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(BHPB & Diavik)

Pursuant to the *Mackenzie Valley Resource Management Act* and Regulations, the Wek'èezhii Land and Water Board, hereinafter referred to as the Board, hereby grants to:

**BHP Billiton Diamond Mine Inc.**

**(Licensee)**

of **P.O. Box 2498, 5007-50 Avenue ,YELLOWKNIFE, NT X1A 2P8**  
**(Mailing Address)**

Hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number: W2009L2-0001 (Amendment of MV2003L2-0013)

Licence Type: A

Water Management Area: NORTHWEST TERRITORIES 07

Location: LAC DE GRAS, NT

Purpose: WATER USE AND WASTE DISPOSAL

Description: DIAMOND MINING AND MILLING

Quantity of water not to be exceeded: SEE PART D, ITEM 3

Effective Date of Licence: AUGUST 15, 2009

Expiry Date of Licence: AUGUST 18, 2013

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.  
Wek'èezhii Land and Water Board

A handwritten signature in blue ink, appearing to be "R. Fequet".

**Witness – Mr. Ryan Fequet**

A handwritten signature in black ink, appearing to be "V. Camsell-Blondin".

**Chair – Ms. Violet Camsell-Blondin**

**APPROVED BY**

**Minister of Indian and Northern Affairs Canada**

## Part A: Scope and Definitions

### 1. Scope

- a) This Licence entitles BHP Billiton Diamonds Inc. to divert water from Upper Panda Lake to Kodiak Lake, and to use water and dispose of Waste for the purpose of mining the Panda, Koala, Koala North, Misery and Fox kimberlite pipes and for operating the processing facilities and infrastructure associated with diamond mining within the Koala, Misery, King-Cujo and Desperation-Carrie Watersheds of the Lac de Gras basin, Northwest Territories.

This Licence also entitles BHP Billiton Diamonds Inc. to use water, Dewater Sable, Pigeon, and Beartooth Lakes for the purpose of mining, to Drawdown Two Rock Lake, divert Pigeon Stream around the Pigeon pit, pipe water from Bearclaw Lake outflow around Beartooth pit, use water from Ursula and Upper Exeter Lake, deposit Processed Kimberlite into the Beartooth pit for the purpose of creating a pit lake, and dispose of Waste for industrial undertakings in diamond mining and processing, production and associated uses in the Koala, Pigeon and Sable watersheds, Northwest Territories as shown on Figure 6, 8, & 10 of the Class A Water Licence and Land Use Permits supporting documents, submitted August 21, 2001.

The activities listed above are to be conducted as described in the Environmental Impact Assessment.

- b) This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of Waste of any type in any waters or in any place under any conditions where such Waste or any other Waste that results from the deposit of such Waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations.
- c) Compliance with the terms and conditions of this Licence does not relieve the Licensee from responsibility from compliance with the requirements of all applicable, Federal, Territorial, Tlicho and Municipal legislation.

### 2. Definitions

**"Acid/Alkaline Rock Drainage (ARD)"** means the production of acidic or alkaline leachate, Seepage or drainage from underground workings, ore piles, Waste Rock, Processed Kimberlite, and overburden that can lead to the release of metals to Groundwater or surface water during the life of the mine and after mine closure.

**"Act"** means the *Northwest Territories Waters Act*.

**"Adaptive Management Plan"** is a Management Plan that describes a way of managing risks associated with uncertainty and provides a flexible framework for the mitigation measures to be implemented and actions to be taken when specified thresholds are exceeded.

**"Analyst"** means an Analyst designated by the Minister under section 35(1) of the Act.

**"Aquatic Effects Monitoring Program"** means a monitoring program designed to determine the short- and long-term effects in the Receiving Environment resulting from the Project; to evaluate the accuracy of



impact predictions; to assess the effectiveness of planned impact mitigation measures; and to identify additional impact mitigation measures to reduce or eliminate environmental effects.

**"Board"** means the Wek'èezhii Land and Water Board established under Section 57.1 of the *Mackenzie Valley Resource Management Act*.

**"Coarse Kimberlite Reject Material"** is the coarse material, generally between 0.5 mm and 8 mm in diameter, rejected from the process plant after the recoverable diamonds have been extracted.

**"Collection and Settling Ponds"** are containment structures used to collect water and/or Waste or to settle solids suspended in Minewater. This definition does not include Sumps, the King Pond Settling Pond, and Collection and Settling Ponds that are adjacent to active mining areas or within an open pit such that all Seepage or overflow would flow into the pit.

**"Contaminated Snow Containment Facility"** is the lined area set aside within the Waste Rock Storage Areas for the containment of snow and ice contaminated by hydrocarbons and other products as approved of in the Hydrocarbon-Contaminated Materials Management Plan.

**"Construction"** means any activities undertaken to construct or build any components of, or associated with, the development of the Project.

**"Dam Safety Guidelines"** means the Canadian Dam Associations (CDA) Dam Safety Guidelines (DSG), January 1999 or subsequent approved editions. The scope and applicability of the DSG referred to in this Licence, is presented in Section 1 of the DSG.

**"Dewatering"** means the removal of all water from a natural water body.

**"Discharge"** means the direct or indirect release of any water or Waste to the Receiving Environment.

**"Drawdown"** means the partial removal of water from a natural water body.

**"Environmental Impact Assessment"** means the 1995 Environmental Impact Assessment of the 1994 NWT Diamonds Project Description conducted under the EARP Guidelines Order, or the environmental assessment of Licence application N7L2-1736 conducted under Part 5 of the MVRMA, or both as the context requires.

**"Freeboard"** means the vertical distance between the water line and the effective water containment crest on the upstream slope of a dam or dyke.

**"Frozen Core"** means a permafrost core comprised of frozen ice-saturated aggregate material and functioning as an impervious barrier to water, Waste or Processed Kimberlite.

**"Groundwater"** means all water below the ground surface.

**"Inspector"** means an Inspector designated by the Minister under section 35(1) of the Act.

**"King Pond Settling Pond"** comprises the basin and associated containment structures as generally described in the application for renewal of Water Licence N7L2-1616 filed on December 12, 2003 and given file number MV2003L2-0013 [see Figure 1.6c in the Mining Industry Questionnaire] or as modified in subsequent plans and/or drawings as approved by the Board.

**"Land Farm"** comprises the lined, engineered facility designed to contain and treat, using bioremediation, hydrocarbon contaminated sediments and soil with an average diameter less than 4 cm.

**"Licensee"** means the holder of this Licence.



**"Long Lake Containment Facility"** comprises the basin and containment structures that are designed to contain Processed Kimberlite and other Waste as described in the application for renewal of Water Licence N7L2-1616 filed on December 12, 2003 and given file number MV2003L2-0013 [as shown in Figure 5.2a in the Mining Industry Questionnaire] or as modified in subsequent plans and/or drawings as approved by the Board.

**"Management Plans"** means the specific plans required by the Board under this Water Licence.

**"Maximum Average Concentration"** means the running average of any four (4) consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program".

**"Mine Plan"** means the life of mine plan as updated by the Licensee from time to time for sequencing of the development of the Project.

**"Minewater"** includes runoff from facilities associated with the Project and all water or Waste pumped or flowing out of any open pit or underground mine.

**"Minister"** means the Minister of Indian and Northern Affairs Canada.

**"Modification"** means a change made in accordance with Part H of this Licence.

**"Phase I Tailings Containment Area"** comprises the containment basin and the engineered structures designed to contain Processed Kimberlite as described in Drawing Number 11522-1, Sheets 1 and 2, titled "BHP Minerals Canada Ltd. – NWT Diamonds - Phase I Tailings Dam, As Built Plan and As Built Cross Sections" scale 1:100, date stamped on July 28, 1994.

**"Pigeon Development"** means all of the activities and facilities associated with the Construction, operation and decommissioning of the Pigeon pit.

**"Processed Kimberlite"** means material rejected from the process plant after the recoverable diamonds have been extracted.

**"Professional Engineer"** means a Professional Engineer registered with the Association of Professional Engineers, Geologists, and Geophysicists of the Northwest Territories and whose principal field of specialization is appropriate to the work at hand.

**"Project"** means the EKATI Diamond Mine operation in its entirety as described in the Environmental Impact Assessment.

**"Racetrack"** means the designated area within the Coarse Kimberlite Reject Material storage area that is used for the disposal of the decanted water or Waste from the Land Farm and the Contaminated Snow Containment Facility, or other sources of Minewater.

**"Receiving Environment"** means, for the purpose of this Licence, the natural aquatic environment that receives any deposit or Discharge of Waste, including Seepage or Minewater, from the Project.

**"Regulations"** are those Regulations promulgated pursuant to section 33 of the Act.

**"Sable Development"** means all of the activities and facilities associated with the Construction, operation and decommissioning of the Sable pit.

**"Sable, Pigeon, and Beartooth Development"** means all of the activities and facilities associated with the Construction, operation and decommissioning of the Sable, Pigeon and Beartooth pits.



"**Seepage**" includes water or Waste that drains through or escapes from any structure designed to contain, withhold, divert or retain water or Waste, including Waste Rock Storage Areas.

"**Sewage**" means all toilet Waste and greywater.

"**Sewage Treatment Facilities**" means the facilities that are designed to contain and treat Sewage.

"**Sump**" is a storage facility constructed to temporarily collect, hold or transfer water and/or Waste within the Project.

"**Two Rock Sedimentation Pond**" means the containment structure that is designed to contain the Minewater from the Sable pit during operation, drainage from the Waste Rock Storage Area and the turbid water and solids fraction of the lake sediments after lake Dewatering and stripping as described in the document titled "Preliminary Design of Water Control Structures for Sable, Pigeon and Beartooth Pit Developments" prepared by EBA Engineering Consultants Ltd., April, 2000.

