



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
FAX: (867) 360-6369

NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

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# Nunavut Water Board Preliminary Guidelines for Applicant

## Cumberland Resources Ltd. – Meadowbank Project

Dated: 14 March 2007



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
FAX: (867) 360-6369

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## 1 Introduction

For the purpose of this document, the Applicant is Cumberland Resources Ltd.

The Nunavut Water Board (NWB) is an institution of public Government responsible for the regulation, use and management of water in the Nunavut Settlement Area. According to **Section 11** and **12** of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA) *no person shall use, or permit the use of, waters in Nunavut except in accordance with the conditions of a licence and except in accordance with the conditions of a licence, no person shall deposit or permit the deposit of waste in waters in Nunavut or in any other place in Nunavut under conditions in which the waste, or any other waste that results from the deposit of that waste, may enter waters in Nunavut.* In accordance with NWB's mandate, the Applicant filed an application for a water licence on **31 March 2003** for the use of water and disposal of waste into water for the proposed Meadowbank Project.

The application for water licence and other permits, authorizations, and/or licences triggered an environmental screening of the project by the Nunavut Impact Review Board (NIRB). Following screening and an **Article 12, Part 5** Review of Applicant's Environmental Impact Statement, the Minister of Indian and Northern Affairs agreed with the NIRB's recommendations in a letter dated **17 November, 2006**. In reviewing the application submitted by the Applicant the Board will consider **Sections 57** and **58** of the NWNSRTA which state the following:

**Section 57** *The Board may not issue a licence unless the applicant satisfies the Board that:*

- a) any waste produced by the appurtenant undertaking will be treated and disposed of in a manner that is appropriate for the maintenance of the water quality standards and effluent standards that are prescribed by the regulations or, in the absence of such regulations, that the Board considers acceptable; and*
- b) the financial responsibility of the applicant, taking into account the applicant's past performance, is adequate for*
- c) the completion of the appurtenant undertaking,*
- d) such measures as may be required in mitigation of any adverse impact, and*
- e) the satisfactory maintenance and restoration of the site in the event of any future closing or abandonment of that undertaking.*



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**Section 58** *The Board may not issue a licence unless the applicant, with respect to any person, other than an instream user, who would be entitled to use waters in precedence to the applicant under section 47,*

- a) satisfies the Board that the use of waters or the deposit of waste would have no adverse effects on the use of waters by that person;*
- b) satisfies the Board that any adverse effects caused by the use of waters or the deposit of waste would not be significant, and has paid or undertaken to pay the compensation that the Board considers appropriate to that person; or*
- c) has entered into an agreement to compensate that person for any adverse effects.*

In accordance with the *NWNSRTA Section 48(3)* and **Part 13.8.1** of the *Nunavut Land Claims Agreement (NLCA)*, the NWB has decided to issue preliminary guidelines to the Applicant through this document. The guidelines are based on the NWB requirements outlined in the *NWNSRTA*, the *Northwest Territories Water Regulations* and engineering best practices and principles. The guidelines do not relieve the Applicant from confirming and following up on other information requirements which may be required. The Reader is to refer to **Section 4** of these guidelines for a list of additional documents, guidelines, legislation and standards that may be of use to the Applicant in preparing the supplemental information. The Applicant should understand that through **Sections 70 and 71** of the *NWNSRTA* the Board may develop conditions in a licence as per the following:

**Section 70** *(1) Subject to this Act and the regulations, the Board may include in a licence any conditions that it considers appropriate, including conditions relating to*

- a) the manner in which waters may be used;*
- b) the financial responsibility of the applicant, taking into account the applicant's past performance, is adequate for the quantity, concentration and types of waste that may be deposited and the manner of depositing waste;*
- c) the studies to be undertaken, works to be constructed, plans, including contingency plans, to be submitted, and monitoring programs to be undertaken; and*
- d) any future closing or abandonment of the appurtenant undertaking.*

*(2) The monitoring programs referred to in paragraph (1)(c) may specify responsibilities of the applicant, the Nunavut Impact Review Board or Her Majesty in right of Canada.*

*(3) The Board shall, to the extent that it is authorized under this Act to do so, include in a licence the terms and conditions of any project certificate, referred to in section 12.5.12 or*



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*12.6.17 of the Agreement, that is issued in respect of the use of waters or deposit of waste or the appurtenant undertaking to which that use or deposit relates.*

