

# Fax

# teckcominco

Teck Cominco Ltd.  
Bag 2000  
Kimberley, B.C. V1A 3E1  
Phone: (250) 427-8256  
Fax: (250) 426-8451  
Email: bruce.donald@teckcominco.com

## Page 1 of 15

**Bruce Donald**  
Reclamation Manager,  
Environment & Corporate Affairs

---

To: **Mr. Philippe di Pizzo, Executive Director, Nunavut Water Board**  
Fax: (867) 360-6369  
Date: October 4, 2002

**Re: Polaris Mine – Water Licence Application**

Please find the following attached:

- a) Letter of Submission for new Water Licence
- b) Water Licence application Form
- c) Section 7 details
- d) Section 12 details
- e) Section 13 details
- f) Phase 1 Surveillance Plan
- g) Phase 2 Monitoring Plan

I will forward you the originals by mail complete with cd's containing previously submitted reports in electronic form. Also attached will be a cheque for the application fee.

NIRB faxed me indicating that they would proceed screening the DFO authorization without the Water Licence Application if they did not receive it today. I have emailed NIRB indicating we were submitting our Water Licence application to you today and that I they wait for the Water Licence application before starting the DFO Screening (as they suggested they would prefer to do).

Please contact me if you have any questions related to the application.

---

This message is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the reader of the message is not the intended recipient, or the employee or agent responsible for delivering the message, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to the above address via the Postal Service. Thank you.

October 4, 2002

Nunavut Water Board  
P.O. Box 119,  
Gjoa Haven, NU  
X0B 1J0

**Attention:**     **Philippe di Pizzo, Executive Director**

*Via fax*

Dear Sir:

**Re:     Application for new Water Licence for the Decommissioning and Reclamation of the Polaris Mine**

Polaris Operations currently holds Water Licence N4L2 – 0262 which expires December 31, 2002. The mine recently ceased commercial operation and has commenced with the decommissioning and reclamation activities proposed in the Polaris Mine Decommissioning and Reclamation Plan of March 2001 ('Closure Plan') as approved by the Water Board on April 15, 2002. The approval was conditional in that it excluded the decommissioning of Garrow Lake Dam, the Dock and Adjacent Shoreline areas until Polaris Operations obtained the Fisheries Act Authorization from the Department of Fisheries and Oceans Canada (DFO). In September, the Authorization was signed by both Teck Cominco and DFO and has been forwarded to NIRB for screening. The approval of the reclamation activities also excluded work on the causeway for the pump house at Frustration Lake until further information is provided. The additional information requested will be forwarded to you next week.

As you are aware, as of June 6, 2002 the federal Metal Mining Effluent Regulations (MMER) were registered into law. It is our understanding that these regulations apply to the Polaris Operations as the mine was in commercial operation when the regulations came into effect. We will be meeting with Environment Canada prior to next summer to discuss the implementation of these regulations at Polaris. In the interim, the proposed site surveillance and monitoring plans being submitted as part this Water Licence application have been updated from those approved as part of the Closure Plan to reflect known additional requirements from the MMER.

As proposed in the Closure Plan, decommissioning activities have started immediately upon closure and are scheduled to be complete by October 2004. During this time period, the site will be occupied continuously with higher activity levels during the summer months due to the addition of earth moving activities and reduced activity levels during the winter months. Upon completion of the reclamation activities, we will de-mobilize from the site and will only have a presence at the site during the proposed regular inspections and monitoring activities as generally outlined in the Closure Plan and as detailed in the attached detailed surveillance and monitoring plans.