"**Unauthorized Discharge**" is a release or Discharge of any water or Waste not authorized under this Licence.

"**Waste**" means Waste as defined by section 2 of the Act.

"**Waste Rock**" means all unprocessed rock materials that are produced as a result of mining operations.

"**Waste Rock Storage Area**" means the facilities where Waste Rock, Coarse Kimberlite Reject Materials, and till are deposited in accordance with this Licence.

"**Water Supply Facilities - Grizzly Lake**" comprises the area and associated intake infrastructure at Grizzly Lake as identified in Drawing Number D-U150-51-9-0009 titled, "H.A. Simons Ltd., NWT Diamonds Project, Water System, Fresh Water Supply - Plans and Sections", dated July 29, 1996.

"**Water Supply Facilities - Little Lake**" comprises the area and associated intake infrastructure at Little Lake.

"**Water Supply Facilities - Thinner Lake Misery Camp**" comprises the area and associated intake infrastructure at Thinner Lake Misery Camp as identified in Drawing Number 230320-73-210-07, revision A, scale 1:500, titled "Potable Water Pumphouse Layout", dated October 26, 1995.

"**Zone S**" means the area within the Waste Rock Storage Areas designated for containment of rock/sediments with an average diameter greater than 4 cm that have been contaminated by hydrocarbons.

"**Zone of Influence**" means an area within which there are positive or negative effects as a result of the Project.



## Part B: General Conditions

1. The Licensee shall file an Annual Report with the Board no later than March 31st of the year following the calendar year reported which shall contain the following information:

### Measuring and Reporting on Water and Waste:

- a) the monthly and annual quantities in cubic metres of water obtained from Grizzly Lake, Little Lake, Thinner Lake (Misery Camp) and Two Rock Lake or Two Rock Sedimentation Pond;
- b) the monthly elevations of water during open water for Grizzly Lake, Little Lake, Thinner Lake Upper Panda Lake, Cell E of the Long Lake Containment Facility, the King Pond Settling Pond and the Two Rock Sedimentation Pond;
- c) the monthly and total quantities in cubic metres of water Dewatered from Sable, Pigeon, and Two Rock Lakes;
- d) the monthly and annual quantities in cubic metres of each Waste deposited into the Long Lake Containment Facility, King Pond Settling Pond, Phase 1 Tailings Containment Area and Two Rock Sedimentation Pond;
- e) the monthly and annual quantities in cubic metres of any Discharges of water or Waste from the Long Lake Containment Facility, King Pond Settling Pond, Phase 1 Tailings Containment Area and Two Rock Sedimentation Pond;
- f) the monthly and annual quantities in cubic metres of Minewater pumped from each open pit and underground mine;
- g) the monthly and annual quantities in cubic metres of treated Sewage effluent Discharged from the Sewage Treatment Facilities;
- h) the monthly and annual quantities in cubic metres of Sewage solids removed from the Sewage Treatment Facilities;
- i) the source and volume (on a monthly and annual basis in cubic metres) of recycled water, identifying both source and use;
- j) tabular and graphical summaries of all data and information generated under the "Surveillance Network Program" in an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form upon request by the Board;

### Management Plans and Activities:

- k) a summary of Dewatering and Drawdown activities in accordance with Part E, Item 1;
- l) a summary of Construction activities and an updated Mine Plan;
- m) a summary of all work carried out under the approved Management Plans over the last year in accordance with Part G, Items 1 through 3 of this Licence including:
  - i. the quantity of kimberlite processed through the process plant,
  - ii. the quantity of Waste Rock from each open pit and underground mine deposited in each of the Waste Rock Storage Areas,



- iii. the quantity of Coarse Kimberlite Reject Material deposited in the Coarse Kimberlite Reject Material storage areas,
  - iv. the quantity of fine Processed Kimberlite deposited in the Long Lake Containment Facility,
  - v. a summary of the results of Seepage surveys conducted in accordance with Part G, Item 4 of this Licence, and
  - vi. updated results of ongoing Acid/Alkaline Rock Drainage and related geochemical test work;
- n) a summary of Modifications in accordance with Part H of this Licence and/or major maintenance work carried out on any water or Waste management facilities including, but not limited to, Water Supply Facilities, Collection and Settling Ponds, Long Lake Containment Facility, King Pond Settling Pond, Sewage Treatment Facilities, Two Rock Sedimentation Pond, Pigeon Diversion Channel and associated structures;
  - o) a summary of the results of the Aquatic Effects Monitoring Program in accordance with Part J of this Licence;
  - p) a progress report on any studies requested by the Board that relate to Waste management, water use or mine site reclamation and a brief description of any future studies planned by the Licensee;
  - q) a summary of any revisions to the approved:
    - i. Wastewater and Processed Kimberlite Management Plan and Waste Rock and Ore Storage Management Plan referred to in Part G of this Licence; and
    - ii. Contingency Plan, Hydrocarbon-Contaminated Materials Management Plan and Adaptive Management Plan referred to in Part I of this Licence.
  - r) a summary of the results of the monitoring carried out under the Hydrocarbon-Contaminated Materials Management Plan and Adaptive Management Plan referred to in Part I, Items 5 and 6 of this Licence;

Spills and Unauthorized Discharges:

- s) a list and description including volumes of all Unauthorized Discharges and summaries of follow-up action taken;
- t) an outline of any spill training and communications exercises carried out;

Closure and Reclamation:

- u) a summary of any amendments to the approved Interim or Final Closure and Reclamation Plan in accordance with Part K of this Licence;
- v) a summary of any closure and reclamation work undertaken during the year and an outline of any work anticipated for the next year;
- w) an updated estimate of the current mine reclamation liability (as at December 31 of the preceding year) using the current version of RECLAIM, its equivalent or some other method acceptable to the Board;



Other Reporting Requirements:

- x) any other details on water use or Waste disposal requested by the Board by November 1<sup>st</sup> of the year being reported; and
  - y) a list of the techniques that will be used to analyze samples collected under the attached Surveillance Network Program during the following year.
2. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.
  3. The Licensee shall comply with the Surveillance Network Program, which is annexed to and forms part of this Licence, and any amendment to the said Surveillance Network Program as may be made from time to time by the Board.
  4. The attached Surveillance Network Program and any compliance dates specified in this Licence may be amended at the discretion of the Board.
  5. Meters, devices or other such methods used for measuring the volumes of water used and Waste Discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
  6. The Licensee shall post and maintain signs to identify the stations listed in the attached Surveillance Network Program. All postings shall be located and maintained to the satisfaction of an Inspector.
  7. The water use fee shall be paid annually in advance of any water use.





## Part C: Conditions Applying to Security Deposits

1. Prior to the use of water for industrial undertakings or the disposal of Waste and pursuant to section 17(1) of the Act and Section 12 of the Regulations, the Licensee shall have posted and shall maintain a security deposit according to the following:
  - a) a security deposit of CDN \$21,025,000 for the Project, excluding the Sable, Pigeon and Beartooth Development;
  - b) interim security in the amount of CDN \$56,000,000 for the Project, excluding the Sable, Pigeon and Beartooth Development;
  - c) reclamation security in the amount of CDN \$14,446,000 as required by Licence MV2001L2-0008 shall be returned to the Licensee upon the Licensee posting CDN \$4,325,673 security for Beartooth pit;
  - d) reclamation security in the amount of CDN \$4,019,232 shall be posted sixty (60) days prior to Construction commencing at the Sable pit;
  - e) reclamation security in the amount of CDN \$1,260,481 shall be posted sixty (60) days prior to Construction commencing at the Pigeon pit; and
  - f) Any further amounts as may be required by the Board based on annual estimates of current mine reclamation liability in accordance with Part B, Item 1(w) of this Licence.
2. The security deposits required under Part C, Item 1, shall be in a form acceptable to the Minister and shall be maintained until such time as they are fully or partially refunded by the Minister pursuant to section 17 of the Act.
3. A reclamation trust fund may be established for the posting and maintenance of any security deposits required under Part C, Item 1 during the term of this Licence. The Licensee shall implement the terms of the reclamation trust agreements as accepted by the Minister.
4. The Licensee may apply to the Board for a reduction in the amount of security required if there is a reduction in the total liability at the Project site.
5. The Licensee shall be liable for any and all costs related to the closure and reclamation of the Project site over and above the total amount of the security deposits posted.
6. Part C, Items 1 through 5 of this Licence shall survive the expiry of this Licence or renewals thereof and until full and final reclamation has been completed to the satisfaction of the Minister.



## Part D: Conditions Applying to Water Use

1. The Licensee may obtain water for domestic purposes, processing, road watering and associated uses from Two Rock Lake, Grizzly Lake, Little Lake, Long Lake and Thinner Lake (Misery Camp), using the Water Supply Facilities or as otherwise approved by the Board.
2. The annual quantity of fresh water withdrawn for any purpose shall not exceed the limits set out below (in cubic metres):
  - a) Pigeon Pond 18, 500
  - b) Sable Lake 393, 000
  - c) Beartooth Lake 145, 000
  - d) Two Rock Lake 143, 500
  - e) Grizzly Lake 200, 000
  - f) Little Lake 400, 000
  - g) Thinner Lake 15, 000
3. The Licensee shall obtain water for road watering and associated uses from Two Rock Sedimentation Pond only if the water meets the effluent quality criteria established in Part G, Item 15(b) of this water Licence, or as otherwise approved by the Board.
4. The freshwater intake pumps shall operate in accordance with the Fisheries and Oceans Canada *Freshwater Intake End-of-Pipe Fish Screen Guideline*, 1995, or subsequent editions.
5. The Drawdown of Little Lake shall not exceed one metre from the water level recorded immediately prior to the start-up of the sampling plant.
6. The Drawdown of Grizzly Lake and Thinner Lake (Misery Camp) shall not exceed one (1) metre from the water level recorded immediately prior to the start-up of the process plant.