**Section 71** *In fixing the conditions of a licence, the Board shall make all reasonable efforts to minimize*

- a) any adverse effects of the licenced use of waters or deposit of waste on aquatic ecosystems and on the persons who are entitled to be paid compensation under section 58 or 60;*
- b) any interference by any person referred to in section 62 with the existing use of waters by the Inuit, whether that use is or is not licenced; and*
- c) any loss or damage described in section 63.*

With all of the above in mind, the Applicant shall use its judgment to determine what information is relevant to the scope of the Application, taking into account the information and studies concerning the use of waters or the deposit of waste that are required for the Board to evaluate the qualitative and quantitative effects of the use or the deposit on waters, in accordance with **Section 48(2)** of the Act.

## **2 Guidelines for the Provision of Supplemental Information**

The Applicant shall submit with the application a concise executive summary of the application and of any separate supporting document, report or study, in English, Inuktitut and Inuinnaqtun. A summary document should be presented which is to contain details of the information requested rather than general statements.

In complying with the NWB information guidelines, the Applicant, where practical, may combine components of the information requested in List 2.1 and 2.2 as well as the information requested in Section 3 into more concise plans to provide clarity and eliminate duplication. If this practice is considered, then the Applicant shall clearly outline, through proper referencing and clear detailed statements, how the NWB shall consider the documents that have combined elements of information. Information management is the responsibility of the Applicant. The Applicant is to guide the NWB through its application in a fluid logical manner.

The Applicant is to recognize that the NWB water licence application process is independent of NIRB's environmental assessment process. As such, the materials provided to NWB must be able to support the application on their own merit. If



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documents used during the NIRB process are also being used to support the NWB water licence then they must be submitted and adequately referenced in the NWB water license application. It is inferred that information filed at NIRB may form the basis of the design, operations, and management of the infrastructure and systems proposed in the water licence application. The Applicant is to decide in what fashion they wish to compliment the water licence application with materials filed with NIRB. Of course the Applicant is required to guide the NWB through water licensing materials with appropriate referencing of materials that may compliment the water licence

The Applicant is to understand that each piece of design or management correspondence shall act as a discrete stand-alone document that effectively discusses the specifics of a particular design or management plan (that is signed for authorship, and where appropriate, sealed by a qualified professional) The Applicant is to provide a CV (curriculum vita) for each signing professional as well as any other representative that intends to participate at a Public Hearing in its water licence application. The CV, partnered with the application materials and/or testimony provided, will allow the NWB to understand the weight of opinions presented through the written and verbal records.

The NWB will not engage in an exhaustive process of conditionally approving technical reports through conditions set in a water licence. Thus it will be necessary to provide information related to design and management prior to water licence issuance. With this in mind the Applicant is encouraged to develop the design of infrastructure, and formulate management, operational, and contingency plans beyond the conceptual and intermediate phases before the submittal of a water licence application.

Through the design of a full scale operational mine, it is intuitively understood that individual designs and management plans will interconnect with one another (i.e. Site water management is a function of the structures on site set to convey waters). The Applicant is to communicate the connectivity of discrete design and management plans through discussion in the discrete designs and management plans or through a separate document that details the macroscopic view of mine component interconnectivity. A statement should be included to further clarify interlinking and cross-referencing of sub-documents. For example, if a main summary document is used to guide the reader through the application, links to sub-documents along with cross-linking between sub-documents may be required (when examining the contents of **Annex A**, a discrete Abandonment and Restoration (A&R) Plan is not presented. It must be understood that the Applicant is to still guide the NWB through A&R practices presented in individual reports through a covering document that outlines all components of the A&R Plan in the water licence application). Cross-referencing to all sub-documents and reference materials should include title, section, and page number of the supporting document.



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The NWB encourages and expects the Applicant to adhere to best engineering practices and sound construction methods when designing and managing infrastructure related to the use of waters or the deposition of wastes. The NWB encourages the use of ASTM standards when defining and developing project specifics in technical documents. Generally the following information should be presented, though not limited to, when submitting application designs and plans as outlined in List 2.1

### **List 2.1**

- i Design rational; design requirements, design criteria, design parameters, design standards/analysis/method;
- ii Design assumptions and the limitations associated with such design assumptions;
- iii The inclusion of clear, definable engineering qualifiers with all design drawings and reports;
- iv Site specific data and analysis to support the design and management decisions made;
- v Materials that appropriately delineate the particulars of a design or plan;
- vi Construction methods and procedures in how infrastructure will be put in place on-site.
- vii Instrumentation and monitoring requirements of the proposed designs and plans;
- viii Details on how facilities, structures, and plans will be operated, maintained and implemented;
- ix Details on chemicals or other hazardous or potentially hazardous materials that will be used and will be in contact with or may impact water either directly or indirectly;
- x Mitigation measures that will be implemented when working in close proximity to water;
- xi Appropriate referencing of other documents and annexed materials.

