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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

File No.: 3BC-EUR1116

June 08, 2011

Mr. Carl Carroll
Property Management Division
Environment Canada
335 River Road
Ottawa ON K1V 1C7

Email: carl.carroll@ec.gc.ca

RE: NWB Licence No. 3BC-EUR1116

Dear Mr. Carroll:

Please find attached Licence No. 3BC-EUR1116 issued to Environment Canada by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*. The terms and conditions of the attached Licence related to water use and waste disposal are an integral part of this approval.

If the Licensee contemplates the renewal of this Licence, it is the responsibility of the Licensee to apply to the NWB for its renewal. The past performance of the Licensee, new documentation and information, and issues raised during a public hearing, if the NWB is required to hold one, will be used to determine the terms and conditions of the Licence renewal. Note that if the Licence expires before the NWB issues a new one, then water use and waste disposal must cease, or the Licensee will be in contravention of the *Nunavut Land Claims Agreement* (NLCA) and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSTRA). However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least three months prior to the Licence expiry date.

If the Licensee contemplates or requires an amendment to this licence, the NWB may decide, in the public interest, to hold a public hearing. The Licensee should submit applications for amendment as soon as possible to give the NWB sufficient time to go through the amendment process. The process and timing may vary depending on the scope of the amendment, however a minimum of sixty (60) days is required from time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments received by interested persons

on issues identified. This information is attached for your consideration¹.

Sincerely,



Thomas Kabloona
Nunavut Water Board Chair

TK/kk/ip

Enclosure: Licence No. **3BC-EUR1116**
 Comments – INAC, GN-CLEY

cc: Distribution – Qikiqtani

¹ Indian and Northern Affairs Canada (INAC), March 04, 2011; and Government of Nunavut – Department of Culture, Language, Elders and Youth (GN-CLEY), February 23, 2011.

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DECISION

LICENCE NUMBER: 3BC-EUR1116

This is the decision of the Nunavut Water Board (NWB) with respect to an application dated October 21, 2010 for a renewal water licence made by:

ENVIRONMENT CANADA

to allow for the use of water and disposal of waste during operation and maintenance of Environment Canada's Eureka High Arctic Weather Station (HAWS), located on Ellesmere Island within the Qikiqtani Region, Nunavut generally located at the geographical coordinates as follows:

Latitude: 79° 59' 41" N

Longitude: 85° 48' 48" W

DECISION

After having received a positive land use plan conformity determination from the Nunavut Planning Commission on January 6, 2011, and following notification of exemption from screening by the Nunavut Impact Review Board on January 11, 2011, the NWB decided that the application could proceed through the regulatory process. In accordance with S.55.1 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA)* and Article 13 of the *NLCA*, public notice of the application was given and interested persons were invited to make representations to the NWB.

After reviewing the submission of the Applicant and considering the representations made by interested persons, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the *NLCA* and of the *NWNSRTA*, waived the requirement to hold a public hearing, and determined that:

Renewal Licence Number 3BC-EUR1116 be issued subject to the terms and conditions contained therein. (Motion #: 2011-05-L08)

SIGNED this 7th day of June 2011 at Gjoa Haven, NU.



Thomas Kabloona
Nunavut Water Board Chair

TK/kk/ip

LICENCE NO: 3BC-EUR1116

I. INTRODUCTION

The Eureka High Arctic Weather Station (HAWS) was established in 1947. The Eureka HAWS is approximately 1100 km from the true North Pole and is located on the northern shore of Slidre Fiord, at the north-western tip of Fosheim Peninsula, Ellesmere Island, approximately 425 km northwest of the Hamlet of Grise Fiord. The total area of the occupied Site is approximately 2.23 ha. The primary purpose of the Eureka station is to collect weather information in order to produce public weather forecasts. The station also serves as a staging location for other science based activities in the High Arctic, and provides support to the Arctic aviation community.

Facilities at Eureka include operations, shops and other buildings, maintenance garage, warehouses, pump-house, power-house, fuel storage facility, electrical-plumbing-carpentry facilities, water reservoir, incinerator, sewage lagoon and several landfills.

