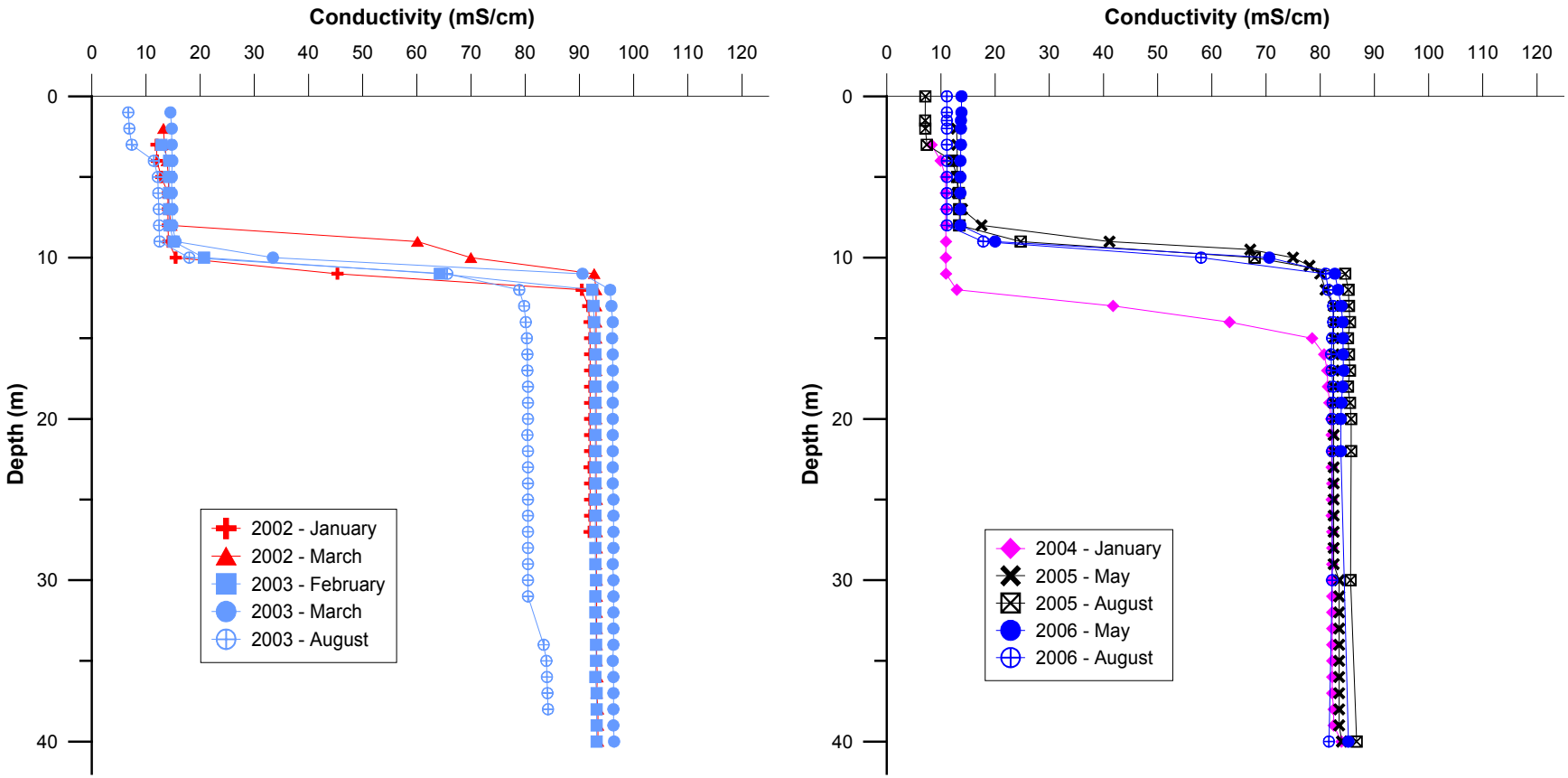


Figure 3: Garrow Lake Center Zinc