The Applicant should also consider that the concept of *Adaptive Management* includes the need to describe the methods used to assess the risks associated with uncertainty in design and management, and clearly outline the measures and quantifiable markers for when a final design decision will be made. The Applicant shall keep in mind that *Adaptive Management* is a flexible framework to implement final decisions through a mature intermediate design and not a “*revolving door*” design method that allows for multi-iterations to a preliminary design. A commitment to a final design needs to be made through the designs and plans submitted in the water licence application, or a clear defined criteria for which final design decisions will be made must be submitted when a final design can not be presented. Installing the strategy of *Adaptive Management* through the design and management of the Meadowbank Project can positively refine



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mine operations through the dynamics of scientific modeling, experimentation and monitoring to improve processes and lessen environmental impact. The NWB will consider the key decision points the Applicant will use to define the *Adaptive Management* framework they plan to implement through mining operations. Additionally, *Adaptive Management* is not limited to design decisions. Mitigation and contingency plans should also consider the concept to help define when elements within plans require action through associated benchmark limits.

The NWB expects that plans and designs shall be presented where the use of water or deposit of waste will take place. The Applicant shall also consider that information must be presented where there is a potential impact through the deposition of waste, and describe the measures the applicant proposes to take to avoid or mitigate **any** adverse impact of the use of waters or the deposit of waste<sup>1</sup>; This may include, but not be limited to, the design and management of the issues in List 2.2.

### **List 2.2**

- i. earthwork infrastructure;
- ii. water intake facilities and how water will be withdrawn;
- iii. interim and permanent waste rock facilities;
- iv. tailings containment area;
- v. landfills;
- vi. landfarms;
- vii. fuel and chemical storage facilities;
- viii. explosives management areas and facilities;
- ix. construction materials (i.e. quarried rock);
- x. hazardous waste facilities;
- xi. site water management facilities;
- xii. wastewater treatment facilities;
- xiii. ore stockpiles and waste rock piles;
- xiv. dewatering programs;
- xv. hydrostatic testing programs;
- xvi. road, airstrip and ice road construction;
- xvii. water use;
- xviii. macroscopic site surface water and groundwater management;
- xix. spill contingency and emergency response;
- xx. interim and final abandonment and reclamation of the mine site;
- xxi. aquatic effects monitoring;

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<sup>1</sup> NWNSRTA Section 48(3)(c)



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- xxii. general monitoring;
- xxiii. quality assurance and quality control;
- xxiv. geotechnical and structural monitoring;
- xxv. the collection of weather data for purposes of mine design;
- xxvi. metal leaching / acid rock drainage management;
- xxvii. permafrost protection.

It is understood that the Meadowbank Project may not include all of the design, construction, monitoring, and management plans listed above and that other designs and management plans may be required to be submitted by the Applicant. The NWB is available to assist and provide additional guidance on each design and management plan through future interactions with the Applicant. The Applicant shall understand that there will be a requirement to provide appropriately qualified as-built construction drawings once structures have been constructed and are in operation.

A summary table of all monitoring commitments is to be provided that details all Surveillance Network Program (SNP) locations. The table should include, but not limited to, parameter(s), location, frequency, and mining phase, along with, cross-referencing to sub-document where detailed information was provided. Where appropriate, a map detailing location of monitoring is to be provided within the application. It is suggested that the Applicant contact Peter Kusugak, Manager of Field Operations at Indian and Northern Affairs Canada (INAC).

The application is to include a summary table of expected quality and quantity of waters over time in all sumps, SNP, and discharge points, along with i) if applicable, adaptive management criteria to benchmark if mitigation/contingency are to be implemented, ii) if applicable, water quality criteria, and iii) management action.

The Applicant is to detail what information will be included in annual reports along with a proposed layout of information that will be submitted to the NWB within the application.

