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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI  
OFFICE DES EAUX DU NUNAVUT

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File No.: 3BM-BAK1015

June 25, 2010

Dennis Zettler  
Senior Administrative Officer  
Hamlet of Baker Lake  
P.O. Box 149  
Baker Lake, NU X0C 0A0  
E-mail: [blsao@qiniq.com](mailto:blsao@qiniq.com)

**RE: NWB Licence No. 3BM-BAK1015**

Dear Mr. Zettler:

Please find attached, the renewal of Licence No. 3BM-BAK1015 for the Hamlet of Baker Lake 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 (Nunavut Land Claims Agreement or NLCA)*. 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 may be in contravention of the *NLCA* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA)*. However, the expiry or cancellation of a licence does not relieve the Licensee 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. An application for amendment will be required for the construction of the proposed new solid waste disposal facility. 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 from interested persons on issues identified. This information is attached for your consideration.<sup>1</sup>

Sincerely,



Lootie Toomasie  
Nunavut Water Board, Vice-Chair

LT/dc

Enclosure: Licence No. 3BM-BAK1015  
Comments from EC, GN-DOE, GN-CLEY and INAC

cc: Kivalliq Distribution List  
Nick Lawson – Nunami Jacques Whitford Limited  
Wayne Thistle – Government of Nunavut, Community and Government Services

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<sup>1</sup> Indian and Northern Affairs Canada, September 11, 2009; Government of Nunavut – Department of Environment, September 10, 2009; Government of Nunavut – Department of Culture, Language, Elders and Youth, September 10, 2009; and Environment Canada, September 4, 2009.



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OFFICE DES EAUX DU NUNAVUT

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## DECISION

### LICENCE NUMBER: 3BM-BAK1015

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a Licence renewal and amendment received September 18, 2008 made by:

#### HAMLET OF BAKER LAKE

to allow for the use of water and disposal of waste for the Hamlet of Baker Lake, located on the northwest shore of Baker Lake within the Kivalliq region of Nunavut. With respect to this application, the NWB gave notice to the public that the Hamlet had filed an application for a water licence renewal.

### DECISION

After having been satisfied that the application was exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with S. 12.3.2 of the *Nunavut Land Claims Agreement* (NLCA), the NWB decided that the application could proceed through the regulatory process. After reviewing the full submission of the Applicant and written comments expressed by interested parties, 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 *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSTRTA), decided to waive the requirement to hold a public hearing and determined that:

**Licence No. NWB3BAK9904 be renewed as Licence No. 3BM-BAK1015 subject to the terms and conditions contained therein. (Motion #: 2010-11-L05)**

Signed this 23<sup>rd</sup> day of June, 2010 at Gjoa Haven, NU.

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Lootie Toomasie  
Nunavut Water Board  
Vice-Chair

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## I. BACKGROUND

The Hamlet of Baker Lake is a community located north of the mouth of the Thelon River on the northwest tip of Baker Lake, at 64°19'N and 96°02'W within the Kivalliq Region of Nunavut.

Located in the Wager Bay Plateau Ecoregion of the Northern Arctic Ecozone, the region is characterized by broad sloping uplands, plains and valleys. Soils are primarily silty sand and silty clays overlying boulder till, beach deposits and reworked till. Local topography slopes upward from the lake to a ridge approximately 2 km to the north. Historically, the community has been subject to extreme snow drifting. A large snow fence has been installed to the north of the community and more snow drift protection is planned. Permafrost is present, with an active layer of up to 1.5 m depth. Vegetation in the area is typical tundra vegetation consisting of mosses, lichens, grasses and dwarf shrubs.<sup>2</sup>

The average annual precipitation in Baker Lake consists of 156 mm of rainfall and 1,307 mm of snowfall. The July mean high and low temperatures are 16°C and 6°C, respectively. The January mean high and low temperatures are -29.5°C and -36.4°C, respectively. Winds are commonly from the north at an average speed of 23 km/h.

The Hamlet obtains its fresh water directly from Baker Lake, utilizing a single vertically mounted drum screen and inclined shaft casing intake, located approximately 120m off shore at a depth of 5-6 m below surface. Water is currently pumped on demand from the intake to the truckfill station (includes a pump building and overhead truckfill arm). As the trucks are being filled, water is chlorinated (using calcium hypochlorite) before being discharged into distribution trucks. Current water use estimates provided by the Applicant are approximately 66,200 m<sup>3</sup>/year, well within the previous licence authorized use of 100,000 m<sup>3</sup>/year.