## PART E: Conditions Applying to Dewatering and Drawdown

1. Prior to the commencement of Dewatering or Drawdown, excluding the Drawdown of Grizzly Lake, the Licensee shall submit to the Board for approval, a Dewatering or Drawdown Plan for each lake that shall include, but not be limited to, the following information:
  - a) volume of water produced by Dewatering or Drawdown from each source;
  - b) a schedule for Dewatering or Drawdown and maximum pump rates;
  - c) pumping methods including locations of intake and outflow structures;
  - d) the design of any erosion prevention structures in the areas where water or Waste is Discharged;
  - e) the description of procedures for inspecting any erosion along the affected watercourse;
  - f) a description of and mitigation measures for any predicted hydrological or water quality impacts to downstream water bodies;
  - g) the schedule and locations for water quality monitoring;
  - h) the frequency, location and procedures for monitoring flow rates in the Discharge stream and, where appropriate, in the receiving water body;
  - i) the design of the pipeline and related facilities; and
  - j) the procedures and rates for Dewatering or Drawdown to minimize erosion of the downstream water bodies, adjacent shorelines and, in winter, damage to spawning habitat from the development of icings, overflows or glaciation damage.
2. The Licensee shall implement the Dewatering or Drawdown Plan referred to in Part E, Item 1, as and when approved by the Board.
3. Prior to Dewatering or Drawdown, each water source shall be sampled and analyzed for those parameters outlined in Part G, Item 15(a) and 15(b) and results shall be provided to an Inspector before Dewatering or Drawdown commences.
4. All Discharge outflow structures shall be located so as to minimize erosion.
5. During the Dewatering or Drawdown of any lake, daily erosion inspections of the Discharge points shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector. If any erosion is observed, the Licensee shall notify an Inspector, and take the necessary corrective action to mitigate the erosion problem to the satisfaction of an Inspector.
6. The Licensee shall ensure that Drawdown rates from pumps do not exceed  $2.55 \text{ m}^3/\text{sec}$  during May to July inclusive, and  $0.52 \text{ m}^3/\text{sec}$  during the remaining months.
7. The Licensee shall submit to the Board and an Inspector, within sixty (60) days of the completion of Dewatering or Drawdown of any water source, excluding Grizzly Lake, Little Lake and Thinner Lake, a summary report that shall include, but not be limited to, the following:



- a) the metered daily, monthly, and total Discharge rates;
- b) a description of any erosional problems encountered and mitigative actions taken;
- c) the results of water quality monitoring and compliance with the regulated water quality requirements;
- d) a summary of any impacts to the Receiving Environment resulting from Dewatering or Drawdown activities;



## Part F: Conditions Applying to Construction

1. At least ten (10) days prior to Construction of any facilities related to water use or Waste disposal for the Project, excluding Sumps, that are included in an approved Management Plan, the Licensee shall submit to the Board design drawings stamped by a Professional Engineer, a Construction schedule and any information required under Part F, Item 2 of this Licence that was not included in an approved Management Plan.
2. At least forty-five (45) days prior to the start of Construction, or ninety (90) in the case of the Pigeon Stream Diversion Channel, of any facilities related to water use or Waste disposal for the Project, excluding Sumps, that are not part of a Board approved Management Plan, the Licensee shall submit to the Board for approval a Construction Plan that shall contain, but not be limited to, the following information:
  - a) a description of the facilities to be constructed;
  - b) the proposed location for the structures;
  - c) any potential impacts to the aquatic environment;
  - d) a description of any monitoring including, but not limited to, sampling locations, parameters measured and frequencies of sampling to be carried out to determine impacts to the aquatic environment;
  - e) a detailed description of any measures used to prevent or mitigate impacts to the aquatic environment;
  - f) schedule for the Construction;
  - g) drawings of engineered structures stamped by a Professional Engineer; and
  - h) in the case of the Pigeon Stream Diversion Channel, the details of measures to prevent degradation of permafrost and/or ice lenses.
3. Dams, dykes or structures designed to contain, withhold, divert or retain water or Wastes constructed as part of the Sable, Pigeon and Beartooth Development must comply with the Dam Safety Guidelines.
4. The Inspector must receive written notification a minimum of ten (10) days prior to commencement of Construction at the Sable, Pigeon and Beartooth Development from the Licensee.
5. The Licensee shall ensure that Construction of engineered structures is supervised by a Professional Engineer.
6. The Licensee shall, within ninety (90) days of completion of any Construction of engineered structures related to water use and Waste disposal for the Project, excluding the Construction of Sumps, submit to the Board a report prepared by a Professional Engineer that shall include as-built drawings, documentation of field decisions that deviate from original plans and any data used to support these decisions.
7. The Licensee shall undertake and submit to the Board, the results of a comprehensive delineation program to identify soil, rock and ground ice conditions prior to the start of Construction along the centreline of all containment structures and diversion channels related to the Sable, Pigeon and Beartooth Development.



## Part G: Conditions Applying to Waste Disposal

### 1. Wastewater and Processed Kimberlite Management Plan

- a) The Licensee shall operate in accordance with the Wastewater and Processed Kimberlite Management Plan as approved by the Board. Amendments to the Plan shall be in accordance with the NWT Water Board's "Guidelines for Tailings Impoundment in the Northwest Territories, February 1987" or any subsequent editions, and shall include, but not be limited to the following:
  - i. a comprehensive description of all sources and types of Waste related to the Project where not provided in the Acid/Alkaline Rock Drainage (ARD) and Geochemical Characterization Plan, or the Waste Rock and Ore Storage Management Plan as approved by the Board,
  - ii. a description of any proposed physical or chemical treatment of Waste prior to Discharge to the Long Lake Containment Facility, the King Pond Settling Pond, the Phase 1 Tailings Containment Area, Two Rock Sedimentation Pond, or to the Receiving Environment,
  - iii. a description, including maps to scale, of the locations of monitoring stations for ground temperature, water quality, water Discharge and Processed Kimberlite elevation, including the sampling protocols and frequency to be undertaken at each station,
  - iv. a schedule of Processed Kimberlite Discharge within the Long Lake Containment Facility over the term of this Licence, including detailed maps showing deposition locations,
  - v. stage-volume curves and water balance calculations showing life expectancy of the Long Lake Containment Facility and Two Rock Sedimentation Pond,
  - vi. an anticipated schedule of volumes of Discharge to and from the Two Rock Sedimentation Pond and King Pond Settling Pond,
  - vii. a series of contingency options should Two Rock Sedimentation Pond approach or exceed capacity, and
  - viii. any operational changes and Modifications, which may impact the Wastewater and Processed Kimberlite Management Plan;
- b) The Licensee shall submit to the Board for approval, sixty (60) days prior to the Construction of both the Sable and Pigeon pits, an updated Wastewater and Processed Kimberlite Management Plan.

### 2. Acid/Alkaline Rock Drainage (ARD) and Geochemical Characterization and Management Plan

- a) The Licensee shall operate in accordance with the Acid/Alkaline Rock Drainage and Geochemical Characterization and Management Plan for managing non-neutral drainage and metal leaching, as approved by the Board. The plan shall be in accordance with the Department of Indian Affairs and Northern Development's DIAND "Guidelines for Acid Rock



Drainage Protection in the North, September 1992" or subsequent updates, and shall include, but not be limited to, the following:

- i. characterization of the rock types, geology and mineralogy of the rock units for each mine component including each pit or pipe or mine workings, the quantity of rock, Waste or sludge, or the surface area exposure in pit walls,
  - ii. representative sampling and testing of each rock unit,
  - iii. assessment of potential for Acid/Alkaline Rock Drainage and for metal leaching from ore stockpiles, Waste Rock and pit wall rock, both during operation and after closure,
  - iv. representative sampling and testing of Processed Kimberlite,
  - v. description of predicted loadings and/or impact on receiving water chemistry from each source, incorporating the results of Seepage surveys where available,
  - vi. geochemical characterization of material to be used for reclamation, and
  - vii. description of the process to be used to regularly assess and amend the plans based on on-going data collection through this program or through the attached Surveillance Network Program, the Aquatic Effects Monitoring Program, Seepage Surveys, or other environmental monitoring programs;
- b) The Licensee shall submit an updated Acid/Alkaline Rock Drainage and Geochemical Characterization Management Plan to the Board for approval, sixty (60) days prior to the Construction of both the Sable and Pigeon pits.