The Applicant is to submit a water licence application report that communicates structure design and management plans that use waters or may impact waters through the deposition of wastes. The Applicant is encouraged to develop design and management discussion through a clear methodical layout that is logical in nature. Additional information may be required from the Applicant following an initial assessment of the application by the NWB. The NWB will assist the Applicant in completing water licence application materials and recommends that the Applicant communicates with the NWB if uncertainty exists when preparing water licence application materials.





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The Applicant is to file, through cover letter correspondence, a *declaration of application completeness* authored and signed by the Chief Executive Officer indicating that the application submitted is considered complete and the guidelines issued have been consulted.

The NWB will not process an application that it deems to be incomplete and/or when supporting documents have not been submitted. The NWB will give the required hearing notice of no less than sixty-days after it deems the application to be complete. The Applicant shall understand that the water licence application must be a stand-alone document.

Although the NWB water license application is a stand alone document the Applicant must understand that it can not replace or supersede any other government regulations, territorial or federal. As such the commitments made by the Applicant to other governmental bodies (i.e. NIRB) should be described in a conformity table for all conditions pertaining to the water licence. Section 3 lists information that should also be included in the water licence application.

The NWB understands that the Applicant has communicated with and will provide each organization included on the NWB's distribution list with the application and determine the number of copies and the format (electronic and/or hard copies) each interested organization requires to complete their respective reviews.

### **3 Additional Information to be Considered by the Applicant**

#### **1. Water Quality**

- i. Results of the assessment of the permeability of any faults beneath the northwest arm of Second Portage Lake (i.e. the tailings impoundment area);
- ii. Mitigation measures that can be undertaken if groundwater monitoring around the Second Portage tailings facility demonstrates that contamination from tailings has occurred through the fault;
- iii. Results of the re-sampling of the existing groundwater monitoring wells, which was to occur as soon as possible upon reopening the camp in 2007;
- iv. Revised estimates of the quality of the groundwater that will flow into the open pits, using existing groundwater data from both rounds of sampling (i.e. 2003 and 2004);



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- v. Revised site water quality model using the updated estimates of the quality of groundwater flowing to the pits, and additional groundwater quality data collected on site. The revised water quality model should be used to assess the impacts of pit water discharges on the environment and to develop mitigation measures for disposing of pit water of poor quality;
- vi. Detailed contingency plans for the treatment of turbid water during dewatering activities and/or increased suspended solids during operations (i.e rewatering);
- vii. Detailed information regarding the disposal of lake bottom sediments;
- viii. Detailed water treatment plans for discharges from the Tailings Impoundment Area, as well as the Vault Pit attenuation pond (on a contingency basis). Water treatment plans should include estimates of treatment efficiency for each parameter of concern and a description of pH adjustment methods;
- ix. Details regarding treatment of camp sewage, including the type of treatment system and the expected treatment capabilities;
- x. The NIRB Project Certificate requires the establishment of “receiving environment discharge criteria” for discharges into Wally Lake and Third Portage Lake. The water license application should clearly outline the proposed discharge criteria, how the criteria were developed, and how these criteria will be used to prevent ecological effects in the receiving environment as a result of reconnecting the pit lakes to the watershed (especially in regards to contaminants, major ions and nutrients);
- xi. Details regarding the effluent outfall configuration;
- xii. Predictions for the likely behaviour of the discharge plume;
- xiii. Bathymetric information for Wally Lake;
- xiv. Detailed treatment plans for the treatment of effluent from attenuation pond and/or reclaim pond prior to transfer to the Goose Pit;
- xv. Discussion of the consequences of long-term stratification in the pit lakes and associated contingency plans; and
- xvi. Monitoring plan for the Baker Lake collection sump, including parameters to be sampled, sampling frequency and sampling locations.