Please find the following enclosed with this letter:

- a) Application for a new Water Licence for the decommissioning, reclamation and monitoring of the site.
- b) Attachment responding to Section 8 of Application Form – Associated information regarding the List of Wastes
- c) Attachment responding to Section 12 of the Application Form - List of Contractors and Sub-Contractors
- d) Attachment responding to Section 13 of the Application Form - Studies undertaken to date
- e) Polaris Mine Decommissioning and Reclamation Plan - March 2001 (cd format as previously supplied in paper format)
- f) Polaris Mine Decommissioning and Reclamation Plan – Response to Regulator Questions - January 7, 2002 (cd format as previously supplied in paper format)
- g) Polaris Fish Habitat Restoration Plan – May 24, 2002 (cd format as previously supplied in paper format)
- h) Letter to Nunavut Impact Review Board dated September 20, 2002 submitting a Section 35(2) Fisheries Act Authorization – to Decommission Garrow Lake Dam, The Dock and Marine Foreshore Area at Polaris Mine
- i) Detailed Surveillance Plan (2003 & 2004) – September 25, 2002 Revision
- j) Detailed Monitoring Plan (2005 to 2011) – September 25, 2002 Revision
- k) A cheque for the application fee.

Please don't hesitate to contact the writer if you have any questions or require additional information.

Yours truly,

Bruce Donald,  
Reclamation Manager

Attachments (11)

cc: Dionne Filiatrault (NWB)  
Carl McLean (DIAND)  
John Knapp (Polaris)



P.O. Box 119  
GJOA HAVEN, NU X0E 1J0  
TEL: (867) 360-6338  
FAX: (867) 360-6369  
KATIMAYINGI

kNK5 wmoEp5 vtmpq  
NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN

## WATER LICENCE APPLICATION FORM

Application for: (check one)

☒ **New**    ☐ **Amendment**    ☐ **Renewal**    ☐ **Assignment**

### LICENCE NO:

(for NWB use only)

#### 1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

Teck Cominco Ltd., Polaris Operations  
Box 188  
Resolute Bay, Nunavut  
X0A 0E0  
Attention: Bruce Donald  
Phone: (867) 253 - 2201  
Fax: (867) 253 - 6862  
e-mail: bruce.donald@teckcominco.com

#### 2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Teck Cominco Ltd.  
#600 – 200 Burrard Street  
Vancouver, BC  
V1A 3E1  
Phone: (604) 687-1117  
Fax: (604) 687-6100  
e-mail:

#### 3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

**Polaris Mine, Little Cornwallis Island, Nunavut**

Latitude: 75 degrees north      Longitude: 97 degrees west      NTS Map No. 68 H/8  
(Refer to enclosed figures 1 & 2 of the Polaris Mine Decommissioning and Reclamation Plan – March 2001 – Volume 1)

#### 4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

**Decommissioning and Reclamation of the Polaris Mine Site After Permanent Closure of the Operation**

#### 5. TYPE OF UNDERTAKING (A supplementary questionnaire must be submitted with the application for undertakings listed in “**bold**”)

☐ **Industrial**                      ☐ **Remote/Tourism Camps**  
☐ **Mine Development**        ☐ **Municipal**  
☐ **Advanced Exploration**      ☐ **Power**  
☐ **Exploratory Drilling**        ☒ Other (describe): Mine Reclamation Activities

**6. WATER USE**

- ☒ To obtain water  
☒ To modify the bed or bank of a watercourse  
\_\_\_ To alter the flow of , or store, water  
\_\_\_ To cross a watercourse
- \_\_\_ To divert a watercourse  
\_\_\_ Flood control  
\_\_\_ Other (describe): \_\_\_\_\_

**7. QUANTITY OF WATER INVOLVED** (litres per second, litres per day or cubic metres per year, including both quantity to be used and quality to be returned to source)

<u>Water Use By Year</u>	<u>Returned to Source</u>
2003 - 250,000 cu m per year	0 cu m per year
2004 - 200,000 cu m per year	0 cu m per year
2005 to 2011 – 0 cu m per year	

**8. WASTE** (for each type of waste describe: composition, quantity, methods of treatment and disposal, etc.)  
**See Attached listing**

- ☒ Sewage  
☒ Solid Waste  
☒ Hazardous  
☒ Bulky Items/Scrap Metal
- ☒ Waste oil  
☒ Greywater  
☒ Sludges  
\_\_\_ Other (describe): \_\_\_\_\_

**9. PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING** (give name, mailing address and location; attach if necessary)  
**No local residents**