Concentrations: 2002-2006

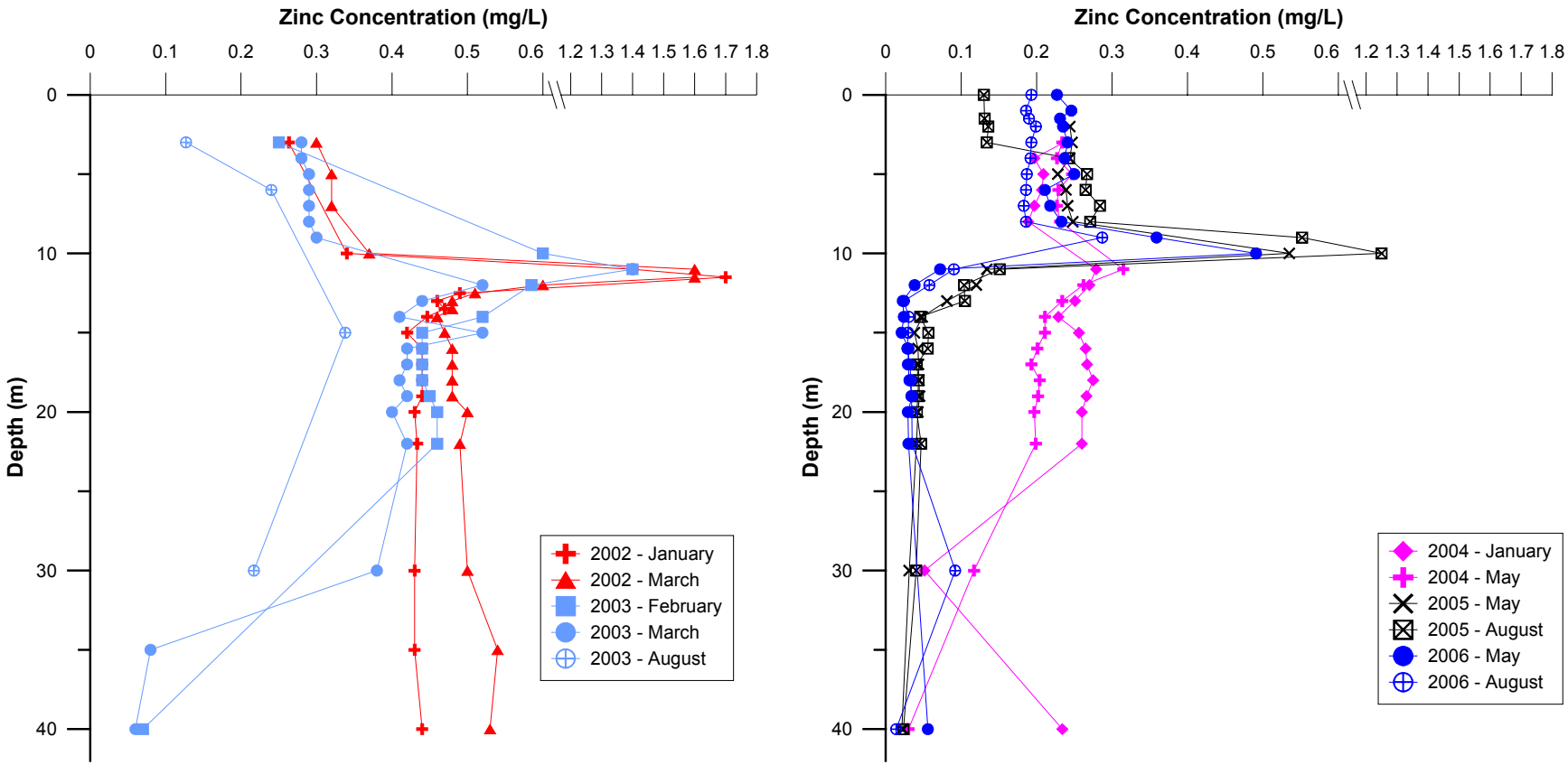


Figure 4: Garrow Lake