### 3. Waste Rock and Ore Storage Management Plan

- a) The Licensee shall operate in accordance with the Waste Rock and Ore Storage Management Plan, as approved by the Board. Any amended versions of this Management Plan shall include, but not be limited to the following:
- i. a schedule of ore stockpiling, and Coarse Kimberlite Reject Material and Waste Rock production by rock type, tonnage, and destination over the term of this Licence,
  - ii. a complete description, including site maps to scale, of each proposed ore and Waste Rock Storage Area,
  - iii. detailed descriptions of the different types of solid Waste disposed of and the locations for the disposal of solid Waste and sewage sludge within the Waste Rock Storage Area,
  - iv. an identification of all potential sources of Seepage for each Waste Rock Storage Area and the distance to the downstream Receiving Environment,
  - v. detailed proposals for management of Seepage, including water quality monitoring, collection, treatment, re-routing and final disposal and for incorporating the studies and plans developed under Part G, Item 4 of this Licence,
  - vi. detailed Construction plans and drainage management for Waste Rock Storage Areas used for containment of the Misery schist, and other Waste Rock types that may be identified as problematic through Acid/Alkaline Rock Drainage testing, including contingency plans for controlling runoff and Seepage water chemistry,



- vii. temperature analysis of all Waste Rock Storage Areas having acid/alkaline potential to include the effect of oxidation reactions on predicted Acid/Alkaline Rock Drainage generation rates,
  - viii. detailed descriptions of how Seepage surveys will be carried out to meet the requirements of Part G, Item 4, and
  - ix. in the case of the Sable and Pigeon pit, a description of the geochemical criteria for the management and placement of potentially ARD Waste Rock and hydrocarbon contaminated materials within the Waste Rock Storage Areas. This shall include a section describing the process for segregation of the various rock types;
- b) The Licensee shall submit an updated Waste Rock and Ore Storage Management Plan to the Board for approval, sixty (60) days prior to the Construction of both the Sable and Pigeon pits.
4. During the term of this Licence, the Licensee shall conduct a Seepage survey of all constructed ore stockpiles or Waste Rock Storage Areas on the following basis:
- a) sampling of detected Seepage twice per year; once during spring freshet, and again in late summer or fall;
  - b) testing in the field shall include measurements of volume and rate of flow, field pH and conductivity;
  - c) laboratory analysis of each sample shall include Major Ions (as defined in the attached Surveillance Network Program), pH, conductivity, sulphate, alkalinity/acidity, nitrogen as total ammonia, hardness, total suspended solids (TSS), and dissolved metals by inductively coupled plasma (ICP) mass spectrometry;
  - d) laboratory analysis of Seepage samples in areas down gradient of the land farm, Contaminated Snow Containment Facility, and the Racetrack shall include TPH and BTEX as defined in the attached Surveillance Network Program;
  - e) all data collected is to be reported to the Board within sixty (60) days of each survey; and
  - f) a report interpreting the results of both surveys shall be submitted to the Board for approval by March 31 annually, and shall include site plans indicating the locations of Seepage, the Quality Assurance/Quality control (QA/QC) protocols used, and a consideration of how the results will affect the Waste Rock and Ore Storage Management Plan required under Part G, Item 3.
5. Prior to the start of Construction of a Waste Rock Storage Area for each of the Sable and Pigeon pits, the Licensee shall submit to the Board a final detailed design report stamped by a Professional Engineer. This report shall include geothermal and short-term stability analyses, and be developed in accordance with the Waste Rock and Ore Storage Management Plan as described in Part G, Item 3.
6. If the Management Plans referred to in Part G, Items 1, 2 and 3, and the report referred to in Part G, Item 4(f) are not approved by the Board, the Licensee shall revise the Management Plans or reports and re-submit them to the Board for approval within three (3) months of receiving notification of the Board's decision.
7. The Licensee shall implement the Management Plans referred to in Part G, Items 1, 2 and 3 as and when approved by the Board.





8. The Licensee shall review the Management Plans referred to in Part G, Items 1, 2 and 3, annually and modify as necessary to reflect changes in operation and technology, or as requested by the Board. Any proposed amendments to the Management Plans shall be submitted to the Board for approval.
9. Two Rock Sedimentation Pond
  - a) The Licensee shall construct, operate and maintain Two Rock Sedimentation Pond to engineering standards such that:
    - i. a minimum Freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Professional Engineer and as approved by the Board,
    - ii. Seepage from the Two Rock Sedimentation Pond outlet dam is minimized at all times,
    - iii. any Seepage from the Two Rock Sedimentation Pond that occurs and does not meet effluent quality requirements, as specified in Part G, Item 15(b), shall be collected and immediately returned to the Two Rock Sedimentation Pond,
    - iv. any constructed facilities that are eroded are repaired immediately, and
    - v. when not used for reclamation material, the solids fraction of the Sable Lake sediments and the solids fraction of the Wastes deposited, shall be permanently contained within the Two Rock Sedimentation Pond;
  - b) inspections of Two Rock Sedimentation Pond, pipeline(s), and catchment basin(s) shall be carried out weekly when operating or more frequently as directed by the Inspector and records of these inspections shall be kept for review; and
  - c) an inspection of Two Rock Sedimentation Pond shall be carried out annually by a Professional Engineer. The engineer's report shall be submitted to the Board within thirty (30) days of the inspection, including a covering letter from the Licensee outlining an implementation plan to respond to the engineer's recommendations.
10. Long Lake Containment Facility
  - a) The Licensee shall construct, operate and maintain the Long Lake Containment Facility to design specifications such that:
    - i. a minimum Freeboard limit of 5.5 metres (including 1.5 metres of Frozen Core and 4.0 metres of embankment material) for the perimeter dams shall be maintained at all times;
    - ii. a Freeboard limit of 1.0 metre for the intermediate dykes shall be maintained at all times or as recommended by a Professional Engineer;
    - iii. Seepage from the Long Lake Containment facility is minimized at all times;
    - iv. any Seepage from the Long Lake Containment Facility that occurs and does not meet effluent quality requirements as specified in Part G, Item 15(a), shall be collected and immediately returned to the Long Lake Containment Facility;
    - v. any constructed facilities that are eroded are repaired immediately;
    - vi. the solids fraction of all Processed Kimberlite deposited in the Long Lake Containment Facility shall be permanently contained;



- vii. weekly inspections of the Long Lake Containment Facility shall be carried out in consultation with a Professional Engineer and records of these inspections shall be kept for review. The Licensee shall perform more frequent inspections at the request of an Inspector; and
- viii. an inspection of the Long Lake Containment Facility shall be carried out annually in July by a Professional Engineer. The engineer's report shall be submitted to the Board within thirty days of the inspection, including a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the engineer.

#### 11. Phase 1 Tailings Containment Area

- a) The Licensee shall construct, operate and maintain the Phase 1 Tailings Containment Area to design specifications such that:
  - i. a minimum Freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Professional Engineer;
  - ii. Seepage from the Phase 1 Tailings Containment Area is minimized at all times;
  - iii. any Seepage from the Phase 1 Tailings Containment Area that occurs and does not meet effluent quality requirements as specified in Part G, Item 15(a) shall be collected and immediately returned to the Phase 1 Tailings Containment Area;
  - iv. any constructed facilities that are eroded are repaired immediately;
  - v. inspections of the Phase 1 Tailings Containment Area shall be carried out regularly in consultation with a Professional Engineer and records of these inspections shall be kept for review. The Licensee shall perform more frequent inspections at the request of an Inspector; and
  - vi. an inspection of the Phase 1 Tailings Containment Area shall be carried out annually in July by a Professional Engineer. The engineers report shall be submitted to the Board within thirty days of the inspection, including a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the engineer.

#### 12. Collection and Settling Ponds

- a) The Licensee shall construct, operate and maintain the Collection and Settling Ponds to design specifications such that:
  - i. a minimum Freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Professional Engineer;
  - ii. Seepage from the Collection and Settling Ponds is minimized at all times;
  - iii. any Seepage from the Collection and Settling Ponds that occurs and does not meet effluent quality requirements, as specified in Part G, Items 15(a) and 15(b), shall be collected and immediately returned to the Collection and Settling Ponds, the Long Lake Containment Facility, the Two Rock Sedimentation Pond, the process plant or another location approved by the Board;
  - iv. any constructed facilities that are eroded are repaired immediately;



- v. inspections of the Collection and Settling Ponds shall be carried out regularly in consultation with a Professional Engineer and records of these inspections shall be kept for review. The Licensee shall perform more frequent inspections at the request of an Inspector; and
- vi. an inspection of the Collection and Settling Ponds shall be carried out annually in July by a Professional Engineer. The engineers report shall be submitted to the Board within thirty days of the inspection, including a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the engineer.

### 13. King Pond Settling Pond

- a) The Licensee shall construct, operate and maintain the King Pond Settling Pond to design specifications such that:
  - i. a minimum Freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Professional Engineer;
  - ii. Seepage from the King Pond Settling Pond is minimized at all times;
  - iii. any Seepage from the King Pond Settling Pond that occurs and does not meet effluent quality requirements, as specified in Part G, Item 15(a), shall be collected and immediately returned to the King Pond Settling Pond;
  - iv. any constructed facilities that are eroded are repaired immediately;
  - v. inspections of the King Pond Settling Pond shall be carried out regularly in consultation with a Professional Engineer and records of these inspections shall be kept for review. The Licensee shall perform more frequent inspections at the request of an Inspector; and
  - vi. an inspection of the King Pond Settling Pond shall be carried out annually in July by a Professional Engineer. The engineer's report shall be submitted to the Board within thirty (30) days of the inspection, including a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the engineer.

14. The Licensee shall provide water sampling results to an Inspector no later than five (5) days prior to any planned Discharges of water or Waste to the Receiving Environment. Discharge shall not commence until authorized by an Inspector.