**Land Use Permit**

Work is contained within the following Federal land leases already held by Polaris Operations:  
**68H/8-1-3, 68H/8-2-2, 68H/8-3-3, 68H/8-8-2 and 68H/8-9-2**

- DIAND                                      \_\_\_ Yes \_\_\_ No    If no, date expected \_\_\_\_\_
- Regional Inuit Association            \_\_\_ Yes \_\_\_ No    If no, date expected \_\_\_\_\_
- Commissioner                            \_\_\_ Yes \_\_\_ No    If no, date expected \_\_\_\_\_

**10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES** (direct, indirect, cumulative impacts, etc.)

The Decommissioning and Reclamation Work has conditional approval from the Nunavut Water Board and DIAND. Work related to Decommissioning of Garrow Lake Dam and the Decommissioning of the Dock and Adjacent Shoreline will be done under a Section 35(2) Fisheries Act Authorization which has been referred to NIRB on September 20, 2002 for Screening.

NIRB Screening                            \_\_\_ Yes ☒ No    If no, date expected **October 2002**

**11. INUIT WATER RIGHTS**

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

**No**

**11. (Continued)**

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

**12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)**

**See Attached List**

**13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)**

**See Attached List**

**14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN**

Supplementary Questionnaire (where applicable: see section 5) ☐ Yes ☐ No If no, date expected N.A.

Inuktitut/English Summary of Project ☒ Yes ☐ No If no, date expected \_\_\_\_\_

**See Pages i to iv of Volume 1 of the Polaris Mine Decommissioning & Reclamation Plan – March 2001**

Application fee \$30.00 (c/o of Receiver General for Canada) ☒ Yes ☐ No If no, date expected \_\_\_\_\_

**15. PROPOSED TIME SCHEDULE**

Refer to Table 2.1 Of Volume 1 of Polaris Mine Decommissioning and Reclamation Schedule

☐ Annual (or) ☒ Multi Year

Start Date: September 2002 Completion Date: December 2011

Bruce Donald

Name (Print)

Reclamation Manager

Title (Print)

\_\_\_\_\_  
Signature

October 3, 2002

Date

For Nunavut Water Board use only

APPLICATION FEE

Amount: \$ \_\_\_\_\_

Receipt No.:

WATER USE DEPOSIT

Amount: \$ \_\_\_\_\_

Receipt No.:

## **SECTION 7 OF WATER LICENCE APPLICATION – LIST OF WASTES**

As indicated in the application, the following list indicates quantity and method of treatment and disposal of site wastes

### **Sewage**

- Approximately 3,300 cu m in each of 2003 and 2004, discharged to the ocean as currently done.
- No sewage beyond 2004.

### **Solid Waste**

- Less than approximately 1,000 cu m per year in 2003 & 2004 are expected to be placed in the Operational Landfill.
- No solid waste beyond 2004.

### **Hazardous Materials**

- Refer to Closure Plan.
- Most mill reagents have already been shipped to southern Canada for use at another Teck Cominco mine or have been re-sold for use at non-Teck Cominco mines. Other materials will be returned to original suppliers, re-cycled, destroyed and/or placed in a permitted landfill.
- Shipping of all hazardous materials will be done in compliance with transportation of hazardous goods regulations.
- No hazardous wastes will remain on-site beyond 2004.

### **Bulky Items / Scrap Metal**

- Approximately 50,000 cu m will be placed in the approved landfills on site or placed into the underground workings as specified in the Polaris Mine Decommissioning and Reclamation Plan (Closure Plan).
- Bulky items are being cut into smaller pieces and a landfill procedure is being followed to ensure voids within the landfills are minimized.
- All placements of bulky items / scrap metal into landfills will be completed by the end of 2004.

### **Waste Oil**

- It is estimated that approximately a total of 65,000 liters of used oil will require disposal by the end of 2004.
- Disposal will be by incinerations on-site. Teck Cominco has purchased and mobilized to site a new two stage incinerator designed for this application in accordance with the approved Closure Plan.
- All waste oil on-site will have been incinerated of by the end of 2004.

### **Grey water**

- Approximately 29,700 cu m during each of 2003 and 2004.
- There will be no greywater discharge beyond 2004.

