



Water License Annual Report 2008

Hamlet of Rankin Inlet

Solid Waste and Landfarm

Water License NWB3RAN0207

Hamlet of Rankin Inlet

Prepared by

Nuna Burnside Engineering and Environmental Ltd.
Box 175 Rankin Inlet NU X0C 0G0 Canada
15 Townline Orangeville ON L9W 3R4 Canada

March 2009

File No: N-O 14850

The material in this report reflects best judgement in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Nuna Burnside Engineering and Environmental Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

Table of Contents

1.0	Introduction	1
2.0	Background.....	2
3.0	Summary of Waste Management and Disposal Activities	3
3.1	Solid Waste Management Facility.....	3
3.2	Landfarm.....	3
3.3	Sludges.....	4
4.0	Spill Report	5
5.0	Monitoring Results.....	7
6.0	Inspection Reports and Comments	8
7.0	Summary	9

Figures

- 1 Site Location
- 2 Community Plan

Appendices

- A NWB Water License NWB3RAN0207
- B NWB Annual Report Form
- C Site Photographs, September 2008
- D Letter to INAC November 25, 2008 and Sampling Results
- E Landfarm Sampling Results
- E INAC Inspection Report, 2008

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

1.0 Introduction

The Hamlet of Rankin Inlet manages solid waste disposal as per NWB License NWB3RAN0207. A copy is included in Appendix A. Water supply and sewage are operated by the Government of Nunavut on behalf of the Hamlet, under a separate license. The license requires the submission of an Annual Report. The Annual Report outlines the Hamlets efforts to achieve due diligence with respect to the conditions of the license. A license remedial application is in progress. This Annual Report includes solid waste disposal and landfarm activities. The landfarm is not currently part of any license, however the renewal application includes it.

A copy of the NWB Annual Report form is included in Appendix B and the details are included in this report.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

2.0 Background

The Hamlet of Rankin Inlet is located on Rankin Inlet, on the west coast of Hudson Bay. It is 96-air km southwest of Chesterfield Inlet and 1088 air km east of Yellowknife, at 62° 49'N latitude and 92° 05' W longitudes (Figure 1).

Rankin Inlet is the regional centre for the Kivalliq Region of Nunavut. The hamlet has a land area of 20.24 km² and as of the 2006 census a population of 2,358.

The Hamlet of Rankin Inlet is responsible for the waste disposal activities included in the License NWB3RAN0207 including the current (old) landfill, the new landfill and the landfarm (Figure 2). A copy of the license is included in Appendix A. Photographs of the facilities are included in Appendix C.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

3.0 Summary of Waste Management and Disposal Activities

3.1 Solid Waste Management Facility

Currently all waste is being disposed of at the original Rankin Inlet Landfill. The solid waste management site (55,000 m²) is located 1 km southeast of the community. The waste facility reached its maximum capacity in 2002 and a new landfill was planned in 2003. In 2007, the Hamlet decided to commission the new landfill and approved the environmental assessment of the old landfill for its abandonment and restoration. The Hamlet has retained Gartner Lee and Associates to complete the abandonment and restoration (A&R) plan for the old landfill. According to a letter dated November 25, 2008 from Gartner Lee (AECOM) to INAC, they have completed the Environmental Site Investigations and plan to complete the Abandonment and Restoration Plan by May 31, 2009. This letter and the results from their sampling program are included in Appendix D.

The old landfill will not be closed until the new landfill is commissioned.

3.2 Landfarm

The Rankin Inlet Landfarm was constructed by Dillon Consultants Inc. in 2005. The landfarm is located 5 km northwest of the Hamlet and is 2100 m² in area. The soil in the landfarm is approximately 1.8 m deep and is contained by a berm. The soil deposited in the landfarm originated from a fuel spill at the Airport Fuel Facility. The landfarm has received aeration several times a year and nutrients were added when needed. A report assessing the quality of the soil was written by EBA, titled "Landfarm Assessment, Rankin Inlet, 2008". The conclusions of the report were that the top layer of soil (1.2 m) meets all criteria. Soil below this layer should be tested. The effectiveness of the landfarm cannot be assessed because there is no information on the original hydrocarbon concentrations of the soil. The report recommended that a leachate management program be established for future use of the landfarm.

Impacted soil from a recent fuel spill at the Nipissar Lake pump house in 2008 is stockpiled in the northeast corner of the site. A report titled "Nipissar Lake Fuel Spill Assessment and Remediation, Rankin Inlet NU, September 2008" includes soil sampling completed at the site of the spill. The stockpiled soil should be sampled to determine the baseline concentrations. If they meet criteria the soil should be used for cover at the landfill. If they do not meet criteria a remediation plan should be established.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

3.3 Sludges

Sludges are generated through the mechanical system of the Hamlet's sewage treatment plant. The sludges are taken to the current landfill site for disposal. Currently the Hamlet produces approximately 1 cubic metre of sludge a week and a total of 52 m³ of sewage sludge is received by the landfill annually.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

4.0 Spill Report

On June 30, 2008, a fuel spill occurred at the Nipissar Lake Pumphouse in Rankin Inlet.

Apparently youths attempting to climb on the roof of the pumphouse pulled down the fuel tank return line, and allowed the escape of a few hundreds litres of fuel oil into the sand and gravel surface next to the pumphouse. The fuel flowed overland away from the lake and seeped into the parking lot in front of the pumphouse. A small amount reached the shore of the lake.

An NT-NU Spill Report was prepared by CGS staff and forwarded to the GN Spill Report Centre.

Emergency response consisted of:

- Strongly repairing the pipe attachment to the building to avoid a repeat event
- Use of a floater boom and absorbent mats in the lake
- Excavation of the impacted soil and containing the material in bags
- Excavation continued until all evidence of fuel oil was removed
- Monitoring wells were installed
- EBA Engineering Ltd. arranged the removal and disposal of the impacted soil at the Hamlet landfill
- EBA collected confirmatory samples.

The site was inspected by Nuna Burnside Engineering and Environmental staff on September 10, 2008.

The inspection found no evidence of fuel oil impacts in the soil or lake water.

Discussions with the plant operator Arsene Siksik indicated:

- The fuel oil sheen at the lake shore was contained and cleaned up
- The soil was excavated down to permafrost and apparently all the impacted area was removed
- There was never any indication of a threat to the submerged offshore intake.

A report entitled “Nippisar Lake Fuel Spill Assessment and Remediation, Rankin Inlet, Nunavut”, dated September 10, 2008 was provided by EBA Engineering Consultants Ltd.