Center vs. South Temperature Profiles

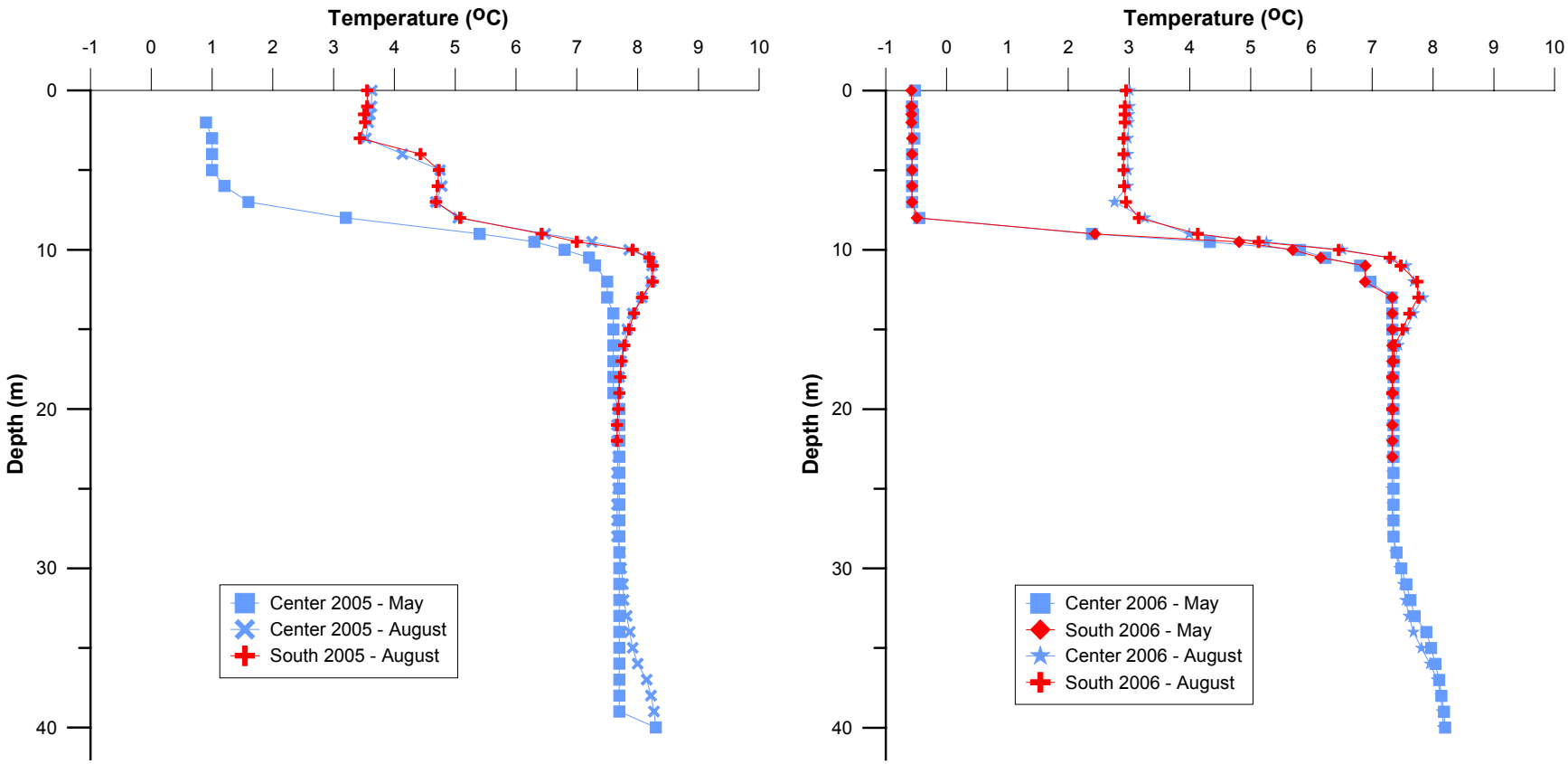