### **Sludge**

- Based on recent investigations, there are approximately 20,000 cu m of hydrocarbon fuel sludge in storage tank bottoms are estimated to be on site.
- All will be incinerated by the end of 2004.

**SECTION 12 OF WATER LICENCE APPLICATION – LIST OF CONTRACTORS AND SUB-CONTRACTORS**

Below is the list of prime contractors and subcontractors currently engaged. This list includes contractors required to complete the majority of the decommissioning and reclamation work. The list is not intended to be all inclusive as other contractors are engaged from time to time for specific project needs. While not anticipated at this time, depending on project needs, the listed contractors could change during the project.

1. The prime contractor is      SNC-Lavalin Engineers & Constructors Inc.  
220 Lake Shore Blvd. West  
Toronto, Ontario  
M8V 1A4
  
2. A major subcontractor is      équipement industriels ROBERT Ltée  
2093, Rue Du Vallon  
Shawinigan, Quebec  
G9N 6T6
  
3. A major subcontractor is      Qikiqtaaluk Corporation  
P.O. Box 1228  
Iqaluit, Nunavut  
X0A 0H0
  
4. A major subcontractor is      Tower Arctic Ltd.  
2045 Stanley St., #1230  
Montreal, Quebec  
H3A 2V4
  
5. A major subcontractor is      Compass Group Canada (Beaver) Ltd.  
Unit 100 – 3700 North Fraser Way  
Burnaby, BC  
V5J 5H4
  
6. A major subcontractor is      Tundra Site Services  
10302 – 121 St.  
Edmonton, Alberta  
T5N 1K8



### **SECTION 13 OF THE WATER LICENCE APPLICATION - STUDIES UNDERTAKEN TO DATE**

1. Polaris Mine Decommissioning and Reclamation Plan – March 2001

This report includes the following studies:

- 1999 Environmental Site Assessment – Gartner Lee Ltd. (June 2000)
- 2000 Environmental Site Assessment – Gartner Lee Ltd. (March 2001)
- Report on Barge Reclamation Options – Gartner Lee Ltd. (March 2001)
- Polaris Mine – Polaris Landfill Closure Report – Gartner Lee Ltd. (March 2001)
- Garrow Lake Dam – Effect of Removal on Lake Stability and Outflow Water Quality – AXYS Environmental Consulting Ltd. and Applied Ocean Sciences (March 2001)
- Decommissioning of Dock Facilities at Polaris Mine Little Cornwallis Island, Nunavut – Westmar Consultants Inc. (March 2001)
- Human Health and Ecological Risk Assessment of Cominco's Polaris Mine on Little Cornwallis Island: Derivation of Soil Quality Remediation Objectives – Cantox Environmental (March 2001)

2. Polaris Mine Decommissioning and Reclamation Plan – Response to Regulator Questions – Teck Cominco Ltd. (January 7, 2001)

- This report responded to questions and concerns submitted by the various agencies including the Nunavut Water Board, Department of Indian and Northern Development, Department of Fisheries and Oceans, Environment Canada and Department of Sustainable Development.
- The report includes additional information related to most of the studies identified in Item 1 above.

3. Polaris Fish Habitat Restoration Plan – Teck Cominco Ltd. (May 2002)

- This plan was developed in support of Teck Cominco's application for a Section 35(2) Fisheries Authorization to decommission the Garrow Lake Dam and to decommission the Dock and Adjacent Shoreline.

All of the above studies and/or reports have been previously submitted to the Nunavut Water Board.