The conclusions and recommendations were as follows:

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

“Based on the results of the project, impacts from the diesel spill at the Nipissar Lake pumphouse have been remediated and contained. Lake and drinking water samples indicate impacts to the water from the spill are negligible. EBA recommends the following actions:

- Seasonal sampling of the installed groundwater monitoring wells should be conducted to determine the effectiveness of the geo-membrane containment skirt in containing impacts below the pumphouse. The wells should be developed and sampled for laboratory analysis of hydrocarbon parameters, and compared to federal and Alberta guidelines. If samples indicate exceedances of adopted criteria, monitoring wells should be pumped and recovered water treated or disposed of in accordance with applicable guidelines
- Impacted soils from the excavation activities, which were placed in the landfill, should be relocated to a controlled environment to prevent further leaching of impacts
- Source water protection options, including secondary containment for all components of fuel systems, should be considered for Nipissar Lake”.

At this time, the GN feels there is not potential threat to the water quality of the lake from the fuel spill, and is evaluating an implementation plan for the recommendations provided.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

5.0 Monitoring Results

On August 21, 2008 Gartner Lee (AECOM) completed an environmental site assessment of the old landfill including test pit investigation and surface and soil sampling. Six surface water samples were collected at five locations and one duplicate. The sample locations are shown in Appendix D. A summary of the results is shown in Table A.

Table A: Old Landfill Sampling Results Summary, August, 21, 2008

Sample ID	CCME Guideline Exceedences
TP19/120	Cadmium, Chromium, Copper, Total Iron, Selenium, Silver
SW1	Cadmium, Chromium, Copper, Selenium
SW2	Cadmium, Copper, Selenium
SW3	Arsenic, Copper, Selenium
SW4/SW4R	Cadmium, Chromium, Copper, Selenium, Zinc

* Note: Laboratory mercury detection limits were larger than the CCME guidelines.

No sampling was necessary at the new landfill as it is currently not being used. It is recommended that background samples be taken prior to commissioning.

Sampling of the Rankin Inlet landfarm was conducted by EBA on July 31, 2008. The methodology of this sampling is outlined in the report "Landfarm Assessment, Rankin Inlet, 2008". Sampling results indicate that soil up to 1.2 metres in depth met all criteria from the GNWT Environmental Guidelines for Contaminated Site Remediation. The results and sample location plan are attached in Appendix E.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

6.0 Inspection Reports and Comments

On July 23, 2008 Andrew Keim of Indian and Northern Affairs Canada completed an inspection on the Water and Waste Water Treatment facilities in Rankin Inlet. The inspection form is included in Appendix F. His report identified several concerns.

To address the concerns outlined in the inspection the licensee will produce the following:

- A detailed Operations and Maintenance plan for the new Solid Waste Management Facility before commissioning
- The submission of an Abandonment and Restoration Plan for the old landfill
- An Environmental Emergency Contingency Plan
- An Environmental Monitoring Program and Quality Assurance/Quality Control Plan for the New Solid Waste Management Facility.

These items have been prepared and submitted to the NWB as part of the Water License Renewal application.

Water License Annual Report 2008
Hamlet of Rankin Inlet
Solid Waste and Landfarm
Water License NWB3RAN0207
Hamlet of Rankin Inlet

March 2009

7.0 Summary

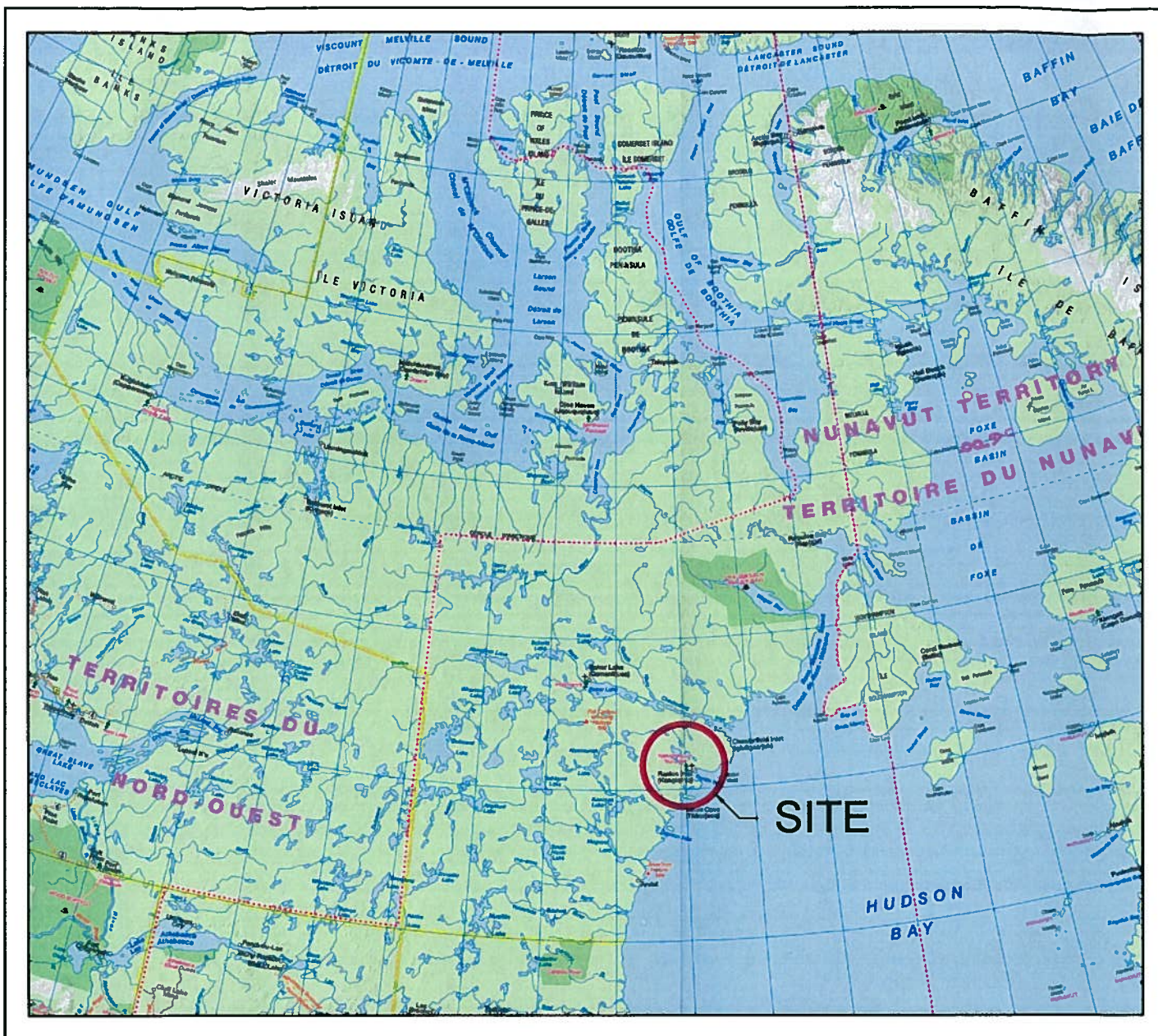
As noted in the report, a number of issues related to NWB License compliance have been addressed in the past year. Efforts are ongoing to close the old landfill according to regulations, and commission the new Solid Waste Management Facility.