Figure 5: Garrow Lake Center vs. South Conductivity Profiles

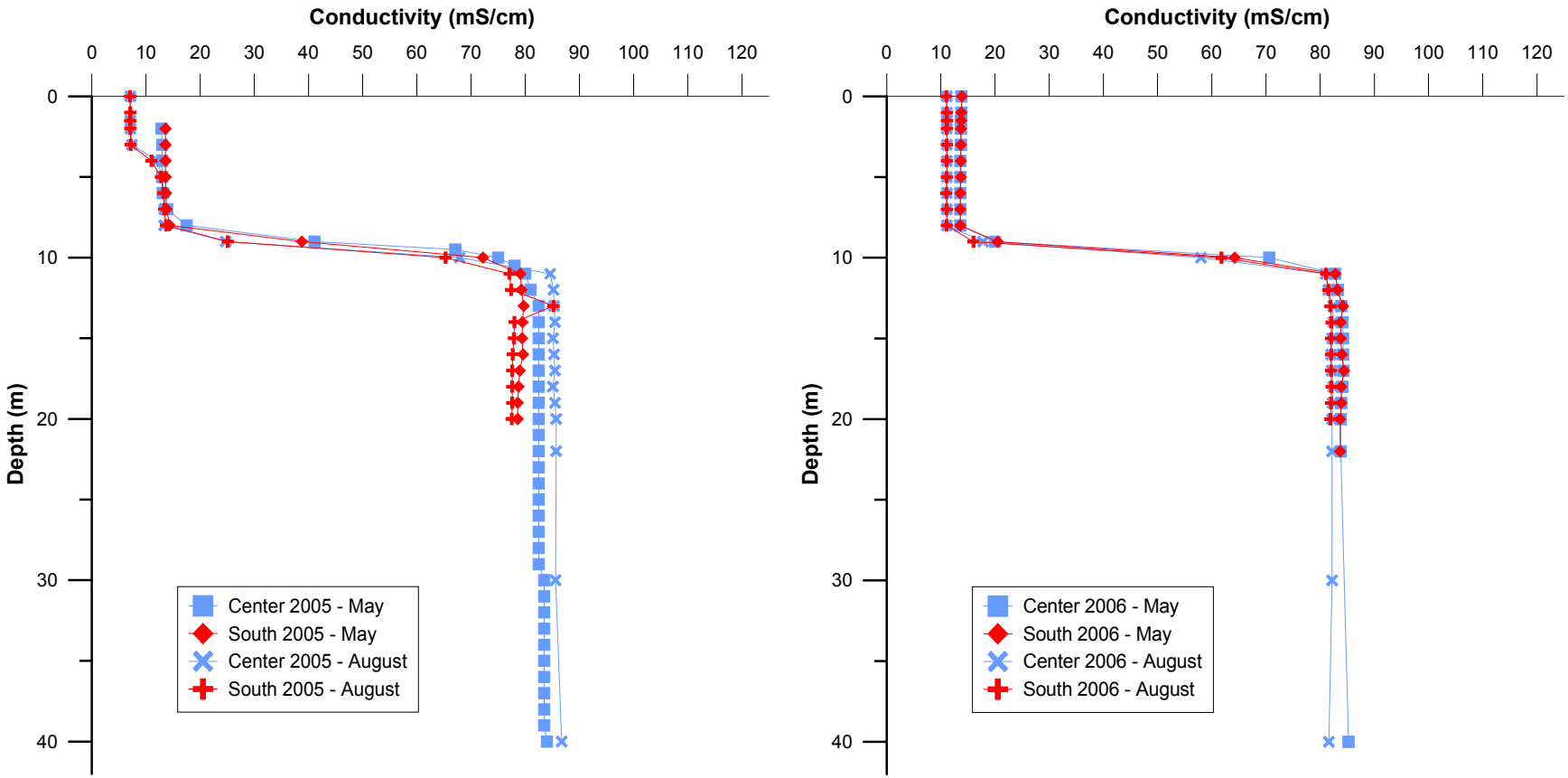


Figure 6: Garrow Lake Center vs. South Zinc Concentrations