The Hamlet's sewage treatment system currently consists of a single holding cell, where sewage is discharged to directly from the truck. Sewage then exfiltrates from the cell and flows into a natural wetland treatment area, through several small lakes before eventually entering Baker Lake via Garbage Creek from Airplane Lake. The holding cell was noted to have breached during the previous license period. It has been rebuilt; however, engineered improvements (increasing capacity and integrity) are currently in the tender stage with the recent application for renewal. A more comprehensive description of the sewage treatment area can be found in Section 4 of the "*Report of the Environmental Study and Evaluation of the Water and Sewage System*", prepared by Nunami Jacques Whitford Ltd. (NJWL)<sup>3</sup> The tundra wetland area treats both wastewater from the Hamlet and in the lower reaches, leachate from the landfill.

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<sup>2</sup> Report of the Environmental Study and Evaluation of the Water and Sewage System, Qamani'tuaq, Nunavut; prepared by Nunami Jacques Whitford Limited, October 2007; Section 2.0 Facility Overview.

<sup>3</sup> Report of the Environmental Study and Evaluation of the Water and Sewage System, Qamani'tuaq, Nunavut; prepared by Nunami Jacques Whitford Limited, October 2007; Section 4.2, Existing Wetland System.

The Hamlet's solid waste disposal facility is located near the southwest shore of Finger Lake, 10 to 15 m away from the shore at its closest point. Drainage from the solid waste facility enters Finger Lake through three or four culverts installed through the northern berm of the facility. Current plans include the construction of a cell to treat landfill leachate before discharge to the wetland treatment system.

## **II. PROCEDURAL HISTORY**

The NWB issued a municipal water licence to the Hamlet of Baker Lake on October 1, 1999, to allow for the use of water and disposal of waste under Licence NWB3BAK9904. The municipal water licence expired on October 1, 2004. The Hamlet of Baker Lake, with the support of the Government of Nunavut, Community and Government Services (CGS) and NJWL submitted an application for water licence renewal to the NWB on September 18, 2008.

Following a preliminary technical review of the application, the NWB advised the applicant that signed and stamped drawings for the Sewage Disposal Facility Upgrades would be required prior to the thirty (30) day public comment period. On July 31, 2009 the NWB received the requested drawings and on August 11, 2009 posted notice of the application and invited interested persons to comment by September 11, 2009. Below is a list of application documents on file at the time of public notice:

- Site Investigation Report for the Water Supply System In the Hamlet of Baker Lake, NU, November 16, 2005;
- Site Investigations Report for the Sewage Disposal System In the Hamlet of Baker Lake, NU, November 16, 2005;
- Site Investigation Report for the Water & Sewage System In the Hamlet of Baker Lake, NU, November 16, 2005;
- Supplementary Questionnaire, November 16, 2005;
- Letter from Dennis Zettler, Hamlet of Baker Lake to Joe Murdoch, NWB, February 24, 2006;
- Email correspondence pertaining to NWB letter of requirements, June 23, 2006;
- Email from Bryan Purdy, Government of Nunavut, Community and Government Services (CGS) to Sarah Gagne, NWB, September 13, 2006;
- Authorization for NJWL and CGS to assist in the application, September 14, 2006;
- Letter from Bryan Purdy, CGS to Sarah Gagne, NWB, Submitting the Implementation Plan for Baker Lake Water Licence, September 25, 2006;
- Draft Implementation Plan, October 31, 2006;
- Accompanying Letter for Implementation Plan, October 31, 2006;
- Letter from Nick Lawson, NJWL to Joe Murdock, NWB, Action Plan follow-up, January 31, 2007;
- Baker Lake Water Licence Action Plan Response to June 2006 letter from NWB, February 4, 2007

- Interim Report on the Environmental Study and Evaluation of the Water and Sewage System, February 4, 2007;
- Application Cover Letter, September 19, 2008;
- Application Fee Letter, September 19, 2008
- Figure 1, Conceptual Design of Proposed System Improvements, September 19, 2008;
- Figure 2, Conceptual Design of Proposed System Improvements, September 19, 2008;
- English Executive Summary, September 19, 2008;
- Inuktitut Executive Summary, September 19, 2008;
- Report of the Environmental Study and Evaluation of the Water and Sewage System, dated October 15, 2007, received September 19, 2008;
- Supplemental Questionnaire, September 19, 2008;
- Water Licence Application Form, September 19, 2008;
- Schematic Design Report Tundra Wetland Sewage Treatment System Design, December 4, 2008;
- 50% Complete Design Drawings of Sewage System Improvements, File 1, March 23, 2009;
- 50% Complete Design Drawings of Sewage System Improvements, File 2, March 23, 2009;
- 100% Complete Design Drawings of Sewage System Improvements, May 21, 2009; and
- For Tender Drawings of Sewage System Improvements, Signed and Stamped by an Engineer, July 31, 2009.

