



December 5, 2016

File: MV2016X0013 &  
MV2016L8-0004

Ms. Carey Ogilvie  
Department of Indian Affairs and Northern Development  
Contaminants and Remediation Division  
PO Box 1500  
YELLOWKNIFE, NT X1A 2R3                      Email: Carey.Ogilvie@aandc-aadnc.gc.ca

Dear Mr. Ogilvie:

**Issuance of Type B Water Licence and Type A Land Use Permit  
Miscellaneous - Bullmoose-Ruth Remediation Project**

Attached are Type B Water Licence MV2016L8-0004 and Type A Land Use Permit MV2016X0013, granted by the Mackenzie Valley Land and Water Board (MVLWB or the Board) in accordance with the *Mackenzie Valley Resource Management Act*. The Licence has been approved for a period of seven years commencing December 5, 2016 and expiring December 4, 2023. The Permit has been approved for a period of five years, commencing December 5, 2016 and expiring December 4, 2021.

Please read all conditions carefully. For the purpose of submitting plans in accordance with the Licence and Permit, the date of this letter, December 5, 2016, is the date of issuance. Also attached is a copy of the "General Procedures for the Administration of Licences in the Northwest Territories". The MVLWB requests that you review these and address any questions to the Board's office.

A copy of the Licence and Permit have been filed on the Public Registry at the office of the MVLWB. Please be advised that this letter, with attached procedures, all inspection reports, and correspondence related thereto is part of the Public Registry and is intended to keep all interested parties informed of the manner in which the Licence and Permit requirements are being met. All Public Registry material will be considered if an amendment to the Licence and/or Permit is requested.

The following report and plan submissions are required by the Licence, and, where noted, the Permit:

<b>Submission</b>	<b>Licence Condition</b>	<b>Permit Condition</b>
Engagement Plan	Part B, item 12	77 and 79
Annual Water Licence Report	Part B, item 13	Not applicable
Final Detailed Construction Plan	Part D, item 6	Not applicable
As-Built Reports	Part D, item 9	Not applicable
Landfill Design Plan	Part D, item 10	Not applicable
Tailings and Waste Rock Cover Design Report	Part D, item 11	Not applicable
Bullmoose Creek Channel Design and Reconstruction Plan	Part D, item 12	Not applicable
Waste Management Plan	Part F, item 3	43 and 77
Landfarm Management Plan	Part F, item 4	Not applicable
Sediment and Erosion Control Plan	Part F, item 5	22 and 77
Geochemical Verification Plan	Part F, item 6	Not applicable
Construction Monitoring Plan	Part F, item 7	Not applicable
Post-Construction Monitoring Plan	Part F, item 8	Not applicable
Long-term Monitoring Plan	Part F, item 9	Not applicable
Geotechnical Inspection Reports	Part F, item 13	Not applicable
Spill Contingency Plan	Part G, item 2	62 and 77
Final Reclamation Plan	Part H, item 2	Not applicable
Surveillance Network Program Report	Annex A	Not applicable
Quality Assurance and Quality Control Plan	Annex A: Part A, item 6	Not applicable

The full cooperation of the Department of Indian Affairs and Northern Development (DIAND) - Contaminants and Remediation Division (CARD) is anticipated and appreciated. If you have any questions or concerns, please contact Julian Morse at (867) 766-7453 or email [jmorse@mvlwb.com](mailto:jmorse@mvlwb.com).

Yours sincerely,



Floyd Adlem  
MVLWB, A/Chair

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Attachments:

- Land Use Permit MV2016X0013
- Water Licence MV2016L8-0004
- General Procedures for the Administration of Licences in the Northwest Territories
- Reasons for Decision



## Mackenzie Valley Land and Water Board Water Licence

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

Department of Indian Affairs and Northern Development –  
Contaminants and Remediation Division

(Licensee)

of Box 1500 Yellowknife NT X1A 2R3  
(mailing address)

hereinafter called the Licensee, the right to alter, divert, or otherwise use water subject to the restrictions and conditions contained in the *Mackenzie Valley Resource Management Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence number:	<u>MV2016L8-0004</u>
Licence type:	<u>B</u>
Water Management Area:	<u>Northwest Territories 01 – Great Slave Lake</u>
Location:	<u>113°36'48.346"W 62°15'7.543"N 112°11'7.161"W 62°32'35.305"N</u>
Purpose:	<u>To use water and dispose of waste to support remediation works.</u>
Description:	<u>Bullmoose-Ruth Remediation Project</u>
Quantity of water <b>not to be exceeded</b> :	<u>299 cubic metres (m<sup>3</sup>)/day</u>
Effective date of Licence:	<u>December 5, 2016</u>
Expiry date of Licence:	<u>December 4, 2023</u>

This Licence, issued and recorded at Yellowknife, includes and is subject to the annexed conditions.

**Mackenzie Valley Land and Water Board**

Handwritten signature of Floyd Adlem in black ink.

Floyd Adlem, A/Chair

Handwritten signature of Amanda Gauthier in black ink.

Amanda Gauthier, Witness

**Type B Water Licence MV2016L8-0004**  
**Department of Indian Affairs and Northern Development –**  
**Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

**Table of Contents**

- Part A: Scope and Definitions
- Part B: General Conditions
- Part C: Conditions Applying to Water Use
- Part D: Conditions Applying to Construction
- Part E: Conditions Applying to Modifications
- Part F: Conditions Applying to Waste and Water Management
- Part G: Conditions Applying to Contingency Planning
- Part H: Conditions Applying to Closure and Reclamation

**Schedules**

- Schedule 1: General Conditions - Annual Water Licence Report
- Schedule 2: Part D: Conditions Applying to Construction
- Schedule 3: Part F: Conditions Applying to Water and Waste Management

**Annexes**

- Annex A: Surveillance Network Program
  - Part A: Reporting Requirements
  - Part B: Site Descriptions and Monitoring Requirements
- Annex B: Concordance Table of Items Requiring Submissions
- Annex C: Table of Revision History

## Part A: Scope and Definitions

### 1. Scope

- a) This Licence entitles the Licensee to use Water and dispose of Waste for the purpose of remediation at seven historical mine and advanced exploration sites located between 70 and 90 km east of Yellowknife, Northwest Territories. This undertaking is described in the Accepted Application and includes the following:
  - i. Water withdrawal for camp use, industrial use, winter road Construction, compaction, and dust suppression;
  - ii. Construction, operation, maintenance, and closure of Sewage Disposal Facilities;
  - iii. Deposit of treated Sewage and Greywater to a Sump;
  - iv. Dewatering
  - v. Deposit of Wastewater to a Sump;
  - vi. Construction, operation, maintenance, and closure of a Landfarm;
  - vii. Construction, operation, maintenance, and closure of Landfills;
  - viii. Diversion and reconstruction of Bullmoose Creek;
  - ix. Remediation of hazardous and non-hazardous Wastes, rock, soil, sediment, Tailings, impacted Water, and infrastructure; and
  - x. Monitoring.
- 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 on Council under the 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) The Licensee shall take every reasonable precaution to protect the environment.
- d) In conducting its activities under this Licence, the Licensee shall make best efforts to consider and incorporate any scientific and Traditional Knowledge that is made available to the Licensee.
- e) Compliance with the terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial or municipal legislation.

## 2. Definitions

**Accepted Application** - the Type B Water Licence application as submitted to the Board on May 16, 2016 and the "Bullmoose Area Mine Sites – Updated Remedial Action Plan" dated January 5, 2016, submitted on May 16, 2016.

**Acid Rock Drainage** - the production of acidic (or alkaline) leachate, Seepage, or drainage from underground workings, ore piles, Waste Rock, Tailings, and overburden that can lead to the release of metals to Groundwater and surface Water during the life of the Project and after completion of the Project. Also known as **acid mine drainage (AMD)** when it originates from mining areas.

**Act** - the *Mackenzie Valley Resource Management Act, S.C. 1998, c. 25*.

**Action Level** - a predetermined qualitative or quantitative trigger which, if exceeded, requires the Licensee to take appropriate actions including, but not limited to: further investigations, changes to operations, or enhanced mitigation measures and reporting of same.

**Analyst** - an Analyst designated by the Minister by subsection 84(2) of the Act.

**Board** - the Mackenzie Valley Land and Water Board established by subsection 99(1) of the Act;

**Construction** - any activities undertaken to construct or build any components of, or associated with, the undertaking.

**Dam Safety Guidelines** - the *Canadian Dam Association's (CDA) Dam Safety Guidelines, 2007*. The scope and application of the *Dam Safety Guidelines* referred to in the Licence, is presented in Section 1 of the *Dam Safety Guidelines*.

**Discharge** - the direct or indirect release of any Water or Waste to the Receiving Environment.

**Engagement Plan** - a document, developed in accordance with the Board's June 2013 *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* that clearly describes engagement activities during the life of the undertaking.

**Engineered Structures** - any structure or facility and the associated area related to Water Use or the deposit of Waste that is designed and approved by a Professional Engineer.

**Groundwater** - all Water below the ground surface.

**Greywater** - all liquid Wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include Toilet Wastes.

**Inspector** - an Inspector designated by the Minister under subsection 84(1) of the Act.

**Landfill** - an Engineered Structure used for containment of non-hazardous Waste.

**Landfarm** - an Engineered Structure used for containment and remediation of hydrocarbon-impacted soils.

**Licensee** - the holder of this Licence.

**Maximum Grab Concentration** - a concentration of a parameter listed in the Licence that cannot be exceeded in any one grab sample.

**Metal Leaching** - the release of metals, metalloids and non-metals in leachate, Seepage or drainage from rock or other materials associated with the undertaking.

**Mineral Materials** – Any material composed of minerals and not covered under the definitions of Waste Rock and Tailings.

**Minewater** - Groundwater or any Water that is pumped or flows out of any underground working.

**Minister** - means the Minister of Indian Affairs and Northern Development Canada.

**Modification** - a change, other than an expansion, that does not alter the purpose or function of a structure.

**Potentially Acid Generating (PAG) Rock** - any rock that has the capability to produce acidic leachate, Seepage, or drainage

**Professional Engineer** - a person who is registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists in accordance with the *Engineering and Geoscience Professions Act*. S.N.W.T. 2006, c.16, as a Professional Engineer, and whose principal field of specialization is appropriate to address the components of the undertaking at hand.

**Project** - the Bullmoose-Ruth Remediation Project as described in Part A, item 1 of this Licence.

**Receiving Environment** - the aquatic environment that receives any Water or Waste released from the undertaking.

**Reclamation** - activities which facilitate the return of disturbed areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment.

**Regulations** - Regulations promulgated pursuant to section 90.3 of the Act.

**Remedial Action Plan** - means the entirety of the documents prepared by the Contaminants and Remediation Division, including all supporting documents submitted and filed with the Board

**Seepage** - includes any Water or Waste that drains through or escapes from any structure designed to contain, withhold, divert or retain Water or Waste.

**Sewage** - all Toilet Wastes and Greywater.

**Sewage Disposal Facilities** - the Engineered Structures and areas designed to contain and treat Sewage.

**Spill Contingency Plan** - a document, developed in accordance with this Licence and Indian and Northern Affairs Canada's April 2007 *Guidelines for Spill Contingency Planning*, that clearly describe the activities required when a spill or Unauthorized Discharge occurs during the life of the Project.

**Sump** - a man-made pit or natural depression in the earth's surface used for the purpose of depositing Waste that does not contain Toxic Material, such as non-toxic drilling Waste or Sewage, therein.

**Surveillance Network Program (SNP)** - the totality of the sampling requirements detailed in Annex A of this Licence.

**Traditional Knowledge** - the cumulative collective body of knowledge, experience and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people, and adapts to social, economic, environmental, spiritual and political change.

**Tailings** - the materials rejected from the mill after the recoverable valuable minerals have been extracted.

**Toilet Wastes** - all human excreta and associated products, not including Greywater.

**Unauthorized Discharge** - the release, Discharge or spill of any Water or Waste not authorized under this Licence.

**Waste** - any Waste as defined in section 51 of the Act.

**Wastewater** - any Water that is generated by activities or originates on site and contains Waste and includes, but is not limited to, runoff, Seepage, or Minewater.

**Waste Management Plan** - a document, developed in accordance with the Board's March 2011 *Guidelines for the Development of a Waste Management Plan* which describes the methods of Waste management from Waste generation to final disposal.

**Waste Disposal Facilities** - the areas and associated infrastructure designated for the disposal of Waste.

**Waste Rock** - all unprocessed rock materials, except ore and Tailings, which are produced as a result of mining and exploration operations.

**Waste Rock Cover** - the areas and associated infrastructure designated to encapsulate Waste Rock.

**Water(s)** - any Water as defined in section 51 of the Act.

**Water Supply Facilities** - the intake infrastructure and associated area to collect and supply Water for the Project.

**Water Use** - a use of Water as defined in section 51 of the Act.



## Part B: General Conditions

1. The Licensee shall ensure a copy of this Licence is maintained on site at all times.
2. All references to policies, guidelines, codes of practice, statutes, Regulations or other authorities shall be read as a reference to the most recent versions.
3. All information submitted to the Board, as required by this Licence, shall:
  - a) Be submitted in a form acceptable to the Board;
  - b) Be in accordance with the Mackenzie Valley Land and Water Board's March 2012, Document Submission Standards; and
  - c) Include a section within each submission which identifies where the pertinent requirements of the Licence are addressed.
4. The Licensee shall operate in accordance with approved plans, programs, studies and manuals referred to in this Licence, including such revisions as may be made pursuant to the conditions of this Licence and as approved by the Board.
5. The Licensee shall review the plans, programs, studies and manuals annually, or as directed by the Board, and make any necessary revisions to reflect changes in operations. All revised plans, programs, studies and manuals shall be submitted to the Board, for approval, at least 60 days, unless otherwise specified, prior to implementing any proposed updates or changes in the approved plan, program, study or manual, and shall be accompanied by a brief summary of the changes made. All revised plans, programs, studies, and manuals shall be presented in a format consistent with the Board's *Standard Outline for Management Plans*.
6. The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any changes to the Schedules as may be made from time to time by the Board.
7. The Licensee shall comply with the **Surveillance Network Program**, which is annexed to and forms part of this Licence, and any changes to the Surveillance Network Program as may be made from time to time by the Board.
8. The Schedules, Surveillance Network Program, and any compliance dates specified in this Licence may be changed at the discretion of the Board. If any date for a submission falls on a weekend or holiday, the item shall be submitted on the following business day.
9. 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.
10. The Licensee shall maintain, to the satisfaction of an Inspector, the signs necessary to identify the stations of the Surveillance Network Program.
11. The Licensee shall adhere to the **Engagement Plan**, once approved.