The Hamlet has identified this as a priority and will continue work over the next year.

Hamlet Water License Application Report 2008.doc 3/4/2009 11:03 AM



Figures



Map Reference:
Map Art Publishing

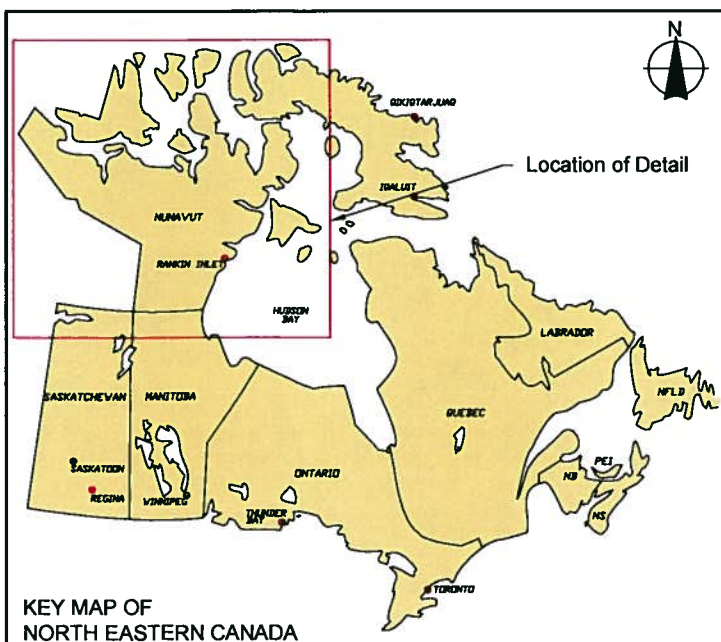


FIGURE 1 - SITE LOCATION MAP

HAMLET OF RANKIN INLET
HAMLET OF RANKIN INLET, NUNAVUT

2008 ANNUAL REPORT

December 2008

Project Number: N-O14850

Prepared by: C. Sheppard

Verified by: J. Walls

nuuk BURNSIDE

N-O14850 ANNUAL REPORT 2008 - HAMLET SL.dwg

FIGURE 2
HAMLET OF RANKIN INLET
HAMLET OF RANKIN INLET, NUNAVUT
ANNUAL REPORT 2008

COMMUNITY PLAN



Satellite Image Source:
Background 2006 satellite image covering the immediate community area obtained from MDA Geospatial Services.
Background colour satellite image covering the area beyond the immediate community obtained from the Google Earth Pro website.



1:30,000
August 2008
Project Number: N-014850
Prepared by: C. Sheppard
Projection: UTM Zone 15
Datum: NAD83
Verified by: J. Walls



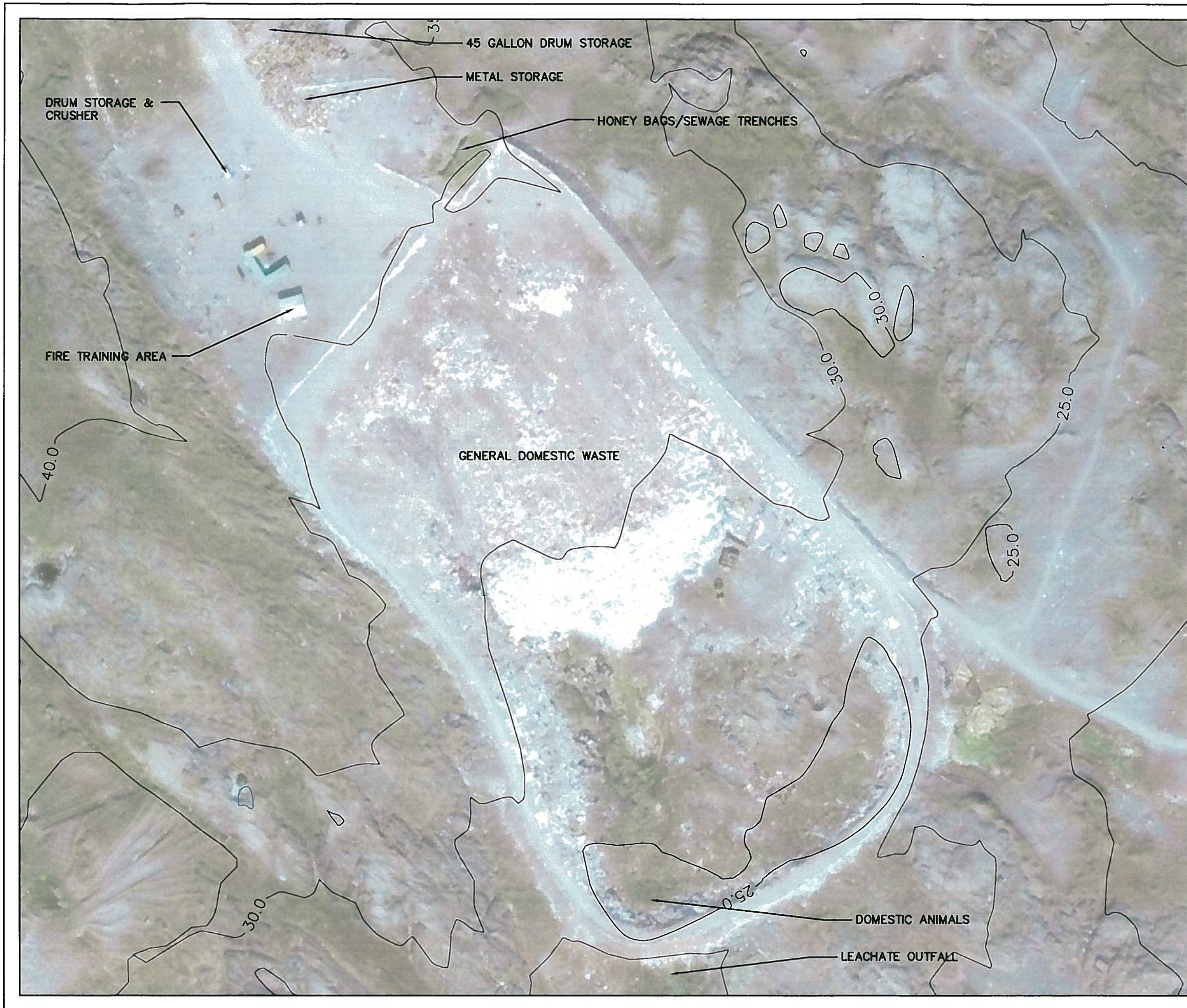
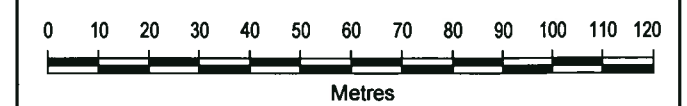