## **2. Spill Contingency Plan**

- i. Detailed Spill Contingency Plan for the mine site, the all-weather road, and the marine components. The Spill Plan should include, but not be limited to, the following information:
- ii. Identification, description and evaluation of the potential impacts of all project-related accidents and malfunctions (i.e. types, sources, threat-risk



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assessment, worst-case scenarios, etc.) that may occur during each phase of the project, including, but not limited to:

- a. Spills of petroleum hydrocarbons, hazardous materials, and other contaminants of concern onto land, ice, and into marine waters (i.e. ocean/sea/salt waters), freshwaters, ground waters, and potable water supplies;
  - b. Explosions;
  - c. Fires;
  - d. Transportation accidents involving aircraft, marine vessels and barges, and land based motor vehicles, including any hazardous material cargoes for all modes.
- iii. Description of emergency response plans and procedures for the accidents, and malfunctions, including: the level of preparedness; safety; response capacity; and technological capability and any deficiencies or shortcomings in this regard, and indicate how the latter will be addressed. Plans should incorporate sufficient detail to understand and assess emergency preparedness and response capability; ensure emergency response plans will work; and, determine how and when plans will work.
- iv. Identification of communities, organizations, agencies, boards, and governmental parties (and their regulatory requirements) involved in preparing programs and identify opportunities for partnerships, coordination, and participation
- v. Explanation of how the Applicant will ensure project contractors meet the Applicants' due diligence standards with respect to oil and hazardous material spill prevention, preparedness, response, and restoration.
- vi. A timetable for when the Applicant will file the appropriate plans and procedures as required by the governmental parties.

### **3. Closure and Reclamation Plan**

- i. Details regarding the timing of the removal of dewatering dikes and the implications of this action on water quality; and
- ii. Detailed information regarding the method used to remove/breach the dewater dykes, including details of any mitigation measures for any adverse impacts.

### **4. Air Quality**

- i. Monitoring plan for incinerator emissions (including, but not limited to, stack testing and annual reporting);



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- ii. Detailed waste management plan; and
- iii. Justification regarding the selection of incinerators in regards to the use of best available economically feasible technologies.

## 5. Fisheries

Generally, to mitigate potential impacts to fish and fish habitat, any works or undertakings associated with the Meadowbank Project that are in or near waters frequented by fish should:

- i. Comply with the DFO legislation/policies/guidelines/Operational Statements as outlined below or noted within Section 3 of the Preliminary Guidelines for the Applicant.
- ii. Be done in manner that prevents the deposit of any materials in waters frequented by fish,
- iii. Comply with the DFO Freshwater Intake End-of-Pipe Fish Screen Guideline (March, 1995), to minimize impingement/entrainment of fish,
- iv. Comply with the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky, 1998), whenever possible
- v. Ensure that hydrostatic testing be done in manner that prevents the transfer of aquatic species into water bodies where they do not currently frequent,
- vi. Ensure that groundwater is managed in a manner that prevents any seepage of hazardous waste materials into waters frequented by fish.

Site specific environmental data considerations for works in or near waters that are frequented by fish should include, but not be limited to:

- vii. Description of proposed works or undertakings (culvert crossing, bridge, intake, infilling pipeline, etc.)
- viii. Construction Plans:
  - a. proposed start and completion dates
  - b. methods of construction
  - c. detailed site description (incl. diagrams, photos)
  - d. details of materials and machinery to be used
  - e. a description of types and quantities of explosives to be used, if any
  - f. operation and maintenance plans
- ix. Fish and Fish Habitat Present:
  - a. detailed area description (including Photographic record),
  - b. description of fish habitat (including river or lake bottom substrates such as silt, sand, or cobble),
  - c. presence of sensitive habitats (spawning, migration corridors etc.),



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- d. description of aquatic and riparian vegetation,
- e. fish community and lifestage present,
- f. depth and watercourse width,
- g. max/min water flows, currents, tides,
- h. turbidity and sediment loads (total suspended solids),
- i. sport, commercial, subsistence fishery present,
- x. Potential Environmental Effects and Mitigation Measures to Protect Fish Habitat
  - a. potential effects on fish or fish habitat,
  - b. area (in m<sup>2</sup>) to be impacted,
  - c. measures to avoid sensitive periods and habitat areas (i.e., spawning beds, migration corridors),
  - d. measures to avoid physical impacts on habitat,
  - e. measures to maintain flows and fish passage,
  - f. measures to avoid sedimentation,
- xi. Compensation/Monitoring:
  - a. Detailed habitat no-net-loss plan and site restoration plan,
  - b. on site construction monitoring plan,
  - c. post construction monitoring

## 6. Transportation

The Applicant will also be responsible to provide formal applications to the Navigable Waters Protection Program (NWPP) for any works

## 7. Annual Reporting

The annual report should include, but not be limited to, reporting of:

- i. Water related monitoring;
- ii. Comparison of water quality and quantity monitoring data to the forecasted information in the summary table attached to the application;
- iii. Implementation of the conditions in the NIRB project certificate related to NWB mandate;
- iv. Project changes under Adaptive Management; and
- v. Any actions taken to resolve directions from the Inspector.