12. Within 90 days following issuance of this Licence, the Licensee shall submit a revised **Engagement Plan** to the Board for approval. The Licensee shall not commence operations until the Board has approved the Plan. The Plan shall meet the objectives outlined in the Board's *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*.
13. Beginning March 31, 2017 and no later than every March 31 thereafter, the Licensee shall submit an **Annual Water Licence Report** to the Board. The Report shall be in accordance with Schedule 1, item 1.

### **Part C: Conditions Applying to Water Use**

1. The Licensee shall obtain all Water as described in the Accepted Application for domestic and industrial uses, unless otherwise approved by the Board. All Water shall be withdrawn using the Water Supply Facilities, or as otherwise approved by the Board.
2. The Licensee may divert Water from Bullmoose Creek during removal of sediments in Bullmoose Creek upon approval of, and according to, the Bullmoose Creek Channel Design and Reconstruction Plan.
3. The daily quantity of fresh Water withdrawn from all Water bodies shall not exceed 299 cubic metres.
4. The Licensee shall equip and maintain the Water intake(s) with a screen designed to prevent impingement and/or entrainment of fish and adhere to best practices outlined in both the Department of Fisheries and Oceans' *Fresh Water Intake End-of-Pipe Fish Screen Guidelines, 1995* and *Fish Screen Design Criteria for Flood and Water Truck Pumps, 2011*.
5. The Licensee shall adhere to the best practices outlined in the Department of Fisheries and Oceans' *Protocol for Winter Water-Withdrawal from Ice-Covered Waterbodies in the NWT and NU*.

## **Part D: Conditions Applying to Construction**

1. The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Waste are designed, constructed, and maintained to prevent escape of Waste to the Receiving Environment.
2. The Licensee shall ensure that all Engineered Structures intended to contain, withhold, divert, or retain Water or Waste and which meet the definition of a dam under the *Dam Safety Guidelines* are designed, constructed, and maintained to meet or exceed the *Dam Safety Guidelines*.
3. The Licensee shall ensure that all Engineered Structures are constructed and maintained following the recommendations of the Professional Engineer responsible for the design, including but not limited to, recommendations regarding field supervision and inspection requirements.
4. The Licensee shall maintain Construction records and geochemical records of Construction materials for all Engineered Structures and make them available at the request of the Board or an Inspector.
5. The Licensee shall submit a revised schedule for Construction and Project development:
  - a) Immediately following any alterations to this schedule; and
  - b) Upon request from the Board.

### **Final Detailed Construction Plans and As-built Reports**

6. A minimum of 60 days prior to the commencement of Construction of any Engineered Structures intended to contain, withhold, divert, or retain Water or Waste, the Licensee shall submit to the Board, a **Final Detailed Construction Plan**. The Plan shall be in accordance with Schedule 2, item 1.
7. The Licensee shall ensure that the Engineered Structures identified in Part D, item 6, are constructed in accordance with the Final Detailed Construction Plan.
8. A minimum of 10 days prior to the commencement of Construction of the Engineered Structures identified in Part D, item 6, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the site manager.
9. Within 90 days of the completion of the Construction of the Engineered Structures identified in Part D, item 6, the Licensee shall submit an **As-Built Report** which shall include as-built drawings of the structures, documentation of field decisions that deviate from the Final Detailed Construction Plan, and any data used to support these decisions to the Board.
10. The Licensee shall submit to the Board, for approval, 90 days prior to Landfill Construction, a **Landfill Design Plan**. The Licensee shall not commence Construction until the Board has approved the Plan. The Plan shall meet the objectives listed in Part F, item 1 and Schedule 2, item 2.

11. The Licensee shall submit to the Board, for approval, 90 days prior to cover Construction, a **Tailings and Waste Rock Cover Design Plan**. The Licensee shall not commence Construction until the Board has approved the Plan. The Plan shall meet the objectives listed in Part F, item 1 and Schedule 2, item 3.
12. The Licensee shall submit to the Board, for approval, 90 days prior to the diversion of Bullmoose Creek for the removal of sediments, a **Bullmoose Creek Channel Design and Reconstruction Plan**. The Licensee shall not commence Construction until the Board has approved the Plan. The Plan shall meet the objectives listed in Part D, item 1 and Schedule 2, item 4.

## **Part E: Conditions Applying to Modifications**

1. The Licensee may, without written approval from the Board, carry out Modifications to the Water Supply and Waste Disposal Facilities provided the following requirements are met:
  - a) The Licensee has notified the Board and an Inspector in writing of such proposed Modifications at least 60 days prior to beginning the Modifications;
  - b) The Modifications do not place the Licensee in contravention of either the Licence or the Act;
  - c) The Board has not, during the 60 days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than 60 days;
  - d) An Inspector has authorized the proposed Modifications and provided a letter of notification to the Board; and,
  - e) The Board has not rejected the proposed Modifications.
2. Modifications for which all of the conditions referred to in Part E, item 1 have not been met, may be carried out only with written approval from the Board.
3. Within 90 days of the completion of Modifications referred to in Part E, item 1, the Licensee shall submit to the Board as-built plans and drawings stamped by a Professional Engineer.

## Part F: Conditions Applying to Water and Waste Management

1. The Licensee shall manage Water and Waste with the objectives of minimizing impacts on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.

### **Management Plans and Monitoring Programs**

2. The Licensee shall act in accordance with the **Waste Management Plan** in the Accepted Application, until a revised plan has been approved by the Board.
3. Within 90 days following issuance of this Licence, the Licensee shall submit a revised **Waste Management Plan** to the Board for approval. The Licensee shall not commence operations until the Board has approved the Plan. The Plan shall meet the objectives listed in Part F, item 1, include all components outlined in the Board's *Guidelines for Developing a Waste Management Plan*, and shall also be in accordance with Schedule 3, item 1.
4. The Licensee shall submit to the Board, for approval, 90 days prior to the Construction of a Landfarm, a **Landfarm Management Plan**. The Licensee shall not commence Construction of the Landfarm until the Board has approved the Plan. The Plan shall meet the objectives listed in Part F, item 1 and shall adhere to the Board's *Guidelines for Developing a Waste Management Plan*.
5. Within 90 days of Licence Issuance, the Licensee shall submit to the Board, for approval, a revised **Sediment and Erosion Control Plan**. This Plan shall address all Remediation activities, including all areas of Water flow and Discharge, the Construction and repair of roads and Water crossings; excavations and borrow pits; disposal practices; and site management. The Plan shall meet the objectives listed in Part F, item 1 and shall be in accordance with Schedule 3, item 2.
6. Within 90 days following issuance of this Licence, the Licensee shall submit to the Board, for approval, a **Geochemical Verification Program**. This plan shall detail how the Licensee will verify geochemical test results of Waste Rock, Tailings, and Landfill, Waste Rock and Tailings cover material. The Plan shall meet the objectives listed in Part F, item 1 and be in accordance with Schedule 3, item 3.
7. Within 90 days following issuance of this Licence, the Licensee shall submit to the Board, for approval, a **Construction Monitoring Plan**. The Plan shall meet the objectives listed in Part F, item 1 and be in accordance with Schedule 3, item 4.
8. A minimum of 90 days prior to demobilization, the Licensee shall submit to the Board, for approval, a **Post-Construction Monitoring Plan**. The Plan shall meet the objectives listed in Part F, item 1 and be in accordance with Schedule 3, item 5.
9. The Licensee shall, 6 months prior to Project completion, submit to the Board, for approval, a **Long-term Monitoring Plan**. The Licensee shall not move from Post-Construction Monitoring into Long-term Monitoring until the Board has approved the Plan. The Plan shall meet the objectives listed in Part F, item 1 and shall be in accordance with Schedule 3, item 6.

### Operations of Structures and Facilities

10. The Licensee shall construct, operate, and maintain the Waste Disposal Facilities, to design specifications/engineering standards such that:
  - a) Any Seepage from the Waste Disposal Facilities that occurs and does not meet effluent quality requirements, as specified in Part F, items 17, 19, and 21, shall be prevented from entering the Receiving Environment;
  - b) Any constructed facilities that are eroded are repaired immediately;
  - c) Monitoring of the Waste Disposal Facilities is sufficient to ensure that:
    - I. Performance design criteria, as described in the Final Detailed Construction Plan documents are being met;
    - II. Changes in management of the Waste storage facilities, including any necessary additional mitigations are identified; and
    - III. Material will be handled and stored based on its PAG or Non-PAG status, as characterized by geochemical testing.
  - d) Any constructed facilities are maintained and operated so as to prevent structural failure; and
  - e) Conditions for eventual closure and Reclamation of the Waste Disposal Facilities are optimized.

### Inspections of Structures and Facilities

11. The Licensee shall conduct daily erosion inspections of Discharge points during periods of Discharge, or more frequently as directed by an Inspector. Records of these inspections shall be kept for review upon request of an Inspector.
12. The Licensee shall conduct regular inspections of all Engineered Structures during periods of active remediation. The inspections are to be completed weekly or more frequently, as directed by an Inspector. Records of these inspections shall be kept for review upon request of an Inspector.
13. The Licensee shall ensure that geotechnical inspections of all Engineered Structures are conducted annually, during the summer months, by a Professional Engineer and following any unforeseen extreme events (such as earthquakes, flooding, cracks, sinkhole formation, etc.). The Licensee shall:
  - a) Provide written notification to an Inspector a minimum of two weeks prior to the Professional Engineer's annual inspections; and,
  - b) Within 90 days of completing the inspection, the Licensee shall submit the Professional Engineer's full **Geotechnical Inspection Report** to the Board. The Report shall include a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the Professional Engineer, including a rationale for any decisions that deviate from the Professional Engineer's recommendations.

### Discharge Locations and Rates

14. The Licensee shall direct all Sewage and Toilet Wastes to the Sewage Disposal Facilities, or as otherwise approved by the Board.
15. The Licensee shall direct Wastewater to be Discharged to the Receiving Environment to soak-away Sumps, or as otherwise approved by the Board.
16. The Licensee shall Discharge Water from the Landfarm as identified in the approved Landfarm Management Plan.



### **Effluent Quality Criteria (EQC)**

17. Effluent from the Sewage Disposal Facilities at SNP stations 2016-4a and 2016-4b shall have a pH between 6.0 and 9.0 and meet the following EQC:

<b>Parameter</b>	<b>Maximum Grab Concentration*</b>
Faecal Coliforms	10,000 CFU/dL
Oil and grease	5.0mg/L and none visible
Total Suspended Solids	100 mg/L
Biological Oxygen Demand	80 mg/L

\* CFU = Colony Forming Units

Discharge from the Sewage Disposal Facilities shall not commence until authorized in writing by an Inspector.

18. If, during the period of this Licence, the concentration of any sample of Sewage effluent from the Sewage Disposal Facilities exceeds the requirement specified in condition Part F, item 16, the Licensee shall implement the contingency plan as per the Construction and Post-Construction Monitoring Plan referred to in Part F, item 16.
19. All Waste Discharged by the Licensee from the Landfarm at SNP station 2016-3 shall have a pH between 6.0 and 9.0 and meet the following EQC:

<b>Parameter</b>	<b>Maximum Grab Concentration</b>
Volatile Hydrocarbons	15 mg/L
Extractable Hydrocarbons	5 mg/L
Oil & Grease	5 mg/L, non-visible
Non- Aqueous Phase Liquid/Free Product	Not Present
pH	6 to 9
Total Arsenic	100 µg/L
Dissolved Cadmium	10 µg/L
Total Chromium	100 µg/L
Dissolved Cobalt	50 µg/L
Dissolved Copper	200 µg/L
Dissolved Lead	50 µg/L
Total Mercury	0.6 µg/L
Dissolved Nickel	200 µg/L
Total Zinc	1000 µg/L
Phenols	20 µg/L
Polychlorinated Biphenyl (PCBs)	1000 µg/L

20. Waste from the Landfarm that does not meet the requirements specified in Part F, item 18, shall be managed as per the Waste Management Plan referred to in Part F, item 3.

21. Drainage from mine dewatering Sumps shall have a pH between 6.0 and 9.0 and meet the following EQC:

<b>Parameter</b>	<b>Maximum Grab Concentration</b>
Volatile Hydrocarbons	15 mg/L
Extractable Hydrocarbons	5 mg/L
Oil & Grease	5 mg/L, non-visible
Non- Aqueous Phase Liquid/Free Product	Not Present
pH	6 to 9
Total Arsenic	100 µg/L
Dissolved Cadmium	10 µg/L
Total Chromium	100 µg/L
Dissolved Cobalt	50 µg/L
Dissolved Copper	200 µg/L
Dissolved Lead	50 µg/L
Total Mercury	0.6 µg/L
Dissolved Nickel	200 µg/L
Total Zinc	1000 µg/L
Phenols	20 µg/L
Polychlorinated Biphenyl (PCBs)	1000 µg/L

22. Waste from mine dewatering Sumps that does not meet the requirements specified in Part F, item 21, shall be managed as per the Waste Management Plan referred to in Part F, item 3.
23. If any of the EQCs as listed in Part F, items 17, 19, and 21 are exceeded, the Licensee shall cease all Discharge from or to that specific SNP station, shall notify the Board and an Inspector, and shall take the necessary corrective action to mitigate the exceedance, as outlined in the Construction and Post-Construction Monitoring Plans referred to in Part F, items 7 and 8, to the satisfaction of an Inspector immediately.

## **Part G: Conditions Applying to Contingency Planning**

1. The Licensee shall act in accordance with the **Spill Contingency Plan** in the Accepted Application, until a revised plan has been approved by the Board.
2. A maximum of 60 days following issuance of the Water licence, the Licensee shall submit to the Board, for approval, an updated Spill Contingency Plan.
3. If during the period of this Licence, a spill or an Unauthorized Discharge occurs or is foreseeable, the Licensee shall:
  - a) Implement the Spill 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;
  - c) Report each spill and Unauthorized Discharge to the Board and an Inspector within 24 hours; and,
  - d) Submit a detailed report on each spill and Unauthorized Discharge, including descriptions of root causes, response actions and any changes to procedures to prevent similar occurrences in the future, to the Board within thirty (30) days.
4. All spills and Unauthorized Discharges of Water or Waste shall be reclaimed to the satisfaction of an Inspector.