II. PROCEDURAL HISTORY

The previous water licence was issued by the Nunavut Water Board (NWB) to Environment Canada on February 6, 2006 to allow for the use of water, disposal of waste and the handling or storage of petroleum products or hazardous materials for the Eureka Weather Station located within the North Baffin Region, Nunavut. The NWB received an application for the renewal water licence from Environment Canada (EC) on October 21, 2010. The following plans were included with the application:

- Oil Pollution Emergency Plan for Land Spills;
- Summary of Operations and Maintenance Procedures for Drinking Water, Sewage, Solid Waste Disposal and Waste Treatment Facilities;
- Interim Abandonment and Restoration Plan;
- Sludge Disposal Plan;
- Quality Assurance & Quality Control Program.

Following an internal completeness review of the application, the NWB noticed that the Interim Abandonment and Restoration and Sludge Disposal Plans are the same as presented for Board approval on March 17, 2009. The technical review of these plans was completed on September 13, 2010 and identified some issues to be addressed. The Licensee was requested to revise the plans and re-submit for approval which wasn't done. Therefore the NWB requested on November 2, 2010 to update those plans. Following receipt of additional information provided by Environment Canada on December 14, 2010 and January 17, 2011, the NWB notified parties on January 18, 2011 and distributed the file for review. Following a thirty (30) day review period followed by an additional fifteen (15) day extension (requested by Indian and Northern Affairs Canada - INAC), and after reviewing all submissions, the renewal Licence 3BC-EUR1116 has been issued.

III. GENERAL CONSIDERATIONS

The following sections outline the issues identified by the NWB and raised by interested parties and provides the background for the terms and conditions imposed within the body of the licence.

A. Term of Licence

In accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* s. 45, the NWB may issue a licence for a term not exceeding twenty-five years. In determining an appropriate term of a water licence, the Board considers a number of factors including, but not limited to; the results of INAC site inspections and the corresponding compliance record of the Applicant, as well as intervener comments provided during the application review process.

The applicant proposed a ten (10) year term for the renewal licence. In the past the NWB has issued a five (5) year licence for Eureka HAWS. INAC recommended to renew the licence for five (5) years, which should be sufficient time for EC to improve the performance of their domestic wastewater treatment capacity. It is recommended that EC keep the NWB and INAC aware of any developments concerning the wastewater treatment lagoon replacement and closure/reclamation. The NWB finds that a five (5) year term is more appropriate in this case. The Licence duration will allow the Licensee to properly carry out the terms and conditions of the Licence and to improve the performance of the wastewater treatment facility.

B. Annual Reporting

The NWB has imposed on the Licensee, the requirement to produce an Annual Report. These Reports, which are standard requirements for NWB licences, are for the purpose of ensuring that the NWB has an accurate annual update of the Licensee's activities related to water use and waste disposal during a calendar year. This information is maintained on the NWB Public Registry and is available to interested parties upon request. A "*Standardized Form for Annual Reporting*" is to be used by the Licensee and is available from the NWB file transfer protocol (FTP) site under the Public Registry link at the NWB Website.

Website Public Registry:

<ftp://nunavutwaterboard.org/ADMINISTRATION/Standardized%20Forms/>.

This form provides the basis for annual reporting and format, however individual licences with project specific reporting requirements will need to provide information in addition to that of the standard form.

C. Water Use

The Eureka HAWS obtains its water for domestic purposes from nearby Station Creek. The water is pumped from Station Creek into the water reservoir using a submersible pump in order to reduce the transfer of silt from the creek to the reservoir. In the past, a diversion berm was constructed annually to divert water from the creek into the reservoir. This had resulted in unusually high sediment characteristics within the reservoir and the practice was converted to the submersible pumping system. The water is then transferred from the water reservoir to holding tanks within the Eureka complex building and is then chlorinated. The potable water is then further treated by filtration and Reverse Osmosis prior to use for drinking and food preparation. The volume of water in the impoundment must be sufficient to supply the Eureka HAWS needs throughout the year. It is estimated that the impoundment holds approximately 12,000 m³ of water. Daily consumption of water for a location such as Eureka HAWS has been estimated to be 290 L per person per day (Smith and Nahir, 2000). The requested volume has not changed and is 10,000 m³ per annum.

