



**WATER LICENCE NO: 2AM-LUP0914**

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## NUNAVUT WATER BOARD WATER LICENCE

Pursuant to the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

LUPIN MINES INCORPORATED

(Licensee)

SUITE 200, 1159 ALLOY DRIVE  
THUNDER BAY, ONTARIO  
P7B 6M8

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water or dispose of waste for a period subject to restrictions and conditions contained within this Licence:

Licence Number/Type: 2AM-LUP0914 Type "A"

Water Management Area: 07

Location: LUPIN MINE  
KITIKMEOT REGION, NUNAVUT

Classification: MINING AND MILLING UNDERTAKING

Purpose: DIRECT WATER USE AND DEPOSIT OF WASTE

Quantity of Water use not  
to Exceed: 1,700,000 CUBIC METRES ANNUALLY

Date of Licence Issuance: FEBRUARY 25, 2009

Expiry of Licence: MARCH 31, 2014

This Licence, issued and recorded at Gjoa Haven, Nunavut, includes and is subject to the annexed conditions.

Thomas Kabloona,  
Nunavut Water Board  
Chair

APPROVED  
BY:

Minister of Indian and  
Northern Affairs  
Canada

**DATE LICENCE APPROVED:**

**PART A: SCOPE, ENFORCEMENT AND DEFINITIONS****1. Scope**

- a. This Licence authorizes Lupin Mines Incorporated (“LMI” or “Licensee”) to use Water and dispose of Waste associated with Mining and Milling undertakings in accordance with Schedule V of the *Regulations* at the Lupin Mine, located on the west shore of Contwoyto Lake, within the Kitikmeot Region, Nunavut (approximate Latitude 65°46’N and Longitude 111°14’W), as outlined in the Water Licence Renewal Application.

LMI may conduct mining, milling and associated activities at the Lupin Mine located on the west shore of Contwoyto Lake, Nunavut, (65°46’N, 111°14’W) including, in general, as follows:

- Use of water for Mining and Milling and associated activities;
  - Deposit of tailings slurry into the Tailings Containment Area (TCA);
  - Deposit of tailings paste into underground works;
  - Deposit and treatment of Sewage into Sewage Disposal Facilities;
  - Discharge of effluent from TCA;
  - Discharge of effluent from Sewage Disposal Facilities;
  - Progressive Abandonment and Reclamation of Mine facilities;
  - Care and Maintenance of facilities
  - Monitoring Program;
  - Operations of site infrastructure including:
    - o Mining and Milling structures;
    - o Water intake and supply facilities;
    - o Mine site camp facilities;
    - o Tailings Containment Area;
    - o Tailings Line and associated facilities;
    - o Sewage Disposal Facilities;
    - o Mine site roads;
    - o Mine site airstrip;
    - o Breakwater and Causeway;
    - o Fuel Storage Facilities;
- b. This Licence is issued subject to 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 deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the Act, or other statutes imposing more stringent conditions relating to the quantity, type or manner under which any such Waste may be so deposited, this Licence shall be deemed to be subject to such requirements.

- c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with all applicable legislation, guidelines and directives.

## **2. Enforcement**

- a. Failure to comply with this Licence will be a violation of the Act, subjecting the Licensee to the enforcement measures and the penalties provided for in the Act.
- b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the Act.
- c. For the purpose of enforcing this Licence and with respect to the use of Water and deposit or Discharge of Waste by the Licensee, Inspectors appointed under the Act, hold all powers, privileges and protections that are conferred upon them by the Act or by other applicable law.
- d. Section 70 of the Act permits the Board to specify responsibilities of Her Majesty in right of Canada for monitoring programs. INAC shall carry out a series of inspections annually during Care and Maintenance, to monitor the status of Abandonment, Reclamation and Closure, including a minimum of:
  - i. Once in the spring following the initial freshet;
  - ii. Once in July, to be conducted in conjunction with the Annual Geotechnical Inspection under Part E, Item 6(g); and
  - iii. Once in the 4<sup>th</sup> quarter following receipt of the Engineer's report on the Geotechnical Inspection under Part E, Item 6(g).

## **3. Definitions**

- a. The Licensee shall refer to Schedule A for definitions of terms used in this Licence.

## **PART B: GENERAL CONDITIONS**

- 1. The amount of Water use fees shall be determined in accordance with the section 9(b) of the *Regulations*. Payment of fees shall be made in accordance with section 9(6)(b) of the *Regulations*.
- 2. The Licensee shall file an Annual Report with the Board, not later than March 31<sup>st</sup> of the year following the calendar year reported and shall be developed in accordance with Schedule B.

3. The compliance dates specified in the Licence may be modified at the discretion of the Chief Executive Officer.
4. Metres, 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.
5. The Licensee shall maintain, to the satisfaction of the Inspector, all the signs necessary to identify the stations of the annexed "Monitoring Program".
6. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times in English, Inuktitut and Inuinnaqtun.
7. Any communication with respect to this Licence shall be made in writing to the attention of:

Manager of Licensing  
Nunavut Water Board  
P. O. Box 119  
Gjoa Haven, NU X0B 1J0  
Telephone: (867) 360-6338  
Fax: (867) 360-6369  
Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

8. Any notice made to an Inspector shall be made in writing to the attention of:

Water Resources Officer  
Nunavut District, Nunavut Region  
P.O. Box 100  
Iqaluit, NU X0A 0H0  
Telephone: (867) 975-4295  
Fax: (867) 979-6445

9. The Licensee shall submit one (1) paper copy and one (1) electronic copy of all reports, studies, and plans to the Board, or as otherwise requested by the Board. Reports or studies submitted to the Board by the Licensee shall include an executive summary in English and Inuktitut.
10. This Licence is assignable as provided in section 44 of the Act.
11. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board is received and acknowledged by the Manager of Licensing.
12. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary

to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.