### 15. Effluent Quality Requirements

- a) All water or Waste from the Project that enters the Receiving Environment, including all Discharges from Surveillance Network Program Stations 1616-30 and 1616-43, but excluding those Discharges listed in Part G, Items 15(b) and 17, shall meet the following effluent quality requirements:



<b>Parameter</b>	<b>Maximum Average Concentration (mg/L)</b>	<b>Maximum Concentration of Any Grab Sample (mg/L)</b>
Total Ammonia-N	2.0	4.0
Total Aluminum	1.0	2.0
Total Arsenic	0.50	1.0
Total Copper	0.1	0.2
Total Nickel	0.15	0.30
Total Suspended Solids	15.0	25.0
Total Petroleum Hydrocarbons	3.0	5.0
Biochemical Oxygen Demand	40.0	-

- b) All water or Waste from the Sable Development that enters the Receiving Environment, including Discharges from Surveillance Network Program Station 0008-Sa3, but excluding those Discharges listed in Part G, Item 17, shall meet the following effluent quality requirements:

<b>Parameter</b>	<b>Maximum Average Concentration (mg/L)</b>	<b>Maximum Concentration of Any Grab Sample (mg/L)</b>
Total Ammonia-N	4.0	8.0
Total Aluminum	1.0	2.0
Total Arsenic	0.050	0.10
Total Copper	0.02	0.04
Total Cadmium	0.0015	0.003
Total Chromium	0.02	0.04
Total Lead	0.01	0.02
Total Zinc	0.03	0.06
Total Nickel	0.05	0.1
Nitrite-N	1.0	2.0
Nitrate-N	20.0	40.0
Total Suspended Solids	15.0	25.0
Total Petroleum Hydrocarbons	3.0	5.0
Turbidity	10 NTU	15 NTU
Total Phosphorus	0.2	0.4

- c) Any water or Waste from the Project that enters the Receiving Environment shall have a pH between 6.0 and 9.0, except surface runoff which shall have a pH between 5.0 and 9.0; and
- d) All water or Waste from the Project that enters the Receiving Environment, including Discharges from Surveillance Network Program Station 1616-30, 1616-43, and 0008-Sa3,



shall be non-acutely toxic as determined by the acute toxicity tests described in Part B in the attached Surveillance Network Program.

16. The Licensee shall direct all piped and pumped Sewage to the Sewage Treatment Facilities, or as otherwise approved by the Board.
17. All surface runoff during the Construction of any facilities, related to the Sable, Pigeon and Beartooth Development, designed to withhold, divert, or retain such runoff up to the end of Construction, as per the Construction plan, shall prior to Discharge meet the criteria mentioned in Part G, Item 15(b) except for the following criterion:

Parameter	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
TSS	50 mg/L	100mg/L

18. The Licensee shall direct all water or Waste from the Project that does not meet the effluent quality criteria specified under Part G, Items 15(a) and 15(b) to the Long Lake Containment Facility, the King Pond Settling Pond or the Two Rock Sedimentation Pond, or as otherwise approved by the Board.
19. Erosion Mitigation:
  - a) erosion prevention structures that are satisfactory to an Inspector shall be used at all points where water or Waste is Discharged;
  - b) daily erosion inspections of Discharge points shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector. If any erosion is observed, the Licensee shall notify an Inspector and take necessary corrective action to mitigate the erosion problem to the satisfaction of an Inspector.
20. The annual volumes of Discharge from Two Rock Sedimentation Pond shall not exceed 740,600 cubic metres per year during the operations phase.
21. At least one year prior to commencing Discharge from Two Rock Sedimentation Pond, the Licensee shall submit to the Board, for approval, a report detailing the final proposed design of the outfall from Two Rock Sedimentation Pond into Horseshoe Lake. This report should include, at a minimum, the following information:
  - a. the specifications of the proposed Discharge pipeline and the diffuser, if used;
  - b. the location of the end of pipe within Horseshoe Lake and a detailed rationale for selection of that location;
  - c. the results of modeling the initial mixing of effluent into Horseshoe Lake based on the selected placement and specifications of the outfall;
  - d. a proposed location for Surveillance Network Program Station 0008-Sa9 that will allow verification of the model of initial effluent mixing in Horseshoe Lake;
  - e. the design for a plume delineation study to confirm initial effluent mixing in Horseshoe Lake.
22. Within eight months of the beginning of Discharge from Two Rock Sedimentation Pond, the Licensee shall submit to the Board the results of a plume delineation study designed to describe dispersion of effluent into Horseshoe Lake from Two Rock Sedimentation Pond. This study should, at a minimum, be performed under worst-case conditions with respect to mixing within Horseshoe Lake and will be



used to verify the SNP location proposed in Part G, Item 21(d). The location of SNP Station 0008-Sa9 may be moved as a result of this study.



## **PART H: Conditions Applying to Modifications**

1. The Licensee may, without written approval from the Board, carry out Modifications to facilities related to water use or Waste disposal provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:
  - a) the Licensee has notified the Board in writing of such proposed Modifications at least forty-five (45) days prior to beginning the Modifications;
  - b) such Modifications do not place the Licensee in contravention of either the Licence or the Act;
  - c) the Board has not, during the forty-five (45) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than forty-five (45) days;
  - d) the Board has not rejected the proposed Modifications; and
  - e) an Inspector has authorized the Modifications.
2. Modifications for which all of the conditions referred to in Part H, Item 1, have not been met, may be carried out only with written approval from the Board.
3. The Licensee shall provide to the Board, stamped and signed as-built plans and drawings of the Modifications referred to in Part H, Item 1 of this Licence prepared by a Professional Engineer within ninety (90) days of completion of the Modifications.



## PART I: Conditions Applying to Contingency Planning

1. The Licensee shall review and update the Board approved Contingency Plan as necessary to reflect changes in operation and technology and sixty (60) days prior to the Construction of both the Sable and Pigeon pits. Any proposed amendments shall be in accordance with the INAC's "Guidelines for Spill Contingency Planning, 2007," or subsequent editions, and shall be submitted to the Board for approval.
2. If not approved by the Board, the Contingency Plan referred to in Part I, Item 1 shall be revised and resubmitted within thirty (30) days of receiving notification of the Board's decision.
3. If, during the period of this Licence, an Unauthorized Discharge occurs or is foreseeable, the Licensee shall:
  - a) implement the Contingency Plan;
  - b) report the incident immediately via the 24 Hour Spill Reporting Line (867) 920-8130 in accordance with the instructions contained in the Spill Report Form NWT 1752/0593 or subsequent editions; and
  - c) submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.
4. All Unauthorized Discharges of water or Waste shall be reclaimed to the satisfaction of an Inspector.
5. The Licensee shall operate in accordance with the Hydrocarbon-Contaminated Materials Management Plan, as approved by the Board and shall describe the following:
  - a) locations and designated uses of existing or planned facilities used for storage, treatment, disposal or management of hydrocarbon-contaminated solids and liquids;
  - b) general description of the facilities described under Part I, Item 5(a);
  - c) operating history of existing facilities and chemical characteristics of existing stockpiles of hydrocarbon-contaminated materials;
  - d) general description of the planned activities and processes for storage;
  - e) monitoring, treatment, and disposal or management of hydrocarbon contaminated materials;
  - f) monitoring program to test for migration, leakage or Seepage of hydrocarbon contaminated materials;
  - g) process for review of information and amending the plan as necessary;
  - h) identification of ways to reduce the generation of hydrocarbon-contaminated materials; and
  - i) reporting to the Board on activities carried out under this plan, including details on the volumes of hydrocarbon-contaminated materials treated and treatment efficacy.
6. The Licensee shall operate under the Adaptive Management Plan, as approved by the Board that shall include, but not be limited to:
  - a) monitoring and research program that is designed to meet the needs of the Adaptive Management Plan;





- b) identification of contaminants of interest for adaptive management planning including at a minimum: total arsenic, total cadmium, total chromium, total copper, total lead, total molybdenum, total phosphorous, total zinc, chloride, nitrate, nitrite, total suspended solids, turbidity, BTEX as defined in the attached Surveillance Network Program and total dissolved solids;
  - c) derivation of numerical thresholds in the Receiving Environment for the contaminants of interest;
  - d) appropriate triggers for the numerical thresholds referred to in Part I, Item 6(c);
  - e) response procedures, mitigation measures and treatment options if triggers are activated;
  - f) linkage with the Aquatic Effects Monitoring Program and other Management Plans as appropriate; and
  - g) annual reporting to the Board.
7. The Licensee shall submit to the Board for approval, at least two years prior to Discharge from Two Rock Sedimentation Pond, an update to the Adaptive Management Plan.
  8. If the plans referred to in Part I, Items 5 and 6 are not approved by the Board, the Licensee shall revise the plans according to the Board's direction and re-submit them to the Board for approval.
  9. The Licensee shall implement the updated plans referred to in Part I, Items 5 and 6 as and when approved by the Board.



## **PART J: Conditions Applying to Aquatic Effects**

1. The Licensee shall submit to the Board for approval on or before December 31, 2006 a revised Aquatic Effects Monitoring Plan (AEMP), and every three years thereafter through the term of the Licence, or as directed by the Board, to determine the short- and long-term effects in the Receiving Environment resulting from the Project, to test impact predictions and to measure the performance of operations and effectiveness of impact mitigation.
2. The Licensee shall submit to the Board for approval at least one (1) year prior to commencement of Construction at each of the Pigeon pit or Sable pit an update to the Aquatic Effects Monitoring Plan to include those sampling stations necessary to determine short- and long-term effects in the Receiving Environment as a result of the Pigeon and Sable Developments.
3. Generally, the plan referred to in Part J, Item 1 for the Aquatic Effects Monitoring Program shall include, but not be limited to, the following:
  - a) clearly identifiable objectives of the Aquatic Effects Monitoring Program;
  - b) a description of the area to be monitored including maps showing all sampling and control sites, as well as the overall Zone of Influence of the Project;
  - c) an evaluation of all available data including baseline data, and data collected under the Surveillance Network Program and the Aquatic Effects Monitoring Program and a description of how any additional data will be integrated with the existing Aquatic Effects Monitoring Program;
  - d) a description of the sampling program that will be conducted throughout the term of this Licence to achieve the objectives of the Aquatic Effects Monitoring Program including the variables, sample media, monitoring protocols and Quality Assurance/Quality Control procedures;
  - e) statistical design criteria, including a description of sampling frequencies for each parameter that ensures both accurate characterization of short-term variability and the collection of sufficient data to establish long-term trends;
  - f) a description of procedures to analyze and interpret data collected and procedures to identify and address information gaps;
  - g) a description of evaluation criteria for the Aquatic Effects Monitoring Program and approaches to amend and refine the Aquatic Effects Monitoring Program;
  - h) a description of how the results of the Aquatic Effects Monitoring Program will be incorporated in the overall adaptive management strategies employed by the Licensee;
  - i) a description of how proposed changes in monitoring protocols will be calibrated to previous monitoring procedures and data sets so that continuity, consistency, validity and usability of monitoring results will be maintained; and
  - j) a comparison of effects in the aquatic environment to those predicted in the Environmental Impact Assessment and the Licensee's impact predictions and an assessment and rationale of how the results of this comparison are incorporated into revisions to the Aquatic Effects Monitoring Program.