**Part H: Conditions Applying to Closure and Reclamation**

1. The Licensee shall act in accordance with the **Remedial Action Plan**.
2. A minimum of 90 days prior to the Reclamation of any roads or bridges, the Licensee shall submit to the Board, for approval, a **Final Reclamation Plan** which includes, but is not limited to:
  - a) Details of decommissioning the roads, bridges, airstrips, staging areas, and associated infrastructure used for the Project;
  - b) Details of decommissioning borrow sources; and
  - c) Details of re-establishing drainages impacted by winter or all-season roads and road-crossings associated with historic and present use of the site.
3. The Licensee shall carry out Reclamation activities as per the schedule specified in the Remedial Action Plan, referred to in Part H, item 1, or as subsequently revised and approved by the Board.
4. The Licensee shall carry out progressive Reclamation of areas as soon as is reasonably practicable.

**Signed on behalf of the Mackenzie Valley Land and Water Board**



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**Floyd Adlem, A/Chair**



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**Amanda Gauthier, Witness**

**Schedule 1**  
**Attached to Water Licence MV2016L8-0004**  
**Department of Indian Affairs and Northern Development –**  
**Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

**Part B: General Conditions – Annual Water Licence Report**

1. The **Annual Water Licence Report** referred to in Part B, item 13, shall include, but not be limited to the following information:
  - a) A summary of the calibration and status of the meters and devices referred to in Part B of this Licence;
  - b) Monthly and annual quantities in cubic metres of fresh Water obtained from all sources;
  - c) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, in Part B of this Licence, undertaken during the previous calendar year and shall include a brief description of activities planned for the forthcoming year;
  - d) A summary of **Construction** activities conducted in accordance with Part D of this Licence, undertaken during the previous year calendar year;
  - e) An updated schedule of activities for the undertaking;
  - f) A summary of **Modification** activities and major maintenance work conducted in accordance with Part E of this Licence, undertaken during the previous calendar year;
  - g) A summary of activities conducted in accordance with the approved **Waste Management Plan**, required in Part F of this Licence, undertaken during the previous calendar year, including:
    - i. A summary of updates or changes to the process or facilities required for the management of Waste;
    - ii. The monthly and annual quantities in cubic metres of non-hazardous and hazardous Waste managed during Remediation activities;
    - iii. Monthly and annual quantities in cubic metres of all solid Waste deposited, identified by location;
    - iv. Monthly and annual quantities in cubic metres of all liquid Waste deposited, identified by location;
    - v. Monthly and annual quantities and geochemical characteristics of all PAG and Metal Leaching Waste Rock, Tailings, Soils and any other Mineral Materials deposited/managed, identified by location;
    - vi. The estimated monthly and annual quantities in cubic metres of Sewage deposited into the Sewage Disposal Facilities;
    - vii. Monthly and annual quantities in cubic metres of Sewage Discharged from the Sewage Disposal Facilities, identified by disposal location; and
    - viii. Any other item as directed by the Board.

- h) A summary of activities conducted in accordance with the approved **Landfarm Management Plan**, required in Part F of this Licence, undertaken during the previous calendar year, including:
  - i. A summary of updates or changes to the process or facilities required for the treatment of PHC contaminated soil and rock;
  - ii. The monthly and annual quantities in cubic metres of PHC contaminated soil and rock placed in the Landfarms;
  - iii. The monthly and annual quantities in cubic metres of PHC contaminated Groundwater and free-phase product removed and a description of how this material was managed; and
  - iv. Any other item as directed by the Board.
- i) A summary of activities conducted in accordance with the approved **Sediment and Erosion Control Plan**, including:
  - i. A description of any erosion susceptible areas encountered, and a summary of activities undertaken to prevent or mitigate erosion;
  - ii. A report of the performance of erosion mitigations applied in previous years, if applicable; and
  - iii. Any other item as directed by the Board.
- j) A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, required in Part G of this Licence, undertaken during the previous calendar year, including:
  - i. A list and description for all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e. open or closed), in accordance with the reporting requirements in Part G of this Licence; and
  - ii. An outline of any spill training and communications exercises carried out during the previous calendar year.
- k) A summary of all results in accordance with the approved **Geochemical Verification Program**, referred to under Part F, item 6 and Schedule 3, item 3 of this Licence.
- l) A summary of all monitoring results and any Action Level exceedances in accordance with the approved **Construction Monitoring Plan**, referred to under Part F, item 7 and Schedule 3, item 4 of this Licence.
- m) A summary of all monitoring results and any Action Level exceedances in accordance with the approved **Post-Construction Monitoring Plan**, referred to under Part F, item 8 and Schedule 3, item 5 of this Licence.
- n) A summary of all monitoring results and Action Level exceedances in accordance with the approved **Long-Term Monitoring Plan**, referred to under Part F, item 9 and Schedule 3, item 6 of this Licence.
- o) A summary of activities conducted in accordance with the **Remedial Action Plan**, required in Part H of this Licence, undertaken during the previous calendar year, including:
  - i. A summary of updates or changes to the process or facilities required for the management of Waste Rock and Tailings;
  - ii. The monthly and annual quantities in cubic metres of excavated Tailings for placement into Landfills and any excavation contingency measures implemented;

- iii. The monthly and annual quantities in cubic metres of PAG Waste Rock excavated and deposited into trenches;
  - iv. The monthly and annual quantities in cubic metres of soil and rock placed below Waste Rock Covers, placed above Waste Rock Covers, and used elsewhere on site;
  - v. Any geochemical inspection reports, as appendices to the Annual Water Licence Report;
  - vi. An outline of anticipated activities for the next year; and
  - vii. Any other item as directed by the Board.
- p) Any other details on Water Use or Waste disposal requested by the Board by November 30 of the year being reported;
- q) Tabular summaries of all data and information generated under the **Surveillance Network Program** and graphical summaries of parameters with effluent quality criteria referred to in Part F, at the points of compliance (SNP stations 2016-1, 2016-3 and 2016-4), in excel or an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form to the Board; and,
- r) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector.

**Schedule 2**  
**Attached to Water Licence MV2016L8-0004**  
Department of Indian Affairs and Northern Development –  
Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project

**Part D: Conditions Applying to Construction**

1. The **Final Detailed Construction Plan**, referred to in Part D, item 6 of this Licence shall include, but not be limited to, the following information:
  - a) A description of the facilities to be constructed, including proposed locations;
  - b) Relevant background information, including the data from geotechnical and geochemical investigations, the results of programs to characterize soil, rock, Groundwater, ground ice, and ground temperature conditions to the depth expected to be affected by the proposed facilities, beneath the footprint of all containment and runoff control structures, as deemed adequate by the Professional Engineer responsible for the design;
  - c) Quantities and the physical and geochemical characteristics of materials required for Construction;
  - d) Design drawings and specifications of Engineered Structures, stamped by a Professional Engineer;
  - e) Stability analyses;
  - f) Construction considerations, including timing, sequencing, and a schedule;
  - g) Operations and maintenance requirements;
  - h) Detailed instrumentation and monitoring plans, including but not limited to sampling locations, parameters measured, and frequencies of sampling to be carried out; and
  - i) A Quality Control Plan stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check Construction activities.
  
2. The **Landfill Design Plan**, referred to in Part D, item 10 of this Licence shall include, but not be limited to, the following information:
  - a) A description of the facilities to be constructed, including proposed locations;
  - b) Relevant background information, including the data from geotechnical and geochemical investigations, the results of programs to characterize soil, rock, Groundwater, ground ice, and ground temperature conditions to the depth expected to be affected by the proposed facilities, beneath the footprint of all containment and runoff control structures, as deemed adequate by the Professional Engineer responsible for the design;
  - c) A cover design alternatives analysis;
  - d) A design, with supporting analysis, and description of the purpose of each component of the cover system;
  - e) Quantities and the physical and geochemical characteristics of materials required for Construction;
  - f) Design drawings and specifications of Engineered Structures, stamped by a Professional Engineer;
  - g) Stability analyses;



- h) Construction considerations, including timing, sequencing, and a schedule;
  - i) Operations and maintenance requirements;
  - j) Detailed instrumentation and monitoring plans, including but not limited to sampling locations, parameters measured, and frequencies of sampling to be carried out;
  - k) The details of how the monitoring program will assess cover performance;
  - l) A contingency plan outlining measures to be implemented should cover failure occur and if final cover performance does not achieve cover performance criteria; and
  - m) A Quality Control Plan stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check Construction activities.
3. The **Tailings and Waste Rock Cover Design Plan**, referred to in Part D, item 11 of this Licence shall include, but not be limited to, the following:
- a) A cover design alternatives analysis;
  - b) A design, with supporting analysis, and description of the purpose of each component of the cover system;
  - c) For-Construction drawings stamped and signed by an Engineer;
  - d) The Construction and materials specifications for the cover system;
  - e) The material source and borrow design details for cover material;
  - f) The Construction and materials quality assurance and quality control program for the cover;
  - g) The details for a monitoring program to assess cover performance, oxygen ingress into Tailings or Waste Rock, net infiltration into Tailings or Waste Rock, and solids and pore Water geochemistry and Seepage quality;
  - h) The details of how the monitoring program will assess cover settlement and performance;
  - i) The details of how the monitoring program will confirm design assumptions; and
  - j) A contingency plan outlining measures to be implemented should cover failure occur and if final cover performance does not achieve cover performance criteria.
4. The **Bullmoose Creek Channel Design and Reconstruction Plan**, referred to Part D, item 12 shall include, but not be limited to, the following:
- a) A design plan, with supporting analysis, timing considerations, and description of the purpose of each component or Engineered Structure of the design;
  - b) Information on the natural flow of Bullmoose Creek;
  - c) Anticipated flow volumes during diversion;
  - d) Any changes to flow characteristics in the reinstated channel;
  - e) For-Construction drawings stamped and signed by an Engineer of all drainage, diversion, and Discharge structures
  - f) Location of the diversion dam;
  - g) The Construction and materials specifications;
  - h) The Construction and materials Quality Assurance and Quality Control program;
  - i) The details for dam removal including removal procedures, sediment and erosion controls, and monitoring requirements;
  - j) Timing and duration of the diversion;
  - k) Details of all dewatering requirements;
  - l) The design of any erosion and sediment control measures;
  - m) A summary of risks to Water quality and associated mitigation;
  - n) A summary of risk to fish, fish habitat, associated mitigation, salvage, timing, and minimization or avoidance of physical habitat impacts;

- o) The details for Water management and monitoring including details on the selected drawdown and dewatering method, daily flow rates and monitoring requirements;
- p) The details of how the monitoring program will assess channel performance;
- q) The details of how the monitoring program will confirm design assumptions; and
- r) A contingency plan outlining measures to be implemented should sediment and erosion levels be greater than expected.

**Schedule 3**  
**Attached to Water Licence MV2016L8-0004**  
**Department of Indian Affairs and Northern Development –**  
**Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

**Part F: Conditions Applying to Water and Waste Management**

1. The **Waste Management Plan**, referred to in Part F, item 3 of this Licence shall meet the objectives listed in Part F, item 1, include all components outlined in the Board's *Guidelines for Developing a Waste Management Plan*, and include, but not be limited to, the following:
  - a) The development and management of excavation areas (trenches, quarries, borrow sources, and overburden) so as to eliminate or minimize the risk of potential for Acid Rock Drainage and Metal Leaching;
  - b) The consolidation and disposal of Tailings, including the quantity of Tailings to be consolidated, the location of disposal, and confirmatory sampling plans for the site of origin;
  - c) The collection and disposal of impacted sediment, including the amount of sediment moved and the location of sediment disposal;
  - d) The collection and disposal of metal impacted soils, including the quantity to be collected, the location of disposal, and confirmatory sampling plans for the site of origin;
  - e) The collection and disposal of petroleum hydrocarbon (PHC) contaminated soils, including the quantity to be collected, the location of disposal, and confirmatory sampling plans for the site of origin;
  - f) Details of how Groundwater will be managed in areas where Tailings, impacted sediments, and metals-impacted soil area removed;
  - g) Details of how Groundwater and free-product will be managed in areas where free product is identified during PHC contaminated soil excavation;
  - h) Details of how PHC contaminated Groundwater will be delineated and treated;
  - i) The sampling and Discharge of portal and trench Water into soak-away Sumps, including the quantity of Water to be Discharged, and the location of the Sumps and the surrounding environment;
  - j) A Wastewater management plan, addressing the management of all Seepage and leachate Waters from all Engineered Structures intended to contain, withhold or divert Waste or Waters, including the management of Water from the equipment decontamination facility and any contact Water;
  - k) Any manipulation of the Bullmoose portal seep and adjacent wetland; and
  - l) Any other item as directed by the Board.
  
2. The **Sediment and Erosion Control Plan**, referred to in Part F, item 5 of this Licence shall include, but not be limited to, the following:
  - a) The details of erosion and sediment control measures implemented prior to, during and after Reclamation activities are completed, until all disturbed areas are completely stabilized;
  - b) The details of Water management during excavation;
  - c) A monitoring program that ensures the effectiveness and maintenance of all sediment and erosion control measures, stabilization and re-vegetation success; and,
  - d) A contingency plan that will be undertaken in the event that sediment and erosion issues are identified.

3. The **Geochemical Verification Program**, referred to in Part F, item 6 of this Licence, shall meet the objectives listed in Part F, item 1 and include, but not be limited to:
  - a) A summary of findings from geochemical characterization studies (Acid Rock Drainage/Metal Leaching potential) on the Waste Rock, Tailings, borrow sources, cover material, and overburden;
  - b) Criteria for defining PAG, non-PAG and Metal Leaching materials with supporting rationale;
  - c) Criteria for defining high, moderate, and low risk Waste Rock with supporting rationale;
  - d) Sampling and testing methods for the Geochemical Verification Program with supporting rationale;
  - e) Sampling locations and collection methodology for follow-up verification testing with supporting rationale;
  - f) Timing and frequency of verification sampling;
  - g) Quality assurance and quality control measures; and
  - h) A contingency plan in the event of increasing trends in Metal Leaching or acid generation potential.
  