13. In the event that a Plan is not found acceptable to the Board, the Licensee shall provide a revised version to the Board for review within thirty (30) days of notification by the Board.
14. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board.
15. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and condition imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.
16. The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made.
17. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

### **PART C: CONDITIONS APPLYING TO SECURITY**

1. The Licensee shall furnish and maintain security with the Minister, in the amount of \$25.5 million dollars, in the form that is satisfactory to the Minister.
2. The Licensee shall furnish and maintain such further or other amounts as may be required by the Board based on annual estimates of current mine reclamation liability.
3. The Licensee may submit to the Board for approval, a request for a reduction to the amount of security. The submission shall include supporting evidence to justify the request.
4. The security referred to in Part C, Item 1 shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to section 76(5) of the Act. This clause 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 shall obtain all fresh Water for mining, milling and associated uses from Contwoyto Lake, at monitoring station LUP-01 using the Water Supply Facilities or as otherwise approved by the Board in writing.
2. The annual quantities of water withdrawn from Contwoyto Lake for all uses, shall not exceed 1,700,000 cubic metres.
3. The Licensee shall equip the fresh water intake with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.
4. The Licensee shall carry out weekly inspections of all water management structures during periods of flow and maintain records of the inspections and findings, for review upon the request of the Board.
5. The Licensee shall implement measures to prevent the generation and deposition of dust and/or sediment into Water arising from road use.

**PART E: CONDITIONS APPLYING TO WASTE DISPOSAL**

1. The Licensee shall discharge all Tailings into the Tailings Containment Area, underground as Backfill or to other locations in accordance with the *Guide to the Management of Tailings Facilities* (Mining Association of Canada September 1998), or as otherwise approved by the Board in writing.
2. The discharge from the Tailings Containment Area at Monitoring Station LUP-10 shall commence no sooner than July 15 of any calendar year unless otherwise approved by the Board in writing.
3. The discharge rate from the Tailings Containment Area shall not exceed 70,000 cubic metres per day, unless otherwise approved by the Board in writing.
4. The Licensee shall provide at least ten (10) days notice to the Inspector prior to any planned Discharge from any facilities. The notice shall include an estimated volume proposed for Discharge and the receiving location.
5. All Effluent discharged from the Tailings Containment Area shall not exceed the following effluent quality limits at Monitoring Program station LUP-10:

| Parameter                                                | Maximum Average<br>Concentration (mg/L) | Maximum Concentration<br>of Any Grab Sample (mg/L) |
|----------------------------------------------------------|-----------------------------------------|----------------------------------------------------|
| Total Arsenic                                            | 0.50                                    | 1.00                                               |
| Total Copper                                             | 0.15                                    | 0.30                                               |
| Total Cyanide                                            | 0.80                                    | 1.60                                               |
| Total Lead                                               | 0.10                                    | 0.20                                               |
| Total Nickel                                             | 0.20                                    | 0.40                                               |
| Total Zinc                                               | 0.40                                    | 0.80                                               |
| Total Suspended Solids                                   | 15                                      | 30                                                 |
| Oil and Grease                                           | Visual sheen                            |                                                    |
| The Waste discharged shall have a pH between 6.0 and 9.5 |                                         |                                                    |

6. The Tailings Containment Area shall be constructed, operated and maintained to engineering standards such that:
  - a. A freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board in writing;
  - b. Seepage from the Tailings Containment Area is minimized;
  - c. Any Seepage that occurs is collected and returned immediately to the Tailings Containment Area;
  - d. Erosion of constructed facilities is addressed immediately;
  - e. The solids fraction of the mill Tailings shall be permanently contained within the Tailings Containment Area or underground as Backfill;
  - f. Weekly inspections of the dam(s), Tailings line(s), and catchment basin(s) shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector, or as otherwise approved by the Board. More frequent inspections shall be performed at the request of an Inspector; and
  - g. An inspection of the Tailings Containment Area shall be carried out annually during ice free, open water conditions by a Geotechnical Engineer. The Engineer's report shall be submitted to the Board within sixty (60) days following the inspection, and shall include a covering letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations.
7. The Licensee shall discharge all Sewage to the Sewage Lakes Disposal Facilities or as otherwise approved by the Board in writing.