## 8. Security

The Applicant is to provide an estimate of security as defined under **Section 76** of NWNSRTA and **Section 12** of the NWT Water Regulations. The Applicant must



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inform the NWB if a compensation agreement is in place as required under Section 58 otherwise an estimate of compensation as suggested under Section 60 of the Act for the Board's decision is required.

## **4 Additional Documents to Assist the Applicant**

For the development of supplemental information the Applicant should be guided by, and is directed to, the following standards/guidelines/legislation that includes, but is not limited to:

- AWWA (American Water Works Association) - Standard Methods for the Examination of Water and Wastewater.
- CCME (Canadian Council of Ministers of the Environment) – *Environmental Code of Practice for Above Ground and Underground Storage Tanks Systems containing Petroleum Product and Allied Petroleum Products (2003)*;
- CCME – *Canadian Environmental Quality Guidelines*
- CCME – *Canadian-Wide Standards for Petroleum Hydrocarbons in Soil*
- DFO – *Freshwater Intake End-of-Pipe Fish Screen Guide*;
- DFO – *Guidelines for the Use of Explosives In or Near Canadian Fisheries Water*;
- DFO - *Guidelines for the Use of Explosives in or near Canadian Fisheries Waters*,
- DFO – *Operational Statements*
- DFO – *Policy for Management of Fish Habitat*;
- DFO – *Practitioners Guide to the Risk Management Framework*
- DFO – *Practitioners Guide to Habitat Compensation*
- EC (Environment Canada) – *Guidelines for the Preparation of Hazardous Material Spill Contingency Plans*;
- EC – *MMER Environmental Effects Monitoring Program Protocol*;
- *EC - Canada-Wide Standards for Mercury Emissions*
- GN (Government Nunavut) – *Contaminated Site Remediation*;
- GN – *Environmental Guideline for Contingency Planning and Spill Reporting in Nunavut*;
- GN – *General Management of Hazardous Waste in Nunavut*;
- GN – *Occupational Health & Safety Guidelines*;
- GN – *Spill Contingency Planning and Reporting Regulations*;
- GN – *Environmental Protection Act*;
- GNWT – *Ice Road Guidelines*;
- HC - *The Guidelines for Canadian Drinking Water Quality*



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- INAC (Indian and Northern Affairs Canada) – *A Policy Respecting the Prohibition of Bulk Water Removal from Major River Basins in Nunavut*;
- INAC – *Mine Site Reclamation Policy for Nunavut*;
- *International Cyanide Management Code*
- JC (Justice Canada) – *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;
- JC– *Territorial Lands Act*;
- JC – *Territorial Land Regulations*;
- JC – *Canadian Environmental Protection Act*
  - *Federal Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on federal Lands or Aboriginal Lands Regulation*
  - *Sulphur in Diesel Regulation*
  - *Fuels Information Regulation No. 1*
  - *Sulphur in Gasoline Regulation*
  - *Benzene in Gasoline Regulation*
  - *Interprovincial Movement of Hazardous Waste Regulation*
  - *Federal Halocarbon Regulation*
  - *National Pollutant Release Inventory*
  - *Environmental Emergencies Regulation*
- JC – Fisheries Act
  - Metal Mining Effluent Regulations
- JC – Water Regulations (as attached to the Nunavut Waters and Nunavut Surface Right Tribunal Act) and other guidelines adopted by the NWB;
- NWTWB – *Guidelines for Abandonment and Restoration Planning for Mines in the NWT*;
- ASTM - Standards
- The Mining Association of Canada “*A Guide to the Management of Tailings Facilities*” (1998);
- CDA – Dam Safety Guidelines
- Navigable Waters Protection Act (NWPA)
- TC - Navigable Waters Protection Program (NWPP)
- TC – *Transportation of Dangerous Goods Act/Regulations*;
- Workplace Hazardous Materials Information System (WHMIS);

Copies of all guidelines referenced in this document may be available on the NWB ftp site or with Justice Canada for federal legislation and policies. The Applicant may have to contact the appropriate author of the above listed guidelines for a copy if needed.