### **STUDIES PLANNED**

1. Upon approval of the application for a Section 35(2) Authorization to Decommission Garrow Lake Dam and the Dock and Adjacent Marine Foreshore Area, Teck Cominco Ltd. (TCL) has agreed to propose a study design (conducted by TCL) to the Department of Fisheries and Oceans by April 2003 with the following scope:

- to study the metals concentrations in benthic sediment adjacent to the shore of Garrow Lake, Garrow Lake stream channel and Garrow Bay
- to study the metals concentrations of four-horn sculpins in Garrow Lake and Garrow Bay
- to monitor erosion rates of the shore of Garrow Lake and Garrow Creek stream channel

PHASE 1 - DECOMMISSIONING & RECLAMATION SURVEILLANCE PLAN - (2003 - 2004)						
Area	Station #	Station Location	Parameter(s)	Frequency	Duration / Timing	Comments
<b>Garrow Lake and Garrow Creek</b>						
	<b>262 - 3</b>	Centre of Garrow Lake at water depths of 3, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22 and 40 m. During open water, also sample at 0 and 1.5 m	Total lead, total zinc, pH, temperature, conductivity	Three times per year	Mid-winter, maximum ice thickness and maximum ice melt in 2003 & 2004	
	<b>262 - 3</b>	Centre of Garrow Lake at water depths of 3 and 10 m. During open water, also sample at 0 and 1.5 m	Total copper, cyanide, cadmium, antimony, nickel, arsenic, mercury	Three times per year	Mid-winter, maximum ice thickness and maximum ice melt in 2003 & 2004	
	<b>262 - 3</b>	Centre of Garrow Lake - at water depth of 1.5 m during open water.	TSS	Annual	Mid-winter, maximum ice thickness and maximum ice melt in 2003 & 2004	
	<b>262 - 4</b>	Outlet of Garrow Lake	Lake elevation	Twice annually	At break-up and prior to freeze up	
	<b>262 - 4</b>	Garrow Lake near the outlet channel.	Peak Pressures changes in Garrow Lake	Each time a blast is initiated at the dam	During decommissioning of the dam scheduled in early 2004	Measure peak pressures in Garrow Lake to ensure fish are not harmed by the blasting which is occurring 500 metres from the lake.
	<b>262 - 7</b>	Discharge from Garrow Lake at the location of the Garrow Creek dam (the 'Final Discharge Point' as per MMER)	As specified in Schedule 4 of the MMER (Aresnic, Copper, Cyanide, Lead, Nickel, Zinc, TSS, Radium 226) plus temperature, and conductivity	Once per week	During periods of discharge of effluent during 2003 & 2004	
	<b>262 - 7</b>	Discharge from Garrow Lake at the location of the Garrow Creek dam (the 'Final Discharge Point' as per MMER)	As specified in Schedule 5 of the MMER - hardness, alkalinity, and Total concentration for Aluminum, cadmium, iron, mercury, molybdenum, ammonia and nitrate, dissolved oxygen	Up to 4 times per year at the same time as collecting the samples listed in the item immediately above.	Not less than 1 month apart in 2003 & 2004	The MMER requires 4 times per year not less than one month apart to be taken at the same time as samples listed above. However, Garrow Creek does not flow for 4 months per year so it will not be possible to obtain all the samples.
	<b>262 - 7</b>	Discharge from Garrow Lake at the location of the Garrow Creek dam (the 'Final Discharge Point' as per MMER)	Sublethal toxicity tests as per Schedule 5 of the MMER	Twice annually at the same time as the two items immediately above.	During periods of effluent discharge in 2003 & 2004 but not less than 1 month apart.	
	<b>262 - 7</b>	Discharge from Garrow Lake at the location of the Garrow Creek dam (the 'Final Discharge Point' as per MMER)	Volume of effluent	Daily while siphoning and weekly once natural flows have been re-established	During periods of effluent discharge in 2003 & 2004	