8. All Effluent discharged from the Sewage Lakes Disposal Facilities shall not exceed the following effluent quality limits at Monitoring Program monitoring station LUP-14:

| Parameter                                                | Maximum Concentration<br>of Any Grab Sample (mg/L) |
|----------------------------------------------------------|----------------------------------------------------|
| Total Arsenic                                            | 0.05                                               |
| Total Copper                                             | 0.20                                               |
| Total Lead                                               | 0.05                                               |
| Total Nickel                                             | 0.30                                               |
| Total Zinc                                               | 0.50                                               |
| Total Suspended Solids                                   | 35                                                 |
| BOD <sub>5</sub>                                         | 30                                                 |
| Faecal Coliform                                          | 1000 colony forming units/100 mL                   |
| Oil and Grease                                           | Visual sheen                                       |
| The Waste discharged shall have a pH between 6.0 and 9.5 |                                                    |

9. All Effluent discharged from the Bulk Fuel Storage Facility at Monitoring Program station LUP-27 shall not exceed the following effluent quality limits

| Parameter                       | Maximum Average<br>Concentration (mg/L) | Maximum Concentration<br>of Any Grab Sample (mg/L) |
|---------------------------------|-----------------------------------------|----------------------------------------------------|
| pH                              | 6.0. – 9.0                              |                                                    |
| Total Suspended Solids<br>(TSS) | 15.0                                    | 30                                                 |
| Total Oil and Grease            | 5.0 and no visible sheen                | 10                                                 |
| Total Ammonia                   | 2.0                                     | 4.0                                                |
| Total Lead                      | 0.01                                    | 0.02                                               |
| Benzene                         | 0.37                                    | -                                                  |
| Toluene                         | 0.002                                   | -                                                  |
| Ethyl Benzene                   | 0.090                                   | -                                                  |

10. The Licensee shall confirm compliance with Effluent quality limits in Part E, Items 5, 8 and 9 prior to Discharge.
11. The Licensee shall Discharge all Minewater to the Tailings Containment Area or to the Sewage Lakes Disposal Facilities, except as specified in Part E, Item 12.
12. The Licensee shall submit to the Board for approval, a proposal for the disposal of Minewater should a location other than those specified in Part E, Item 11 be considered. The proposal shall describe options for the Discharge of Minewater, data on the quantity and quality of the Minewater, and the options for Minewater treatment and disposal.

13. The proposal specified in Part E, Item 12, shall be implemented as approved by the Board in writing.
14. The Licensee shall remove from the project site, all hazardous Wastes generated through the course of the Operation, for disposal at an approved hazardous waste disposal facility.
15. The Licensee shall maintain records of all Waste backhauled and confirmation of proper disposal through the use of Waste manifest tracking systems and registration with the Government of Nunavut, Department of Environment.

#### **PART F: CONDITIONS APPLYING TO MODIFICATIONS**

1. The Licensee may, without written consent from the Board, carry out Modifications 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 sixty (60) days prior to beginning the Modifications, that includes the requirements of Part F, Item 3;
  - b. Such modifications do not place the Licensee in contravention of the Licence or the Act;
  - c. Such Modifications are consistent with the NIRB Project Certificate;
  - d. The Board has not, within sixty (60) days following notification of the proposed Modifications informed the Licensee that review of the proposal will require more than sixty (60) days; and
  - e. The Board has not rejected the proposed Modifications.
2. Modifications, for which all of the conditions referred to in Part F, Item 1 have not been met, may be carried out only with approval of the Board in writing.
3. Applications for modifications shall contain:
  - a. A description of the facilities and/or works to be constructed;
  - b. The proposed location of the structure(s);
  - c. Identification of any potential impacts to the Receiving Environment;
  - d. A description of any monitoring required, including sampling locations, parameters measured and frequencies of sampling;
  - e. Schedule for construction;
  - f. Drawings of engineered structures stamped by a Professional Engineer; and
  - g. Proposed sediment and erosion control measures.

4. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

**PART G: CONDITIONS APPLYING TO CONSTRUCTION**

1. All new final design and construction drawings, submitted as required by Licence 2AM-LUP0914, shall be stamped and signed by a Professional Engineer.
2. Prior to construction of any dams, dykes or structures intended to contain withhold, divert or retain water or wastes other than as contemplated in the Contingency Plan, the Licensee shall submit to the Board, for approval, final design and construction drawings signed and stamped by an Engineer.
3. As-built drawings of the dams, dykes or structures shall be stamped by a Geotechnical Engineer and submitted to the Board within ninety (90) days of completion of the structures.
4. The construction of engineered earthworks shall be supervised and field checked by a qualified Engineer. Construction records shall be maintained and made available at the request of the Board.
5. The Licensee shall submit a Construction Summary Report to the Board for review, within ninety (90) days following the completion of all new structures designed to contain, withhold, divert or retain Waters or Wastes. The Construction Summary Report shall be prepared by a qualified Engineer(s) in accordance with Schedule G, Item 1.
6. The Licensee shall use fill material for construction from an approved source, which has been demonstrated not to produce Acid Rock Drainage and to be non-Metal Leaching.
7. The Licensee shall implement sediment and erosion control measures prior to and during Construction, and Operations where necessary, to prevent entry of sediment into Water.
8. The Licensee shall inspect daily, all construction activities for signs of erosion.
9. The Licensee shall minimize disturbance to terrain, permafrost and drainage during movement of the Licensee's and its contractor's equipment and personnel around the site during construction activities.
10. The Licensee shall not store material on the surface of frozen streams or lakes except what is for immediate use.
11. The Licensee shall locate new equipment storage areas on gravel, sand or other durable land, a distance of at least thirty (30) metres above the ordinary high Water mark of any Water body in order to minimize impacts on surface drainage and Water quality.