4. The **Construction Monitoring Plan**, as referred to in Part F, item 7 of this Licence, shall meet the objectives listed in Part F, item 1 and include, but not be limited to:
  - a) A description, with appropriate site maps or diagrams, of monitoring locations, types of instrumentation used, and frequency of monitoring;
  - b) The location of collection and methods of monitoring and sampling any Seepage, leachate or runoff from the Landfill, including monitoring parameters, frequency, and a rationale for the above;
  - c) The location of collection and methods of monitoring and sampling any Seepage, leachate or runoff from the Landfarm, including monitoring parameters, frequency, and a rationale for the above;
  - d) Details on the confirmatory sampling plans for the site of origin of all former Sewage, Tailings and impacted soils;
  - e) The collection, monitoring and sampling of Waste Rock storage areas, including monitoring parameters, frequency, and a rationale for the above;
  - f) The collection, monitoring and sampling of all excavation areas (trenches, quarries and overburden), including monitoring parameters, frequency, and a rationale for the above;
  - g) The location of Groundwater monitoring wells, including monitoring parameters, frequency, and a rationale for the above. This shall include, but not be limited to:
    - i. Wells established around the Landfills;
    - ii. Landfarms;
    - iii. Waste Rock storage areas; and
    - iv. Soak-away Sumps for trench and portal Water;
  - h) The location of collection and methods of monitoring and sampling any Seepage and leachate Waters from any other Engineered Structure intended to contain, withhold or divert Waste or Waters;

- i) The location of collection and methods of monitoring and sampling of all down-gradient surface waters. This shall include, but not be limited to:
    - i. Mine site areas;
    - ii. Landfills;
    - iii. Landfarms;
    - iv. Waste Rock storage areas;
    - v. Former Sewage, Tailings and impacted soil storage areas;
    - vi. Soak-away Sumps for trench and portal Water;
    - vii. Sewage and Greywater Sumps or Discharge areas;
    - viii. The Bullmoose Creek diversion area;
    - ix. The Bullmoose portal seep and adjacent wetland;
    - x. The equipment decontamination facility; and
    - xi. Any other Water Discharge location.
  - j) The location of collection and methods of monitoring and sampling of all impacted sediments left in-situ;
  - k) A description of the quality assurance and quality control measures followed for each monitoring type;
  - l) Proposed locations for all specific Surveillance Network Program stations, including, but not limited to:
    - i. Exact location of each sampling station;
    - ii. Parameters to be analyzed;
    - iii. Frequency of monitoring; and
    - iv. Rationale for all of the above.
  - m) An Adaptive Management Plan. This Plan shall include, but not be limited to:
    - i. A description, including detailed rationale, of the monitoring endpoints (Action Levels) for each parameter monitored;
    - ii. A description of response actions (contingency plans) to be carried out if the Action Levels are exceeded; and
  - n) Any other item as directed by the Board.
5. The **Post-Construction Monitoring Plan**, referred to in Part F, item 8 of this Licence, shall meet the objectives listed in Part F, item 1 and include, but not be limited to, to following:
- a) A description, with appropriate site maps or diagrams, of monitoring locations, types of instrumentation used, and frequency of monitoring;
  - b) A description, including detailed rationale, of the site-specific monitoring activities required to identify impacts from Project-related activities;
  - c) A description of baseline sampling locations;
  - d) A description of monitoring protocols, methodologies, parameters, and frequency specific to each type of monitoring identified in Item (d) above;
  - e) A description of the quality assurance and quality control measures followed for each monitoring type;
  - f) A description, including detailed rationale, of the monitoring endpoints (Action Levels or cessation criteria) for each parameter monitored;
  - g) A description of response actions (contingency plans) to be carried out if the Action Levels are exceeded;

- h) Proposed locations for all specific Surveillance Network Program stations, including, but not limited to:
    - i. Exact location of each sampling station;
    - ii. Parameters to be analyzed;
    - iii. Frequency of monitoring; and
    - iv. Rationale for all of the above.
  - i) An Adaptive Management Plan. This Plan shall include, but not be limited to:
    - iii. A description, including detailed rationale, of the monitoring endpoints (Action Levels) for each parameter monitored;
    - iv. A description of response actions (contingency plans) to be carried out if the Action Levels are exceeded; and
  - j) Any other item as directed by the Board.
6. The **Long-term Monitoring Plan**, referred to in Part F, item 9 of this Licence, shall meet the objectives listed in Part F, item 1 and shall include, but not be limited to, the following:
- a) A summary of mitigation measures in place to prevent, reduce, or manage potential environmental impacts;
  - b) A list of all components to be monitored;
  - c) A map and attached table or detailed legend illustrating monitoring and sampling locations;
  - d) A description, including detailed rationale, of the site-specific monitoring activities required to identify impacts from Project-related activities;
  - e) A description of monitoring protocols, methodologies, parameters, and frequency specific to each type of monitoring identified in Item (d) above;
  - f) A description of the quality assurance and quality control measures followed for each monitoring type;
  - g) A description, including detailed rationale, of the monitoring endpoints (Action Levels or cessation criteria) for each parameter monitored;
  - h) A description of response actions (contingency plans) to be carried out if the Action Levels are exceeded; and
  - i) Any other item as directed by the Board.

**Annex A: Surveillance Network Program**  
**Annexed to Water Licence MV2016L8-0004**  
**Department of Indian Affairs and Northern Development –**  
**Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

**Part A: Reporting Requirements**

1. The effective date of this Surveillance Network Program (SNP) is December 5, 2016.
2. Beginning on the month following the date of Board approval of the Construction Monitoring Plan, and Post-Construction Monitoring Plan, and for every month thereafter, the Licensee shall submit to the Board and an Inspector, a Surveillance Network Program Report, which shall include, but not be limited to the following:
  - a) Electronic and tabular summaries of all data and information generated under the SNP for the month being reported, including rationale for SNP stations where samples were not collected and results and interpretation of quality assurance/quality control procedures;
  - b) Graphical summaries and interpretation of the analytical results from the SNP samples collected at the points of compliance (SNP stations 2016-1, 2016-3 and 2016-4) compared to the EQC under Part F of this Licence, for the previous 2 consecutive years;
  - c) An explanation of any actions taken in response to any exceedances of the EQC;
  - d) Information regarding the calibration and status of the meters and devices referred to in Part B, item 9 of this Licence;
  - e) The coordinates of all SNP stations which were established within the month being reported, including an updated map identifying the locations of all the SNP stations; and
  - f) A tabular summary of cumulative Water Use.
3. More frequent sample collection may be required at the request of an Inspector.
4. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of American Public Health Association's (APHA) Standard Methods for the Examination of Water and Wastewater at the time of analysis, or by other such methods approved by an Analyst.
5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.
6. Prior to the collection of SNP samples, the Licensee shall submit to the Board and an Analyst, a **Quality Assurance and Quality Control Plan**, which shall include a list of techniques that will be used to collect and analyze samples collected under the SNP, for the purposes of quality assurance and quality control. The Analyst shall provide a recommendation to the Board. The Licensee shall not commence Construction until the Analyst has approved the Plan.

7. The Licensee shall adhere to the Quality Assurance and Quality Control Plan, once approved, and shall annually review the Plan and make any necessary revisions to reflect changes in Operations or as directed by the Board. Revisions to the Plan shall be submitted to the Board for a decision.
8. If the Quality Assurance and Quality Control Plan is not approved by the Analyst, the Licensee shall revise the Plan according to the Analyst's direction and re-submit it to the Analyst for a decision.



**Part B: Site Descriptions and Monitoring Requirements**

1. The location of sampling sites is subject to approval of an Inspector.
2. The sampling station locations and monitoring requirements are as follows<sup>1</sup>:

**SNP station 2016-1(a, b, c...)**

<b>Description</b>	The daily Water Use for all purposes. Water Use shall be measured and recorded in m <sup>3</sup> .
<b>Location</b>	Water Intake at the following lakes: <ul style="list-style-type: none"> <li>• 1a: X Lake</li> <li>• 1b: Y Lake...</li> </ul>
<b>Sampling Frequency</b>	Daily, when the contractor is onsite
<b>Sampling parameters</b>	Flow – Meter, Volume (m <sup>3</sup> )
<b>Rationale</b>	Compliance monitoring site, in accordance with daily quantity Water Use limits identified in Part C, item 3 of this Licence. To monitor the quantity of daily Water Use.
<b>Status</b>	Active

Note: Footnotes are defined after the final table in Part B.

**SNP station 2016-2(a, b, c...)**

<b>Description</b>	Surface and/or Groundwater monitoring around perimeter of the Landfarm at the former Bullmoose Mine site
<b>Location</b>	Bullmoose Landfarm perimeter: <ul style="list-style-type: none"> <li>• 2a: TBD</li> <li>• 2b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Hydrocarbons <sup>f</sup> , NAPL, Phenols, and Total Metals <sup>e</sup>
<b>Rationale</b>	To monitor the quality of Landfarm leachate to ensure Landfarm operations do not impact the surrounding environment.
<b>Status</b>	Active

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<sup>1</sup> Exact SNP locations, parameters and frequencies must be submitted to the Board for approval as per Part F, item 7.

### SNP station 2016-3

<b>Description</b>	Landfarm Discharge Water at the former Bullmoose Mine site
<b>Location</b>	Bullmoose Landfarm Discharge
<b>Sampling Frequency</b>	Once upon Discharge, and weekly, should Discharge last longer than one week
<b>Sampling Parameters</b>	Hydrocarbons <sup>f</sup> , NAPL, Phenols, and Total Metals <sup>e</sup> , EQC outlined in Part F.
<b>Rationale</b>	Compliance monitoring site, in accordance with EQCs listed in Part F, item 19 of this Licence. To monitor the quality of Landfarm leachate prior to Discharge.
<b>Status</b>	Active

### SNP station 2016-4 (a,b)

<b>Description</b>	Sewage Disposal Facilities Discharge
<b>Location</b>	<ul style="list-style-type: none"> <li>• 4a: Bullmoose Sewage Treatment Facility</li> <li>• 4b: Ruth Sewage Treatment Facility</li> </ul>
<b>Sampling Frequency</b>	Once upon Discharge, and weekly, should Discharge last longer than one week
<b>Sampling Parameters</b>	EQC outlined in Part F, item 17
<b>Rationale</b>	Compliance monitoring site, in accordance with criteria identified in Part F, item 16 of this Licence. To monitor the quality of effluent Water prior to Discharge from the Sewage Disposal Facilities.
<b>Status</b>	Active

### SNP station 2016-5 (a,b,c...)

<b>Description</b>	Surface and/or Groundwater monitoring around the perimeter of the Landfill at the historic Bullmoose mine site.
<b>Location</b>	Bullmoose Landfill perimeter: <ul style="list-style-type: none"> <li>• 5a: TBD</li> <li>• 5b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup> , Hydrocarbons <sup>f</sup>
<b>Rationale</b>	To monitor the quality of leachate from the Landfill to ensure Landfill operations do not impact the surrounding environment.
<b>Status</b>	Active

**SNP station 2016-6 (a,b,c...)**

<b>Description</b>	Surface and/or Groundwater monitoring around the perimeter of the Landfill at the historic Ruth mine site.
<b>Location</b>	Ruth Landfill perimeter: <ul style="list-style-type: none"> <li>• 6a: TBD</li> <li>• 6b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup> , Hydrocarbons <sup>f</sup>
<b>Rationale</b>	To monitor the quality of leachate from the Landfill to ensure Landfill operations do not impact the surrounding environment.
<b>Status</b>	Active

**SNP station 2016-7**

<b>Description</b>	Bullmoose Portal Seep	
<b>Location</b>	Bullmoose Portal	
<b>Sampling Frequency</b>	Monthly during periods of flow	Daily during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>	Flow
<b>Rationale</b>	To monitor the quality and quantity of Water emanating from the Bullmoose portal, and track any trends in Water quantity and/or contaminants	
<b>Status</b>	Active	

**SNP station 2016-8 (a,b,c...)**

<b>Description</b>	Bullmoose wetland
<b>Location</b>	Bullmoose wetland sample sites: <ul style="list-style-type: none"> <li>• 8a: TBD</li> <li>• 8b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>
<b>Rationale</b>	To monitor the quality of Water emanating from the Bullmoose portal and moving through the wetland, and track any upward trends in contaminants
<b>Status</b>	Active

**SNP station 2016-9 (a,b,c...)**

<b>Description</b>	Bullmoose Lake
<b>Location</b>	Bullmoose Lake sample sites: <ul style="list-style-type: none"> <li>• 9a: TBD</li> <li>• 9b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>
<b>Rationale</b>	To monitor the quality of Water entering Bullmoose Lake from the wetland, and track any trends in contaminants
<b>Status</b>	Active

**SNP station 2016-10 (a,b,c...)**

<b>Description</b>	Bullmoose Creek
<b>Location</b>	Bullmoose Creek sample sites: <ul style="list-style-type: none"> <li>• 10a: Upstream of reconstruction</li> <li>• 10b: Downstream of reconstruction</li> <li>• 10c: End-of-pipe from temporary pool</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>
<b>Rationale</b>	Upstream and downstream monitoring of Bullmoose Creek before, during, and after diversion and reconstruction, to ensure the creek is not impacted by diversion and reconstruction activities.
<b>Status</b>	Active

### SNP station 2016-11 (a,b,c...)

<b>Description</b>	Waste Rock Seepage
<b>Location</b>	Surface and/or Groundwater monitoring stations around the perimeter of Waste Rock areas: <ul style="list-style-type: none"> <li>• 11a: Bullmoose</li> <li>• 11b: Ruth</li> <li>• 11c: Beaulieu</li> <li>• 11d: Spectrum</li> <li>• 11e: Chipp</li> <li>• 11f: Storm</li> <li>• 11g: Joon</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>
<b>Rationale</b>	To monitor the quality of Leachate from Waste Rock Piles to ensure the surrounding environment is not being impacted.
<b>Status</b>	Active

### SNP station 2016-12 (a,b,c...)

<b>Description</b>	Trench Water and Borrow Pit Water Sumps
<b>Location</b>	Groundwater monitoring around the perimeter of trench Water and/or borrow pit Water Sumps at the following locations: <ul style="list-style-type: none"> <li>• 12a: TBD</li> <li>• 12b: TBD...</li> </ul>
<b>Sampling Frequency</b>	Monthly during periods of flow
<b>Sampling Parameters</b>	Standard <sup>b</sup> , Nutrients <sup>a</sup> , Major Ions <sup>c</sup> , Solids <sup>d</sup> , Total Metals <sup>e</sup>
<b>Rationale</b>	To monitor the quality of Water emanating from soak-away Sumps to ensure the surrounding environment is not being impacted.
<b>Status</b>	Active

**Footnotes:**

- a. Total Ammonia (NH<sub>3</sub> + NH<sub>4</sub><sup>+</sup> - N), Total Nitrate + Nitrite (NO<sub>3</sub> + NO<sub>2</sub>), Total Phosphorous (TP), Orthophosphate (OP), and Total Organic Carbon (TOC).
- b. pH, Temperature (T), and Conductivity (Cond). These parameters should be measured both in the field as well as in the laboratory.
- c. Alkalinity (Alk), Calcium (Ca), Chloride (Cl), Hardness, Magnesium (Mg), Potassium (K), Sodium (Na), and Sulphate (SO<sub>4</sub>).
- d. Total Suspended Solids (TSS) and Total Dissolved Solids (TDS).
- e. Full = Total elemental analysis by ICP-Metal Scan of: ICP-MS 24 element scan: includes all elements in Total Metals plus Antimony (Sb), Arsenic (As), Barium (Ba), Bismuth (Bi), Cesium (Cs), Chromium (Cr), Lithium (Li), Thallium (Tl), Titanium (Ti), Uranium (U), & Vanadium (V).
- f. Extractable Hydrocarbons (ExtHC), and Benzene, Toluene, Ethyl-benzene, and Xylene (BTEX).