The scope of the renewal application included water use, and ongoing disposal of sewage and solid waste. No public concern was expressed during this review. Therefore, the NWB waived the requirement to hold a public hearing and proceeded with the application process.

The NWB received comments on the application from interested parties including Environment Canada (EC), Indian and Northern Affairs Canada (INAC), Government of Nunavut, Department of Culture, Language, Elders and Youth (GN-CLEY) and the Government of Nunavut, Department of Environment (GN-DOE) on or prior to September 11, 2009.

Based upon the results of the detailed assessment of the renewal application, including consideration of any potential accidents, malfunctions, or impacts to water that the overall project might have in the area, the Board has approved the application for renewal and has issued Licence 3BM-BAK1015.

### **III. ISSUES**

#### **Term of Licence**

In accordance with section 45 of the Act, the NWB may issue, renew or amend 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 the results of INAC site inspections and the compliance record of the Applicant. Inspection Reports were received for 2000 – 2005, an Inspectors Direction in 2008 and an Inspection Report for 2009. The 2008 Inspectors Direction required the following:

- To immediately upon receipt of this Direction make contact Mr. Bernie Mac Isaac, Manager of Field Operations, Indian and Northern Affairs Canada in Iqaluit, Nunavut to make arrangements for an Inspector to attend the community of Baker Lake to conduct the Municipal Inspection.

In the 2009 inspection report dated December 8, 2009, the Inspector noted the following issues:

- Failure to file Annual Reports;
- Failure to take steps to prevent and control the migration off site of runoff from the Solid Waste Management Facility. (installation of ditches or berms);
- Failure to comply with the monitoring program by collecting samples for analysis;
- Failure to segregates wastes in the Municipal Waste Management Area; and
- Failure to properly store and contain Hazardous Wastes.

In the same report, the Inspector identified the following Non-Compliance:

Issues with a known or anticipated human health impacts;

- Sewage is discharged directly to the environment without treatment; and
- Failure to collect and submit for analysis the samples required on the Monitoring Program.

Issues where there is a known or anticipated environmental impairment;

- Failure to undertake such water management to control runoff from the waste management area;
- The Licensee is required to segregate hazardous materials into a lined and controlled area;
- Failure to properly store and contain hazardous wastes;
- Failure to contain and remediate the release of hazardous materials; and
- Failure to maintain and control the Municipal Waste Management Area.

Issues where there is a known or suspected violation of a requirement of the Water License;

- It has been a period of over 4 years since the Municipality has had a Water License. Currently the Municipality is operating in Non-compliance with the Nunavut Waters and Nunavut Surface Rights Tribunal Act; and

- The Municipality failed to follow the terms and conditions contained within the Direction issued on August 12, 2008.

An internal review of administrative compliance for the previous licence revealed that for Part B, Item 1, which required the submission of annual reports and associated monitoring results, identified that no reports were received for the years 2000 through to 2008 with the exception of 2005. The 2005 annual report however, was noted as incomplete. Part H, Item 1 required a Spill Contingency Plan by April of 2000, to date this has not been received. Part I, Item 5 required a report that described all existing abandoned water supply and waste disposal activities by January 31, 2001; this has not been received by the Board.

In the renewal application, the Hamlet requested a licence term of ten years. No concerns were raised by the parties pertaining to the length of the requested renewal Licence. However, taking into account information submitted for the renewal, comments received, previous inspection reports and administrative compliance, the NWB has decided on a Licence term of five (5) years.

Prior to seeking a longer term Licence or seeking an amendment or future renewal, the Board recommends that the Licensee demonstrate they are capable of meeting the terms and conditions of this Licence. As per Part B, Item 11 of the Licence, the Licensee shall submit a Plan for Compliance, within ninety (90) days following issuance of the Licence, that clearly demonstrates how the Hamlet will achieve full compliance with the Licence conditions,. The Board fully expects the Hamlet to take immediate steps towards full compliance with all Licence requirements for its existing facilities.

## **Annual Report**

The NWB has imposed on the Licensee, the requirement to produce an Annual Report. These reports are for the purpose of ensuring that the NWB has an accurate, annual update of municipal activities during a calendar year. This information is maintained on the Public Registry and is available to interested parties upon request. A “*Standardized Form for Annual Reporting*” 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 is to be used when reporting, however additional information may be required of the annual report and can be provided as an appendix.