12. The Licensee shall undertake necessary corrective measures to mitigate impacts on surface drainage resulting from the Licensee's activities.
13. The Licensee shall limit any in-stream activity to low Water periods. In-stream activity is prohibited during fish migration.
14. For the purposes of culvert and bridge installations, the Licensee shall not encroach on the natural channel width by the placement of abutments, footings or armoring below the ordinary high Water mark of any water body.

**PART H: CONDITIONS APPLYING TO EMERGENCY RESPONSE AND CONTINGENCY PLANNING**

1. The Licensee shall submit to the Board for approval, no later than thirty (30) days following approval of the Licence by the Minister, an updated "*Spill Contingency Plan, Lupin Operations*". The Spill Contingency Plan shall be prepared in accordance with Schedule H, Item 1.
2. The Licensee shall keep a copy of the Spill Contingency Plan at each site of operation.
3. The Licensee shall prevent any chemicals, fuel or wastes associated with the undertaking from entering any Water body.
4. The Licensee shall provide secondary containment for fuel and chemical storage as required by applicable standards and acceptable industry practice.
5. Licensee shall operate the Bulk Fuel Storage Facilities in accordance with all applicable legislation, guidelines and practices, including:
  - a. *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003; CCME;*
  - b. *National Fire Code, 1995, and*
  - c. *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, SOR/2008-197, June 12, 2008.*
6. The Licensee shall perform, at a minimum, weekly inspections of fuel containment facilities for leaks and settlement and shall keep a written log of inspections to be made available to an Inspector upon request, or as otherwise approved by the Board in writing.
7. The Licensee shall conduct emergency maintenance and servicing on equipment, in designated areas, and shall implement measures to collect motor fluids and other Waste and prevent and contain spills.

8. If, during the term of this licence, an unauthorized Discharge of Waste and or Effluent occurs, or if such a discharge is foreseeable, the Licensee shall:
  - a. Employ as required, the contingency Plan referred to in Part H, Item 1;
  - b. Report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
  - c. For each spill occurrence, submit a detailed report to the Inspector, no later than thirty (30) days after initially reporting the event, which includes the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain, clean up and restore the spill site.

**PART I: CONDITIONS APPLYING TO ABANDONMENT, RECLAMATION AND CLOSURE PLANNING**

1. The Licensee shall, no later than thirty (30) days following approval of the Licence by the Minister, submit to the Board for approval, an updated Interim Abandonment, Reclamation and Closure Plan, prepared in accordance with Schedule I, Item 1.
2. The Licensee shall, no later than thirty (30) days following approval of the Licence by the Minister, submit to the Board for approval, a Care and Maintenance Plan that shall be prepared in accordance with Schedule I, Item 2.
3. The Licensee shall submit to the Board annually, an updated assessment of the current mine reclamation liability using the most current version of RECLAIM, its equivalent or other method acceptable to the Board.
4. The Licensee shall notify the Board in writing, at least sixty (60) days prior to any intent to achieve Recognized Closed Mine status.
5. The Licensee shall submit to the Board for approval, a Final Abandonment, Reclamation and Closure Plan, at least two (2) years prior to the final abandonment of the mine. The Final Plan shall be prepared in accordance with Schedule I, Item 2.
6. The Licensee shall, in addition to Part B, Item 16, review the Plans referred to in this Part as required by changes in operation and/or technology and modify the Plan accordingly. Revisions to the Plan should incorporate design changes and adaptive engineering required and implemented during Operations or Care and Maintenance, and on the basis of actual site conditions and monitoring results over the life of the project.
7. The Licensee shall notify the Board in writing, as soon as is practically possible, of any change in the status of the mine operations. This notice shall include a summary of Plans and a Schedule for anticipated activities related to the Care and Maintenance or the Final Closure of the Mine and associated infrastructure.

8. The Licensee shall notify the Board in writing, at least sixty (60) days prior to recommencement of the mining and milling undertaking on site. This notice shall include a summary of Plans and a Schedule for anticipated activities related to the change in status.
9. Notwithstanding the time schedule referred to in the Abandonment, Reclamation and Closure Plan, the Licensee shall implement Progressive Reclamation, including progressive covering of the tailings and revegetation, as soon as is realistically possible.

#### **PART J: CONDITIONS APPLYING TO MONITORING**

1. The Licensee shall carry out the Monitoring Program as *per* Table 1 of Schedule J.
2. The Licensee shall provide the GPS co-ordinates, in degrees, minutes and seconds of latitude and longitude, of all locations where sources of water are utilized for all purposes.
3. The Licensee shall determine the GPS co-ordinates, in degrees, minutes and seconds of latitude and longitude, of all locations where wastes associated with camp operations and drilling operations are deposited.
4. The quantity of ore milled shall be measured in tonnes and recorded monthly. The total volume and the solids/solution ratio of waste discharged to the Tailings Containment Area and underground disposal as paste Backfill shall be recorded monthly.
5. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by the Board in writing.
6. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
7. The Licensee shall submit to the Board a revised, Quality Assurance/Quality Control (QA/QC) Plan. The Plan shall be modified to include up to date sampling methods to all applicable standards, acceptable to an accredited laboratory as required by Part J, Item 5 and Part J, Item 6. The Plan shall include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence.
8. Additional monitoring requirements may be requested by the Inspector.
9. The Licensee shall include in the Annual Report required under Part B, Item 2, all data, monitoring results and information required by this Part and the associated Schedule.