**Signed on behalf of the Mackenzie Valley Land and Water Board**



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**Floyd Adlem, A/Chair**



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**Amanda Gauthier, Witness**

**Annex B: Concordance Table of Items Requiring Submission  
Annexed to Water Licence MV2016L8-0004  
Department of Indian Affairs and Northern Development –  
Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

This table summarizes the information the Licensee is required to submit as per the Water Licence conditions.

**Table 1: Water Licence Submission Requirements**

<b>Part of Licence</b>	<b>Item</b>	<b>Date</b>
B	Revisions	Annually and at least 60 days prior to any proposed changes to approved Plans
B	Engagement Plan	Within 90 days following issuance of the Licence
B	Annual Water Licence Report	Annually beginning March 31, 2017
D	Final Detailed Construction Plans	60 days prior to the commencement of Construction of any Engineered Structures
D	Construction Notification Letter	10 days prior to the commencement of Construction of any Engineered Structures
D	As-Built Report	Within 90 days of the completion of the Construction of any Engineered Structures
D	Landfill Design Plan	90 days prior to Landfill Construction
D	Tailings and Waste Rock Cover Design Report	90 days prior to cover Construction
D	Bullmoose Creek Channel Design and Reconstruction Plan	90 days prior to the diversion of Bullmoose Creek
F	Waste Management Plan	Within 90 days following issuance of the Licence
F	Landfarm Management Plan	90 days prior to Landfarm Construction
F	Sediment and Erosion Control Plan	Within 90 days following issuance of the Licence
F	Geochemical Verification Program	Within 90 days following issuance of the Licence
F	Construction Monitoring Plan	Within 90 days following issuance of the Licence
F	Post-Construction Monitoring Plan	90 days prior to demobilization
F	Long-term Monitoring Plan	6 months prior to Project completion
F	Geotechnical Inspection Report	Annually, within 90 days of completing the inspection
G	Spill Contingency Plan	Within 60 days following issuance of the Licence
H	Final Reclamation Plan	A minimum of 90 days prior to the Reclamation of any roads or bridges
Annex A	Surveillance Network Program Report	Monthly beginning after issuance of the Licence.

**Annex C: Table of Revision History**  
**Annexed to Water Licence MV2016L8-0004**  
**Department of Indian Affairs and Northern Development –**  
**Contaminants and Remediation Division – Bullmoose-Ruth Remediation Project**

**Table 1: Updates and changes that have been made to the Water Licence since issuance**

<b>Date</b>	<b>Location of change</b>	<b>Description of change</b>



**General Procedures for the Administration of Licences  
Issued Under the *Mackenzie Valley Resource Management Act*  
in the Northwest Territories**

1. At the time of issuance, a copy of the Licence is placed on the Public Registry in the office of the Mackenzie Valley Land and Water Board (MVLWB or the Board) in Yellowknife and is then available to the public.
2. To enforce the terms and conditions of the Licence, the Minister of Indigenous and Northern Affairs Canada has appointed Inspectors in accordance with subsection 84(1) of the *Mackenzie Valley Resource Management Act*. The Inspectors coordinate their activities with staff of the MVLWB. The Inspector responsible for Licence MV2016L8-0004 is located in the Yellowknife office.
3. To keep the MVLWB and members of the public informed of the Licensee's conformity to the Licence's conditions, the inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating which action, if any, should be taken. The inspection reports and cover letters are placed on the Public Registry, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.
4. It is the responsibility of the Licensee to apply to the MVLWB for a new licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any new licence. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Mackenzie Valley Resource Management Act*. It is suggested that an application for a new licence be made at least eight months in advance of the Licence's expiry date.
5. If, for some reason, Licence # MV2016L8-0004 requires amendment, a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the MVLWB ample time to complete the amendment process. The process may take up to six months or more depending on the scope of the amendment requested.

6. Specific clauses of your Licence make reference to the Board, Analyst, or Inspector. The contact person, address, phone, and fax number of each is:

**Mackenzie Valley Land and Water Board:**

Public Registry Clerk  
Mackenzie Valley Land and Water Board  
7th Floor - 4922 48 Street,  
P.O. Box 2130  
YELLOWKNIFE NT X1A 2P6  
Phone (867) 669-0506  
Fax (867) 873-6610

**Analyst:**

Manager, Land and Resource Management  
P.O. Box 1500  
4923 – 52<sup>nd</sup> Street  
Yellowknife NT X1A 2R3  
Phone: (867) 669-2501 (number may change)  
Fax: (867) 669-2702  
Email: NWTLands@aandc-aadnc.gc.ca

**Inspector:**

P.O. Box 1500  
4923 – 52<sup>nd</sup> Street  
Yellowknife NT X1A 2R3  
Phone: (867) 669-2449  
Fax: (867) 669-2702

7. Specific clauses of your licence may reference security. The contact person, address, and phone and fax numbers of the individual administering security deposits is:

Manager, Financial Services  
P.O. Box 1500  
Yellowknife NT X1A 2R3  
Phone: (867) 669-2517  
Fax: (867) 669-2724  
Email: Michelle Desjarlais-Morris@aandc-aadnc.gc.ca



**Mackenzie Valley Land and Water Board**  
 7th Floor - 4922 48th Street  
 P.O. Box 2130  
 YELLOWKNIFE NT X1A 2P6  
 Phone (867) 669-0506  
 FAX (867) 873-6610

**Reasons for Decision**

Issued pursuant to sections 72.25 of the *Mackenzie Valley Resource Management Act*  
 and paragraph 40(2)(c) of the *Mackenzie Valley Land Use Regulations*

<b>Water Licence and Land Use Permit Applications</b>	
<b>Reference/File Numbers</b>	MV2016L8-0004 and MV2016X0013
<b>Applicant</b>	Department of Indian Affairs and Northern Development – Contaminants and Remediation Division
<b>Project</b>	Bullmoose-Ruth Remediation Project, Bullmoose Area, NT

**Decision from Mackenzie Valley Land and Water Board meeting of**

December 5, 2016

## Table of Contents

### Contents

1.0 Background .....	3
2.0 Regulatory Process .....	4
3.0 Procedural Requirements .....	6
4.0 Reasons for Decision.....	6
4.1 Requirements of Subsection 72.03(5) of the MVRMA: Conditions for Licence Issuance .....	7
4.1.1 Existing Licensees.....	7
4.1.2 Compensation .....	7
4.1.3 Water Quality Standards.....	7
4.1.4 Effluent Standards .....	7
4.1.5 Financial Responsibility of the Applicant.....	8
4.2 Reasons for Decision on Terms and Conditions of Licence MV2016L8-0004.....	8
4.2.1 Term of Licence.....	8
4.2.2 Part A: Scope and Definitions .....	8
4.2.3 Part B: General Conditions .....	9
4.2.4 Part C: Conditions Applying to Water Use .....	10
4.2.5 Part D: Conditions Applying to Construction .....	10
4.2.6 Part E: Conditions Applying to Modifications.....	11
4.2.7 Part F: Conditions Applying to Waste and Water Management.....	11
4.2.8 Part G: Conditions Applying to Contingency Planning.....	14
4.2.9 Part H: Conditions Applying to Reclamation .....	15
4.2.10 Annex A: Surveillance Network Program .....	15
4.2.11 Annex B: Table of Items Requiring Submission .....	17
4.2.12 Annex C: Table of Revision History .....	17
4.3 Reasons for Decision on Term and Conditions of Permit MV2016X0013 .....	18
4.3.1 Eligibility for Land Use Permit under Section 18(b) of the Mackenzie Valley Land Use Regulations .....	18
4.3.2 Part A: Scope of Permit .....	19
4.3.3 Part B: Definitions .....	19
4.3.4 Part C: Conditions Applying to All Land-Use Operations.....	19
5.0 Conclusion.....	22

These Reasons for Decision set out the Mackenzie Valley Land and Water Board's (the Board or MVLWB) decision on an Application made by the Department of Indian Affairs and Northern Development - Contaminants and Remediation Division (DIAND-CARD) to the Board on May 18, 2016, with additional information provided on June 6, 2016 for a new Land Use Permit (Permit) MV2016X0013 and Water Licence (Licence) MV2016L8-0004. This Application was to initiate DIAND-CARD's mine remediation activities at seven mine sites in the vicinity of Bullmoose Mine, collectively referred to as the Bullmoose Area Mine Sites. The proposed work is referred to herein as the Bullmoose-Ruth (BMR) Remediation Project. The term requested for the Licence is seven years, and five years (with the option of applying for a two-year extension) for the Permit.

## **1.0 Background**

The BMR Remediation Project involves the mobilization, remediation, demobilization and closure monitoring of seven historic metal mine sites located north of the East Arm portion of Great Slave Lake; including: Ruth Mine, Bullmoose Mine, Beaulieu Mine, Spectrum Mine, Chipp Mine, Storm Mine, and Joon Mine. All seven of the abandoned mine sites fall under the custodial responsibility of DIAND, and site remediation is coordinated by DIAND-CARD.

The Ruth Mine, on the west side of Tam Lake, is 90 km east of Yellowknife, NT. Until 2014, the site consisted primarily of historic mine and camp structures, including two tailings areas, an airstrip, several outlying buildings and structures, two mine shafts, and trenches up to 1m deep. Buildings at Ruth, Spectrum, and Storm Mine were burned as a result of a fire in 2014. DIAND is currently the caretaker of the Ruth Mine Site with subsurface rights belonging to Hidden Lake Gold Mines, Lease #2447 (AMEC, 2006). Mining itself was conducted sporadically from 1940 through 1974, with later work primarily being exploration and further assessment.

The Bullmoose Mine is approximately 83 km east of Yellowknife, NT, between Campbell Lake and Buckham Lake. Subsurface rights belong to Bullmoose Mining Ltd. Minimal mining-related infrastructure is present at the site; however, the Bullmoose Mine has eight mine shafts/vents/raises, a decline portal, relic structures, tailings areas, waste rock piles, seepage from an underground mine portal, and contaminated sediments that require attention. Mining was conducted sporadically at Bullmoose Mine from 1940 to 1942 and again between 1961 to 1987 with some milling occurring in 1986 and 1987.

Beaulieu Mine is located between Hansen Lake and John Lake. The Site consists of an abandoned mine with associated mining infrastructure, including one main shaft, several trenches and a small tailings area. Mining was conducted sporadically at the Beaulieu Mine from 1941 to 1950 with some milling in 1947, 1948 and 1979.

Spectrum Mine is located next to Spectrum Lake. The site consists of an abandoned mine site with associated mining infrastructure, including one shaft, one trench, and a small tailings area. Buildings at Ruth, Spectrum, and Storm mines were burned as a result of a fire in 2014. Spectrum Mine was initially staked in 1945 and exploration occurred in the area periodically until 1969 and in the 1980s.

Chipp Mine is located at Chipp Lake. The site includes relic structures, one shaft, several trenches, and some overhanging trench rubble. Chipp Mine was staked in 1940 and exploration occurred until 1949 with additional exploration in 1975.

Storm Mine is located on Consolation Lake and currently consists of only several trenches. The tailings were reported to be discharged into a pond at the shore of Consolation Lake. Some mining and milling occurred at the Storm Mine between 1942 and 1985.

Joon Mine is located near the Beaulieu River, and 9 km northeast of Campbell Lake at Strike Lake and includes several trenches in the mill area and the camp areas. Mining occurred periodically between 1939 and 1988 with materials trucked and processed at the Beaulieu Mine Site.

## **2.0 Regulatory Process**

On May 18, 2016, DIAND-CARD submitted an Application for a new Type B Water Licence, MV2016L8-0004,<sup>1</sup> and a new Type A Land Use Permit, MV2016X0013<sup>2</sup> to carry out remediation activities at the Ruth, Bullmoose, Beaulieu, Spectrum, Chipp, Storm, and Joon mine sites, north of the East Arm of Great Slave Lake. On May 27, 2016, the Applications were deemed incomplete due to the lack of an Engagement Plan.<sup>3</sup> An updated Engagement Plan was submitted by DIAND-CARD on June 6, 2016<sup>4</sup> and on June 7, 2016, the Applications were deemed complete and sent for review in accordance with section 63 of the *Mackenzie Valley Resource Management Act* (MVRMA).<sup>5</sup>

The Board is satisfied that the Applications were in the form and contained the information required by the regulations in accordance with section 72.1 of the MVRMA and Section 19 of the *Mackenzie Valley Land Use Regulations* (MVLUR). Notice of commencement of the review was provided to the distribution list, indicating that the Board had deemed the information supplied by DIAND-CARD to be sufficient, that the regulatory process would proceed, and that the legislated timelines defined in section 72.18(1) of the MVRMA had commenced. All interested parties were given the opportunity to participate in this regulatory process.

On July 7, 2016, the Board decided to invoke paragraph 22(2)(b) of the MVLUR for Land Use Permit MV2016X0013 to allow for additional time to gather information with the associated Type B Water Licence (MV2016L8-0004) regulatory process.<sup>6</sup> A comment deadline of July 27, 2016 was established.