## **Operational Plans**

Under the previous licence NWB3BAK9904 Part F Item 1, the Licensee was required to submit a Plan for the Operation and Maintenance (O&M) of the Sewage and Solid Waste Facilities. An O&M Plan was received by the Board on November 16, 2005 however the Plan was never approved by the Board. The 2005 O&M Plan was made available as part of the application during the public comment period.

INAC, GN-DOE and EC all noted in their comments to the NWB, that an updated Operations and Maintenance Manual should be provided, and several recommendations were provided for the Licensees consideration. In its submissions both GN-DOE and EC recommended the submission of a Sludge Management Plan as part of the O&M Manual.

The NWB requires the Licensee to resubmit a revised O&M Manual for Board approval within ninety (90) days following issuance of the Licence. The purpose of the revision is to update the plan with changes to the Waste Disposal Facilities and address comments received by interested parties in the renewal process. The updated O&M Manual should demonstrate to the NWB that the Hamlet is capable of operating and maintaining the infrastructure related to water use and waste disposal and to meet the requirements of the Licence. The O&M Manual should be based, at a minimum on the various NWB recognized guidelines available (i.e. *Guidelines for the Preparation of an Operations and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories; 1996*) and other regulatory guidelines as deemed appropriate. Also, to remain consistent with similar municipal licences, this Licence requires the submission of an O&M Plan for the Water Supply Facilities as part of the O&M Manual. This requirement is detailed under Part F, Item 1 of the Licence.

## **Water Use**

The Hamlet of Baker Lake currently utilizes water from Baker Lake as a source of potable water for the community. The preceding Licence authorized 100,000 cubic metres of water annually. No concerns were raised with respect to total quantity of water authorized, the manner in which it is obtained or will be used. Therefore, the Board has authorized a water use of one hundred thousand (100,000) cubic metres per annum.

## **Sewage**

The Hamlet of Baker Lake currently discharges its sewage into a short term holding cell which then migrates through a wetland in the area of Lagoon lake and Finger Lake, followed by a small stream through to Airplane Lake and then final discharge from the lake at monitoring point BAK-3 where flow continues through Garbage Creek to Baker Lake. As part of this renewal, for tender plans have been submitted with respect to upgrades the Sewage Disposal Facility and Solid Waste Disposal Facility as follows:

- Upgrade the short term holding cell by strengthening its walls;
- Construct an additional short term holding cell to increase the initial retention time of sewage;
- Upgrade the offloading point into the holding cells;
- Install attenuation berms in the wetland between the holding cells and Lagoon Lake;
- Install attenuation berms in the wetland between Lagoon Lake and Finger Lake;
- Install an attenuation berm between the Solid Waste Disposal Facility and Finger Lake; and
- Construct a fence around the Waste Disposal Facilities to keep out wildlife.

In its submission, INAC identified:

- Breaches in the berms which cause spills of sewage effluent are unacceptable;
- The NWB should impose a condition that requires the Hamlet to engage the services of an Engineer with appropriate expertise to examine the berms, make recommendations for repairs and then certify the structural integrity upon completion of any repairs;
- The repair of the current berms could be thought of as an interim measure until the construction of the new lagoon system is completed; and
- The Board should consider requiring the installation of fencing around the perimeter of the lagoon to prevent access by animals and humans.

In its submission EC included the following:

- The Hamlet must ensure that any effluent discharged must be in compliance with Section 36(3) of the *Fisheries Act*. According to the *Fisheries Act*, Section 36(3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited; and
- The retention time in the primary cell is currently only three days (supplementary questionnaire page 19) which may allow for some settling of solids but does not provide enough time for further treatment. EC strongly encourages the Hamlet to expedite the planned system upgrades, and to plan for sufficient retention time in the holding cells to attain some treatment;

The NWB has included a requirement for an inspection of all engineered earthworks related to the management of water and waste shall be carried out annually in July or August by a Geotechnical Engineer. Within sixty (60) days following the inspection, the Licensee shall submit to the Board a report outlining an implementation plan and addressing each of the Engineer's recommendations. This requirement is detailed under Part F, Item 2 of the Licence.

The Board has maintained, for the renewal licence, the effluent quality criteria for the discharge of the Sewage Disposal Facilities, consistent with the *Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories* (Northwest Territories Water Board, 1992).

## **Solid Waste**

The Hamlet's Solid Waste Disposal Facility is located adjacent to the wetland and Finger Lake, immediately north of the community. No changes to the Solid Waste Disposal Facility were proposed in the renewal application, however the Licensee has proposed to construct a wildlife fence around the facility. The 2009 Inspection Report describes Hazardous Waste in both the scrap metal area and the landfill. Hazardous wastes including battery acid, fuel and waste oil were noted leaking within the waste management area where there is no secondary containment provided.