FIGURE 3
HAMLET OF RANKIN INLET
HAMLET OF RANKIN INLET, NUNAVUT
ANNUAL REPORT 2008
OLD
LANDFILL SITE

LEGEND

— 20m — 5m INTERVAL CONTOUR LINES (m amsl)
 (Obtained from National Topographic Digital Database)

Satellite Image Source:
 Background 2006 satellite image obtained from MDA Geospatial Services.



1:1,500
 August 2008
 Project Number: N-014850
 Prepared by: C. Sheppard
 Projection: UTM Zone 15
 Datum: NAD83
 Verified by: J. Walls



FIGURE 4

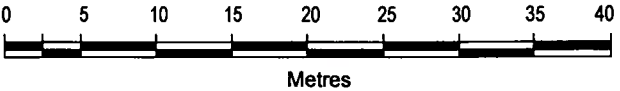
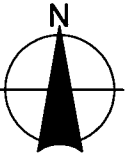
HAMLET OF RANKIN INLET
HAMLET OF RANKIN INLET, NUNAVUT
ANNUAL REPORT 2008

LANDFARM

LEGEND

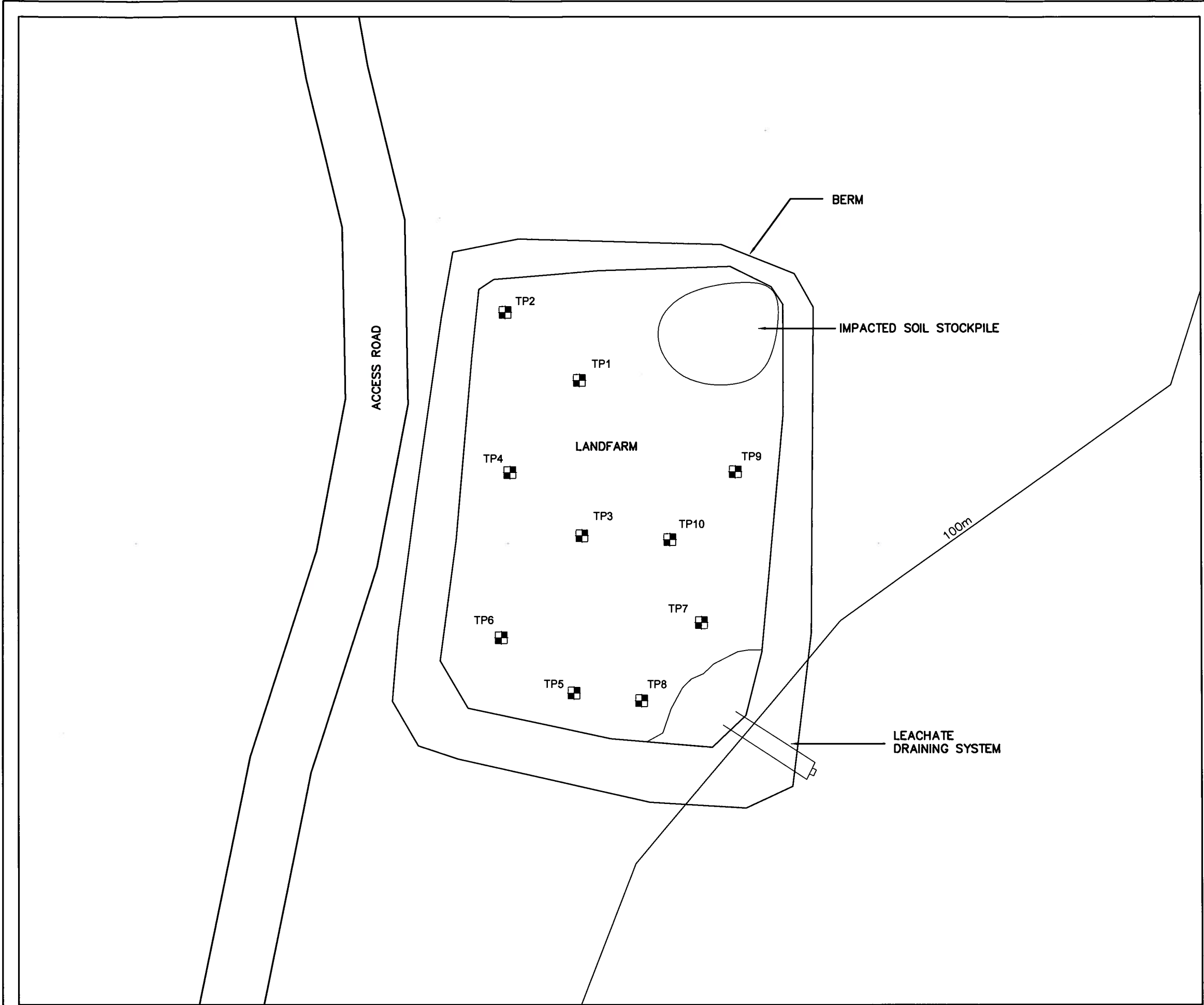
TP1  TEST PIT LOCATION
By EBA Engineers, August 2008

Site Plan Source:
Site data obtained from the EBA Engineering & Consulting Ltd.,
Landfarm Assessment, Rankin Inlet, 2008



1:500
September 2008
Project Number: N-014850
Prepared by: C. Sheppard

Projection: UTM Zone 15
Datum: NAD83
Verified by: J. Walls





Appendix A

NWB Water License NWB3RAN0207



P.O. BOX 119
GJOA HAVEN, NU X0B 1J0
TEL: (867) 360-6338
FAX: (867) 360-6369

ᓇᓂᓕ ᐃᓕᓕᓂᓕ ᑲᑎᓚᓂᓂ
NUNAVUT WATER BOARD
NUNAVUT IMALIRIYINKATIMAYINGI

DECISION

LICENCE NUMBER: NWB3RAN0207

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a Licence dated 06 June, 2002 made by:

Hamlet of Rankin Inlet

to allow for the use of water and the disposal of waste at the Hamlet at Rankin Inlet, Nunavut.