Comments on the applications were received from the following parties: Department of Fisheries and Oceans Canada (DFO), Government of the Northwest Territories – Department of Transportation (GNWT-DOT), Government of the Northwest Territories – Department of Environment and Natural Resources (GNWT-ENR), Government of the Northwest Territories – Department of Lands (GNWT-Lands), Government of the Northwest Territories – Department of Lands Inspector (GNWT-Lands Inspector), Indigenous and Northern Affairs Canada – Inspector (INAC Inspector), the North Slave Métis Alliance (NSMA), Brian Sundberg, Peter Graham, and Stacey Sundberg. Board

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<sup>1</sup> [Water Licence Application](#)

<sup>2</sup> [Land Use Permit Application](#)

<sup>3</sup> [Incomplete Letter](#)

<sup>4</sup> [Engagement Plan](#)

<sup>5</sup> [Complete Letter](#)

<sup>6</sup> [Further Study Requested Letter \(22\(2\)\(b\)\)](#)

staff also submitted comments on the applications. DIAND-CARD responded to the parties' comments and recommendations on August 10, 2016.<sup>7</sup>

On September 9, 2016, the Board held a technical workshop to discuss and seek clarity on the application and issues raised by reviewers and Board staff during the review. The technical workshop was facilitated by Board staff. Attendees included: DIAND-CARD, Public Works and Government Services Canada, GNWT-ENR, DFO, Yellowknives Dene First Nation, NSMA, Brian Sundberg, and the INAC Inspector.<sup>8</sup> DIAND-CARD provided a presentation<sup>9</sup> on the project followed by questions.

On September 14, 2016, NSMA submitted a letter<sup>10</sup> to the Board raising concerns with DIAND-CARD's engagement on the project. Board staff responded in a September 19, 2016 Letter<sup>11</sup>, noting the Board's Engagement and Consultation Policy, and asked for a response from DIAND-CARD by September 26, 2016. DIAND-CARD responded on September 28, 2016,<sup>12</sup> detailing engagement efforts to date, and offered to meet with NSMA to discuss their concerns. NSMA responded to DIAND-CARD on October 4, 2016<sup>13</sup>, and initiated a process to meet with DIAND-CARD. On October 12, 2016, Board staff sent a letter<sup>14</sup> to NSMA noting that the Board encourages the ongoing dialogue between NSMA and DIAND-CARD, and encouraging NSMA to submit comments on the draft permit and licence which would be circulated.

No public hearing was ordered for this process. On October 12, 2016, a draft Permit<sup>15</sup> and draft Licence<sup>16</sup> were circulated to parties for review. By October 28, 2016 the following parties responded: GNWT-ENR Inspector, INAC Inspector, GNWT-ENR, GNWT-Prince of Wales Northern Heritage Centre (GNWT-PWNHC), Ken Yoder (Hearne Lake Lodge), and NSMA. DIAND-CARD responded to all of the parties' comments and provided comments of their own on November 4, 2016.<sup>17</sup>

Several letters between NSMA, Board staff, and DIAND-CARD went back-and-forth during and after the review period for the drafts, discussing the possibility of NSMA meeting with DIAND-CARD regarding consultation concerns. Board staff noted a meeting was scheduled to take place on November 4, 2016, and gave NSMA an opportunity to submit a summary of the results of this meeting by November 8, 2016. On November 8, 2016, DIAND-CARD submitted a letter<sup>18</sup> noting they had attempted to meet with NSMA on October 28, 2016, and November 4, 2016, however both meetings were cancelled at NSMA's request. NSMA submitted a letter<sup>19</sup> to the Board on November 9, 2016, noting

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<sup>7</sup> [See ORS Reviewer Comments](#)

<sup>8</sup> [Technical Workshop Minutes](#)

<sup>9</sup> [DIAND-CARD Technical Workshop Presentation](#)

<sup>10</sup> [September 14, 2016 NSMA Letter](#)

<sup>11</sup> [Board Staff September 19, 2016 Letter](#)

<sup>12</sup> [DIAND-CARD September 28, 2016 Letter](#)

<sup>13</sup> [NSMA October 4, 2016 Letter](#)

<sup>14</sup> [Board Staff October 12, 2016 Letter](#)

<sup>15</sup> [DRAFT Land Use Permit MV2016X0013](#)

<sup>16</sup> [DRAFT Water Licence MV2016L8-0004](#)

<sup>17</sup> [See ORS Reviewer Comments](#)

<sup>18</sup> [DIAND-CARD November 8, 2016 Letter](#)

<sup>19</sup> [NSMA November 9, 2016 Letter](#)

that a meeting had not yet taken place, but the parties were continuing to look for mutually acceptable dates.

On December 5, 2016, the Board met to make decisions regarding the Applications. Reasons for these decisions can be found in Section 4.0, below.

### **3.0 Procedural Requirements**

In conducting the review processes for the Applications as described in Sections 1.0 and 2.0, above, the Board has ensured that all applicable legal and procedural requirements have been satisfied, including notice of the Permit and Licence Applications given in accordance with sections 63 and 64 of the MVRMA. The Board is satisfied that a reasonable period of notice was given to communities, First Nations and the public so that they could provide comments to the Board.

The scope, definitions, and conditions set forth in the Licence and Permit have been developed in order to address the Board's statutory responsibilities, its ongoing role in the regulation of the Bullmoose Area Mine Sites, and the concerns raised during the regulatory process. The Reasons for Decision set out in Section 4.0, below, address most conditions contained in the authorizations but provide more detail on major concerns raised by parties, including those that were the subject of substantive submissions made by one or more parties. They also address evidence which resulted in the inclusion of any new or non-standard conditions in the Licence and Permit.

### **4.0 Reasons for Decision**

After reviewing the evidence submitted by DIAND-CARD and the written comments and submissions from parties received by the Board, and having due regard to the facts, circumstances, and the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA, the Board has determined that Licence MV2016L8-0004 and Permit MV2016X0013 should be issued, subject to the terms and conditions contained therein. The Board has screened the development pursuant to subsection 124(1) of the MVRMA. The Board's determination and reasons for its decision are set out below.

The project is subject to the MVRMA and the Mackenzie Valley Federal Areas Waters Regulations (MVFAWR) with respect to licensing because of the arrangements made for administration and control of the affected lands in the NWT devolution process.

On August 25, 2016, Information Requests were submitted by Board staff to both DIAND<sup>20</sup> and the GNWT<sup>21</sup> confirming regulation of the project, considering any potential jurisdictional overlap. DIAND responded that only one permit and one licence needed to be issued for the project<sup>22</sup>. No response was received from GNWT.

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<sup>20</sup> [Information Request to DIAND](#)

<sup>21</sup> [Information Request to GNWT](#)

<sup>22</sup> See [DIAND Response to Information Request](#)



## **4.1 Requirements of Subsection 72.03(5) of the MVRMA: Conditions for Licence Issuance**

### **4.1.1 Existing Licensees**

There are no existing Water Licences overlapping the project area for the DIAND-CARD BMR Remediation Project. Bullmoose Mines Ltd. had previously applied for a Land Use Permit, MV2011X0016, and Water Licence, MV2012L2-0004, to carry out an extended test milling operation of existing waste rock at the Bullmoose Mine Site. These authorizations were never issued.

After reviewing the submissions filed on the public registry the Board is satisfied that, with respect to paragraph 72.03(5)(a) of the MVRMA, the granting of this Licence to the Applicant will not adversely affect, in a significant way, any existing Licensee or any other applicant. No Licensees or applicant contacted the Board within the statutory period. The Board is satisfied that no licensees or applicants will be affected by the DIAND-CARD licence.

### **4.1.2 Compensation**

Paragraph 72.03(5)(b) of the MVRMA prohibits the issuance of a Licence unless the Board is satisfied that appropriate compensation has been or will be paid by DIAND-CARD to persons who were, at the time when DIAND-CARD filed its Application with the Board, members of the classes of water users, depositors, owners, occupiers, or holders listed under paragraph 72.03(5)(b), who would be adversely affected by the use of waters, or deposit of waste proposed by DIAND-CARD.

There are lease holders in the vicinity of the project who have raised concerns with improved access to the area via winter road and the disturbance and movement of contaminated materials, including potential impacts to surrounding waters. The Board received no claims for compensation from any person, either during the prescribed period or afterwards. Provided that compliance with the Licence conditions takes place, the Board finds that there are no water users or persons listed in paragraph 72.03(5)(b) of the MVRMA who will be adversely affected by the use of waters or the deposit of waste proposed by DIAND-CARD.

### **4.1.3 Water Quality Standards**

With regards to subparagraph 72.03(5)(c)(i) of the MVRMA, the Board is satisfied that compliance with the Licence conditions will ensure that waste produced by DIAND-CARD will be collected and disposed of in a manner which will maintain water quality consistent with applicable standards and the Board's Water and Effluent Quality Management Policy. These are discussed further in Section 4.2.7 (Part F of the Licence: Conditions Applying to Waste and Water Management) and Section 4.2.10 (Annex A: Surveillance Network Program) of these Reasons.

### **4.1.4 Effluent Standards**

Consistent with subparagraph 72.03(5)(c)(ii) of the MVRMA, the Board is satisfied that the effluent quality criteria set out in the Licence are consistent with the Board's Water and Effluent Quality Management Policy and will protect the receiving waters and environment. These are discussed further in Section 4.2.7 (Part F of the Licence:

Conditions Applying to Waste and Water Management) and Section 4.2.10 (Annex A: Surveillance Network Program) of these Reasons.

#### **4.1.5 Financial Responsibility of the Applicant**

The Board must satisfy itself of the financial responsibility of the Applicant under paragraph 72.03(5)(d) of the MVRMA before it can issue the Licence. The project will be undertaken by the Government of Canada through DIAND-CARD. Therefore, there is no issue, in the Board's view, as to the capacity of the Licensee to meet any, or all, financial obligations set out in the MVRMA and the Licence.

#### **4.2 Reasons for Decision on Terms and Conditions of Licence MV2016L8-0004**

The conditions set forth in the Licence have been imposed in order to address the Board's statutory responsibilities and those concerns which arose during the regulatory process. In drafting the Licence, changes were made based on the following overriding principles: consistency with existing Type B water licences; consistency with proposed plans, programs, studies and reports; addressing comments from reviewers and the Proponent; and overall clarity of licence requirements.

The Board has screened the development pursuant to subsection 124(1) of the MVRMA. It is the opinion of the Board that compliance with the conditions of this Licence, including adherence to effluent quality criteria and management plans, studies, reports, and programs, will ensure that any potential adverse effects on other water users, which might arise as a result of the issuance of this Licence, will be minimized as required by subsection 72.04(2) of the MVRMA.

##### **4.2.1 Term of Licence**

DIAND-CARD requested a seven year term to 2023 to align with the associated Permit. This time frame should see the project through active remediation and several years of post-construction/short-term monitoring. If necessary, long-term monitoring could be covered under a new Type B Water Licence in 2023.

No comments were received on the proposed term of the Licence and the Board has decided to approve a term of seven years to cover the completion of active remediation and several years of post-construction/short-term monitoring.

##### **4.2.2 Part A: Scope and Definitions**

Part A of the Licence contains the scope and definitions for terms used throughout.

###### Scope

The scope of the Licence ensures the Licensee is entitled to conduct activities which have been applied for. In setting out the scope of the Licence, the Board endeavoured to provide enough detail to describe the authorized activities, but not so much detail that DIAND-CARD's activities would be unduly restricted.

Part A, items 1 b) through 1 e) are consistent with other recently issued water licences. These conditions ensure that the scope of the authorization includes all water uses and deposits of waste associated with the Project, reflect and comply with all applicable legislation for the life of the authorization, and consider and incorporate scientific and traditional knowledge where available in the Licensee's effort to protect the environment.

The scope of MV2016L8-0004 includes activities required to complete active remediation and move into the post-construction/short-term monitoring of the BMR Remediation Project. Conditions in the Licence, including the requirement for Board approval of plans and changes in the Surveillance Network Program (SNP), will also help shape the transition between Construction and Post-Construction phases of the project.

#### Definitions

The Board included a list of defined terms used in the Licence in order to ensure a common understanding of conditions and to avoid future differences in interpretation. Where appropriate, the definitions use wording similar to that found in Licences recently issued by the Board.

#### **4.2.3 Part B: General Conditions**

Part B of the Licence applies to matters regarding compliance and conformity with the MVRMA and *Waters Act*, and is consistent with standard conditions found in previous Licences issued by the Board. This section addresses conformity and compliance with plans, submission timelines, revisions, and format of the SNP and the Schedules which are annexed to and form part of the Licence. This section also addresses signage, measuring devices, public engagement requirements, and annual water licence reporting.

All conditions in Part B are standard conditions, consistent with recently issued Licences. Part B, item 2, clarifies that all references to policies, guidelines, codes of practice, statutes, regulations or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted. This standard practice allows for flexibility in Licence conditions when documents are updated during the life of the Licence.

Part B, items 3, 4 and 5 address plan, program, study and manual submission requirements and adherence under the Licence. Part B, item 5 requires DIAND-CARD to annually review all plans, programs, studies and manuals and resubmit any updates or changes, as required, for Board approval. Updates and revisions to these plans, programs, studies and manuals must be approved by the Board prior to the implementation of any activity not identified in existing, approved plans, programs, studies and manuals. This condition ensures that all applicable plans, programs, studies and manuals are regularly reviewed and updated so that they reflect changes in technology and/or changes and phases of the project throughout the life of the authorization.

Part B, items 6 through 8 allow the Board to update the Schedules and the SNP, which are annexed to, and form part of the Licence, and to update compliance dates as necessary. Changes to these licence components are largely administrative matters and within the Board's authority.

Part B, items 9 and 10 address maintenance requirements for the SNP stations so that sampling and inspections of the sites can be completed efficiently and consistently.

Part B, items 11 and 12, refer to the Engagement Plan submitted by DIAND-CARD with the Permit and Licence Applications. An updated Engagement Plan is required under Part B, item 12 so that lease holders and local land users identified during the review process are included in ongoing project updates and communications that address significant concerns regarding winter road use and access during the life of the BMR Project. The Engagement Plan is required to describe proposed engagement activities during the life

of the Project and shall be in accordance with the Board's *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*.

Schedule 1, item 1 outlines the requirements for the Annual Report. The Annual Report has been designed so that the Board and all reviewers have the opportunity to be updated on all project components and activities on an annual basis and provide comments, questions or feedback as necessary. The purpose of the Annual Report is to provide a summary of activities that have occurred on site during the previous year. These summaries include volumes of water (use, moved, treated and deposited), volumes of waste (generated, moved, disposed of), engagement activities, summary of works completed on site, summaries of all monitoring data, and anticipated activities for the following year. Annual Report requirements are intended to provide clarity for the submission of information summaries already being captured through existing plans and programs and are not meant to be onerous.