4. Specifically, the AEMP shall include, but not be limited to, the following elements:
- a) a process for measuring Project-related effects in:
    - i. water quality,
    - ii. sediment quality, transport and deposition,
    - iii. surface and shallow groundwater flow regimes, fish migration routes and lake recharge rates, retention times and dilution factors,
    - iv. structure, abundance and productivity of phytoplankton, periphyton, zooplankton, benthic macro invertebrates and fish communities,
    - v. contaminant levels in fish tissues and indicators of fish health, and
    - vi. the taste of fish in water bodies downstream of the Long Lake Containment Facility, that shall be completed with the communities. The Licensee shall identify the water bodies to be sampled at the frequency of sampling;
  - b) the establishment of sufficient control sites outside the immediate Zone of Influence of mining operations and associated activities to provide the necessary information on reference conditions including:
    - i. a detailed rationale for site selection,
    - ii. an assessment of adequacy of existing data for representing predevelopment conditions, and
    - iii. an appraisal of the degree to which each site is representative;
  - c) the establishment of sufficient monitoring sites within the Zone of Influence including sites located at:
    - i. lakes in the vicinity of the Project including, but not limited to, Leslie Lake, Moose Lake, Slipper Lake, Nema Lake, and connecting streams,
    - ii. lakes in the vicinity of the Misery operation and connecting streams,
    - iii. Lac de Gras in the vicinity of the outflow of Slipper Lake,
    - iv. Lac du Sauvage in the vicinity of the Misery operation,
    - v. lakes in the vicinity of the Sable Development (when constructed) including, but not limited to, Horseshoe Lake and outflow, Ulu Lake, Ross Lake and outflow, Lower Exeter Lakes, and connecting streams,
    - vi. lakes in the vicinity of the Pigeon Development (when constructed) including, but not limited to, Upper Exeter Lake, Pigeon Fay Stream and Fay Lake, and
    - vii. any additional sites necessary to evaluate the spatial extent of impacts associated with the Project.
  - d) a description of the procedures that will be used to minimize the impacts of the AEMP on fish populations;
  - e) a description of the procedures that will be used to assess the accuracy of the Licensee's impact predictions and to evaluate the effectiveness of the proposed mitigation measures;



- f) a detailed description of how the data collected in the Aquatic Effects Monitoring Program will be used to identify the need for additional mitigation strategies to minimize the impacts of the Project;
  - g) an evaluation of the contaminant loads associated with Waste resulting from dust deposition, from the Project, to the aquatic environment;
  - h) a summary of how Traditional Knowledge will be collected and incorporated into the Aquatic Effects Monitoring Program; and
  - i) an evaluation of the Project-related effects on the receiving environment that may contribute to cumulative effects in the region.
5. The Licensee shall implement the plan referred to in Part J, Item 1 for the Aquatic Effects Monitoring Plan as and when approved by the Board.
6. The Licensee may at any time propose amendments to the plan referred to in Part J, Item 1 for the Aquatic Effects Monitoring Plan for approval by the Board.
7. The Licensee shall file as part of the AEMP Annual Report the following information:
- a) a summary of activities conducted under the Aquatic Effects Monitoring Program;
  - b) tabular summaries of all data and information generated under the Aquatic Effects Monitoring Program in an electronic and printed format acceptable to the Board;
  - c) a scientifically defensible interpretation and discussion of the data, including data collected as part of snow quality surveys;
  - d) an assessment of any identified environmental changes relative to baseline conditions that occurred as a result of the Project;
  - e) an evaluation of the overall effectiveness of the Aquatic Effects Monitoring Program to date; and
  - f) every third annual report for the Aquatic Effects Monitoring Program, commencing with the report on the 2005 sampling period, shall include a summary of the results of the Aquatic Effects Monitoring Program from Project inception, and a comparison of effects in the aquatic environment for all parameters monitored to those predicted in the Environmental Impact Assessment.



## PART K: Conditions Applying to Closure and Reclamation

1. The Licensee shall operate under the Interim Closure and Reclamation Plan, as approved by the Board and in accordance with directives from the Board.
2. Updates to the Interim Closure and Reclamation Plan will be in accordance with the “Terms of Reference for the EKATI ICRP”, approved in May 2006, and shall be submitted to the Board for approval.
3. The Licensee shall implement the Interim Closure and Reclamation Plan as approved by the Board in accordance with the schedules and procedures specified in the plan and endeavor to carry out progressive reclamation of areas as soon as is reasonably practicable.
4. The Licensee shall review the approved Interim Closure and Reclamation Plan annually, and shall revise the plan as necessary to reflect changes in operations and technology or to incorporate results from reclamation research studies. All proposed amendments to the plan shall be submitted to the Board for approval.
5. The Licensee shall, a minimum of twenty four (24) months prior to mine closure, submit to the Board for approval a Final Closure and Reclamation Plan.
6. The Licensee shall revise the Terms of Reference, referred to in Part K, Item 2, or the Interim or Final Closure and Reclamation Plans as required by the Board, for its approval within timelines specified by the Board.

**Signed the 24th day of June 2009 on behalf of the**

**Wek'èezhìi Land and Water Board**



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Witness  
Wek'èezhìi Land and Water Board



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Ms. Violet Camsell-Blondin, Chair



## Surveillance Network Program (SNP)

### A. Location and Description of Sampling Stations

<u>Station</u>	<u>Description</u>	<u>Status</u>
1616-2	Little Lake at freshwater intake.	Active
1616-3	Discharge from the Phase I Tailings Containment Area.	Active
1616-5	Discharge from the Fox Underground Minewater Settling Pond.	Inactive
1616-8	Discharge from Process Mill Clarifier overflow pipeline.	Permanently Inactive
1616-10	Polar Lake Outflow.	Active
1616-11	Freshwater intake from the Grizzly Lake Pumphouse.	Active
1616-12	North Panda Lake adjacent to the Panda Lake Dam.	Active
1616-13	Panda Diversion Channel prior to entering Kodiak Lake.	Active
1616-14	Panda Lake at Dewatering intake.	Permanently Inactive
1616-15	Koala Lake at Dewatering intake.	Permanently Inactive
1616-16	Discharge from the Panda/Koala Sedimentation Pond downstream of the impervious Seepage collection dam.	Permanently Inactive
1616-17	Runoff from the area nearby Seep-19 location which drains into Bearclaw Lake, northeast of the Panda/Koala Waste Rock Storage Areas.	Active
1616-20	Runoff from the Southwestern Catchment Area of the plant site.	Active



1616-21	Runoff from the Northern Catchment Area of the plant site.	Permanently Inactive
1616-22	Sewage Treatment Facilities outfall into Kodiak Lake. Sampling is not required unless reactivated in an emergency situation.	Currently Inactive
1616-24	Airstrip Lake at Dewatering intake.	Permanently Inactive
1616-26	Long Lake Containment Facility, upstream of Cell C intermediate dyke, in the area most likely to collect ponded water.	Permanently Inactive
1616-26(a)	Long Lake Containment Facility, upstream of Cell C intermediate dyke, in the area most likely to collect ponded water.	Active
1616-27	Long Lake Containment Facility, downstream of Cell B intermediate dyke.	Permanently Inactive
1616-28	Long Lake Containment Facility, downstream of the Cell C intermediate dyke, in the area most likely to collect ponded water.	Active
1616-29	Long Lake Containment Facility, downstream of the Cell D intermediate dyke.	Active
1616-30	Long Lake Containment Facility, Cell E, upstream of decant structure to Leslie Lake. Point of Compliance.	Active
1616-32	Outlet of Leslie Lake.	Active
1616-33	Outlet of Moose Lake.	Active
1616-34	Outlet of Nema Lake.	Active
1616-35	Outlet of Slipper Lake prior to entering Lac de Gras.	Active
1616-36	Freshwater intake at Thinner Lake Pumphouse. Sampling is not required until water intake is activated.	Not yet activated
1616-37	Sewage Treatment Facilities outfall into King Pond	Not yet activated



	Settling Pond. Sampling is not required until Discharge is activated.	
1616-39	Misery Lake at Dewatering intake.	Permanently Inactive
1616-43	King Pond Settling Pond, upstream of intake structure. Point of Compliance.	Active
1616-44	Discharge from Koala Minewater Settling Pond.	Permanently Inactive
1616-45	Discharge from Fox Lake at Dewatering intake.	Permanently Inactive
0008-Pi1	Pigeon Pond Dewatering Station. Rationale: To monitor the quality of the water being pumped to the Long Lake Containment Facility.	Not yet activated
0008-Pi2	Pigeon Pit Minewater. Rationale: To monitor quality of the water entering the Long Lake Containment Facility.	Not yet activated
0008-Pi3	Upstream Reference Site. The outflow from unnamed lake, referenced as W.L. 463.7 on figure 4.1-1 of the February 2002 Response to Information Requests. Rationale: To determine the quality of the water entering the Pigeon Stream.	Not yet activated
0008-Pi4	The inflow to Fay Lake. Rationale: To determine the quality of the water entering Fay Lake.	Active
0008-Pi5	Upper Exeter. Rationale: To monitor the quality of the water in the Exeter watershed for potential impacts from the Pigeon Development.	Permanently Inactive
0008-Pi6	The outflow of Little Reynolds Pond. Rationale: To monitor the quality of the water leaving the Pigeon Waste Rock drainage area and to detect potential contamination from the Waste Rock Storage Areas.	Active
0008-Pi100	Upper Exeter at site of withdrawal for the future filling	Not yet activated