With respect to this application, the NWB gave notice to the public that the Hamlet had filed an application for a water licence.

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 Claim Agreement* (NLCA), the NWB decided that the application could go through the regulatory process.

Based on the review of the comments and concerns, it was noted that the issue of the operation of Water Treatment and Sewage Treatment Facilities in Rankin Inlet by the Department of Public Works and Services (Government of Nunavut) prevented the issuance of water licence to the Hamlet of Rankin Inlet for the operation of these Facilities. It was determined that the most appropriate action was to issue a water licence to the Hamlet of Rankin Inlet for the operation of the Solid Waste Disposal Facility, while the Department of Public Works and Services would be licensed for the operation of the Water Treatment and Sewage Treatment Facilities, on behalf of the Government of Nunavut.

Applications reflective of this division of activities were received from both the Hamlet of Rankin Inlet and the Department of Public Works and Services. Notice of these applications was posted with local organizations in Rankin Inlet. As the technical information previously reviewed remained unchanged, the Nunavut Water Board accepted written concerns and comments on these applications until December 6, 2002.

After reviewing the 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 *Nunavut Land Claims Agreement*

and of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA), decided to waive the requirement to hold a public hearing and furthermore to delegate its authority to approve the application to the Chief Administrative Officer pursuant to S. 49(a) of the NWNSRTA and determined that:

Licence Number NWB3RAN0207 be issued subject to the terms and conditions contained therein. (Motion #: 2002-21)

SIGNED this ____1st____ day of December, 2002 at Gjoa Haven, NU.

Original signed by:

Philippe di Pizzo
Chief Administrative Officer

TABLE OF CONTENTS

DECISION	i
TABLE OF CONTENTS.....	iii
I. INTRODUCTION.....	1
II. GENERAL CONSIDERATIONS	1
A. Term of the Licence	1
B. Annual Report.....	1
C. Operation and Maintenance Plan	2
D. Abandonment and Restoration Plan	2
E. Monitoring Program	2
F. Quality Assurance/Quality Control Program.....	2
III. LICENCE NWB3RAN0207	3
PART A: SCOPE AND DEFINITIONS.....	4
PART B: GENERAL CONDITIONS	6
PART C: CONDITIONS APPLYING TO WATER USE	8
PART D: CONDITIONS APPLYING TO WASTE DISPOSAL	8
PART E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION.....	8
PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE.....	9
PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION.....	10
PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM.....	11

I. INTRODUCTION

Following an application filed by Ferguson Simek Clark on behalf of the Hamlet of Rankin Inlet on 6 June 2002 to the Nunavut Water Board, the Board conducted an initial assessment of the Hamlet's request for a municipal water licence for water use and waste disposal activities within the Hamlet. The assessment was conducted so that the Nunavut Water Board could make a fully informed decision on the application. The application was referred for review and comments to Federal, Territorial and local organizations. Based upon the results of this initial assessment and the technical review, including consideration of any potential accidents, malfunctions, or cumulative environmental effects that the overall project might have in the area, the Board concluded that this application was complete and could go through the regulatory process.

In accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* S. 55.1 and Article 13 of the *Nunavut Land Claims Agreement*, public notice of the application was posted. No public concerns were expressed, and the NWB waived the requirement to hold a public hearing for the application. Authority to approve the application was delegated to the Chief Administrative Officer pursuant to S. 13.7.5 of the *Agreement*. After considering and reviewing the comments submitted by interested parties, the NWB has issued licence NWB3RAN0207.

II. GENERAL CONSIDERATIONS

Term of the 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. The NWB believes that a term of five years is appropriate. Because this is the first licence issued to the Hamlet by the Nunavut Water Board, a 5-year licence will allow enough time for the Hamlet to establish a consistent compliance record. The 5-year licence will allow the Licensee to properly carry out the terms and conditions of the licence and to ensure that sufficient time is given to permit the Licensee to develop, submit, and implement the plans required under the licence to the satisfaction of the NWB.

Annual Report

The requirements imposed on the Licensee in this licence 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 any interested parties upon request. Refer to attached standard form for completing Annual Report (see Attachment I).

Regulated Parameters

Effluent quality criteria imposed in this Licence are consistent with the *Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories* (Northwest Territories Water Board; 1992), and follow advice received from both the Department of Indian and Northern Affairs and Environment Canada.

Operation and Maintenance Manual (O&M)

The purpose of an Operation and Maintenance Manual is to assist Hamlet staff in the proper operation and maintenance of their waste disposal facilities. The manual should demonstrate to the Nunavut Water Board that the Hamlet is capable of operating and maintaining all waste disposal sites adequately. The Plan should be completed using the *Guidelines for the Preparation of an Operations and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories* (Duong and Kent, 1996; see Attachment II).

Abandonment and Restoration (A&R)

To ensure that all future abandoned facilities are reclaimed in an appropriate manner, the NWB has imposed the requirement for the submission of Abandonment and Restoration Plans. These plans should be submitted when the Licensee files preliminary design drawings for the construction of new facilities to replace existing ones.

Monitoring Program

The Monitoring Program is a monitoring program established to collect data on water quality to assess the effectiveness of treatment for protection of public health and to assess potential impacts to the environment associated with the municipal facilities. As this is the first Municipal Water Licence issued to the Hamlet by the Board, minimum requirements have been imposed, but additional sampling may be required by an Inspector.

Quality Assurance/Quality Control (QA/QC) Plan

The requirements to develop a QA/QC Plan imposed on the Licensee in this licence are for the purpose of ensuring the NWB that samples taken in the field as part of the Monitoring Program will maintain a high quality, so as to accurately represent the physical and chemical nature of the samples being taken.

LICENCE NWB3RAN0207

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 RANKIN INLET

(Licensee)

of

RANKIN INLET, NUNAVUT, X0A 0S0

(Mailing Address)

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

NWB3RAN0207

Licence Number

NUNAVUT 05

Water Management Area

RANKIN INLET, NUNAVUT

Location

WATER USE AND WASTE DISPOSAL

Purpose

MUNICIPAL UNDERTAKINGS

Description

400,000 CUBIC METRES ANNUALLY

Quantity of Water Not to be Exceeded

DECEMBER 1, 2002

Date of Licence

NOVEMBER 30, 2007

Expiry Date of Licence

Dated this 1st of December 2002 at Gjoa Haven, NU.