10. The NWB may modify the Monitoring Program without a public hearing. Requests for changes to the Monitoring Program should be forwarded to the NWB in writing, and should include the justification and appropriate evidence to support the change.

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## **SCHEDULES**

**Schedules are provided for Parts:**

**A – Definition of Terms**

**B – General Conditions**

**G – Conditions Applying to Construction**

**H – Conditions Applying to Emergency Response and Contingency Planning**

**I – Conditions Applying to Abandonment, Reclamation And Closure Planning**

**J – Conditions Applying to the Monitoring Program**

**Schedules are not provide for the remaining Parts**

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**Schedule A – Definitions of Terms**

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**“Abandonment”** means the permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures;

**“Act”** means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

**“Acid Rock Drainage (ARD)”** means the production of acidic leachate, seepage or drainage from underground workings, ore piles, waste rock, construction rock, tailings, and overburden that can lead to the release of metals to groundwater and surface water during the life of the mine and after mine closure;

**“Addendum”** means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report. Also considered to be an appendix or supplement;

**“Amendment”** means a change to any terms and conditions of this Licence, through application to the NWB, requiring a change, addition, or deletion of specific terms and conditions of the Licence;

**“Maximum Average Concentration for Faecal Coliform”** means the running geometric mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the “Monitoring Program”;

**“Backfill”** means a combination of any or all of a mixture of sand, cement, water or Tailings that is pumped underground and is used to strengthen/support mined out areas;

**“Board”** means the Nunavut Water Board established under Article 13 of the *Nunavut Land Claims Agreement* and under section 14 of the Act;

**“Bulk Fuel Storage Facility”** means the facility, constructed to contain a nominal capacity of approximately 21.6 million litres of petroleum products and all associated infrastructure, as described in the Renewal Application dated January 15, 2008;

**“Care and Maintenance”** in respect of a mine, means the status of the facility when the Licensee ceases production or commercial operation temporarily for an undefined period of time;

**“Closure”** means when an Operator ceases operations at a facility without the intent to resume mining activities in the future;

**“Discharge”** means the release of any water or waste to the receiving environment;

**“Effluent”** means the liquid Discharge from all site water management facilities;

**“Engineer”** means a professional engineer registered to practice in Nunavut in accordance with the *Engineering, Geological and Geophysical Act (Nunavut)* S.N.W.T. 1998, c.38, s.5;

**“Freeboard”** means the vertical distance between the water line and the crest on a dam or dyke’s upstream slope;

**“Geotechnical Engineer”** means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

**“Grab Sample”** means an undiluted quantity of material collected at a particular time and place that may be representative of the total substance being sampled at the time and place it was collected;

**“Inspector”** means an Inspector designated by the Minister under section 85 (1) of the Act;

**“Interim Closure and Reclamation Plan”** means a conceptual detailed plan on the reclamation of mine components which will not be closed until the end of the mining operations, and operational detail for components which are to be progressively reclaimed throughout the mine life;

**“Licence”** means this Type “A” Water Licence 2AM-LUP0914, issued by the Nunavut Water Board in accordance with the Act, to Lupin Mines Incorporated (LMI) for the Lupin Mine.

**“Licensee”** to whom Licence 2AM-LUP0914 is issued to or assigned;

**“Maximum Average Concentration”** means the maximum allowable arithmetic mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the “Monitoring Program”;

**“Metal Leaching”** means the mobilization of metals into solution under neutral, acidic or alkaline conditions;

**“Minewater”** means groundwater or any water used in mining, which is pumped or flows out of any underground workings or open pit;

**“Minister”** means the Minister of Indian and Northern Affairs Canada;

**“Modification”** means an alteration to a physical work that introduces new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion; changes to the operating system that are consistent with the terms of this Licence and do not require amendment;

**“Monitoring Program”** means the program to collect data on surface water and Ground Water quality to assess impacts to the environment of an appurtenant undertaking;

**“Monthly”** means, in the context of monitoring frequency, one sampling event occurring every 30 days with a minimum of 21 days between sampling events;

**“Nunavut Land Claims Agreement (NLCA)”** means the *“Agreement Between the Inuit of the Nunavut Settlement area and Her Majesty the Queen in right of Canada,”* including its preamble and schedules, and any amendments to that agreement made pursuant to it;

**“Operations”** means the set of activities associated with mining, ore processing and recovery of gold; excluding construction and decommissioning activities;

**“Progressive Reclamation”** means those reclamation activities conducted during the operation period of the mine prior to modification of final closure, to modify and restore the land and water to standards acceptable to the board;

**“Quality Assurance / Quality Control (QA/QC)”** Quality Assurance means the system of activities designed to better ensure that quality control is done effectively; Quality Control means the use of established procedures to achieve standards of measurement for the three principle components of quality: precision, accuracy and reliability;