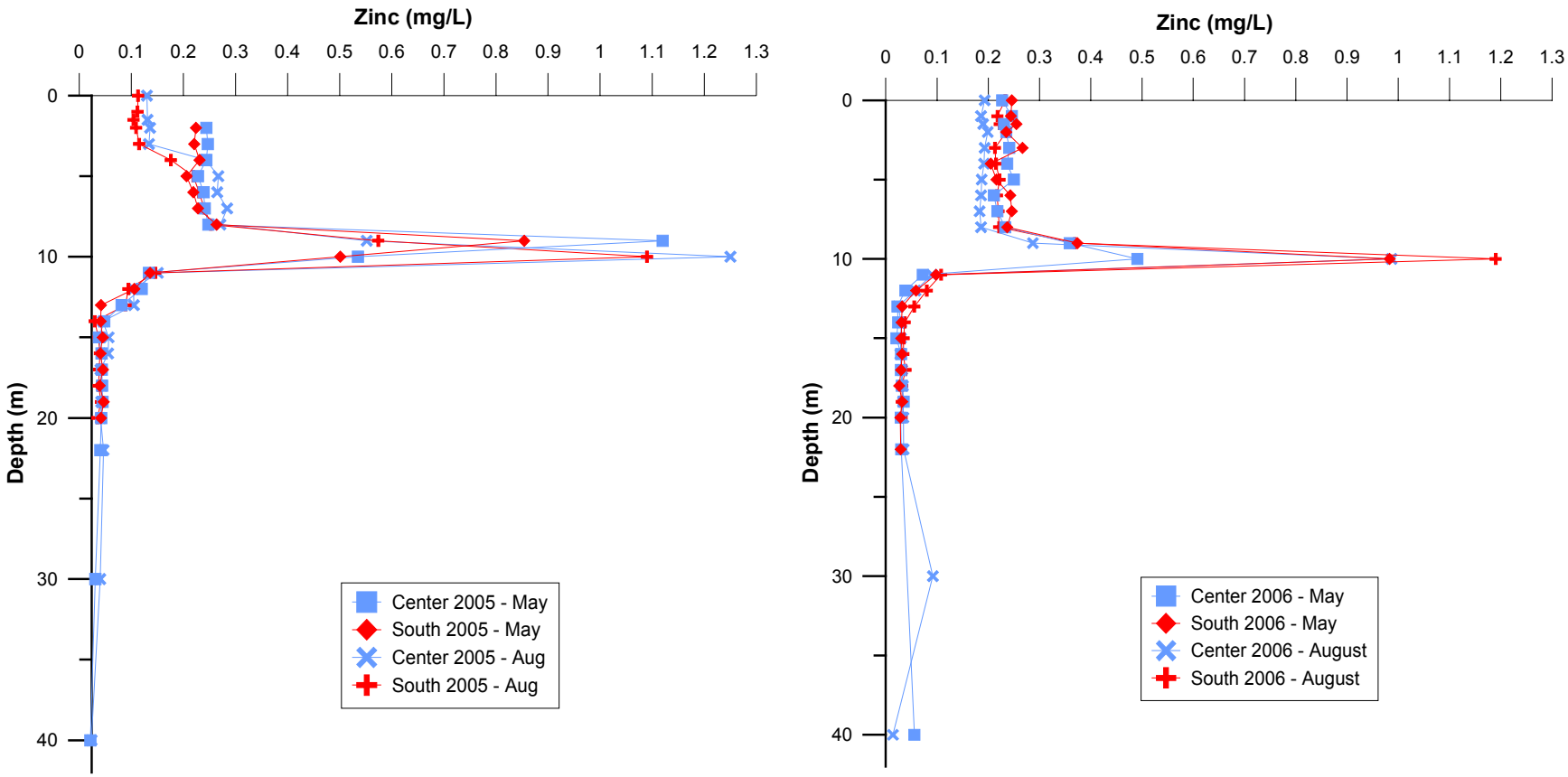
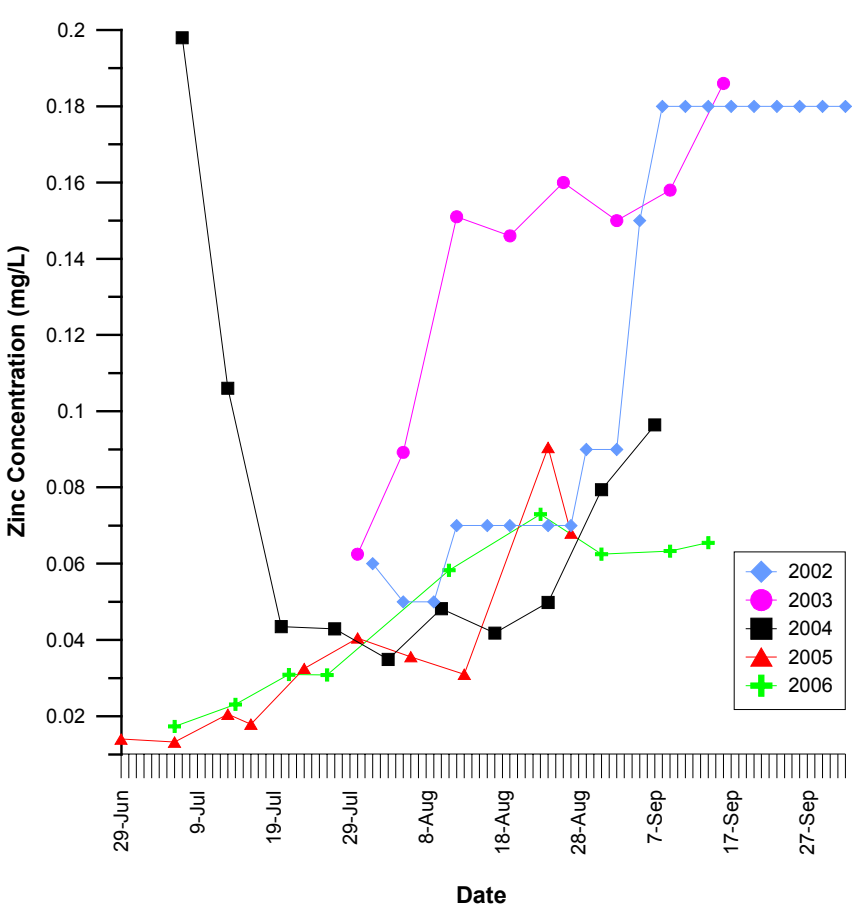