Original signed by:

Philippe di Pizzo

Chief Administrative Officer

PART A: SCOPE AND DEFINITIONS

1. Scope

- a. This Licence allows for the use of water and the disposal of waste by the Hamlet of Rankin Inlet for municipal undertakings at the Hamlet of Rankin Inlet, Nunavut (64°49'N, 92°05'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: **NWB3RAN0207**

“**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;

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

“**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;

“**Average Concentration**” means the arithmetic mean of the last four consecutive analytical results for contained in composite or grab samples collected from the Waste Facility’s final discharge point;

“Average Concentration For Faecal Coliforms” means the geometric mean of the last four consecutive analytical results for faecal coliforms contained in composite or grab samples collected from the Waste Facility’s final discharge point;

“Board” means the Nunavut Water Board established under the *Nunavut Land Claims Agreement*;

“Chief Administrative Officer” means the Executive Director of the Nunavut Water Board;

“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;

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

“Grab Sample” means a single water or wastewater sample taken at a time and place representative of the total discharge;

“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 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 Treatment Facility” comprises the area and engineered lagoon and decant structures operated by the Department of Public Works on behalf of the Government of Nunavut which are designed to contain sewage as described in the Application for Water Licence;

“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; and

“Water Supply Facility” means the area and associated intake infrastructure at Nipissar Lake, operated by the Department of Public Works on behalf of the Government of Nunavut, as described in the Application for Water Licence.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report with the Board not later than March 31st of the year following the calendar year reported which shall contain the following information:
 - i. tabular summaries of all data generated under the “Monitoring Program”;
 - ii. the monthly and annual quantities in cubic metres of fresh water obtained from all sources;
 - iii. the monthly and annual quantities in cubic metres of each and all waste discharged;
 - iv. a summary of modifications and/or major maintenance work carried out on the Solid Waste Disposal Facility, including all associated structures and facilities;
 - v. a list of unauthorized discharges and summary of follow-up action taken
 - vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
 - vii. a summary of any studies, reports and plans (e.g., Operation and Maintenance, Abandonment and Restoration, QA/QC) requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;
 - viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

2. The Licensee shall comply with the “Monitoring Program” described in this Licence, and any amendments to the “Monitoring Program” as may be made from time to time, pursuant to the conditions of this Licence.
3. The “Monitoring Program” and compliance dates specified in the Licence may be modified at the discretion of the Board.
4. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
5. The Licensee shall, within ninety (90) days after the first visit of the Inspector, post the necessary signs, where possible, to identify the stations of the “Monitoring Program.” All signage postings shall be in the Official Languages of Nunavut, and shall be located and maintained to the satisfaction of an Inspector.
6. The Licensee shall immediately report to the 24-Hour Spill Report Line (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 Sewage Treatment Facility.
7. The Licensee shall ensure a copy of this Licence is maintained at the Municipal office and at the site of operation at all times. Any communication with respect to this Licence shall be made in writing to the attention of:

(i) Chief Administrative Officer:

Executive Director
Nunavut Water Board
P. O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369

(ii) Inspector Contact:

Water Resources Officer
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4298
Fax: (867) 979-6445

(iii) Analyst Contact:

Taiga Laboratories
Department of Indian and Northern Affairs
4601 - 52 Avenue, P.O. Box 1500
Yellowknife, NT X1A 2R3
Telephone: (867) 669-2781
Fax: (867) 669-2718

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.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all fresh water from Nipissar Lake using the Water Supply Facilities operated by the Department of Public Works and Services on behalf of the Government of Nunavut, or as otherwise approved by the Board.
2. The annual quantity of water used for all purposes shall not exceed 400,000 cubic metres.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall direct all solid waste to the Solid Waste Disposal Facility or as otherwise approved by the Board.
2. The Solid Waste Disposal shall be maintained and operated in such a manner as to prevent the entry of waste into water.
3. The Licensee shall maintain the Solid Waste Disposal Facility to the satisfaction of an Inspector.
4. The Licensee shall direct all sewage to the Sewage Treatment Facility operated by the Department of Public Works on behalf of the Government of Nunavut

PART E: CONDITIONS APPLYING TO MODIFICATION AND CONSTRUCTION

1. The Licensee shall submit to the Board for approval design drawings stamped by a qualified engineer registered in the Nunavut 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 Solid Waste Disposal Facility provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
 - i. the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
 - ii. said modifications do not place the Licensee in contravention of the Licence or the *Act*;
 - iii. 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
 - iv. the Board has not rejected the proposed modifications.
3. Modifications for which all of the conditions referred to in Part E, Item 1, have not been met may be carried out only with written approval from the Board.
4. The Licensee shall provide as built plans/drawings of the modifications referred to in this Licence within ninety (90) days of completion of the modifications.

PART F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall, before December 1, 2003 submit to the Board for approval, a plan for the Operation and Maintenance of the Solid Waste Disposal Facility in accordance with "*Guidelines for preparing an Operation and Maintenance Manual for Sewage and solid Waste Disposal Facilities*" (October 1996).
2. The Licensee shall implement the Plan specified in Part F, Item 1 as and when approved by the Board.
3. The Licensee shall revise the Plan referred to in Part F, Item 1, if not acceptable to the Board. The revised Plan shall be submitted to the Board for approval within thirty (30) days of notification of the Board decision.

4. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
 - i. employ the appropriate Contingency Plan as provided for in the Operation and Maintenance Plan;
 - ii. report the incident immediately *via* the 24-Hour Spill Reporting Line at (867) 920-8130 and to an Inspector; and
 - iii. submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval an Abandonment and Restoration Plan at least six (6) months prior to abandoning any facilities and the construction of new facilities to replace existing ones. The Plan shall include, but not be limited to where applicable:
 - i. The Solid Waste Disposal Facility;
 - ii. petroleum and chemical storage areas;
 - iii. any site affected by waste spills;
 - iv. leachate prevention;
 - v. an implementation schedule;
 - vi. maps delineating all disturbed areas, and site facilities;
 - vii. consideration of altered drainage patterns;
 - viii. type and source of cover materials;
 - ix. future area use;
 - x. hazardous wastes; and
 - xi. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.

2. The Licensee shall implement the plan specified in Part G, Item 1 as and when approved by the Board.
3. The Licensee shall revise the Plan referred to in Part G, Item 1 if not approved. The revised Plan shall be submitted to the Board for approval within thirty (30) days of receiving notification of the Board's decision.
4. The Licensee shall complete the restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.

PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain a Monitoring Station at the following location:

<u>Station Number</u>	<u>Description</u>
RAN-2	Runoff from the Solid Waste Disposal Facility

2. The Licensee shall sample monthly at Monitoring Station RAN-2 during the months of May to August, inclusive.
3. The Licensee shall analyze samples collected at Station Number RAN-2 for the following parameters:

BOD	Faecal Coliforms
pH	Conductivity
Total Suspended Solids	Ammonia Nitrogen
Nitrate-Nitrite	Oil and Grease (visual)
Total Phenols	Sulphate
Sodium	Potassium
Magnesium	Calcium
Total Arsenic	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel
Total Zinc	

4. Additional sampling and analysis may be requested by an Inspector;
5. The Licensee shall conform to the Quality Assurance/Quality Control (QA/QC) Plan which shall be provided to the Licensee by the NWB within 60 days of the issuance of this licence;

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;
7. All analyses shall be performed in a Canadian Association of Environmental Analytical Laboratories (CAEAL) Certified Laboratory, or as otherwise approved by an Analyst;
8. The Licensee shall record in cubic metres the monthly and annual quantities of water obtained from the Water Supply Facility for all purposes;
9. The Licensee shall measure and record the annual quantities of sewage solids removed from the Sewage Disposal Facility shall be measured and recorded;
10. The Licensee shall, unless otherwise requested by an Inspector, include all of the data and information required by the "Monitoring Program" in the Licensee's Annual Report, as required *per* Part B, Item 1; and
11. Modifications to the Monitoring Program may be made only upon written approval of the Chief Administrative Officer.



Appendix B

NWB Annual Report Form

NWB Annual Report

Year being reported:

2008 ▼

License No: NWB3RAN0207

Issued Date: December 1, 2002

Expiry Date: November 30, 2007

Project Name: Rankin Inlet Waste Disposal

Licensee: Hamlet of Rankin Inlet

Mailing Address: Rankin Inlet, Nunavut
X0C 0G0

Name of Company filing Annual Report (If different from Name of Licensee please clarify relationship between the two entities, if applicable):

Nuna Burnside Engineering and Environmental Ltd.

General Background Information on the Project (*optional):

see attached information

Licence Requirements: the licensee must provide the following information in accordance with

Part B ▼

Item 1 ▼

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s):

Water Quantity:

Quantity Allowable Domestic (cu.m)

Actual Quantity Used Domestic (cu.m)

Quantity Allowable Drilling (cu.m)

Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

☒ Solid Waste Disposal☐ Sewage☐ Drill Waste☐ Greywater☒ Hazardous☒ Other:

Landfarm

Additional Details:

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)

Date of Spill:

Date of Notification to an Inspector:

Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Revisions to the Spill Contingency Plan

Other: (see additional details)



Additional Details:

A Spill Contingency Plan will be submitted by Nuna Burnside, as part of Environmental Emergency Contingency Plan for Hamlet of Rankin Inlet.

Revisions to the Abandonment and Restoration Plan

Other: (see additional details)



Additional Details:

An Abandonment and Restoration Plan of the current landfill will be provided by Gartner Lee. See attached details for timelines.

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

Results of the Monitoring Program Including:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Not Applicable (N/A)



Additional Details:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details described below



Additional Details:

Current Old Landfill - 62°48'04.30"N 92°04'37.79"W
New Landfill - 62°49'35.82"N 92°10'24.39"W
Landfarm - 62°49'49.36"N 92°10'15.74"W

Results of any additional sampling and/or analysis that was requested by an Inspector

Additional Details: (date of request, analysis of results, data attached, etc)

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

Additional Details: (Attached or provided below)

Any responses or follow-up actions on inspection/compliance reports

Additional Details: (Dates of Report, Follow-up by the Licensee)

Any additional comments or information for the Board to consider**Date Submitted:****Submitted/Prepared by:****Contact Information:**

	Jim Walls, Nuna Burnside Engineering and Environmental
Tel:	519-941-5331
Fax:	519-941-8120
email:	iwalls@riburnside.com



Appendix C

Site Photographs, September 2008

Current (Old) Landfill



Photo 1: Current (old) Landfill



Photo 2: Steel Drum Storage



Photo 3: Tank Farm



Photo 4: Bulky Waste Area

Landfarm Facility



Photo 5: Landfarm Facility, looking east.



Photo 6: Impacted soil pile in northeast corner of landfarm.



Appendix D

**Letter to INAC November 25, 2008 and
Sampling Results**

AECOM

2 – 512 Woolwich Street, Guelph, ON, Canada N1H 3X7
T 519.763.7783 F 519.763.1668 www.aecom.com

November 25, 2008

Project Number: 80-510

Mr. Andrew Keim
Indian and Northern Affairs Canada
(by email)

Dear Mr. Keim:

**Re: Plans for Abandonment and Restoration of the
Rankin Inlet Solid Waste Site (License No. NWB3GRA0207)**

Gartner Lee Limited doing business as AECOM has been retained by the Hamlet of Rankin Inlet to prepare an Abandonment and Restoration Plan for the Rankin Inlet Solid Waste Site. Our proposed scope of work includes:

1. Collection and review of available historical information on the landfill site;
2. Environmental site assessment including test pit investigation to delineate the extent of waste and soil and groundwater sampling;
3. Development of a soil remediation plan to relocate contaminated soil that has been impacted by landfill leachate for use as final cover over the waste;
4. Grading and final cover design to minimize infiltration of precipitation into the waste and reduce leachate generation;
5. Preparation of site plan and closure design drawings delineating the extent of waste and proposed closure improvements including grading and surface water drainage;
6. Preparation of an Abandonment and Restoration Plan outlining the proposed implementation schedule, post-closure landuse, recommended monitoring program, and post-closure maintenance requirements.

We have completed the Environmental Site Assessment investigations and a topographic survey of the landfill area. Please find attached test pit investigation location plan and soil and groundwater sampling results for your information. A soil remediation plan is being developed based on this information that will identify areas where soil exceeds applicable CCME criteria. Soil that exceeds applicable CCME criteria will be excavated and relocated to the waste disposal area for use as interim soil cover and graded to provide positive drainage off the landfilled waste. Contaminated soil will be placed under the final landfill cover that will likely be comprised of a geomembrane or geosynthetic clay liner (GCL) and granular material (possibly crushed quarry rock).

The above work will be carried out this winter to support completion of the Abandonment and Restoration Plan by May 31, 2009 and implementation of closure improvements during Summer 2009.

We trust this letter and attached information meet your present requirements to address your solid waste comments in your letter dated July 23, 2008. Should you require any additional information or have any questions please feel free to contact the undersigned at your convenience.

