



August 6, 2014

Andrew Keim  
Water Resources Officer  
INAC Nunavut Regional Office  
P.O. Box 100  
Iqaluit, Nunavut X0A 0H0

By email: [Andrew.Keim@AANDC.GC.CA](mailto:Andrew.Keim@AANDC.GC.CA)

Dear Mr Keim:

**Reference: AANDC Inspection Report of July 10, 2014.**

Teck Resources Limited (Teck) acknowledges receipt of a Water Licence Inspection Report Form (Report) from Aboriginal Affairs and Northern Development Canada (AANDC) dated July 10, 2014 pertaining to the former Polaris mine site (Polaris). Teck is pleased to provide the following response to address the three (3) items requested in the Report.

1. Annual reports for 2011, 2012 and 2013.

Teck submitted a detailed letter to AANDC Water Resources on July 31, 2014<sup>1</sup>, which provides an account of the annual monitoring activities starting in 2003 and culminating as planned in 2011 in accordance with plans approved by the Nunavut Water Board (NWB). Supplemental long term monitoring of Polaris was only proposed to commence in 2014. Therefore, there has not been any required monitoring or activities at site since 2011, and the annual reports requested for 2012 and 2013 do not exist.

Teck acknowledges that the 2011 Annual Report, as noted in the *Former Polaris Mine Decommissioning and Reclamation Summary of Reporting 2003 – 2011* (Teck 2013)<sup>2</sup>, was to be submitted in March 2013. This Report was overlooked and not previously submitted, but is attached to this letter. Please note however that the 2011 Annual Report does not contain new or additional information as no activities occurred in the 4<sup>th</sup> quarter of 2011 due to freeze up, and all monitoring results were previously reported to the NWB in the second and third quarter reports for 2011.

2. Results of sampling conducted on site for the 2014 year.

As noted in Teck's letter to AANDC on July 31, 2014<sup>3</sup>, Teck is planning to mobilize a small crew to Polaris towards the end of August 2014 to carry out a monitoring visit in accordance with the supplemental plan currently before the NWB. Sampling results will be submitted to the Inspector as requested, and to the NWB for consideration as part of the water licence process.

<sup>1</sup> Letter from Teck (B. Donald) to AANDC Inspector (A. Keim) dated July 31, 2014 submitted in response to AANDC Inspector letter dated July 9, 2014.

<sup>2</sup> Submitted to the NWB as part of the Water Licence application on August 31, 2013.

<sup>3</sup> *Supra* note 1.

3. Geotechnical inspection report conducted between July and September 2014.

As noted in Teck's letter to AANDC on July 31, 2014<sup>4</sup>, Teck is planning to mobilize a small crew to Polaris towards the end of August 2014 to carry out a monitoring visit in accordance with supplemental plan currently before the NWB. This will include a geotechnical inspection by a qualified geotechnical Engineer with previous experience at Polaris. The Engineer's geotechnical inspection report will be submitted to the Inspector as requested, and to the NWB for consideration as part of the water licence process.

Teck looks forward to working with AANDC during the NWB process. Should you have any questions please do not hesitate to contact me.

Yours truly,



Bruce Donald

Manager, Dormant Properties, Environment

Teck Resources Limited

Attachment: 2011 4<sup>th</sup> Quarter and Annual Water Licence and Decommissioning and Reclamation Plan Reports.

c.c. David Hohnstein, Director of Technical Services, NWB

Phyllis Beaulieu, Manager of Licensing, NWB

Ian Parsons, Regional Coordinator, AANDC

Murray Ball, Manager Water Resources, AANDC

---

<sup>4</sup> *Supra* note 1.