D. Waste Disposal

Sewage

The HAWS facility utilizes a single stage sewage lagoon system for the treatment of wastewater. The wastewater from the Main Complex flows to a holding tank in the pump house. When the tank is full it is pumped to a single-cell sewage lagoon for storage and primary treatment that is subsequently decanted twice a year to Slidre Fiord, at the beginning of July and the end of August. INAC has indicated that the lagoon is situated within thirty (30) metres of the marine environment and based on the effluent quality monitoring results included in the 2008 and 2009 Annual Reports, this facility is having difficulty meeting licensed effluent quality discharge limits for Biochemical Oxygen Demand, Total Suspended Solids, and pH. In 2009, EC (the Licensee) initiated an “options” analysis for sewage treatment and disposal at Eureka HAWS by Golder Associates (GA). GA recommended the construction of a new 2 cell facultative sewage lagoon as the most viable among the three preferable options. Subsequent to this report, a geotechnical study was initiated by Worley Parsons (WP) in order to further investigate the geotechnical feasibility of constructing a new 2 cell sewage lagoon as an option. EC indicated that this report is in the draft stage and will be forwarded to the NWB when completed (early 2011).

Currently, there is no management of sludge from the wastewater lagoon as all settled solids are left in place within the lagoon. EC’s strategy for handling the sludge has not been finalized but a two-cell drying bed is being considered along with the disposal of dried sludge either in place or at an existing site landfill. Prior to removing any sludge, the Licensee shall revise the approved November 2010 Sludge Disposal Plan and submit for Board review as required in Part D, Item 14. The revised Plan shall specify the mitigation measures that will be implemented to prevent any negative impacts to surrounding water sources that can result from the drying or disposal of this material. INAC noted that according to the submitted documents, sludge sampled from the existing lagoon in the summer of 2006 had concentrations of certain parameters exceeding the Canadian Council of Ministers of the Environment “*Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, 1999*”. The Licensee states that EC and the Department of National Defence (DND) are investigating the reasons for these exceedances. The summary of analysis findings shall be submitted for the Board’s review.

Sewage Effluent Quality Parameters

In order to protect receiving environment, the NWB has included Effluent quality limits for Total Suspended Solids and Biological Oxygen Demand that are consistent with the “*Guidelines for the discharge of treated municipal wastewater in the Northwest Territories (1992)*”. Effluent discharge quality is set based on annual release to a marine fiord environment. Other standard parameters have been included for consistency with other municipal licences.

Eureka HAWS is a Federal facility and as such, the Licensee is encouraged to achieve the recommendations set out in the EC document “*An Approach for Assessing and Managing Wastewater Effluent Quality for Federal Facilities – Final Report, June 1, 2000*” prepared for the Federal Committee on Environmental Management Systems / Wastewater Working Group, Environmental Quality Branch, Environment Canada. The monitoring requirements have been included in the Licence to assist in the characterization and evaluation of the effluent quality.

Solid Waste -Landfills

The “Summary of Operations and Maintenance Procedures for Drinking Water, Sewage , Solid Waste Disposal and Waste Treatment Facilities”, dated January, 2011, indicates that the major active landfills

are just south of the east end of the landing strip. They are approximately 1.3 km from the Fjord. The referenced landfills are as follows: East Landfill, Ash Landfill, Asbestos Landfill, the former West Landfill, and the Crushed Barrel Landfill. According to this plan, the project's main East Landfill is used to contain non-organic/non-hazardous waste that cannot be incinerated and ash from the incinerator. INAC noted that it is not clearly articulated which landfill areas will remain in use and which landfills will be reclaimed as part of the present abandonment and restoration plans. This item is to be addressed through the preparation of an Operation and Maintenance Manual, (see item H) complete with a schedule for implementation. The Licensee shall also identify the landfills that are jointly operated with the Department of National Defence (DND) or other organizations. The requirement is set out in Part H, Item 1 of the Licence.

Landfarm

In their comments, INAC raised concerns regarding the projects petroleum hydrocarbon (PH) contaminated soil treatment facility (Landfarm) situated adjacent to the main complex area as referenced in document "Appendix B - MAPS of UNDERTAKING" provided with the Application. INAC recommended that the licence include effluent quality limits for discharge of effluent released from this facility, along with the corresponding monitoring program station(s). As a Federal facility the Licensee is encouraged to achieve the recommendations set out in the EC document "*Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils*" (2005) and in the GN-DOE "*Environmental Guideline for Contaminated Site Remediation*" (2009).

E. Conditions Applying to Infrastructures, Access and Roads

The Licensee will be required to notify the Board sixty (60) days prior to the beginning of any modifications to the Water Supply and/or Waste Disposal Facilities. If the changes proposed are consistent with the terms of the Licence and Act and the Board does not otherwise notify the Licence, proposed modification may take place. Modifications will require as-built drawings produced and stamped by an Engineer.