#### **4.2.4 Part C: Conditions Applying to Water Use**

Part C of the Licence contains conditions related to water use for the Project. The conditions in Part C are based on standard conditions consistent with recently issued Licences. Part C, item 1 identifies the water sources and supply methods approved for use for the duration of the Project under MV2016L8-0004. The maximum quantity of water that can be withdrawn from all sources is set out in Part C, item 3. The Water use limit is 299 m<sup>3</sup>/day which is below the maximum permissible under a type B water licence. The Board did not receive any comments on the water use limit.

Part C, item 2 allows for the diversion of water from Bullmoose Creek during removal of contaminated sediment upon approval of the Bullmoose Creek Channel Design and Reconstruction Plan. This Plan is required by Part D, item 12. This plan will describe water management, drainage channel construction, and monitoring activities for the Bullmoose Creek diversion and must be approved by the Board prior to the active management of any water from the creek.

#### **4.2.5 Part D: Conditions Applying to Construction**

Part D of the Licence contains conditions related to construction activities at the site. These conditions ensure that engineered structures are built to appropriate standards, and require the submission of design and engineering reports.

Part D, items 1 through 5 are all standard conditions, consistent with recently issued Licences. These conditions are designed to ensure the stability of site infrastructure and to prevent or minimize unauthorized discharges to the environment. Part D, item 2 requires DIAND-CARD to ensure that all Engineered Structures are designed, constructed, and maintained to meet or exceed the *Dam Safety Guidelines*. This condition is intended for newly constructed structures specific to the Project, however, historic structures shall be inspected to ensure that they are structurally sound and functioning to minimize the escape of waste to the receiving environment, as applicable.

Part D, items 6 through 9 are standard conditions consistent with recently issued Licences to ensure that any new engineered facility development is properly planned, described, and reviewed prior to, and following, construction. Schedule 2, item 1 provides the

detailed requirements for Final Detailed Construction Plan submissions for the public record.

Part D, item 10 requires the submission of a Landfill Design Plan. DIAND-CARD identified its intention to submit this plan in its comments on the Draft Water Licence. This plan shall address the construction details of the landfill, including any liners and covers intended to prevent the transport of contaminants into the surrounding environment. Detailed requirements are identified in Schedule 2, item 2. In addition to the Landfill Design Plan, the Board requires DIAND-CARD to prepare a Tailings and Waste Rock Cover Design Report. Schedule 2, item 3 provides the detailed submission requirements for the Tailings and Waste Rock Cover Design Report. DIAND-CARD requested that the requirement for this plan be removed from the Licence since information on the covers was provided in the Remedial Action Plan. The level of detail provided in these submissions does not fully address the requirements laid out in the Schedule. There is very little information on the design, maintenance and monitoring required for the landfill and for tailings and waste rock covers. The submission of this report to address all aspects of the design, in detail, will provide clarity to the Board and reviewers, as well as an opportunity to provide comments, recommendations and feedback on the cover designs. DIAND-CARD is encouraged to engage with parties in the development of these reports.

Part D, item 12 requires the submission of a Bullmoose Creek Channel Design and Reconstruction Plan. Schedule 2, item 4 provides the detailed submission requirements for the Bullmoose Creek Channel Design and Reconstruction Plan. Currently, there is very little information on the design, operation, maintenance and monitoring required for the diversion of Bullmoose Creek, removal of contaminated sediment, and reestablishment of flow. The submission of this report to address all aspects of the diversion, in detail, will provide clarity to the Board and reviewers as well as an opportunity to provide comments, recommendation and feedback on the development of the plan prior to the initiation of creek diversion. DIAND-CARD is encouraged to engage with parties in the development of this plan.

#### ***4.2.6 Part E: Conditions Applying to Modifications***

Part E of the Licence contains conditions applying to modification of structures and facilities associated with the Project. All conditions in Part E are standard conditions consistent with recently issued Licences. These conditions are in place to ensure changes to the project are within the scope of the applications and with the notification and approval, as appropriate, of the Inspector and/or the Board.

#### ***4.2.7 Part F: Conditions Applying to Waste and Water Management***

Part F of the Licence contains conditions applying to the management of waste and water for the Project. Part F, item 1 describes the overall objectives of this portion of the Licence.

#### **Management Plans and Monitoring Programs**

Part F, items 2 and 3 refer to the Waste Management Plan. A Waste Management Plan was submitted with the Land Use Permit and Water Licence Applications. An updated and more robust Waste Management Plan, however, is required to be submitted in accordance with Schedule 3, item 1 and the Board's *Guidelines for Developing a Waste*

*Management Plan*. This plan is intended to provide the Board and reviewers with a holistic plan for the management of all waste types throughout the seven mine sites prior to mobilization.

Part F, item 4 requires the submission of a Landfarm Management Plan. DIAND-CARD indicated during the technical workshop that details on the construction, operation, and management of the Landfarm would be provided in a stand-alone document. DIAND-CARD should reference the Board's *Guidelines for Developing a Waste Management Plan* when developing this plan.

Part F, item 5 requires the re-submission of a Sediment and Erosion Control Plan. The Sediment and Erosion Control Plan submitted with the applications is conceptual and includes guidance for sediment and erosion control measures to be implemented prior to, during and after remediation activities are completed.<sup>23</sup> This plan shall be updated and provide project-specific details for the control of sediment and erosion risks. Schedule 3, item 2 outlines the requirements for re-submission of the Sediment and Erosion Control Plan.

Part F, item 6 requires the submission of a Geochemical Verification Program. The draft Water Licence proposed the submission of a Geochemical Characterization Plan; however, DIAND-CARD recommended the removal of this condition since geochemical analysis of material on site had been completed, supported by a July 6, 2016 memo<sup>24</sup> provided to the Board. Details on previous geochemical characterization of waste rock and tailings were provided in the Remedial Action Plan and Environmental Site Assessment reports submitted to the Board in support of the Applications, and reviewed during the water licence amendment and land use permit application process. The Board, therefore, agrees that the submission of a Geochemical Characterization Plan is not necessary. The information provided in the Remedial Action Plan and Environmental Site Assessments indicate that DIAND-CARD carried out Acid Base Accounting (ABA) testing on waste rock and tailings in the BMR Project area. ABA testing is limited in its ability to predict the long-term behavior of acid rock drainage (ARD) and metal leaching potential in the field. Kinetic testing can help validate static test results and classifications and is commonly required to assess the relative rates of the various ARD and metal leaching reactions occurring, and to provide information on the evolution of ARD over time. DIAND-CARD proposes to monitor down-gradient surface waters. The Board, however, believes that verification test work of the waste rock source will help evaluate the potential for future risk whereas long term monitoring of water bodies will only identify the impact after it has occurred. As a result, the Board requires that DIAND-CARD submit a Geochemical Verification Program designed to confirm static test results and support predictions about the ARD potential of waste rock left on-site. This program shall summarize how DIAND-CARD has geochemically classified waste rock, tailings, landfill and waste rock cover material, and other materials, in order to minimize ARD and Metal Leaching throughout the Project area, as well as, how this material will be monitored and re-tested to confirm results for the long-term. The goal is to ensure that material that is not moved or covered is indeed low/moderate risk and will remain so in the future. Schedule 3, item 3 outlines the requirements for submission of the Geochemical Verification Program.

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<sup>23</sup> [Licence and Permit Application Supporting Documents](#)

<sup>24</sup> [Waste Rock Remedial Actions Memo](#)

Part F, items 7, 8 and 9 require the submission of construction monitoring, short-term (post-construction) and long-term monitoring plans. The timing of plan submissions was addressed through reviewer comments and is intended to provide enough time for review prior to the transition from active remediation (construction) to short-term monitoring (post-construction<sup>25</sup>), and into long-term monitoring<sup>26</sup>. The draft Licence had the Construction and Post-Construction Monitoring Plan tied into one submission, the final Licence reflects DIAND-CARD's response to reviewer comments clarifying its intention to submit separate monitoring plans to address each phase of the Project independently. Schedule 3, items 4, 5, and 6 outline the requirements for submission of the abovementioned monitoring plans. In their comments on the draft Licence, DIAND-CARD indicated that groundwater monitoring was planned for the landfills and landfarm only, as groundwater was not identified as requiring remediation. They requested removal of requirements in Schedule 3, Item 4 that addressed groundwater monitoring related to waste rock storage areas, sumps, and other water discharge locations. The Board is of the opinion, however, that groundwater monitoring is required to verify that the proposed remediation methods do not impact the surrounding environment. This requirement is consistent with other licenses issued by the Board.

All plans required under this section require Board approval and will be distributed for review and comment when they are submitted.

#### Operations of Structures and Facilities

Part F, item 10 is a standard condition consistent with recently approved licences that is designed to ensure the appropriate level of monitoring and maintenance of waste storage facilities are undertaken to protect the surrounding environment from unauthorized discharges.

#### Inspections of Structures and Facilities

Part F, items 11 through 13 refer to inspection requirements for discharge locations and engineered structures in the project area to ensure site stability and minimize any impact on the surrounding environment. Daily erosion inspections required under Part F, item 11 are designed to ensure that discharges of water do not disturb adjacent lands. Geotechnical inspections are standard conditions in many Licences issued by the Board. Part F, item 12 has been edited to reflect recommendations made by DIAND-CARD in its review of the draft Licence. Part F, item 13 stipulates the reporting requirements for the Board.

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<sup>25</sup> The five-year monitoring program referred to in the Remedial Action Plan which includes, but is not limited to, monitoring of submerged tailings at Beta Lake, submerged tailings at Skeeter Lake, Bullmoose portal seepage, wetland and lake, Alpha Lake, submerged sediments and fish tissue at Spectrum Lake, submerged and terrestrial sediments at Joon Mine, waste rock cover integrity, landfill integrity and groundwater, landfarm integrity and groundwater, down-gradient surface waters, subsidence monitoring as a forecasting tool for sinkholes or troughs, and land use.

<sup>26</sup> The six-year plus monitoring program referred to in the Remedial Action Plan which includes, but is not limited to, continued monitoring of Alpha Lake, Beta Lake, Skeeter Lake, Bullmoose portal, wetland and lake, and Alpha Lake if parameters have not shown steady or reducing trends, uncovered waste rock if parameters of concern are persistent, landfill integrity and groundwater, subsidence monitoring as a forecasting tool for sinkholes or troughs, and land use.

## Discharge Locations and Rates

Part F, items 14 through 16 identify the discharge locations for different waste streams for the Project. These methods and locations for the management and discharge of waste have been included and accepted by the Board during the course of the Application review.

## Effluent Quality Criteria (EQC)

Part F, items 17, 19, and 21 set out the EQC for wastewater and sewage disposal facility discharges. EQC for the sewage treatment facility in Part F, item 17 are consistent with recently issued licences. Specifications on the treatment system submitted by DIAND-CARD<sup>27</sup> indicate that the system can achieve discharge criteria of 25 mg/L for BOD and TSS; however, DIAND-CARD has requested that industry standard “upset limits” be considered as treatment performance may be dependent on temperature, feed rates and bacterial loading<sup>28</sup>. EQC for landfarm discharge and sump water drainage identified in Part F, items 19 and 21, respectively, were identified by DIAND-CARD in its Water Licence Application. All EQC were reviewed under the draft water licence and are further discussed under the SNP, below (Section 4.2.10).

Part F, items 18, 20, 22, and 23 address the potential for non-compliant discharges (as outlined in Part F, items 17, 19, and 21). These conditions provide direction to DIAND-CARD in response to any non-compliant waters with reference to the appropriate, approved, management or monitoring plans. DIAND-CARD may not resume discharge to the receiving environment until water quality results demonstrate compliance, and the Inspector has authorized the discharge. Where appropriate, contingency and adaptive management plans should be implemented according to the approved plan.

### **4.2.8 Part G: Conditions Applying to Contingency Planning**

Part G of the Licence contains conditions applying to spills, unauthorized discharges, and emergency response for the Project. The purpose of this part is to ensure that the Licensee is fully prepared to respond to spills and unauthorized discharges. The planning and reporting requirements in this part ensure that DIAND-CARD has identified the lines of authority and responsibility, has an action plan(s) for responses to spills and unauthorized discharges, and has established reliable reporting and communication procedures. This will ensure that any spills or unauthorized discharges are effectively controlled and cleaned up, with the goal of preventing or limiting damage to the receiving environment. All conditions in Part G are standard conditions consistent with recently issued Licences.

Part G, item 1 directs the Licensee to adhere to the existing Spill Contingency Plan (submitted with the Applications) until the approval of an updated, project-specific Spill Contingency Plan, required by Part G, item 2. Part G, item 3 outlines the requirements to clean and report spills and Part G, item 4 clearly outlines the requirement to reclaim all spills.

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<sup>27</sup> [Sewage Treatment Details](#)

<sup>28</sup> Ibid



#### **4.2.9 Part H: Conditions Applying to Reclamation**

Part H, item 1 directs the Licensee to adhere to the existing Remedial Action Plan, with annual reviews and necessary updates to the Plan as per Part B, item 6. This is consistent with the requirements for other submissions within the Licence and with recently issued Licences.

The Board requires the submission of a Final Reclamation Plan to address the final aspects of site remediation, including the decommissioning of site roads, bridges, staging areas, quarries, and associated infrastructure remaining at the Project site and the re-establishment of drainages impacted by roads and road-crossings.

Part H, items 3 and 4 are standard conditions consistent with recently issued Licences that require the timely progression of the Project. Proposed Project schedules have been approved through the Remedial Action Plan and delays may have unintended impacts.

#### **4.2.10 Annex A: Surveillance Network Program**

Annex A of the Licence contains conditions applying to the SNP. At the time of issuance of MV2016L8-0004 and MV2016X0013, complete details of the SNP locations, parameters to be measured and the frequencies at which to monitor could not be established, as the water licence application documents did not contain exact details of the site operations. Therefore, the SNP has been established as an outline of the monitoring that shall occur under the Licence; the SNP does not currently contain all of the necessary details that will ultimately be required of DIAND-CARD. DIAND-CARD shall propose exact SNP locations, parameters and frequencies for review and approval with the submission of the Construction Monitoring Plan and Post-Construction Monitoring Plan, as per Part F, items 7 and 8, Schedule 3, items 4 and 5, 90 days post-issuance and 90 days prior to demobilization, respectively. Additional Reasons for Decision will be issued with the Board's approval of the Construction Monitoring Plan and Post-Construction Monitoring Plan and will contain more details on the decisions for SNP locations, parameters and monitoring frequencies.

Consistent with recently issued Licences, the Board has included more detail in Part A, item 2 (of the SNP) outlining information expectations for monthly SNP Reports.