---

**POLARIS MINE**  
**POST-RECLAMATION MONITORING REPORT**  
**2011 4<sup>th</sup> QUARTER and 2011 ANNUAL REPORT**  
**FOR THE NUNAVUT WATER BOARD**  
**&**  
**ABORIGINAL AFFAIRS AND NORTHERN DEVELOPMENT CANADA**

August 6, 2014

## **DISTRIBUTION LIST**

1. Nunavut Water Board - 2 copies  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0
2. Department of Aboriginal Affairs and Northern Development – 1 copy  
Manager, Land Administration  
Department of Indian Affairs and Northern Development  
969 Qimugjuk Building, 2<sup>nd</sup> Floor  
Box 100  
Iqaluit, NU X0A 0H0
3. Teck – 2 copies  
Reclamation Manager,  
Teck Resource Limited.  
Bag 2000  
Kimberley, BC V1A 3E1



August 6, 2014

Nunavut Water Board  
Box 119  
Gjoa Haven, NU  
X0B 0J0

**Attention: Phyllis Beaulieu, Manager of Licensing**

Aboriginal Affairs and Northern Development Canada  
969 Qimugjuk Building, 2<sup>nd</sup> Floor  
Iqaluit, Nunavut  
X0A 0H0

**Attention: Jeff Mercer, Manager, Lands Administration**

Dear Ms. Beaulieu and Mr. Mercer;

**Re: Polaris Mine Water Licence NWB1POL0311 – 2011 4th Quarter and Annual Water Licence and Decommissioning and Reclamation Plan Reports**

Please find attached the Polaris Mine 2011 4th Quarter and 2011 Annual Reports required under Polaris's Water Licence and Decommissioning and Reclamation Plan (DRP). These reports were overlooked and not previously submitted. However, there is no new or additional information to be reported as there were no activities on site in the 4<sup>th</sup> Quarter of 2011 as the site was snow covered and there were no effluent discharges due to the freezing temperatures. All monitoring and reporting of results were previously submitted as required in the 2<sup>nd</sup> and 3<sup>rd</sup> Quarter reports.

As of September 2011, it was nine years since the mine ceased production and closed, and seven years since reclamation was completed. The Polaris Mine has been a Recognized Closed Mine under the Metal Mining Effluent Regulations (MMER) since 2006 and has no further obligations under MMER.

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

Yours truly,

A handwritten signature in black ink, appearing to read "B. Donald".

Bruce Donald  
Manager, Dormant Properties, Environment  
Teck Resources Limited

## **TABLE OF CONTENTS**

	PAGE
<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. 2011 4<sup>th</sup> QUARTER REPORT .....</b>	<b>1</b>
<b>2.1. Reclamation Activities .....</b>	<b>1</b>
<b>2.2. Site Monitoring .....</b>	<b>1</b>
<b>2.3. Financial Reporting .....</b>	<b>1</b>
<b>2.3.1. Updated Financial Report .....</b>	<b>1</b>
<b>2.3.2. Request for Adjustment .....</b>	<b>1</b>
<b>3. 2011 ANNUAL REPORT .....</b>	<b>1</b>
<b>3.1. Unauthorized Discharges.....</b>	<b>1</b>
<b>3.2. Progress Report of Studies and Plans.....</b>	<b>1</b>
<b>3.3. Summary of Closure and/or Reclamation Work Undertaken.....</b>	<b>2</b>
<b>3.4. Estimate of the Total Mine Closure Cost.....</b>	<b>2</b>
<b>3.5. Public Consultation / Participation .....</b>	<b>2</b>
<b>3.6. Work Conducted in Response to Inspection or Compliance Reports .....</b>	<b>2</b>
<b>3.7. Effluent and Water Quality Studies Conducted .....</b>	<b>2</b>
<b>3.7.1. Quantities of Fresh Water Pumped From Frustration Lake ...</b>	<b>2</b>
<b>3.7.2. Garrow Lake Water Column Monitoring.....</b>	<b>3</b>
<b>3.7.3. Garrow Lake Effluent Monitoring.....</b>	<b>3</b>
<b>3.8. Details of Water Use or Waste Disposal Requested By the Board.....</b>	<b>3</b>

## **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 2011 4<sup>th</sup> Quarter and the 2011 Annual Report for the Polaris Mine site.

## **2. 2011 4<sup>th</sup> QUARTER REPORT**

### **2.1. Reclamation Activities**

During the entire 4<sup>th</sup> Quarter of 2011, the Polaris Mine remained unoccupied by personnel. All reclamation activities are now fully completed.