F. Modifications and Construction

The Application's supporting documents indicate that construction of new facilities (2 cell facultative sewage lagoon) will likely take place during this Licence term. The NWB reminds the Licensee that in accordance with Part F, Item 1, the Licensee shall submit to the Board for approval, for Construction drawings at least sixty (60) days prior to commencing the activity, and in accordance with Part F, Item 4, provide as-built plans and drawings of the construction and/or Modifications. These plans and drawings shall be stamped and signed by an Engineer.

G. Spill Contingency Planning

The site-specific Spill Contingency Plan ("Plan") will assist the Licensee in responding to emergencies such that the impacts to water in particular and the environment and public health in general are minimized. The following types of petroleum and allied petroleum products are present at Eureka HAWS:

- Diesel fuel which is used to generate electricity and heat as well as fuel diesel motorized equipment;
- Gasoline to fuel automobiles, pumps and snowmobiles;
- Hydraulic fluids, greases, etc. for equipment and vehicles;
- Aviation Fuel for aircraft;
- Diesel engine oil for equipment and vehicles;

- Hydraulic fluids for equipment and vehicles;
- Glycol for equipment and vehicles; and
- Petroleum and allied petroleum wastes.

Gasoline is brought on shore in 205L drums. The capacity of gasoline tanks located just south of the tank farm is 2,273L. The maximum tank Capacity for Diesel is 693,000L.

The Plan entitled “Emergency Plan for Petroleum and Allied Petroleum Products - Eureka High Arctic Weather Station”, revised on April 1, 2010 and submitted April 27, 2010 as a requirement of Part H Item 1 of water license 3BC-EUR0611, shall be revised and submitted to the Board for approval within the ninety (90) days of issuance of this renewal licence as per Part G, Item 2 of the licence.

H. Operation and Maintenance

The NWB received on November 23, 2007, a document titled “Summary of Operations and Maintenance Procedures for Drinking Water, Sewage, Solid Waste Disposal and Waste Treatment Facilities” (“Manual”), under Part G, Item 1 of the licence 3BC-EUR0611. Several points were identified by the NWB for additions/revision of the plan. A revised document was submitted on March 1, 2009 and further to this, an updated/revised Manual was again received on February 16, 2010. On September 13, 2010, the NWB required the Licensee to submit an updated Manual with the renewal application. An updated Manual, dated January 2011, was submitted as a part of the renewal application. Several items that were identified in previous versions have persisted through to the most recent manual received. The Licensee is required to submit for the Board’s approval, a revised Manual that shall include items identified within the NWB’s September 13, 2010 review letter. INAC recommended that operations and maintenance procedures for the Landfarm be included within the Manual. INAC noted that the Manual shall demonstrate that the waste management facilities are properly engineered and operated. It was also noted that the November 2010 Sludge Disposal Plan be incorporated into the Manual as well, with mitigation measures that will be implemented to prevent any negative impacts to surrounding water sources that may result from the drying or disposal of the Sludge prior to sludge removal.

I. Abandonment and Restoration Plan

The Licensee was required to submit an Interim Abandonment and Restoration Plan (“Plan”) under Part I, Item 1 of licence 3BC-EUR0611. The NWB received the document entitled “Interim Abandonment and Restoration Plan - Eureka High Arctic Weather Station” (“A&R Plan”) on March 17, 2009. Some items were identified and the Plan was not approved at that time. The Licensee was requested to submit an updated Plan with the renewal licence application.

The revised “Interim Abandonment and Restoration Plan - Eureka High Arctic Weather Station” Plan, received with the application, dated December, 2010, has been approved by the Board.

INAC identified that there is infrastructure and waste material on site associated with the DND. The Licensee should communicate to the NWB and INAC any agreements in place with the DND or other parties, for reclamation initiatives along with their respective implementation schedules.

J. Monitoring Program

The Monitoring Program is established to collect water quality data to assess the effectiveness of treatment for protection of public health and to assess potential impacts to the environment associated with the water use or waste disposal facilities. Parameters in addition to those that are regulated under Part D have been included in the Monitoring Program in order to assist in the characterization of effluent and the evaluation of treatment and the potential impacts to the receiving environment. The licence also includes effluent discharge monitoring for effluent released from the landfarm.