<b>PHASE 1 - DECOMMISSIONING &amp; RECLAMATION SURVEILLANCE PLAN - (2003 - 2004)</b>						
<b>Area</b>	<b>Station #</b>	<b>Station Location</b>	<b>Parameter(s)</b>	<b>Frequency</b>	<b>Duration / Timing</b>	<b>Comments</b>
	<b>Therm #14</b>	Thermisters in Garrow Lake Dam - the north thermister	Temperature	Monthly	Until Garrow Lake siphoning has lowered Garrow Lake to its original lake elevation	At that time the dam will have been drained and is no longer retaining water
	<b>Therm # 15</b>	Thermisters in Garrow Lake Dam - the centre thermister	Temperature	Monthly	Until Garrow Lake siphoning has lowered Garrow Lake to its original lake elevation	At that time the dam will have been drained and is no longer retaining water
	<b>Therm # 16</b>	Thermisters in Garrow Lake Dam - the south thermister	Temperature	Monthly	Until Garrow Lake siphoning has lowered Garrow Lake to its original lake elevation	At that time the dam will have been drained and is no longer retaining water
	<b>Garrow Lake</b>	Tailings Piles in Garrow Lake	Bathimetry	Once	After cessation of production	Conduct detailed bathimetry of tailings deposition to document final locations and elevations of the tailings piles
	<b>Stat. 8</b>	Garrow Lake near shore - north quadrant	Rate of erosion just above foreshore	Three times per year	July, August & September of 2003 & 2004	
	<b>Stat. 9</b>	Garrow Lake near shore - east quadrant	Rate of erosion just above foreshore	Three times per year	July, August & September of 2003 & 2004	
	<b>Stat. 10</b>	Garrow Lake near shore - south quadrant	Rate of erosion just above foreshore	Three times per year	July, August & September of 2003 & 2004	
	<b>Stat. 11</b>	Garrow Lake near shore - west quadrant	Rate of erosion just above foreshore	Three times per year	July, August & September of 2003 & 2004	
	<b>Stat. 12</b>	Garrow Creek near the outlet of Garrow Lake	TSS	Weekly	4 weeks from the start of freshet to monitor peak flow period after the dam has been decommissioned in 2004	To monitor the change in TSS as Garrow Creek flows from the lake to the ocean.
	<b>Stat. 12</b>	Garrow Creek near the outlet of Garrow Lake	Erosion (mm)	Weekly	June to October 2004 when there is flow in the creek.	Place a metal pin in the creek channel and measure from the top of the pin to the stream bed. This will allow measurement of erosion if it occurs.
	<b>Stat. 12</b>	Garrow Creek near the outlet of Garrow Lake	Photograph	Weekly	June to October 2004 when there is significant flow in the creek.	Documents any changes in the creek channel during flow period in the creek
	<b>Stat. 13</b>	Garrow Creek - approximately midway between Garrow Lake and Garrow Bay	Erosion (mm)	Weekly	June to October 2004 when there is flow in the creek.	Place a metal pin in the creek channel and measure from the top of the pin to the stream bed. This will allow measurement of erosion if it occurs.
	<b>Stat. 13</b>	Garrow Creek - approximately midway between Garrow Lake and Garrow Bay	Photograph	Weekly	June to October 2004 when there is significant flow in the creek.	Documents any changes in the creek channel during flow period in the creek