Figure 7: Garrow Creek Zinc and Salinity Concentrations: 2002-2006



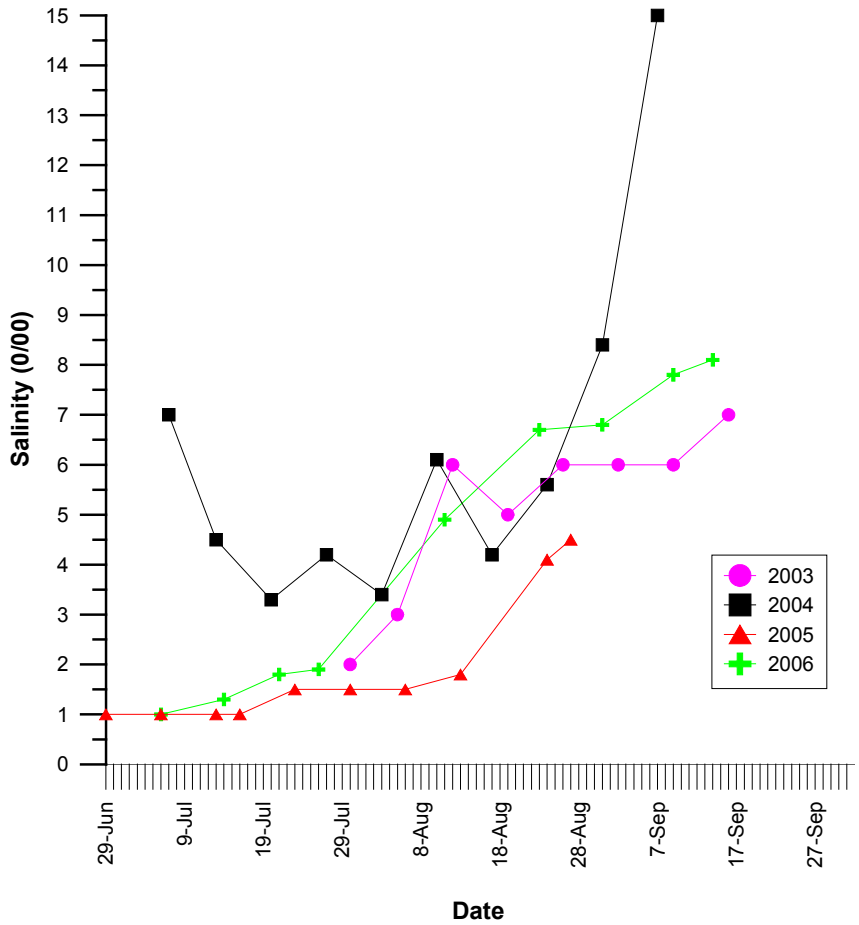


Table 1: Garrow Creek Zinc and Salinity Concentrations - 2002 to 2006

2002			2003			2004			2005			2006		
Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)
29-Jul	0.06	NA	25-Jul	0.048	2	7-Jul	0.198	7	29-Jun	0.014	<1.0	6-Jul	0.017	<1.0
1-Aug	0.06	NA	30-Jul	0.063	2	13-Jul	0.106	4.5	6-Jul	0.013	<1.0	14-Jul	0.023	1.3
5-Aug	0.05	NA	5-Aug	0.089	3	20-Jul	0.044	3.3	13-Jul	0.021	<1.0	21-Jul	0.031	1.8
9-Aug	0.05	NA	12-Aug	0.151	6	27-Jul	0.043	4.2	16-Jul	0.018	<1.0	26-Jul	0.031	1.9
12-Aug	0.07	NA	19-Aug	0.146	5	3-Aug	0.035	3.4	23-Jul	0.033	1.5	11-Aug	0.058	4.9
16-Aug	0.07	NA	26-Aug	0.160	6	10-Aug	0.048	6.1	30-Jul	0.041	1.5	23-Aug	0.073	6.7
19-Aug	0.07	NA	2-Sep	0.150	6	17-Aug	0.042	4.2	6-Aug	0.036	1.5	31-Aug	0.063	6.8
24-Aug	0.07	NA	9-Sep	0.158	6	24-Aug	0.050	5.6	13-Aug	0.031	1.8	9-Sep	0.063	7.8
27-Aug	0.07	NA	16-Sep	0.186	7	31-Aug	0.079	8.4	24-Aug	0.091	4.1	14-Sep	0.066	8.1
29-Aug	0.09	NA				7-Sep	0.096	15.0	27-Aug	0.068	4.5			
2-Sep	0.09	NA												
5-Sep	0.15	NA												
8-Sep	0.18	NA												
11-Sep	0.18	NA												
14-Sep	0.18	NA												
17-Sep	0.18	NA												
20-Sep	0.18	NA												
23-Sep	0.18	NA												
26-Sep	0.18	NA												
29-Sep	0.18	NA												
2-Oct	0.18	NA												