NUNAVUT WATER BOARD WATER LICENCE

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

ENVIRONMENT CANADA

(Licensee)

ENVIRONMENT CANADA PROPERTY MANAGEMENT DIVISION
335 RIVER ROAD, OTTAWA, ON K1V 1C7

(Mailing Address)

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

Licence Number/Type: **3BC-EUR1116 TYPE "B"**

Water Management Area: NUNAVUT 04

Location: EUREKA HIGH ARCTIC WEATHER STATION,
QIKIQTANI REGION, NUNAVUT

Classification: MUNICIPAL UNDERTAKING

Purpose: DIRECT WATER USE AND DEPOSIT OF WASTE

Quantity of Water use not
to Exceed: TEN THOUSAND (10,000) CUBIC METRES ANNUALLY

Date of Licence Issuance: JUNE 7, 2011

Expiry of Licence: JUNE 7, 2016

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

Thomas Kabloona,
Nunavut Water Board Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of water and the disposal of waste for an undertaking classified as Municipal as per Schedule II of the *Regulations* at the Eureka High Arctic Weather Station (HAWS) Project, located approximately 425km north northwest of Grise Fiord, within the Qikiqtani Region, Nunavut.

- a. 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 deposits of such waste may enter any waters. Whenever new Regulations are made or existing *Regulations* are amended by the Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal 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 subject to such requirements; and
- b. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

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

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

“**Amendment**” means a change to original terms and conditions of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

“**Appurtenant Undertaking**” means an undertaking in relation to which a use of water or a deposit of waste is permitted by a licence issued by the Board;

“**Board**” means the Nunavut Water Board established under the *Nunavut Land Claims Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

“**Fuels Storage Product Transfer Area**” means the area around the connection point between a delivery truck, railcar, or vessel and bulk fuel storage with a capacity of 2500 liters or more as described in the water licence application dated October 21, 2011.

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

“Greywater” means all liquid wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet wastes;

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

“Landfarm Facility” means the facility for the petroleum hydrocarbon contaminated soil treatment situated adjacent to the main complex area as referenced in document Appendix B - MAPS of UNDERTAKING, October 21, 2010.

“Licensee” means the holder of this Licence;

“Modification” means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

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

“Regulations” means the *Northwest Territories Water Regulations* sor/93-303 8th June, 1993, omitting Section 5, Water Use or Waste Deposit without a Licence;

“Sewage” means all toilet wastes and greywater;

“Sewage Treatment Facility” means the single stage sewage lagoon described in the water licence application dated October 21, 2010;

“Solid Waste Disposal Facilities” means comprises the area and associated structures designed to contain solid waste as described in the *Summary of Operations and Maintenance Procedures for Drinking Water, Sewage, Solid Waste Disposal and Waste Treatment Facilities*, January 2011.

“Spill Contingency Plan” means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence;

“Sump” means an excavation in impermeable soil for the purpose of catching or storing water or waste;

"Toilet Wastes" means all human excreta and associated products, but does not include greywater;

"Waste" means, as defined in S.4 of the *Act*, any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means;

"Water" means, as defined in S.4 of the *Act*, except for the purposes of subsection 41(2), inland waters, whether in a liquid or solid state, on or below the surface of land

"Water Supply Facility" means the area and associated intake infrastructure at Station Creek, the reservoir, storage tanks and piping as described in the application submitted October 21, 2011.

3. **Enforcement**

- a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;
- b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and
- c. For the purpose of enforcing this Licence and with respect to the use of water and deposit or discharge of waste by the Licensee, Inspectors appointed under the *Act*, hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the appurtenant undertaking with the Board no later than March 31st of the year following the calendar year being reported, containing the following information:
 - a. A summary report of water use and waste disposal activities;
 - b. A list of unauthorized discharges and a summary of follow-up actions taken;
 - c. A description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;
 - d. A summary of all information requested and results of the Monitoring Program;
 - e. Map of monitoring program locations, and
 - f. Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

2. The Licensee shall notify the NWB of any proposed changes in operating plans or conditions associated with this project at least thirty (30) days prior to any such change.
3. The Licensee shall install flow meters or other such devices, or implement suitable methods required for the measuring of water volumes as required under Part J, Item 2.
4. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.
5. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
6. The Licensee shall review the Plans referred to in this Licence, as required by changes in operation and/or technology, and modify the Plan accordingly. Revisions to the Plans are to be submitted in the form of an Addendum to be included with the Annual Report.
7. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.
8. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at all times. Any communication with respect to this Licence shall be made in writing to the attention of:

(a) Manager of Licensing:

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

(b) Inspector Contact:

Manager of Field Operations, INAC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445

9. The Licensee shall submit one paper copy and one electronic copy of all reports, studies,

and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.

10. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board is received and acknowledged by the Manager of Licensing.
11. This Licence is assignable as provided for in Section 44 of the *Act*.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all water for domestic purposes from Station Creek through the Water Supply Facilities, up to a maximum of ten thousand (10,000) cubic metres annually.
2. If the Licensee requires water in sufficient volume that the source water body may be drawn down, the Licensee shall, at least thirty (30) days prior to commencement of use of water, submit to the Board for approval in writing, the following: volume required, hydrological overview of the water body, details of impacts, and proposed mitigation measures.
3. The Licensee shall equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.
4. A freeboard of 1.0 metre, or as recommended by a qualified geotechnical Engineer and as approved by the Board, shall be maintained at all dykes and earth-fill structures associated with the Water Supply Facilities.
5. The Licensee shall not remove any material from below the ordinary high water mark of any water body unless authorized.
6. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
7. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into water.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall locate areas designated for waste disposal at a minimum distance of thirty one (31) metres from the ordinary high water mark of any water body such that the quality, quantity or flow of water is not impaired, unless otherwise approved by the Board in writing.

2. The Licensee is authorized to dispose of all acceptable food waste, paper waste and untreated wood products in an incinerator.
3. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding waters, unless otherwise approved by the Board in writing.
4. The Licensees shall ensure that all hazardous wastes generated through the course of operation are backhauled and disposed of at an approved waste disposal site or as otherwise approved by the Board.
5. The Licensee shall dispose of and contain all non-combustible solid wastes at the appropriate landfill of the Solid Waste Disposal Facilities or as otherwise approved by the Board.
6. The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These records shall be made available to an Inspector upon request.
7. The Licensee shall direct all sewage to the Sewage Treatment Facility or as otherwise approved by the Board.
8. Effluent discharged from the Sewage Treatment Facility at monitoring station EUR-3 shall not exceed the following Effluent quality limits:

Parameter	Maximum Concentration of any Grab Sample
Biochemical Oxygen Demand (BOD)	100 mg/L
Total Suspended Solids (TSS)	120 mg/L
Fecal Coliforms	1×10^6 CFU/100 mL
pH	Between 6 and 9
Oil and grease	No visible sheen

9. Effluent discharge from the Landfarm Facility at monitoring station EUR-4 shall not exceed the following Effluent quality limits:

Parameter	Maximum Concentration of any Grab Sample
Benzene (µg/L)	370
Toluene (µg/L)	2
Ethylbenzene (µg/L)	90
Lead (µg/L)	1
Oil and Grease (mg/L)	15 and no visible sheen
Phenols (µg/L)	20

10. If Effluent does not meet the Effluent quality limits of Part D, Item 10, it shall be considered hazardous waste and disposed off-site at an approved facility.
11. A freeboard of 1.0 metre, or as recommended by a qualified geotechnical Engineer and as approved by the Board, shall be maintained at all dams, dykes and earth-fill structures associated with the Sewage Treatment Facility or Landfarm Facility.
12. The Licensee shall provide at least ten (10) days notification to an Inspector, prior to initiating any Effluent discharge from the Sewage Treatment Facility or Landfarm Facility.
13. The Licensee shall maintain the Sewage Treatment Facility to the satisfaction of the Inspector and operate in such a manner as to prevent structural failure.
14. Should the Licensee require the removal and disposal of sludge from the Sewage Treatment Facility, the Sludge Disposal Plan shall be revised and submitted to the Board for review, at least ninety (90) days prior to commencing the removal.

PART E: CONDITIONS APPLYING TO INFRASTRUCTURES, ACCESS AND OPERATIONS

1. The Licensee shall not store material on the surface or banks of frozen streams or lakes except what is for immediate use.
2. The Licensee shall not conduct any land based activity within thirty one (31) metres of the ordinary high water mark of any water body, unless otherwise approved by the Board.
3. All activities shall be conducted in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake any corrective measures in the event of any impacts on surface drainage.
4. With respect to access road, pad construction or other earthworks, the deposition of debris or sediment into or onto any water body is prohibited. These materials shall be disposed a distance of at least thirty one (31) metres from the ordinary high water mark in such a fashion that they do not enter the water.