Concerns raised by INAC, GN-DOE and EC have identified that the Hamlet should only store hazardous waste in an approved designated area with secondary containment. As such, the NWB has imposed the requirement to segregate and store all hazardous wastes in appropriate areas utilizing secondary containment prior to disposal offsite at a licensed facility.

## **Abandonment and Restoration**

Comments received during review of the application have various recommendations with respect to the provision of an Abandonment and Restoration (A&R) Plan. INAC recommended an A&R Plan be required by a renewed Licence for the water supply, solid waste landfill and sewage lagoon. GN-DOE would like a preliminary A&R Plan to be submitted for review. EC has requested an A&R Plan be provided for all currently abandoned facilities including details for the previous waste oil pit. Also, Part I, Item 5 of the previous Licence required the submission of a report that described all existing abandoned water supply and waste disposal facilities and activities by January 31, 2001. This submission has not been received by the Board.

The 2009 Inspection Report noted over 1000 drums of waste oil and other unknown fluids are located in the bulk metals waste area. The Licensee is reminded that all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation shall be backhauled and disposed at a licensed waste disposal site. The Licensee shall maintain records of all waste backhauled and records of confirmation of proper disposal of backhauled waste. These requirements are detailed under Part D, Items 8 and 9.

As a condition of this Licence, the NWB is requiring of the Licensee to submit for approval of the Board, within six (6) months following issuance of the renewal, abandonment and restoration details of the previous waste oil pit and an Abandonment and Restoration Plan for all abandoned water and waste facilities within the Hamlet boundaries.

The Licensee shall submit to the Board for approval in writing, an Abandonment and Restoration Plan at least six (6) months prior to abandoning any facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. This requirement is detailed under Part G, Item 2.

## **Monitoring**

The Board has maintained the monitoring stations from the previous Licence including the raw water supply, runoff from Finger Lake prior to entry to Airplane Lake, outlet of Airplane Lake and a discharge point for the Solid Waste Disposal Facility. The Board has included a new Monitoring Program Station; BAK-5 at the outlet of the Wetland prior to entry into Finger Lake where the effluent shall be tested for parameters listed under Part H, Item 4 and achieve compliance with limits set by Part D, Item 2.

EC notes that the CCME Strategy for the Management of Municipal Wastewater has been signed, and that northern jurisdictions can expect performance standards for BOD<sub>5</sub> and TSS to be regulated following a five year period which starts in 2009. We anticipate that the standards for these parameters may be higher than the 25 mg/L for each that is proposed for the southern jurisdictions and the Yukon. Also, it should be noted that carbonaceous Biological Oxygen Demand (cBOD) will be the regulated parameter, and it would be prudent to add this to the list of licence parameters now, in order to gain some idea of the system's track record over the next five years. Although no specific effluent quality limits have been set for cBOD under this Licence, the NWB has included cBOD as a parameter to be sampled for at Monitoring Program Stations BAK-2, BAK-3, BAK-4 and BAK-5.

In addition, the Board has also included the requirement for the preparation and submission of a Quality Assurance/Quality Control (QA/QC) Plan to a laboratory analyst for approval. The purpose of the QA/QC Plan is to ensure that samples obtained in the field, accurately represent the physical and chemical nature of the water being sampled. The Licensee shall provide to the Board within ninety (90) days, a letter of approval from the laboratory, providing confirmation that the Hamlet's QA/QC plan is acceptable. The requirement for this submission is detailed under Part H, Item 8.



## **NUNAVUT WATER BOARD WATER LICENCE - RENEWAL**

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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

### **HAMLET OF BAKER LAKE**

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(Licensee)

**P.O. BOX 149, BAKER LAKE, NU, X0C 0A0**

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(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 Renewal:

Licence Number/Type: **3BM-BAK1015 TYPE "B" RENEWAL**

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Water Management Area: **NUNAVUT 06**

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Location: **HAMLET OF BAKER LAKE  
KIVALLIQ REGION, NUNAVUT**

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Classification: **MUNICIPAL UNDERTAKING**

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Purpose: **DIRECT WATER USE AND DEPOSIT OF WASTE**

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Quantity of Water use not to Exceed: **ONE HUNDRED THOUSAND (100,000) CUBIC METRES  
PER ANNUM**

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Date of Licence Issuance: **JUNE 23, 2010**

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Expiry of Licence: **JUNE 30, 2015**