Table 2: Garrow Creek Toxicity Testing Results - 2006

Test Date	Species Tested	Test Type	Sample Method	Consultant Laboratory	LC50 (% effluent)	Test Validity
Rainbow Trout 96-hr LC50						
15-Jul-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	invalid - temperature control unit failure
23-Aug-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
9-Sep-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	NA	invalid - control sample failure
***Daphnia magna* 48-hr LC50**						
15-Jul-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
23-Aug-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
9-Sep-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	invalid - sample exceeded holding times

Environment Canada
Environnement Canada

Environment Canada
Prairie and Northern Region
#301 - 5204 - 50th Ave
Yellowknife, NT X1A 1E2
Ph. (867) 669-4700

December 12, 2006

Our File: 4705 037 POLA

Azimuth Consulting Group Inc.
218-2902 West Broadway
Vancouver, BC V6K 2G8

Attention: Randy Baker

By email: rbaker@azimuthgroup.ca

Re: Monitoring of Garrow Lake and Garrow Creek

Environment Canada (EC) staff have reviewed the 2006 update of Polaris Mine environmental data which you provided to our office November 8, 2006, and evaluated the frequency of monitoring which we feel would be appropriate at this stage. Following are the specific requests from your summary, along with our recommendations for each:

1. *To discontinue all toxicity testing of Garrow Creek.*
   EC recommends retention of annual acute toxicity tests as a means of confirming that there are no problems with the water quality. Further toxicity testing is recommended due to the limited data set currently available as a result of test validity problems with previous samples. Samples would continue to be drawn from Station Number 262-7 until the end of the license period, and should be collected once during the August sampling event or thereafter, for trout and daphnia tests.

2. *Discontinue "routine" weekly/monthly water chemistry sampling of Garrow Creek during open water.*
   The last bullet in the summary section (Page 4) states that opportunistic sampling of Garrow Creek (2-3 times per summer) would be done, for "monthly" sampling parameters excluding radium 226 (not radon) and cyanide. Rather than discontinuing all routine weekly/monthly water chemistry sampling of Garrow Creek, EC recommends that sampling be done on a monthly frequency for the full suite of parameters for Station Number 262-7 as shown in page 33 of Water Licence Table 1, except cyanide and radium 226. This should be approximately the same frequency that was contemplated for the opportunistic basis, but we would like to formalize the timing. The purpose would be to extend the data record until 2011 to cover a greater range of hydrometric conditions which may be expected to occur, prior to final abandonment.

3. *Discontinue measurement of flow, volumes and metals loading*.

EC concurs with this request.

4. *Discontinue any further measurement of Garrow Bay exposure and reference areas*. EC concurs with this request, given that upstream monitoring will continue as recommended above, and that there is reasonably low environmental risk in this receiving environment.

5. *Reduce monitoring of vertical stratification of Garrow Lake to once annually in spring, and only from the deep center station.*
   EC has concerns with this approach, as there is unlikely to be much change in stratification during the ice cover period. We would like to see the maintenance of twice-yearly monitoring, with an open-water period included. It is noted that the profiles for May and August for conductivity and for zinc are reasonably close, with minor variation in the epilimnion, but the period of record is very short. Again, it would be prudent to monitor over a longer open water period, when mixing would be more likely to occur. Therefore, EC recommends that monitoring of vertical stratification occur twice per year, once at maximum ice thickness (in the spring) and once during the open water period. This monitoring should occur until the end of the license period. We need to ensure enough data are collected to try and confirm whether the lake will be stable in perpetuity.

EC looks forward to receiving your formal request for changes to the monitoring program for the Polaris Mine from the Nunavut Water Board. Please do not hesitate to contact Steve Harbicht at 867-669-4735 or myself at (867) 669-4733 with any questions or comments regarding the foregoing.

Yours truly,

Anne Wilson
Water Pollution Specialist
Environmental Protection Branch

cc: Stephen Harbicht (Head, EA - North, EPOD)
Colette Spagnuolo (EA Specialist, Iqaluit, EPOD)
Jenny Ferone (Regional EEM Coordinator, Edmonton)

APPENDIX 7

ELECTRONIC COPY OF REPORT FILES