### **2.2. Site Monitoring**

During the entire 4<sup>th</sup> Quarter of 2011, 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. Financial Reporting**

#### **2.3.1. Updated Financial Report**

No further costs have been expended as all activities for the year are now complete.

#### **2.3.2. Request for Adjustment`**

As stated in the 3<sup>rd</sup> Quarter report, Teck is not requesting an adjustment of its reclamation security (currently there is \$3.539M posted) as this topic will be reviewed as part of any re-licensing activities going forward.

## **3. 2011 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**

- The primary issue that has not been resolved is a geotechnical report discussing potential future subsidence of the ground surface over the underground mine workings. This remains outstanding.
- The Spill Contingency Plan is now null and void as there are no further activities or conditions on site that require a spill contingency plan.

### **3.3. 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 the 3rd Quarter of 2011, the key annual monitoring requirements for the Polaris Mine were undertaken.
- From July 16th to 21st, 6 people were on site to conduct a geotechnical inspection, topographical monitoring by surveying, retrieving thermistor data from landfills, and collecting other miscellaneous samples. A contractor also had two people on site making final preparations for removal of all remaining equipment and supplies from the site.
- A site inspection was conducted by 4 AANDC representatives on July 17th. The group consisted of Ian Parsons, (AANDC, Water Resources); Kevin Robertson (Lands Inspector, AANDC), Holger Hartmaier, consulting Geotechnical Engineer from BGC Engineering; and Christine Berube (summer student, Water Resources). The AANDC representatives spent all day on site and inspected all areas of significant reclamation activities. They also collected water samples from Garrow Creek, Garrow Lake, Frustration Lake and LRD Quarry Landfill.
- On September 1st, the final removal of Teck's temporary exploration style camp, site materials, equipment, and supplies was done by sea lift. A wood shed was left for a local Inuit at his request. Two quads, a boat and miscellaneous equipment remained on site until September 2nd for the Garrow Lake sampling event. After the Garrow Lake sampling was completed, this equipment was also removed.
- No further reclamation work is planned and not has been requested by regulators who have inspected the site.

### **3.4. Estimate of the Total Mine Closure Cost**

An update of reclamation and monitoring costs was presented in the 3<sup>rd</sup> Quarter report and no further costs were incurred in the 4<sup>th</sup> Quarter of 2011. Total costs for 2011 were \$474,000. No further work under the Closure Plan or the Water Licence are required. The Land Leases have now expired and the Water Licence expired at year end.

### **3.5. Public consultation / Participation**

- No public consultations were conducted as the site is basically dormant other than for monitoring.
- One Inuit resident from Resolute assisted with the annual inspection and maintenance program 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 benefit of ensuring that the nearest community is aware of site activity and site conditions.

### **3.6. Work Conducted in Response to Inspection or Compliance Reports**

- None required.

### **3.7. Effluent and Water Quality Studies Conducted**

#### **3.7.1. 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.

### **3.7.2. Garrow Lake Water Column Monitoring**

During 2011, 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 event did not occur due to problems with shipping sampling equipment to the site as discussed in the 2<sup>nd</sup> Quarter report. The 3<sup>rd</sup> Quarter sampling event was reported in the 3<sup>rd</sup> Quarter report.

The 3<sup>rd</sup> Quarter reports include an analysis of the limnology of Garrow Lake in Appendix B in the form of Total Zinc concentration graphs from 2005 to 2011 for both the Centre sampling station (#262-3) and the South sampling station (#262-3A). Trends were fully consistent with previous sampling events continuing to confirm the expected on-going stability of both the physical and chemical properties of the lake.

### **3.7.3. Garrow Creek Effluent Monitoring**

The Water Licence and the DRP requires sampling of the Final Discharge Point from Garrow Lake during periods of effluent discharge. All water quality results were compliant with the parameters specified in the Water Licence. In addition there was no acute toxicity in either the Rainbow Trout or the *Daphnia magna*. The details of the monitoring results can be found in the previously submitted 3<sup>rd</sup> Quarter report. The 3<sup>rd</sup> Quarter report also reports the sample results from the reference area and Garrow Bay sample results.

## **3.8. 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.
- There was no waste disposal at the site. All debris generated in 2011 was removed from site along with the sealift of other materials leaving site.