**“Reclamation”** means the process of returning the mine sites and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities;

**“Receiving Environment”** means both the aquatic and terrestrial environments that receive any discharge resulting from the Project;

**“Recognized Closed Mine”** means a recognized closed mine as defined by section (1) of the *Metal Mining Effluent Regulations* SOR/2002-222 dated 6 June 2002;

**“Regulations”** means the *Northwest Territories Water Regulations* SOR/93-303 8 June, 1993;

**“Seepage”** means any water that drains through or escapes from any structure designed to contain, withhold, divert or retain water or waste. Seepage also includes any flows that have emerged through open pits, runoff from waste rock storage facilities, ore stockpile areas, quarries, landfill or landfarm areas;

**“Sewage”** means all toilet wastes and greywater;

**“Sewage Lake Disposal Facilities”** includes the sewage treatment area and the engineered structures designed to contain and treat sewage as described in Drawing Number LUSEW95.DWG entitled “Lupin Mine-Sewage Lakes Disposal Plan-General Arrangement” updated March, 1995;

**“Tailings”** means material rejected from the mill after the recoverable valuable minerals have been extracted;

**“Tailings Containment Area (TCA)”** consists of the Tailings containment basin and the engineered structures designed to contain Tailings as described in Drawing Number LUTA195.DWG entitled “Lupin Mine-Tailings Impoundment Plan-General Arrangement” dated January, 1995;

**“Use”** means use as defined in section 4 of the Act;

**“Waste”** means waste as defined in section 4 of the Act;

**“Water”** means water as defined in section 4 of the Act;

**“Water Supply Facilities”** comprises the Fresh Water Intake and associated infrastructure as identified in Drawing Number LUWAT95.DWG entitled “Lupin Mine-Raw Water Supply Plan-General Arrangement” updated March, 1995.

**“Weekly”** means, in the context of monitoring frequency, one sampling event occurring every 7 days with a minimum of five (5) days between sampling events.

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**Schedule B – General Conditions**


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1. The Annual Report referred to in Part B, Item 2, shall include:
  - a. The monthly and annual quantities in cubic metres of water pumped from Contwoyto Lake at Station Number LUP-01;
  - b. The monthly and annual quantities in cubic metres of treated Tailings effluent discharged at Station Number LUP-10;
  - c. The monthly and annual quantities in cubic metres of Minewater discharged at Station Number LUP-11;
  - d. The monthly and annual quantities in cubic metres of treated Sewage effluent discharged at Station Number LUP-14;
  - e. Tabular summaries of all data generated under the “Monitoring Program”;
  - f. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.
  - g. A summary of modification and/or major maintenance work carried out on the water supply and the waste disposal facilities, including all associated structures;
  - h. A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken;
  - i. Where applicable, revisions as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals;
  - j. For Care and Maintenance, provide an updated status of any progressive reclamation as it relates to tailings cover remediation and justification for not proceeding to full reclamation under Part I, Item 5;
  - k. A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions.
  - l. A summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year;
  - m. An updated assessment of the current mine reclamation liability using the most current version of RECLAIM as required by Part I, Item 3;and
  - n. Any other details on water use or waste disposal requested by the Board by November 1<sup>st</sup> of the year being reported.

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Schedule C – Conditions Applying to Security

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**There is no Schedule for Part C – Conditions Applying to Security**

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Schedule D – Conditions Applying to Water Use

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**There is no Schedule for Part D – Conditions Applying to Water Use**

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Schedule E – Conditions Applying to Waste Disposal

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**There is no Schedule for Part E – Conditions Applying to Waste Disposal**

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Schedule F – Conditions Applying to Modifications

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**There is no Schedule for Part F – Conditions Applying to Modifications**

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**Schedule G – Conditions Applying to Construction**

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1. The Construction Monitoring Report referred to in Part G, Item 5 shall include:
  - a. A summary of construction activities including photographic records before, during and after construction;
  - b. As-built drawings,
  - c. Documentation of field decisions that deviate from original plans and any data used to support these decisions;
  - d. Discussion of mitigation measures implemented during construction and effectiveness;
  - e. Monitoring undertaken in accordance with Part G;
  - f. Blast vibration monitoring for quarrying activity carried out in close proximity to fish bearing waters; and
  - g. Monitoring for sediment release from construction areas.

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**Schedule H – Conditions Applying to Emergency Response and Contingency Planning**

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1. The Contingency Plan referred to in Part H, Item 1 shall be a revised version of the Plan “Spill Contingency Plan, Lupin Operations” submitted with the application, prepared following GN-DOE’s *Spill Contingency Planning and Reporting Regulations*, and *Contingency Planning and Spill Reporting in Nunavut: a Guide to the New Regulations*, and include:
  - a. A site 24 hour per day contact number;
  - b. A description on how to manage large quantities of oil-soaked snow;
  - c. Detailed information on spill response measures under the Training and Exercises section;
  - d. Provide new contact information as submitted by parties during the written hearing process;
  - e. Include Part 2 of the Spill Report form that discusses the instructions for completing and submitting the Report;
  - f. Provide updated, detailed topographical maps showing all facilities and their relationship to surrounding water bodies;
  - g. More clarity on the quantities and locations of Jet A and Jet B fuel on site (currently under the same line item in Table 1, Appendix III;
  - h. information on the proper storage of all hazardous materials including types, volumes and location;