PART F: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION

1. The Licensee shall submit to the Board for approval, design drawings stamped and signed by a qualified Engineer, ninety (90) days prior to the construction or

Modification of any Water Supply Facilities, Sewage Treatment Facility or Solid Waste Disposal Facilities.

2. The Licensee may, without written consent from the Board, carry out construction and/or Modifications to the Water Supply Facilities, Sewage Treatment Facility or Solid Waste Disposal Facilities provided that such construction and/or Modifications are consistent with the terms of this Licence and the following requirements are met:
 - a. the Licensee has notified the Board in writing of such proposed construction and/or Modifications at least sixty (60) days prior to beginning the Modifications;
 - b. such construction and/or Modifications do not place the Licensee in contravention of the Licence or the *Act*;
 - c. such construction and/or Modifications are consistent with the NIRB Screening Decision
 - d. the Board has not, during the sixty (60) days following notification of the proposed construction and/or Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
 - e. the Board has not rejected the proposed construction and/or Modifications.
3. Construction and/or Modifications for which all of the conditions referred to in Part F, Item 2 have not been met can be carried out only with written approval from the Board.
4. The Licensee shall provide as-built plans and drawings of the construction and/or Modifications referred to in this Licence within ninety (90) days of completion of the construction and/or Modifications. These plans and drawings shall be stamped by an Engineer.

PART G: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Licensee shall revise and submit to the Board for approval, within ninety (90) days of issuance of the Licence, the Spill Contingency Plan entitled “Emergency Plan for Petroleum and Allied Petroleum Products – Eureka High Arctic Weather Station”, revised April 1, 2010. The Plan shall take into consideration the comments received during the application review process and the NWB letter of September 13, 2010 and shall address the following issues:
 - a. Address potential for spills of chemicals used at the site (stored in significant quantity), for example, chemicals used in the chlorination of drinking water;
 - b. Measures are to be provided for collection, storage and treatment/removal from site, of materials contaminated with petroleum products or chemicals, including soils;
 - c. The contact name and phone number of the overall person in charge at the facility (Eureka Station Program Manager);

- d. The Indian and Northern Affairs Canada Water Resources Inspector's updated phone number as 867-975-4295;
 - e. The hard copy of NT/NU Spill form and guide should be available on site in the event that there is no internet access. The spill contingency planning and reporting regulations should be included in the references; and
 - f. A record of revisions page which identifies the changes.
2. The Licensee shall prevent any chemicals, petroleum products or wastes associated with the project do not enter water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body and inspected on a regular basis.
3. The Licensee shall ensure that any equipment maintenance and servicing be conducted only in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.
4. If during the term of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
 - a. Employ the Spill Contingency Plan;
 - b. Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
 - c. For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.

PART H: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall revise and submit to the Board for approval, within ninety (90) days of issuance of the Licence, the Operations and Maintenance Manual entitled "Summary of Operations and Maintenance Procedures for Drinking Water, Sewage, Solid Waste Disposal and Waste Treatment Facilities", dated January, 2011. The Manual shall take into consideration the comments received during the application review process and the NWB letter of September 13, 2010 and shall contain the following:
 - a. Petroleum Hydrocarbon contaminated soil treatment facility (Landfarm) Operation and Maintenance Plan;
 - b. Sewage Sludge Disposal Plan shall be incorporated into the Manual. Mitigation measures shall be specified that will be implemented to prevent any negative impacts to surrounding water sources prior to removing the sludge;
 - c. Summary of EC and DND analysis findings explaining the parameter concentrations exceedances in the sewage lagoon; and

- d. Monitoring Program Quality Assurance/Quality Control Plan (QA/QC Plan). The Plan shall include up to date field sampling methods to all applicable standards, acceptable to an accredited laboratory as required by Part J, Item 7. The Plan shall include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence; and
 - e. A record of revisions page which identifies the changes.
- 2. A Geotechnical inspection of all engineered facilities related to the management of water and waste shall be carried out upon request of an inspector. The engineer's report shall be submitted to the Board within sixty (60) days of the inspection, including a covering letter from the Licensee outlining an implementation plan addressing each of the Engineer's recommendations.
 - 3. The Licensee shall perform more frequent inspections of the engineered facilities at the request of an Inspector.