At the time of issuance, the Board has established general SNP locations for each operation that requires monitoring, but does not specify all of the exact locations that will be included. It is expected that the SNP will be updated by the Board upon review and approval of the Construction Monitoring Plan and again upon review and approval of the Post-Construction Monitoring Plan.

At a minimum, SNP stations should be established to monitor water use (below allowable limits) and water quality in the vicinity of waste management facilities or infrastructure. Suggested SNP locations include surface and/or groundwater monitoring around the perimeter of the landfarm, surface and/or groundwater monitoring around the Bullmoose and Ruth landfills, surface and/or groundwater monitoring around the perimeter of Waste Rock storage areas, monitoring of the Bullmoose portal seep, adjacent wetland, and Bullmoose Lake, and monitoring of Bullmoose Creek. Compliance monitoring stations should be established during active discharge from the landfarm or sewage treatment

facility and for the adaptive management of trench water and borrow pit sumps. A summary of the conceptual design of the SNP is laid out below:

SNP 2016-1 includes the monitoring of the quantity of raw water drawn from each respective water intake.

SNP 2016-2 refers to the surface and/or groundwater monitoring that will be required to ensure that landfarm operations do not influence the surrounding environment. Surface and groundwater have both been included as the exact location for the landfarm has not yet been established; the location of landfarm operations will determine what type of monitoring will be required, depending on proximity to surface water and the hydrogeology of the area.

SNP 2016-3 refers to the monitoring of any water that is discharged from the landfarm. This location is a compliance monitoring site to ensure that discharge meets the EQC outlined in Part F, item 18.

SNP 2016-4 a and b refer to the monitoring of discharge from the respective Sewage Disposal Facilities at the Bullmoose and Ruth sites. These locations are compliance monitoring sites to ensure discharge meets the EQC outlined in Part F, item 16.

SNP 2016-5 and 2016-6 refer to surface and/or groundwater monitoring around the perimeter of the landfills at the Bullmoose and Ruth sites, respectively. Surface and groundwater have both been included as the exact locations for landfills has not yet been established; the location of landfill operations will determine what type of monitoring will be required, depending on proximity to surface water and the hydrogeology of the area.

SNP 2016-7 includes monitoring of the Bullmoose Portal Seep. SNP 2016-8 refers to the monitoring along the Bullmoose wetland into which the Portal Seep runs before ultimately flowing into Bullmoose Lake. Bullmoose Lake water quality will be monitored under SNP 2016-9.

SNP 2016-10 includes upstream and downstream monitoring of Bullmoose Creek associated with the diversion and reconstruction of the creek to ensure it is not impacted by the activities.

SNP 2016-11 includes the monitoring of surface and/or groundwater that may be impacted by areas of waste rock storage. Because the locations of all waste rock storage areas are unknown at issuance, both groundwater and surface water are included; the exact location of the waste rock storage area will determine what type of monitoring will be required, depending on proximity to surface water and the hydrogeology of the area.

SNP 2016-12 includes the monitoring of surface and/or groundwater that may be impacted by trench Water and borrow water being stored in sumps on site. Surface and groundwater have both been included as the exact locations for the Sumps have not yet been established; the exact location of the sumps will determine what type of monitoring will be required, depending on proximity to surface water and the hydrogeology of the area.

Despite the uncertainty of exact sampling locations, sampling frequencies and parameters for each site have been established at issuance of MV2016L8-0004; however, based on the review and approval of the Construction Monitoring Plan, the sampling frequencies and parameters may be changed by the Board.

**4.2.11 Annex B: Table of Items Requiring Submission**

Annex B of the Licence contains a table that summarizes the information DIAND-CARD is required to submit as part of the Licence.

**4.2.12 Annex C: Table of Revision History**

Annex C of the Licence contains a table that identifies updates and tracks changes made to the Licence. This table is currently blank because this is a new Licence, but it will be updated throughout the life of the Licence.

#### **4.3 Reasons for Decision on Term and Conditions of Permit MV2016X0013**

The conditions set forth in the Permit have been imposed in order to address the Board's statutory responsibilities and the concerns which arose during the review. These Reasons are issued pursuant to paragraph 40(2)(c) of the MVLUR.

The Board has screened the development pursuant to subsection 124(1) of the MVRMA. This Permit has been issued for the maximum term of five years. The Permittee may apply for a two year extension in accordance with the Regulations. This timeline should provide enough time to complete active remediation and carry out several years of post-construction/short-term monitoring.

##### ***4.3.1 Eligibility for Land Use Permit under Section 18(b) of the Mackenzie Valley Land Use Regulations***

On May 20, 2016, Board staff inquired as to how DIAND met Section 18(b) of the MVLUR, relating to access to lands administered by the GNWT. DIAND responded and provided the following information:

Our understanding is that INAC's right and responsibility to access these lands for the purposes of remediation are defined and outlined in several ways as referenced below:

##### **Access to Federal Land**

###### *NWT Devolution Agreement*

###### Responsibility for Waste Sites

Section 6.4(a) Subject at all times to the express provisions of this Chapter 6, the allocation of responsibility for the Management of Waste Sites among the Parties pursuant to this Agreement is based upon the following principles: Canada is responsible for the Management of Waste Sites on Public Lands which were wholly created prior to the Transfer Date;

###### Sites Requiring Remediation

Section 6.43 All Sites Requiring Remediation listed in Part D of the Inventory of Sites at the Transfer Date shall be excluded from the transfer of administration and control referred to in Section 3.1 and shall be included in the inventory of exclusions referred to in Section 3.34.

##### **Right to Access GNWT Land**

###### *NWT Devolution Agreement -*

###### Access by Canada

Section 6.62 Canada shall have the right to access Public Lands and Waters and the right to use natural resources in or on Public Lands in order to fulfill its responsibilities in respect of this Chapter 6.

## **Responsible Minister - Sites Requiring Remediation by INAC**

*NWT Devolution Agreement - Schedule 4, Part 5 [sic]*

Schedule 4, Part 5 [sic] lists and describes all waste sites to which INAC has specific responsibility. These sites are further described under Schedule 7, Part D, of the Agreement.<sup>29</sup>

The Board accepts this explanation and finds that DIAND-CARD has a right to access and be on these lands to conduct remediation of contaminated sites. This means that DIAND-CARD is eligible to hold a permit under paragraph 18(b) of the MVLUR.

### **4.3.2 Part A: Scope of Permit**

The scope of the Permit is described in Part A, item 1 in a manner which ensures that the Permittee is entitled to conduct activities set out in its application. In addition, the scope of the Permit describes the components of the development which were screened by the Board pursuant to Part 5 of the MVRMA. In setting out the scope of the Permit, the Board endeavoured to provide enough detail to identify and enable the authorized activities (and allowing for some operational flexibility) throughout the life of the Permit. The BMR Remediation Project is understood to include only the lands described and identified in the Application. Part A, items 2 and 3 are standard conditions consistent with recently issued Permits. These conditions ensure that the Permittee complies with the conditions of the Permit and any applicable legislation.

### **4.3.3 Part B: Definitions**

The Board defined a number of terms used in the Permit in order to ensure a common understanding of conditions and to avoid future differences in interpretation. For the most part, the definitions used wording from the MVLWB's Standard Land Use Permit Conditions Template (Standard Template).

### **4.3.4 Part C: Conditions Applying to All Land-Use Operations**

The subheadings below correspond to the headings in the conditions section of the Permit, as outlined in section 26(1) of the MVLUR. Many conditions are based on wording from the MVLWB's Standard Template. The Standard Template was developed to ensure that all conditions in permits are within the Board's jurisdiction, are supported by a clear purpose and rationale, are practical and enforceable, match the scale of the applicable project, and do not conflict with existing legislation. They are designed to be protective of the surrounding environment.

#### **4.3.4.1 26(1)(a) Location and Area**

Conditions provided in Part C, conditions 1 through 6 are found in the MVLWB's Standard Template. Conditions 1 and 2 respect existing land users and require DIAND-CARD to maintain a reasonable distance from private property and cabins and conditions 3 through 6 emphasize the need to minimize land disturbance while carrying out its land use operations.

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<sup>29</sup> See [Access to Federal Lands Email](#) from Ron Breadmore, dated May 26, 2016 on the Board's Public Registry

#### **4.3.4.2 26(1)(b) Time**

Since site access crosses Territorial lands, Part C, conditions 7 and 8 require DIAND-CARD to contact both the Federal and Territorial Inspectors prior to commencement of activities covered under MV2016X0013. Afterwards, DIAND-CARD is required to contact only one of the Inspectors (Federal) in an effort to reduce redundancy.

Condition 10 (Spring break-up): The Board, for the purpose of this operation, designated April 15 as spring break-up. This date was suggested by the Inspector to allow the flexibility for work to continue if the weather allows. In his comments on the draft Permit, Mr. Yoder of Hearne Lake Lodge recommended that heavy equipment should cease using the road at the end of March, allowing light traffic until April 15 due to overflow, soft ice and melting snow. The Board encourages ongoing communication between DIAND-CARD and lease-holders to address such concerns during the course of the Project and expects that worker health and safety considerations will take precedence if road conditions are dangerous prior to April 15 any given year.

With regard to the on-land portions of the road, there are conditions (25 and 26) in the Permit which are in place to prevent rutting. These can be enforced by the Inspector regardless of date if conditions warrant.

#### **4.3.4.3 26(1)(c) Type and Size of Equipment**

Condition 11 is found in the MVLWB's Standard Template. The condition notes only equipment of a *similar* size, type and number as that listed in the accepted application may be used. This allows DIAND-CARD some flexibility in the implementation of its Project. Condition 12 is an updated version of a condition from the MVLWB's Standard Template.

#### **4.3.4.4 26(1)(f) Control or Prevention of Ponding of Water, Flooding, Erosion, Slides, and Subsidence of Land**

Condition 21 refers to the Sediment and Erosion Control Plan submitted with the Application. Condition 77 requires re-submission of the Plan. The Sediment and Erosion Control Plan submitted with the Applications is conceptual and includes guidance for sediment and erosion control measures to be implemented prior to, during, and after remediation activities are completed.<sup>30</sup> This plan shall be updated and provide project-specific details for the control of sediment and erosion risks. This Plan has not yet been approved by the Board. Schedule 3, item 2 of Water Licence MV2016L8-0004 outlines the requirements for re-submission of the Sediment and Erosion Control Plan.

Condition 36 prohibits removal of vegetation and operation of heavy equipment within 100m of the ordinary high water mark of any watercourse, except as described in the application. DIAND-CARD has committed to maintaining this distance, where possible, but have identified in their comments on the draft Permit that this distance will not be achievable in some cases.

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<sup>30</sup> [Licence and Permit Application Supporting Documents](#)

#### **4.3.4.5 26(1)(i) Storage, Handling, and Disposal of Refuse or Sewage**

Condition 43 requires waste to be managed in accordance with the Waste Management Plan. The Waste Management Plan is intended to ensure that all waste management activities are carried out in a way that is consistent with best practices and applicable guidelines in order to minimize waste released from the Project. A Waste Management Plan was submitted with the Land Use Permit and Water Licence Applications. An updated and more robust Waste Management Plan, however, is required to be submitted in accordance with Condition 77 and the Board's *Guidelines for Developing a Waste Management Plan*. This plan is intended to provide the Board and reviewers with a holistic plan for the management of all waste types throughout the seven mine sites prior to mobilization.

#### **4.3.4.6 26(1)(j) Protection of Historical, Archaeological, and Burial Sites**

The intent of conditions 47 to 49 is to protect cultural sites, whether known or suspected. The distance note reflects the requirements of the MVLUR. Legislated requirements state that: Unless expressly authorized by a permit or in writing by an inspector, no permittee shall (a) conduct a land-use operation within 30 m of a known monument or of a known or suspected historic or archaeological site or burial site (Paragraph 6 of the MVLUR). Since the MVLWB does not have access to the Archaeological Impact Assessment, a minimum of 30 m is established with the ability to work closely in consultation with the PWNHC and the Inspector for a variance.

#### **4.3.4.7 26(1)(k) Objects and Places of Recreational, Scenic, and Ecological Value**

Condition 50 has been included to address concerns identified by Mr. Yoder of Hearne Lake Lodge related to potential impacts on his business due to potential disturbances in the event of heavy traffic along the winter access road. DIAND-CARD indicated that its current road alignment runs within the 500 m setback. Consideration may be given to adjusting the alignment to areas outside the 500 m setback but will only be done if ice conditions in the area do not represent an increased risk to health and safety or environmental protection. The Board included the wording "where practical" to grant flexibility to the Permittee in the case that the 500 m setback cannot be achieved for health and safety, or environmental protection reasons. The Board encourages ongoing communication between DIAND-CARD and lease-holders to address such concerns during the course of the Project.

#### **4.3.4.8 26(1)(l) Security Deposit**

Reclamation security is not applicable for this Application as per section 94 of the MVRMA, as the applicant is the federal government.

#### **4.3.4.9 26(1)(m) Fuel Storage**

The Board has included the requirement for a Spill Contingency Plan as is typical in most permits. This Plan is also required under Part G of the Licence and the Board's reasons for including this plan are previously described in section 4.2.8.

#### **4.3.4.10 26(1)(q) Biological and Physical Protection of the Land**

The Board has included a requirement for an Engagement Plan as is typical in most permits. The Engagement Plan is intended to ensure that affected parties are able to develop an understanding of a proposed project or component of a project, provide feedback during the engagement process and work towards building relationships with

the proponent. It is the Board's opinion that this engagement requirement, and the associated review and approval process, will be adequate to ensure engagement is managed responsibly for the Project. This Plan is also required under Part B, item 12 of the Licence.

### **5.0 Conclusion**

Subject to the terms and conditions set out in Licence MV2016L8-0004, and for the reasons expressed herein, the MVLWB is of the opinion that the licensed undertaking for water use and waste disposal associated with the BMR Remediation Project can be completed by DIAND-CARD while providing for the conservation, development, and utilization of waters in a manner that will provide the optimum benefit for all Canadians and in particular for the residents of the Mackenzie Valley.

Land Use Permit MV2016X0013 contains provisions that the Board feels necessary to ensure and monitor compliance with the MVRMA and the Regulations made thereunder and to provide appropriate safeguards in respect of the Applicant's use of the land affected by the Permit.

Signed on behalf of the Mackenzie Valley Land and Water Board



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Floyd Adlem, A/Chair

December 5, 2016

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Date