	Pigeon Pit. Future site. Rationale: To monitor the quality of the water entering the Pigeon Pit.	
0008-Sa1	Sable Lake Dewatering Station. Site of Compliance. Rationale: To monitor the quality of the water entering the receiving environment.	Active
0008-Sa2	Sable Pit Minewater. Rationale: To monitor quality of water entering the Two Rock Sedimentation Pond Facility.	Not yet activated
0008-Sa3	Outlet of Two Rock Sedimentation Pond. Site of compliance. Rationale: To monitor the quality of the effluent leaving Two Rock Sedimentation Pond prior to Discharge entering the Receiving Environment.	Not yet activated
0008-Sa4	Ulu Lake. Rationale: To monitor any impacts of the Waste Rock Storage Areas on Ulu Lake.	Not yet activated
0008-Sa5	Inflow to Horseshoe Lake from Ulu Lake. Rationale: To monitor water quality leaving Ulu Lake and entering Horseshoe Lake. To ascertain if the Waste Rock Storage Areas are impacting downstream waterbodies.	Not yet activated
0008-Sa6	Horseshoe Lake, to be located within 200m of the Discharge point from Two Rock Sedimentation Pond. Rationale: To detect impacts due to effluent Discharged from Two Rock Sedimentation Pond.	Not yet activated
0008-Sa7	Lower Exeter Lake. Rationale: To monitor the quality of the water in the Exeter watershed for potential impacts from the Sable Development.	Permanently Inactive
0008-Sa8	Runoff from Southern Catchment Area. Site of Compliance. Rationale: To monitor the water quality of surface runoff and Seepage leaving the site facility area.	Active
0008-Sa9	Horseshoe Lake, location to be determined as per Part G, Item 21 and 22 of this Licence. Rationale: To verify the characteristics of initial mixing of	Not yet activated



effluent from Two Rock Sedimentation Pond in Horseshoe Lake close to end of pipe.

0008-Sa10	Upstream Portion of Two Rock Sedimentation Pond. Rationale: To monitor the quality of the water in the upstream portion of Two Rock Sedimentation Pond during operations.	Not yet activated
0008-Sa100	Ursula Lake at site of withdrawal for the future filling of Sable Pit. Future site. Rationale: To monitor the hydrology of the source of the water entering the Sable Pit.	Not yet activated
0008-Be1	Beartooth Lake Dewatering. Site of Compliance. Rationale: To monitor the quality of the water leaving the Beartooth Lake.	Active
0008-Be2	Beartooth Pit Minewater. Rationale: To determine water quality entering Long Lake Tailings Containment Facility.	Active
0008-Be3	North Panda Lake Inflow. Rationale: To determine the quality of the water entering North Panda Lake.	Active
0008-REF1	Reference station to replace the Vulture site should impacts be detected at that site. Rationale: With the addition of the Pigeon Pit there is an increased possibility of impacts to the Vulture Reference site, especially due to airborne contaminants. An alternate reference site should be set up, both to replace Vulture should a need arise and to provide greater information for statistical analysis.	Not yet activated



## B. Sampling and Analysis Requirement

- Water at Station Numbers 1616-2, 1616-11, and 1616-36 (if reactivated) shall be sampled upon startup and monthly thereafter and analyzed for the following:

pH	Total Ammonia-N
Total Suspended Solids	

- Effluent at Station Numbers 1616-3 shall be sampled prior to Discharge, weekly thereafter and on the final day of Discharge and analyzed for the following:
- 

pH	Total Metals <sup>3</sup>
Total Suspended Solids	TPH <sup>5</sup>
Total Ammonia-N	BTEX <sup>6</sup>

- Water at Station Number 1616-10 shall be sampled annually in July or during periods of open water and analyzed for the following:

pH	Total Metals <sup>3</sup>
Total Suspended Solids	

- Water at Station Numbers 1616-12 and 1616-13 shall be sampled every two (2) weeks during periods of flow and analyzed for pH and Total Suspended Solids. Every second sample shall be analyzed for Total Metals<sup>3</sup>.

- During any possible future Dewatering or Drawdown where an existing SNP station is reactivated or a temporary SNP station is set up, samples shall be taken at the Dewatering or Drawdown Discharge point of each station:

- once prior to commencement of Dewatering or Drawdown and analyzed for the following:

Total Ammonia-N	Physical Parameters <sup>2</sup>
Total Suspended Solids	Total Metals <sup>3</sup>
Major Ions <sup>1</sup>	

- daily during Dewatering or Drawdown and analyzed for the following:

pH	Turbidity
Total Suspended Solids	

- once on the final day of Dewatering or Drawdown and analyzed for the following:

Total Suspended Solids	Physical Parameters <sup>2</sup>
------------------------	----------------------------------



Total Ammonia-N Major Ions <sup>1</sup>	Total Metals <sup>3</sup>
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6. Effluent at Station Number 1616-43 shall be sampled two (2) weeks prior to Discharge, every two weeks during periods of Discharge, and concluding on the final day of Discharge and analyzed for the following:

Total Suspended Solids Major Ions <sup>1</sup> Physical Parameters <sup>2</sup>	Total Metals <sup>3</sup> Nutrients <sup>4</sup>
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In addition, effluent at Station Number 1616-43 shall be sampled once annually two (2) weeks prior to Discharge and analyzed for TPH<sup>5</sup> and BTEX<sup>6</sup>.

7. Water at Station Numbers 1616-17 and 1616-20 shall be sampled once each year during periods of flow or more frequently at the request of an Inspector and analyzed for the following:

Total Suspended Solids Total Ammonia-N Major Ions <sup>1</sup> Physical Parameters <sup>2</sup>	Total Metals <sup>3</sup> TPH <sup>5</sup> BTEX
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8. Effluent at Station Numbers 1616-30, 1616-22 (if reactivated in an emergency situation), and 1616-37 (if activated) shall be sampled quarterly and analyzed for the following:

pH Oil and Grease Faecal Coliform Faecal Streptococci BOD <sub>5</sub>	TPH <sup>5</sup> BTE X <sup>6</sup> Total Suspended Solids Nutrients <sup>4</sup>
--	--

9. Water at Station Numbers 1616-26(a), 1616-28 and 1616-29 shall be sampled twice a year, once under ice cover, and once during open water, at a depth of between three and five meters, and analyzed for the following:

Total Ammonia-N Total Suspended Solids Major Ions <sup>1</sup>	Physical Parameters <sup>2</sup> Total Metals <sup>3</sup>
--	---

10. Effluent at Station Number 1616-30 shall be sampled two (2) weeks prior to Discharge, weekly thereafter and on the final day of Discharge and analyzed for the following:

Total Suspended Solids Major Ions <sup>1</sup> Physical Parameters <sup>2</sup>	Total Metals <sup>3</sup> Nutrients <sup>4</sup>
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In addition, effluent at Station Number 1616-30 shall be sampled once annually, two (2)



weeks prior to Discharge and analyzed for TPH<sup>5</sup> and BTEX<sup>6</sup>.

11. Effluent at Station Numbers 1616-30 and 1616-43 shall be sampled once each year after spring break-up and once each year before fall freeze-up, and samples provided to an accredited bioassay laboratory for the following analyses:
  - a) Acute lethality to rainbow trout *Oncorhynchus mykiss* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/13);
  - b) Acute lethality to the cladoceran crustacean *Daphnia magna* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/14);
  - c) Chronic toxicity to the cladoceran crustacean *Ceriodaphnia dubia* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/21); and
  - d) Chronic toxicity to the alga *Selenastrum capricornutum* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/25).
12. Water at Station Numbers 1616-32, 1616-33, 1616-34, and 1616-35 shall be sampled once each year after spring break-up and once each year before fall freeze-up and analyzed for the following:

pH	Major Ions <sup>1</sup>
Total Suspended Solids	Total Metals <sup>3</sup>
Alkalinity	Nutrient s <sup>4</sup>

13. Water at Station Number 0008-Pi3, 0008-Pi4, 0008-Be3 shall be sampled annually during periods of open water in July and analysed for the following:

pH  
ICP Metal Scan-2<sup>9</sup>  
Total Suspended Solids

Sampling of Stations 0008-Pi3 and 0008-Pi4 to commence with Construction of the Pigeon Stream Diversion Channel.

14. Water at Station Number 0008-Pi4 shall be sampled every two-weeks during periods of flow and analysed for pH and Total Suspended Solids, and sampled monthly during periods of flow and analysed for an ICP Metal Scan-2<sup>9</sup>. Sampling of this station to commence with Construction of the Pigeon Stream Diversion Channel.
15. During Dewatering, water at Station Numbers 0008-Pi1, 0008-Sa1, 0008-Sa3, and 0008-Bel shall be sampled at the Dewatering Discharge point of each station. Station 0008-Sa3 will be sampled at times when Dewatering of Sable Lake flow into Two Rock Sedimentation Pond and when Discharging from Two Rock Sedimentation Pond.