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
FAX: (867) 360-6369

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The Applicant is encouraged to consult with governmental agencies on issues related with the above listed guidelines. When a guideline is used by the Applicant the NWB requests the use of well-developed statements within the body of a reports text to clearly reference where a guideline was used. Additionally, a summary table detailing what standards/guidelines was considered with reference to application section, title, and page number shall be included in the main application document. When developing discussion and the Applicant's case, the application is to point the NWB to the appropriate section of a governmental guideline where additional information may be found. It is the Applicant's responsibility to ensure that all necessary standards and guidelines are considered in the water licence application.





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GJOA HAVEN, NU X0B 1J0

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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

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## ANNEX A

The NWB has prepared the attached Table of Contents (TOC) with the Applicant to guide the structure and format of the application. This TOC will act as a reference to where information, relevant to the water licence application, has been filed. Compliance to the TOC does not imply that all necessary materials to deem the application complete are submitted.



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

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## Meadowbank Draft TOC for the NWB Licence Application

### Executive Summary

English  
Inuktitut

### 1.0 Introduction

### 2.0 Project Description

#### 2.1 Summary of Key Baseline Studies

#### 2.2 Regional and Local Setting

##### 2.2.1 Surface Water Regime

2.2.1.1 Receiving lakes (lake id, hydrology, water quality); bathymetry, overland runoff

##### 2.2.2 Groundwater Regime

2.2.2.1 (Hydraulic conductivity, groundwater quality)<sup>2</sup>

##### 2.2.3 Ground Conditions for Engineering Designs

2.2.3.1 (Dewatering dikes, tailings, faults)

##### 2.2.4 Mine Rock Geochemistry

2.2.4.1 Waste rock

2.2.4.2 tailings;

2.2.4.3 overburden)

#### 2.3 Mine Plan Overview

### 3.0 Water Licence Activities

#### 3.1 Water Withdrawal Activities

3.1.1 Camp use

3.1.2 Mill use

#### 3.2 Water Diversion Activities

3.2.1 East dike

3.2.2 Central dike

3.2.3 Goose dike

3.2.4 Portage dike

3.2.5 Walley dike

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<sup>2</sup> The groundwater quality model should be revised using all available data



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
FAX: (867) 360-6369

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- 3.2.6 Other small dikes
- 3.2.7 Ditches and sumps
- 3.2.8 Lake dewatering -Vault, Second and Third Portage Lake
- 3.2.9 Vault Road culvert
- 3.2.10 Discharge into Walley Lake
- 3.2.11 Discharge into Third Portage
- 3.2.12 Dike Breach

### 3.3 Waste

- 3.3.1 Mine Rock Waste Piles- Portage and Vault
- 3.3.2 Tailings Impoundment Facility
- 3.3.3 Landfills<sup>3</sup>

### 3.4 Other Licence Related Activities

- 3.4.1 Baker Lake Fuel Tank Farm
- 3.4.2 Baker Lake ditches and sumps

## 4.0 Management Plans

- 4.1 Waste Rock Management
- 4.2 Tailings Management
- 4.3 Water Management (incl. water balance)
  - 4.3.1 Water treatment (incl sewage)
- 4.4 Baker and Plant Site Facilities<sup>4</sup>
  - 4.4.1 Fuel storage
  - 4.4.2 Landfill
- 4.5 Landfill management<sup>5</sup>
- 4.6 Emergency response and spill contingency<sup>6</sup>

## 5.0 Proposed Water Quality Discharge Limits

## 6.0 Environmental Monitoring Plans

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<sup>3</sup> The Applicant is to also detail how petroleum contaminated soils on site will be managed during operation. If this includes the use of a Landfarm facility the Applicant is to include pertinent details and design on such.

<sup>4</sup> Incineration issues related to water licensing shall be included in the water licence application.

<sup>5</sup> The Applicant is to detail operations and management of Landfarm Facilities if they are proposed.

<sup>6</sup> This shall be for all operations associated with the project (i.e. mine site, roads, barging activities).



P.O. Box 119  
GJOA HAVEN, NU X0B 1J0

TEL: (867) 360-6338  
FAX: (867) 360-6369

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- 6.1 Rock Storage Facility
- 6.2 Tailings Monitoring
- 6.3 Mine Site Water Quality
- 6.4 Receiving Water Quality
- 6.5 Waste areas (Landfill, hazardous waste, etc)
- 6.6 Baker Lake Marshalling Area