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**Schedule I – Conditions Applying to Abandonment, Reclamation and Closure Planning**


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1. The Interim Abandonment, Reclamation and Closure Plan referred to in Part I, Item 1 shall be prepared in accordance with the *Mine Site Reclamation Guidelines for the Northwest Territories, 2007* and consistent with the *INAC Mine Site Reclamation Policy for Nunavut, 2002*. The Plan shall include the following:
  - a. Disposal information for unsold accommodation facilities;
  - b. Disposal of contaminated soils;
  - c. Inspections for fuel/oil spills and inspections of fuel containment facilities;
  - d. Information on the geotechnical requirements, slope and the placement of rip rap along the downstream side of Dam 4;
  - e. Detailed drawings, activities, construction schedules and techniques for the breakwater and causeway; and
  - f. Justification for not proceeding to full reclamation under Part I, Item 5.
  
2. Care and Maintenance Plan referred to in Part I, Item 2 shall include:
  - a. Water and wastewater management plans including measures to avoid the accumulation of run-off water, wastewater retention and release, and Sewage Disposal Facility operation;
  - b. Inspections for fuels, chemicals, all hazardous materials and spills;
  - c. Details on tailings management and monitoring;
  - d. Details on the continued storage of Petroleum products including Bulk Fuel Storage;
  - e. Details on the plans to be implemented for mitigation of exposed tailings and a schedule, including assessment of alternatives; and
  - f. Justification for not proceeding to full reclamation under Part I, Item 5
  
3. The Final Abandonment, Reclamation and Closure Plan referred to in Part I, Item 5 shall, in addition to Item 1 of Schedule I, include:
  - a. Incorporation of recommendation made in the report entitled "Closure Cost Estimate and Scoping of Mine Closure Issues, Lupin Mine NWT," (Golder Associates, 1997).
  - b. An outline of methods to contain potential pore water expulsion from the TCA;
  - c. Identification of contaminated soil sites at the mine site;
  - d. A summary of existing data for background levels of metals in the area, and identification of needs for verification of data or reassessment with modern detection limits;
  - e. Soil Quality Remediation Objectives along with CCME Guidelines and the Government of Nunavut *Environmental Guideline for Site Remediation*;
  - f. Environmental Site Assessment plans in accordance Canadian Standards Association (CSA) criteria;

- g. An evaluation of the Human Health and Ecological Risk associated with closure options; and
- h. Description of reclamation activities outlined in the Interim Abandonment, Reclamation and Closure Plan.
- i. An implementation schedule for the completion of reclamation; and
- j. A detailed monitoring program.

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**Schedule J – Conditions Applying to the Monitoring Program**


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**Licensee:** LUPIN MINES INCORPORATED

**Licence Number:** 2AM-LUP0914

**Effective Date of Licence Renewal:** February 25, 2009

**Effective Date of  
Monitoring Program Renewal:** March 31, 2009

**STATION LOCATIONS, REQUIREMENTS AND PARAMETER ANALYSIS**

Refer to Table 1

Note: All Monitoring Program Station Numbers correspond to the previous Licence 2AM-LUP0008 Stations with the “925” numbering ( ie LUP-01 corresponds to the old SNP Station Number 925-01).

| <b>Table 1</b> |                                       |                                                                   |                                                                                                                                                 |
|----------------|---------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Station</b> | <b>Location</b>                       | <b>Requirements</b>                                               | <b>Parameter Analysis Total (T)</b>                                                                                                             |
| LUP-01         | Freshwater Intake from Contwoyto Lake | Annually                                                          | (T) Arsenic (T) Cadmium<br>(T) Copper (T) Lead<br>(T) Nickel (T) Zinc<br>(T) Mercury Faecal Coliform<br>Conductivity (T) Suspended Solids<br>pH |
|                |                                       | Monthly - Quantity of water measured and recorded in cubic metres |                                                                                                                                                 |

| <b>Table 1</b> |                                                      |                                                                                                                                                                                 |                                                                                                                                                                 |                                                   |
|----------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <b>Station</b> | <b>Location</b>                                      | <b>Requirements</b>                                                                                                                                                             | <b>Parameter Analysis Total (T)</b>                                                                                                                             |                                                   |
| LUP-10         | Pond #2 discharge at Dam 1A                          | Daily during periods of discharge from the Tailings Containment Area                                                                                                            | (T) Arsenic<br>(T) Zinc<br>pH                                                                                                                                   | (T) Copper<br>(T) Cyanide<br>(T) Suspended Solids |
|                |                                                      | Weekly during periods of discharge from the Tailings Containment Area                                                                                                           | (T) Lead<br>(T) Cadmium<br>Ammonia                                                                                                                              | (T) Nickel<br>Alkalinity<br>Hardness              |
|                |                                                      | First day of discharge and monthly thereafter                                                                                                                                   | 24 ICP-MS                                                                                                                                                       |                                                   |
|                |                                                      | Daily - Quantity of treated effluent measured and recorded in cubic metres                                                                                                      |                                                                                                                                                                 |                                                   |
|                |                                                      | Twice per year, prior to initiation of decant and just prior to termination of decant, with samples to be provided to the Environmental Protection Branch of Environment Canada | Static Pass/Fail Bioassay for both rainbow trout and <i>Daphnia</i> species (per Environment Canada's Environmental Protection Series Biological Test Methods). |                                                   |
| LUP-11         | Minewater discharge at automatic sampler in the mill |                                                                                                                                                                                 |                                                                                                                                                                 |                                                   |
| LUP-12         | Mill tailings taken at the mill                      |                                                                                                                                                                                 |                                                                                                                                                                 |                                                   |