- (i) once prior to commencement of Dewatering and analysed for the following:

Major Ions-2 <sup>7</sup>	Total Suspended Solids
Field Parameters-2 <sup>8</sup>	ICP Metal Scan-2 <sup>9</sup>



Nutrients-2<sup>10</sup>

(ii) daily during Dewatering and analysed for the following:

pH	Turbidity
Total Suspended Solids	Conductivity
Temperature	

(iii) once on the final day of Dewatering and analysed for the following:

ICP Metal Scan-2 <sup>9</sup>	Major Ions-2 <sup>7</sup>
Total Suspended Solids	Field Parameters-2 <sup>8</sup>
Nutrients-2 <sup>10</sup>	

16. Water at Station Numbers 0008-Pi2, 0008-Sa2, and 0008-Be2 shall be sampled weekly during Discharge, and analysed for the following:

ICP Metal Scan-2 <sup>9</sup>	Major Ions-2 <sup>7</sup>
Nutrients-2 <sup>10</sup>	Total Suspended Solids
Total Dissolved Solids	pH
Temperature	Conductivity

17. Effluent at Station Numbers 0008-Sa10 and 0008-Sa3 shall be sampled two (2) weeks prior to Discharge from 0008-Sa3, weekly thereafter and on the final day of Discharge from 0008-Sa3 and analysed for the following:

Nutrients-2 <sup>10</sup>	ICP Metal Scan-2 <sup>9</sup>
Major Ions-2 <sup>7</sup>	Field Parameters-2 <sup>8</sup>

18. Water at Station Numbers 0008-Sa5 and 0008-Sa8 shall be sampled once during periods of flow or more frequently at the request of an Inspector and analysed for the following:

ICP Metal Scan-2 <sup>9</sup>	Nutrients-2 <sup>10</sup>
Major Ions-2 <sup>7</sup>	Field Parameters-2 <sup>8</sup>
Total Suspended Solids	

Sampling is to commence with Construction of the Sable Pit. In addition, water at Station Number 0008-Sa8 shall be sampled once every two years and analysed for Total Petroleum Hydrocarbons<sup>5</sup>.

19. Effluent at Station Number 0008-Sa3 shall be sampled once each year during the first week of Discharge (after spring break-up) and once each year during the last week of Discharge (before fall freeze-up) and samples provided to an accredited bioassay laboratory for the following analyses:

- a) Acute lethality to rainbow trout *Oncorhynchus mykiss* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/13 Second Edition December 2000 (with May 1997 amendments));
- b) Acute lethality to the cladoceran crustacean *Daphnia magna* (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/11 July 1990 (with May 1996 amendments));



- c) Chronic toxicity to the cladoceran crustacean *Ceriodaphnia dubia* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/21); and
  - d) Chronic toxicity to the alga *Selenastrum capricornutum* (as per Environment Canada's Environmental Protection Series Biological Test method EPS/1/RM/25)
20. Water at Station Numbers 0008-Pi6, 0008-Sa4, 0008-Sa6, and 0008-Sa9 shall be sampled once each year after Spring break-up and before Fall freeze-up and analysed for the following:
- |                               |                           |
|-------------------------------|---------------------------|
| pH                            | Total Suspended Solids    |
| ICP Metal Scan-2 <sup>9</sup> | Major Ions-2 <sup>7</sup> |
| Ecological <sup>11</sup>      | Nutrients-2 <sup>10</sup> |

Sampling is to commence with Construction of the Sable and Pigeon Pits.

- 21. The field pH, sample temperature and ambient wind and weather conditions shall be recorded at all locations at the time of sampling.
- 22. All sampling, sample preservation, and analysis shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" at the time of analysis, or by such other methods approved by an Analyst.
- 23. All analyses shall be performed in a laboratory accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL) for the specific analyses to be performed or as approved by an Analyst.
- 24. The Licensee shall annually review the approved Quality Assurance/Quality Control (QA/QC) Plan and modify the Plan as necessary. Proposed amendments shall be submitted to an Analyst for approval.
- 25. The QA/QC Plan referred to in SNP Part B, Item 24, shall be implemented as approved by an Analyst.

**NOTES:**

<sup>1</sup>Major ions include the following parameters:

- |               |                 |
|---------------|-----------------|
| Sulphate      | Total Magnesium |
| Chloride      | Total Sodium    |
| Nitrate-N     | Total Potassium |
| Total Calcium |                 |

<sup>2</sup>Physical parameters include the following measurements:



Alkalinity  
Conductivity  
pH

Turbidity  
Temperature  
Hardness

<sup>3</sup>Total Metals shall include, at a minimum, the following parameters:

Arsenic	Lead
Aluminum	Manganese
Barium	Molybdenum
Boron	Nickel
Cadmium	Selenium
Chromium	Strontium
Copper	Uranium
Iron	Zinc

Total metals shall be analyzed in an unfiltered sample.

<sup>4</sup>Nutrients include the following parameters:

Total Ammonia-N	Nitrate-N
Nitrite-N	Total Phosphorus – Low Detection
Orthophosphate	Total Carbon
Total Organic Carbon	

<sup>5</sup>TPH is defined as Total Petroleum Hydrocarbons

<sup>6</sup>BTEX includes the following parameters:

Benzene	Ethylene
Toluene	Xylene

<sup>7</sup>Major Ions-2 includes the following parameters:

Total Hardness	Total Calcium
Sulphate	Total Magnesium
Chloride	Total Sodium
Total Potassium	Alkalinity
Fluoride	Total Dissolved Solids

<sup>8</sup>Field Parameters-2 include the following measurements:

Turbidity	Conductivity
Temperature	pH
Dissolved Oxygen (DO)	% DO Saturation

<sup>9</sup>ICP-MS Metal Scan-2 (Total) shall include at a minimum, the following parameters:

Aluminum	Arsenic*
Beryllium	Boron
Cadmium	Chromium





Cobalt	Copper
Iron	Lead
Manganese	Mercury*
Molybdenum	Nickel
Selenium*	Silver
Strontium	Vanadium
Zinc	

\* also to be analysed by Hydride Atomic Absorption

<sup>10</sup> Nutrients-2 include the following parameters:

Total Ammonia-N	Total Phosphorus
Ortho-Phosphorus	Total Dissolved Phosphorus
Nitrate-N	Total Kjeldhal Nitrogen
Reactive Silica	Total Organic Carbon

<sup>11</sup> Ecological Monitoring: field multiprobe tests at one metre depth intervals for the following parameters:

Temperature (T)	Redox Potential (Eh)
Conductivity	Dissolved Oxygen (DO)
pH	% DO Saturation

## C. Flow and Volume Measurement Requirements

Unless otherwise noted, all flow and volume measurements shall be recorded monthly and recorded in cubic metres.

1. The monthly and annual quantities in cubic metres of freshwater obtained from Grizzly Lake, Little Lake and Thinner Lake (Misery Camp);
2. The monthly lake levels during open water for Grizzly Lake, Little Lake, Thinner Lake (Misery Camp), Upper Panda Lake, Cell E of the Long Lake Containment Facility, and the King Pond Settling Pond;
3. The source and volume (on a monthly and annual basis in cubic metres) of recycled water used in the process plant and sampling plant;
4. The monthly and annual quantities in cubic metres of each Waste Discharged to the Long Lake Containment Facility, King Pond Settling Pond and the Phase I Tailings Containment Area;
5. The monthly and annual quantities in cubic metres of any Discharges of water or Waste from the Long Lake Containment Facility, the King Pond Settling Pond and the Phase I Tailings Containment Area;



6. The monthly and annual quantities in cubic metres of Minewater pumped from each open pit and underground mine;
7. The monthly and annual quantities in cubic metres of treated Sewage effluent Discharged from the Sewage Treatment Facilities;
8.
  - a) The monthly and annual quantities in cubic metres of Sewage solids removed from the Sewage Treatment Facility;
  - b) The monthly and annual quantities in cubic metres of Sewage delivered to the Sewage Treatment Facilities from the Sable and Pigeon Developments.
9. The quantity of water dewatered from Sable Lake and Beartooth Lake.
10. The lake levels in metres for Ursula and Exeter Lakes, during open water season.
11. The quantity of each Waste deposited into the Two Rock Sedimentation Pond.
12. The quantity of effluent Discharged from the Two Rock Sedimentation Pond.
13. The quantity of Minewater pumped from the Pigeon, Sable and Beartooth Open Pits.

## **D. Other Monitoring Requirements**

1. The Licensee shall measure and record the following data:
  - a) precipitation; and
  - b) evaporation, which is calculated from the parameters listed below:
    - wind speed at approximately 2.0 metres above the water surface;
    - wind direction;
    - air temperature at approximately 0.75 and 2.0 metres above the water surface;
    - relative humidity at approximately 0.75 and 2.0 metres above the water surface;
    - water temperature at two levels;
    - net solar radiation over the water surface; and
    - water level.
2. The Licensee shall submit to the Board for approval, the location, methods and frequency for measuring and recording the meteorological data identified in SNP Part D, Item 1.
3. The methods and frequency referred to in SNP Part D, Item 1, shall be implemented as and when approved by the Board.
4. The quantity of ore processed shall be measured in tonnes and recorded monthly.



5. The quantity of Waste Rock and coarse Processed Kimberlite shall be measured in tonnes and recorded monthly and their disposal locations recorded monthly.

## **E. Reports**

1. The Licensee shall, within thirty (30) days following the month being reported, submit to the Board all data and information, in an electronic and printed format acceptable to the Board, required by the "Surveillance Network Program" including the results of the approved QA/QC Program.

**Signed the 24th day of June 2009 on behalf of the**

**Wek'èezhii Land and Water Board**



\_\_\_\_\_  
Witness



\_\_\_\_\_  
Ms. Violet Camsell-Blondin, Chair  
Wek'èezhii Land and Water Board