<b><u>PHASE 1 - DECOMMISSIONING &amp; RECLAMATION SURVEILLANCE PLAN - (2003 - 2004)</u></b>						
<b>Area</b>	<b>Station #</b>	<b>Station Location</b>	<b>Parameter(s)</b>	<b>Frequency</b>	<b>Duration / Timing</b>	<b>Comments</b>
	<b>Stat. 14</b>	Near the mouth of Garrow Creek discharging into Garrow Bay	TSS	Weekly	During periods of discharge by siphoning in 2003	To establish background TSS conditions prior to starting decommissioning of the dam.
	<b>Stat. 14</b>	Near the mouth of Garrow Creek discharging into Garrow Bay	TSS	Weekly	4 weeks from the start of freshet to monitor peak flow period after the dam has been decommissioned in 2004	To monitor the change in TSS as Garrow Creek flows from the lake to the ocean.
	<b>Stat. 14</b>	Near the mouth of Garrow Creek discharging into Garrow Bay	Erosion (mm)	Weekly	June to October 2004 when there is flow in the creek.	Place a metal pin in the creek channel and measure from the top of the pin to the stream bed. This will allow measurement of erosion if it occurs.
	<b>Stat. 15</b>	Along the length of the Garrow Creek from Garrow Lake to Garrow Bay	Visual	Daily	Through period of excavation of the dam in 2004	Conducted by Teck Cominco representative to ensure compliance with conditions of the DFO authorization.
	<b>Stat. 15</b>	Along the length of the Garrow Creek from Garrow Lake to Garrow Bay	Photographic	Once	Upon completion of decommissioning Garrow Lake dam in 2004	Provide documentation to DFO so if there are any deficiencies in the work, they can be identified prior to demobilizing from the site
	<b>Stat. 15</b>	Every 100 metres along the length of Garrow Creek	Photograph	Weekly	June to October 2004 when there is significant flow in the creek.	Documents any changes in the creek channel during flow period in the creek
<b><u>Frustration Lake</u></b>						
	<b>262 - 1</b>	Frustration Lake pumphouse	Water volume	Monthly total pumped in Cu. M.	2003 onward until water use discontinued in 2004	
<b><u>Dock &amp; Adjacent Shoreline</u></b>						
	<b>Dock/Shoreline</b>	Dock/Shoreline at Ocean - between Section lines 600 to 1800	Visual	Daily	Through period of excavation of dock and adjacent shoreline	Conducted by Teck Cominco representatives to monitor compliance with DFO Authorization
	<b>Dock/Shoreline</b>	Dock/Shoreline at Ocean - at Section lines 600, 800, 1000, 1200, 1400, 1600 and 1800	TSS	Daily	While working in the intertidal zone during 2003 & 2004	
	<b>Dock/Shoreline</b>	In foreshore area where excavation work is occurring between Section lines 600 to 1800	Photographic	Weekly	During excavation work in 2003 and 2004	
	<b>Dock/Shoreline</b>	In foreshore area where excavation work occurred between Section lines 600 to 1800	Photographic	Once	Upon completion of decommissioning the dock and shoreline	Forward to DFO for review prior to de-mobilizing from site incase further work is required.

**PHASE II - POST RECLAMATION MONITORING PLAN (2005 - 2011)**

Area	Station #	Station Locations	Parameter(s)	Frequency	Duration / Timing	Comments
<b><u>Garrow Lake and Garrow Creek</u></b>						
	<b>Stat. 15</b>	Resolute Bay or alternate in the region (if authorized by the Nunavut Water Board)	Wind speed	Weekly	During potential open water season (July to September) from 2004 until 2011	Monitor wind speed to identify potential events that could induce mixing of the top two layers of Garrow Creek. Wind speed information is based on a local wind monitoring station.
	<b>262-3</b>	Centre of Garrow Lake at water depths of 3, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22 and 40 m. During open water, also sample at 0 and 1.5 m	Total lead, total zinc, pH, temperature, conductivity, salinity	Following a 49 km/hr wind with a 2.5 hr duration	July through September if the lake is ice free until 2011	
	<b>262-3</b>	Centre of Garrow Lake at water depths of 3, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22 and 40 m	Total lead, total zinc, pH, temperature, conductivity, salinity	Annually in 2005, 2006, 2008, 2011	May / June (prior to ice leaving the lake so that it is safe to sample).	Monitor the stability of the stratification of the lake. If unexpected results are recorded, increase frequency to include 2007, 2009 and 2010
	<b>Garrow Lake</b>	Tailings Piles in Garrow Lake	Bathimetry	Once	Mid July to Mid August 2011	Conduct detailed bathimetry of tailings deposition to document locations and elevations of tailing piles so that any change since closure can be identified.
	<b>Stat. 8</b>	Garrow Lake near shore - north quadrant	Rate of erosion just above foreshore	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	
	<b>Stat. 9</b>	Garrow Lake near shore - east quadrant	Rate of erosion just above foreshore	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	
	<b>Stat. 10</b>	Garrow Lake near shore - south quadrant	Rate of erosion just above foreshore	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	
	<b>Stat. 11</b>	Garrow Lake near shore - west quadrant	Rate of erosion just above foreshore	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	