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

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**Thomas Kabloona,  
Nunavut Water Board  
Chair**

**PART A: SCOPE AND DEFINITIONS**

**1. Scope**

- a. This Licence allows for the use of water and the disposal of waste for a municipal undertaking for the Hamlet of Baker Lake, Kivalliq Region, Nunavut (64°19'N and 96°02'W);
- 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 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
- c. 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**

In this Licence: **3BM-BAK1015**

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

“**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 waters 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*;

“**Effluent**” means treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond or a treatment plant;

**“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;

**“Final Discharge Point”** with respect to effluent means the stream from Finger Lake immediately prior to entry into Airport Lake;

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

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

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

**“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*;

**“Licensee”** means the holder of this Licence;

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

**“Monitoring Program”** means a monitoring program established to collect data on surface water and groundwater quality to assess impacts to the freshwater aquatic environment of an appurtenant undertaking;

**“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;

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

**“Sewage Disposal Facility”** comprises the repaired holding cell, new holding cell, upgraded wetland with attenuation berms and other associated sewage treatment structures designed to contain and treat sewage, as described in the Application for Water Licence filed by the Applicant on September 19, 2008 and illustrated in Baker Lake Sewage System Improvements, Drawings C-1, C-2, C-3, C-4, C-5, C-6, C-7 and C-8 received on July 31, 2009;

**“Solid Waste Disposal Facility”** comprises the area and associated structures (landfill site) designed to contain Solid Waste as described in the Application for Water Licence filed by the Applicant on September 19, 2008;

**“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;

**“Waste Disposal Facilities”** means all facilities designated for the disposal of waste, and includes the Sewage Disposal Facility and the Solid Waste Disposal Facility;

**“Water Supply Facilities”** comprises the area and associated intake, treatment and storage infrastructure at Baker Lake, as described in the Application for Water Licence filed by the Licensee on September 19, 2008;

### **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*;
- 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; and

- d. The Licensee shall have in place, a Plan for Compliance to achieve full compliance with the conditions of this Licence, approved by the Board in writing as per Part B, Item 11.

**PART B: GENERAL CONDITIONS**

- 1. The Licensee shall submit an Annual Report to the Board for review, not later than March 31<sup>st</sup> of the year following the calendar year reported, to include the following information:
  - a. tabular summaries of all data generated under the “Monitoring Program” and an indication of wastewater treatment levels upstream and downstream of the Wetland Area;
  - b. summary of modifications to the “Monitoring Program” in accordance with Part H, Item 11;
  - c. the monthly and annual quantities in cubic metres of fresh water obtained at the Water Supply Facilities;
  - d. the annual quantity in cubic metres and tonnes of sludge removed from the Sewage Disposal Facility along with the treatment, storage, and disposal provided as required in Part H Item 5;
  - e. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;
  - f. a list of unauthorized discharges and summary of follow-up action taken;
  - g. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
  - h. any updates or revisions for manuals and plans (i.e., *Operations and Maintenance Manual*) as required by changes in operation and/or technology, may be subject to Board approval;
  - i. detailed minutes of any public consultation and participation with local organizations and the residents of the community regarding licence amendments;
  - j. a summary of any studies or reports requested by the Board that relate to water use and waste disposal or restoration, and a brief description of any future studies planned; and

- k. any other details on water use or waste disposal requested by the Board by November 1<sup>st</sup> of the year being reported.
- 2. The compliance dates specified in the Licence may be modified at the written approval of the Board.
- 3. The Licensee shall install flow meters or other such devices, or implement suitable methods required for the measuring of water use volumes and waste discharged as required under Part H, Monitoring Program.
- 4. The Licensee shall, within ninety (90) days after the first visit by the Inspector following issuance of this Licence, post the necessary signs to identify the stations of the “Monitoring Program”. All signage postings shall be in the Official Languages of Nunavut.
- 5. The Licensee shall post signs in the appropriate areas to inform the public of the location of the Water Supply Facilities and the Waste Disposal Facilities. All signage postings shall be in the Official Languages of Nunavut.
- 6. The Licensee shall immediately report to the 24-Hour Spill Report Line at (867) 920-8130, any spills of Waste, which are reported to, or observed by the Licensee, within the municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.
- 7. The Licensee shall ensure a copy of this Licence is maintained at the Municipal Office 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](mailto:licensing@nunavutwaterboard.org)

**(b) Inspector Contact:**

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

8. 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.
9. The Licensee shall ensure that all document(s) and correspondence submitted by the Licensee, to the NWB, are received and acknowledged by the Manager of Licensing.
10. The Licensee shall submit to the Board for approval, within ninety (90) days following renewal of the licence, a Plan for Compliance that clearly demonstrates the measures the Licensee will undertake, including an implementation schedule, to achieve full compliance with the conditions of this Licence, including issues raised in the Inspector's Reports.
11. 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.
12. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
13. 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 to the Board for review, in the form of an Addendum to be included with the Annual Report.
14. 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.
15. 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 fresh water from Baker Lake for municipal purposes, using the Water Supply Facilities or as otherwise approved by the Board in writing.
2. The annual quantity of water use for all purposes shall not exceed one hundred thousand (100,000) cubic metres.