PART I: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION OR TEMPORARY CLOSING

- 1. The Board has approved the Plan entitled "Interim Abandonment and Restoration Plan - Eureka High Arctic Weather Station", dated December, 2010 that was submitted as additional information with the Application.
- 2. The Licensee shall submit to the Board for review an addendum to the Plan with the 2011 Annual Report. The addendum shall take into consideration the comments received during the application review process and shall address the following:
 - a. Activities related to the Landfarm;
 - b. Activities related to the bio-treatment cell;
 - c. Plans for the reclamation of the infrastructure and waste material on site associated with the Department of National Defence; and
 - d. A record of revisions page which identifies the changes.
- 3. At least one (1) year prior to final abandonment, the Licensee shall submit to the Board for approval, a final Abandonment and Restoration Plan. The Plan shall include in addition to the content of the Interim Plan, but not be limited to the following:
 - a. A description of contaminated soils identified at the site through a completed Phase III Environmental Assessment and the procedures to mitigate the contamination;
 - b. A summary of existing data for background levels of metals in the area, and identification of needs for verification of data;
 - c. A description of restoration activities outlined in the Interim Abandonment and Restoration Plan:

- d. An implementation schedule for the completion of restoration; and
 - e. A detailed monitoring program.
4. The Licensee shall implement the Final Abandonment and Restoration Plan as approved by the Board.
 5. The Licensee shall complete all restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.
 6. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.
 7. Areas that have been contaminated by hydrocarbons from normal fuel transfer procedures shall be reclaimed to meet objectives as outlined in the Government of Nunavut's Environmental Guideline for Site Remediation, January 2002. The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the Government of Nunavut, Department of Environment and an Inspector.
 8. All disturbed areas shall be contoured and stabilized upon completion of work and restored to a pre-disturbed state.

PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain Monitoring Program Stations and implement the program as described in the table below and the conditions under this Part.

Monitoring Program Station	Description	Status
EUR-1	Raw water supply prior to treatment	Active Volume
EUR-2	Runoff from the Solid Waste Disposal Facilities	Active
EUR-3	Effluent discharge from Sewage Lagoon to the ocean	Active
	Quantity in cubic metres of Sludge removed from the Sewage Lagoon	New
EUR-4	Effluent Discharge from the Landfarm	New

2. The Licensee shall measure and record in cubic metres, the daily and monthly quantities of water pumped from Station Creek during the annual recharge of the Eureka water reservoir at monitoring Program Station EUR-1.

3. The Licensee shall measure and record in cubic metres the monthly quantities of water utilized for facility operations, for all purposes.
4. The Licensee shall measure and record in cubic metres the daily quantities of effluent pumped from the Sewage Treatment Facility during release to the environment.
5. The Licensee shall analyze samples, prior to the release of Effluent from the Sewage Treatment Facility at EUR-3 for the purpose of demonstrating compliance with the parameters listed under Part D, Item 6.
6. The Licensee shall sample monthly at Monitoring Program Stations EUR-2, EUR-3, EUR-4, during periods of observed flow and annual discharges, to be analyzed for the following parameters:

Biochemical Oxygen Demand – BOD ₅	Fecal Coliforms
Total Suspended Solids	pH
Conductivity	Nitrate-Nitrite
Oil and Grease (visual)	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Ammonia Nitrogen	Total Zinc
Total Cadmium	Total Iron
Total Cobalt	Total Manganese
Total Chromium	Total Nickel
Total Copper	Total Lead
Total Aluminium	Total Arsenic
Total Mercury	Total Organic Carbon (TOC)

7. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by the Board in writing.
8. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
9. The Licensee shall annually review the QA/QC plan submitted under Part J, Item 10 and modify it as necessary. Revised plans shall be submitted to the NWB with an approval letter from an accredited lab that meets standards set in Part J, Item 8 and Part J, Item 9.
10. Modifications to the Monitoring Program may be made only upon written approval from the Board. Requests for changes to the Monitoring Program should be forwarded to the NWB in writing, and should include the justification and appropriate evidence to support the change.

11. The Licensee shall include in the Annual Report required under Part B, Item 1 all data, monitoring results and information required by this Part.