**PHASE II - POST RECLAMATION MONITORING PLAN (2005 - 2011)**

<b>Area</b>	<b>Station #</b>	<b>Station Locations</b>	<b>Parameter(s)</b>	<b>Frequency</b>	<b>Duration / Timing</b>	<b>Comments</b>
	<b>262 - 7</b>	At the designated 'Final Discharge Point' from Garrow Lake (as per MMER) when water discharging	As specified in Schedule 4 of the MMER (Aresnic, Copper, Cyanide, Lead, Nickel, Zinc, TSS, Radium 226) plus temperature, and conductivity	Annually in 2005	During periods of effluent discharge in 2005 between July 1 to August 10	Note that site work will be completed in 2004 and the island will be uninhabited in 2005.
	<b>262 - 7</b>	At the designated 'Final Discharge Point' from Garrow Lake (as per MMER)	As specified in Schedule 5 of the MMER - hardness, alkalinity, and Total concentration for Aluminum, cadmium, iron, mercury, molybdenum, ammonia and nitrate, dissolved oxygen	At same time as collect the sample listed immediately above.	During periods of effluent discharge in 2005 between July 1 to August 10	
	<b>262 - 7</b>	At the designated 'Final Discharge Point' from Garrow Lake (as per MMER)	Sublethal toxicity tests as per Schedule 5 of the MMER	At the same time as the two items immediately above.	During periods of effluent discharge in 2005 between July 1 to August 10	
	<b>262 - 7</b>	At the designated 'Final Discharge Point' from Garrow Lake	Totals for Cu, Zn, Pb, Hg, Cd and Cyanide plus temperature, pH and conductivity	Annually in 2006, 2007, 2009 & 2011	During periods of effluent discharge in 2005 between July 1 to August 10	
	<b>Stat. 12</b>	Garrow Creek near the outlet of Garrow Lake	TSS	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to August 10	
	<b>Stat. 14</b>	Near the mouth of Garrow Creek discharging into Garrow Bay	TSS	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to August 10	
	<b>Stat. 15</b>	Every 100 metres along the length of Garrow Creek	Photographic	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	To monitor for erosion of the creek channel
	<b>Stat. 12</b>	Garrow Creek near the outlet of Garrow Lake	Erosion (mm)	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	Measure height of metal pin above stream bed
	<b>Stat. 13</b>	Garrow Creek - approximately midway between Garrow Lake and Garrow Bay	Erosion (mm)	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	Measure height of metal pin above stream bed
	<b>Stat. 14</b>	Near the mouth of Garrow Creek discharging into Garrow Bay	Erosion (mm)	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	Measure height of metal pin above stream bed

<b><u>PHASE II - POST RECLAMATION MONITORING PLAN (2005 - 2011)</u></b>						
<b>Area</b>	<b>Station #</b>	<b>Station Locations</b>	<b>Parameter(s)</b>	<b>Frequency</b>	<b>Duration / Timing</b>	<b>Comments</b>
<b><u>Dock and Adjacent Shorelines</u></b>						
	<b>Dock/Shoreline Stat. 16</b>	Dock/Shoreline at Ocean - at Section lines 600, 800, 1000, 1200, 1400, 1600 and 1800	Photographic	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	Record stability of dock and adjacent shorelines
	<b>Dock/Shoreline Stat. 16</b>	Ocean bottom adjacent to dock and restored shoreline between Section lines 600 to 1800	Video documentation	Once	July 1 to Mid August of 2011	Video tape of ocean floor for aquatic biota in nearshore area of restored dock/shoreline
<b><u>Frustration Lake</u></b>						
	<b>Stat. 17</b>	Causeway extending into the lake	Photographic	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 toMid August	To record the stability (lack of erosion) of the causeway
<b><u>Other Areas of the Site</u></b>						
	<b>Stat. 18</b>	Loon Lake creek near the shoreline	Total lead, total zinc, pH, conductivity concentrations	Annually in 2005, 2006, 2007, 2009 & 2011 if discharging	July 1 to Mid August	
	<b>Misc. Surface Flows</b>	Any surface flows in the mill or mine area that discharge into the ocean - Locations will be identified by NAD83 co-ordinates	Total lead, total zinc, pH, conductivity concentrations	Annually in 2005, 2006, 2007, 2009 & 2011	July 1 to Mid August	Opportunistic sampling of any surface flows found that discharge into the ocean or Garrow Lake