3. The Licensee shall equip all water intake hoses with a screen of appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.
4. The Licensee shall not remove any material from below the ordinary high water mark of any water body unless approved by the Board in writing.
5. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
6. Sediment and erosion control measures shall be implemented prior to and maintained as required during Hamlet operations, to prevent entry of sediment into water.

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

1. The Licensee shall direct all Sewage to the Sewage Disposal Facility.
2. All Effluent discharged from the Sewage Disposal Facility at Monitoring Program Station BAK-5 shall not exceed the following Effluent quality limits:

Parameter	Maximum Concentration of any Grab Sample
BOD <sub>5</sub>	80 mg/L
Total Suspended Solids	100 mg/L
Faecal Coliforms	$1 \times 10^4$ CFU/100mL
Oil and grease	No visible sheen
pH	between 6 and 9

3. A Freeboard limit of 1.0 metre, or as recommended by a qualified geotechnical Engineer and as approved by the Board in writing, shall be maintained at all dams, dykes, or structures intended to contain, withhold, divert or retain water or wastes.
4. The Licensee shall provide at least ten (10) days notification to an Inspector, prior to initiating any decant of the sewage lagoon.
5. The Sewage Disposal Facility shall be maintained and operated, in such a manner as to prevent structural failure.
6. The Licensee shall dispose of and permanently contain all Solid Wastes at the Solid Waste Disposal Facility or as otherwise approved by the Board in writing.

7. The Licensee shall segregate and store all hazardous materials including waste oil, within the Solid Waste Disposal Facility utilizing secondary containment to prevent the deposit of deleterious substances into any water, until such a time as disposal arrangements are made to a licensed facility.
8. The Licensee shall backhaul and dispose of all hazardous wastes, waste oil and non-combustible waste generated through the course of the operation at a licensed waste disposal site.
9. 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
10. The Licensee shall implement measures to control wind-blown litter at the Solid Waste Disposal Facility as required by Part D, Item 6.
11. The Licensee shall implement measures to ensure leachate from the Solid Waste Disposal Facility does not enter water.
12. The Licensee shall use clean material for construction, operation, and maintenance activities that is obtained from an approved source and has been demonstrated not to produce acid rock drainage and to be non-metal leaching.

**PART E: CONDITIONS APPLYING TO MODIFICATION AND CONSTRUCTION**

1. The Licensee shall submit to the Board for approval, for construction drawings stamped and signed by a qualified engineer registered in Nunavut, sixty (60) days prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes.
2. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply and Waste Disposal Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
  - a. the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
  - b. these modifications do not place the Licensee in contravention of the Licence or the Act;
  - c. the Board has not, during the sixty (60) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
  - d. the Board has not rejected the proposed modifications.

3. Modifications for which all of the conditions referred to in Part E, Item 2(a) through (d), have not been met, may only be carried out upon written approval from the Board.
4. The Licensee shall provide as-built plans and drawings of the Modifications or construction referred to in this Part within ninety (90) days of completion of the Modification or construction. These plans and drawings shall be stamped and signed by an Engineer.
5. The Licensee shall submit to the Board for review, as-built drawings signed and stamped by an Engineer, for the upgrades to the Sewage Disposal Facility and the fence around the Waste Disposal Facilities if constructed, within ninety (90) days of the renewal of this Licence, or, within ninety (90) days of completion of the upgrades. These plans and drawings shall be stamped and signed by an Engineer.
6. The Licensee shall submit to the Board for review, as-built drawing signed and stamped by an Engineer for the Solid Waste Disposal Facilities, within ninety (90) days following issuance of the renewal of the Licence.
7. 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.
8. The Licensee shall implement and maintain erosion control measures during activities carried out under this Part, to prevent impacts to water resulting from the release of sediment and minimize erosion.
9. The construction or disturbance of any stream/lake bed or banks of any definable water course are not permitted, unless authorized by the Board in writing.

**PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE**

1. The Licensee shall submit to the Board for approval, within ninety (90) days following the renewal of this Licence, a revised Operation and Maintenance (O&M) Manual. The Manual shall be updated for changes to the Sewage Disposal Facility and Solid Waste Disposal Facility and take into consideration the comments received during the application review process and shall contain the following plans:
  - a. Operation and Maintenance Plan for the Water Supply Facilities;
  - b. Sewage Operation and Maintenance Plan (including Sludge Management Procedures);
  - c. Solid Waste Operation and Maintenance Plan;
  - d. Hazardous Waste Management Plan; and
  - e. Spill Contingency Plan.

2. An inspection of all engineered earthworks related to the management of water and waste shall be carried out annually in July or August by a Geotechnical Engineer. 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. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
  - a. employ the appropriate spill contingency measures as described in the Spill Contingency Plan of the Operation and Maintenance Manual for the Hamlet of Baker Lake;
  - b. report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the INAC Manager of Field Operations at (867) 975-4295; and
  - c. submit to the Inspector, a detailed report on each occurrence, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and any preventative measures to be implemented.

**PART G:      CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION**

1. The Licensee shall submit for approval of the Board, within six (6) months following issuance of the renewal, abandonment and restoration details of the previous waste oil pit and an Abandonment and Restoration Plan for all abandoned water and waste facilities within the Hamlet boundaries.
2. The Licensee shall submit to the Board for approval in writing, an *Abandonment and Restoration Plan* at least six (6) months prior to abandoning any facilities or upon submission of the final design drawings for the construction of new facilities to replace existing ones. Where applicable, the Plan shall include information on the following:
  - a. water intake facilities;
  - b. the water treatment and waste disposal sites and facilities;
  - c. abandoned water and waste facilities;
  - d. petroleum and chemical storage areas;
  - e. any site affected by waste spills;
  - f. leachate prevention;
  - g. an implementation schedule;
  - h. maps delineating all disturbed areas, and site facilities;
  - i. consideration of altered drainage patterns;

- j. type and source of cover materials;
  - k. future area use;
  - l. hazardous wastes; and
  - m. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.
3. The Licensee shall complete the restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.
  4. All disturbed areas shall be stabilized and re-vegetated as required, upon completion of work and restored as practically as possible to a pre-disturbed state.

**PART H: 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.

<b>Monitoring Program Station Number</b>	<b>Description</b>	<b>Frequency</b>	<b>Status</b>
BAK-1	Raw water supply prior to treatment	<u>Volume</u> Monthly and Annually	Active (Volume)
BAK-2	Runoff from the Waste Disposal Facilities just prior to the inlet to Airplane Lake, prior to the culvert	<u>Water Quality</u> Monthly during periods of flow	Active (Water Quality)
BAK-3	Outlet of Airplane Lake at water's edge	<u>Water Quality</u> Annually during periods of flow	Active (Water Quality)
BAK-4	Runoff from the Solid Waste Disposal Facilities prior to Finger Lake	<u>Water Quality</u> Annually during periods of flow (if present)	Active (Water Quality)
BAK-5	Finger Lake at outlet of Wetland	<u>Water Quality</u> Annually during periods of flow (if present)	Active (Water Quality)

2. The Licensee shall confirm the locations and GPS coordinates for all monitoring stations referred to in Part H Item 1 with an Inspector.
3. The Licensee shall measure and record the monthly and annual quantities of water, in cubic meters, pumped from Monitoring Program Station BAK-1 for all purposes.

4. The Licensee shall collect samples at Monitoring Program Stations BAK-2, BAK-3, BAK-4 and BAK-5, according to the frequency provided in Part H Item 1. Samples shall be analyzed for the following parameters:

Biochemical Oxygen Demand – BOD <sub>5</sub>	Faecal 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)
Carbonaceous Biochemical Oxygen Demand (cBOD)	
Total Petroleum Hydrocarbons (BAK-4 only)	
Polycyclic Aromatic Hydrocarbons (BAK-4 only)	
Benzene, Toluene, Ethylbenzene, Xylene (BAK-4 only)	

5. The Licensee shall measure and record the annual quantities of sludge removed from the Sewage Disposal Facility along with the methods of treatment, storage, and disposal provided.
6. 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.
7. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
8. The Licensee shall, within ninety (90) days following issuance of the Licence, submit to the Board a Quality Assurance/Quality Control (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 H, Item 6 and Item 7. The Plan shall include a covering letter from an accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence.

9. The Licensee shall annually review the QA/QC plan submitted under Part H, Item 8 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 H, Item 6 and Item 7.
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.