| <b>Table 1</b> |                                                                               |                                                                           |                                                                                                                       |                                                                                                                                                                        |
|----------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Station</b> | <b>Location</b>                                                               | <b>Requirements</b>                                                       | <b>Parameter Analysis Total (T)</b>                                                                                   |                                                                                                                                                                        |
| LUP-14         | Decant structure from the sewage Lakes Disposal Facilities                    | First day of discharge and then monthly thereafter during periods of flow | (T) Arsenic<br>(T) Zinc<br>(T) Nickel<br>pH<br>Faecal Coliform<br>(T) Cadmium<br>Ammonia<br>Total Nitrogen<br>Nitrite | (T) Copper<br>(T) Lead<br>BOD5<br>(T) Suspended Solids<br>Alkalinity<br>Hardness<br>Total Phosphorus<br>Total Orthophosphorus<br>Nitrate<br>Visible Sheen Oil & Grease |
| LUP-15         | Discharge from Tailings Pond #1 (east pond) into Tailings Pond #2 (west pond) | Not active                                                                |                                                                                                                       |                                                                                                                                                                        |
| LUP-16         | Tailings Pond #2 at center                                                    | Not active                                                                |                                                                                                                       |                                                                                                                                                                        |
| LUP-17         | Tailings Pond #2 upstream of Station Number LUP-10                            | Not active                                                                |                                                                                                                       |                                                                                                                                                                        |
| LUP-19         | East end of Seep Creek in Dam 2 Lake                                          | Not active                                                                |                                                                                                                       |                                                                                                                                                                        |

| <b>Table 1</b> |                                                                  |                                                                                                                                                                |                                                                     |                                                                                           |
|----------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Station</b> | <b>Location</b>                                                  | <b>Requirements</b>                                                                                                                                            | <b>Parameter Analysis Total (T)</b>                                 |                                                                                           |
| LUP-20         | West end of Seep Creek before discharge into Unnamed Lake        | Weekly during discharge from the Tailings Containment Area                                                                                                     | (T) Arsenic<br>(T) Zinc<br>(T) Lead<br>pH<br>(T) Cadmium<br>Ammonia | (T) Copper<br>(T) Cyanide<br>(T) Nickel<br>(T) Suspended Solids<br>Alkalinity<br>Hardness |
| LUP-21         | North end of Concession Creek before discharge into Unnamed Lake | Weekly during discharge from the Tailings Containment Area                                                                                                     | (T) Arsenic<br>(T) Zinc<br>(T) Lead<br>pH<br>(T) Cadmium<br>Ammonia | (T) Copper<br>(T) Cyanide<br>(T) Nickel<br>(T) Suspended Solids<br>Alkalinity<br>Hardness |
| LUP-22         | Inner Sun Bay near center                                        | Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area and conclude two (2) weeks after cessation of the discharge | (T) Arsenic<br>(T) Zinc<br>(T) Lead<br>pH<br>(T) Cadmium<br>Ammonia | (T) Copper<br>(T) Cyanide<br>(T) Nickel<br>(T) Suspended Solids<br>Alkalinity<br>Hardness |
| LUP-24         | Inner Sun Bay near narrows                                       | Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area and conclude two (2) weeks after cessation of the discharge | (T) Arsenic<br>(T) Zinc<br>(T) Lead<br>pH<br>(T) Cadmium<br>Ammonia | (T) Copper<br>(T) Cyanide<br>(T) Nickel<br>(T) Suspended Solids<br>Alkalinity<br>Hardness |

| <b>Table 1</b> |                                            |                                                                                                                                                                |                                                                             |                                                                                           |
|----------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Station</b> | <b>Location</b>                            | <b>Requirements</b>                                                                                                                                            | <b>Parameter Analysis Total (T)</b>                                         |                                                                                           |
| LUP-25         | Outer Sun Bay                              | Weekly at mid-depth, commencing one (1) week prior to discharge from the Tailings Containment Area and conclude two (2) weeks after cessation of the discharge | (T) Arsenic<br>(T) Zinc<br>(T) Lead<br>pH<br>(T) Cadmium<br>Ammonia         | (T) Copper<br>(T) Cyanide<br>(T) Nickel<br>(T) Suspended Solids<br>Alkalinity<br>Hardness |
| LUP-26         | Contwoyto Lake in bay east of water intake | Not active                                                                                                                                                     |                                                                             |                                                                                           |
| LUP-27         | Bulk Fuel Storage Facility                 | Once prior to discharge and weekly during periods of discharge                                                                                                 | pH<br>(T) Suspended Solids<br>(T) Oil and Grease<br>(T) Ammonia<br>(T) Lead | Benzene<br>Toluene<br>Ethylbenzene                                                        |