Sincerely,
Gartner Lee Limited doing business as AECOM

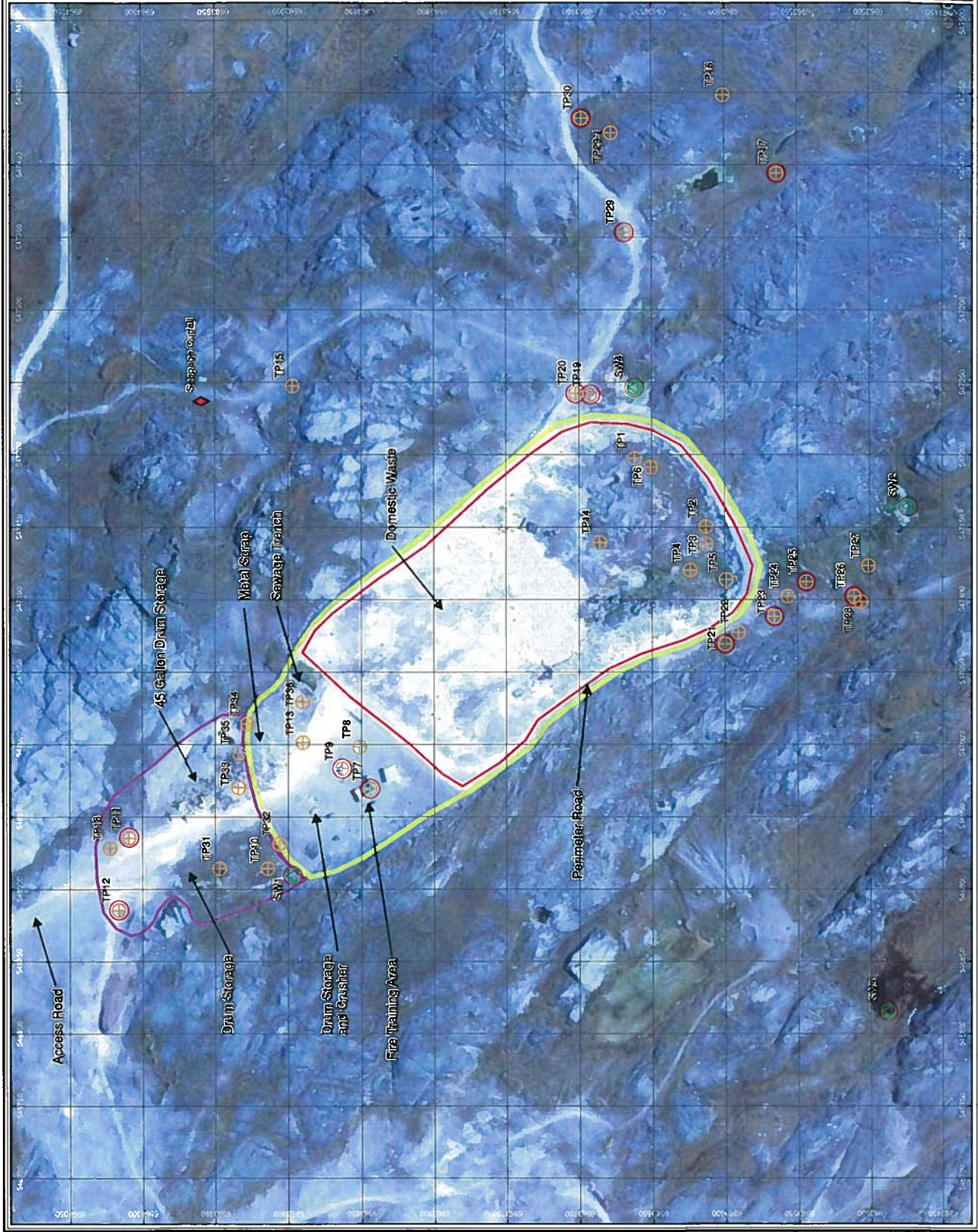
A handwritten signature in black ink, appearing to read 'Darrin Johnson', with a long horizontal flourish extending to the right.

Darrin Johnson, P.Eng.
darrin.johnson@aecom.com

DCJ:

Encl.

cc: File
 Saurabh Dhavale, Dept. of Community & Government Services (by email)
 Phyllis Beaulieu, Nunavut Water Board (by email)
 Stephanie Charity, R.J. Burnside & Associates Limited (by email)



	None	Low	Moderate	High	Very High
Notes:					
1.	Yellow denotes exceedances above CCME Canadian Soil Quality Guidelines for the Environmental and Human Health (CSQG-Residential/Pastland) or Soil (PHC CMS)-Residential/Pastland (Last Updated 2009).				
2.	Green denotes exceedances above CCME Canadian Soil Quality Guidelines for the Environmental and Human Health (CSQG-Residential/Pastland and Commercial (Last Updated 2009)).				
3.	When details are available from CCME Canadian Soil Quality Guidelines which are the lowest than AHS lab can reach, but are higher than CCME guidelines.				
4.	When details are available from CCME Canadian Soil Quality Guidelines which are the lowest than AHS lab can reach, but are higher than CCME guidelines.				
5.	When details are available from CCME Canadian Soil Quality Guidelines which are the lowest than AHS lab can reach, but are higher than CCME guidelines.				

Summary-Water

Rankin Inlet Waste Site - Summary of Analytical Results for Surface Water and Seepage Samples

Parameters	Units	CCME CWQG	TP19-120	SW 1	SW2	SW3	SW4	SW4 R
		Aquatic Life - Freshwater	21-AUG-08	21-AUG-08	21-AUG-08	21-AUG-08	22-AUG-08	22-AUG-08
Physical Tests								
Conductivity	umhos/cm		485	811	922	260	1600	1610
Hardness (as CaCO3)	mg/L		236	281	189	99.9	436	438
pH	pH units	6.5-9.0	7.64	8.06	7.35	8.29	7.83	7.84
TDS (Calculated)	mg/L		302	479	538	139	1040	1240
Turbidity	NTU		95	2.0	0.65	0.90	5.3	3.8
Anions and Nutrlents								
Alkalinity, Total (as CaCO3)	mg/L		114	158	144	88	199	199
Bicarbonate (HCO3)	mg/L		140	193	175	107	243	242
Carbonate (CO3)	mg/L		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride (Cl) - Dissolved	mg/L		20	125	145	24	245	246
Fluoride (F) - Dissolved	mg/L		0.2	<0.1	0.1	0.1	0.2	0.2
Hydroxide (OH)	mg/L		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Nitrate+Nitrite-N - Dissolved	mg/L		1.60	0.013	0.569	0.016	0.977	0.972
Sulphate (SO4) - Dissolved	mg/L		109	101	129	14	348	346
Total Metals								
Aluminum (Al)-Total	mg/L		0.987	0.024	0.019	0.036	0.029	0.032
Antimony (Sb)-Total	mg/L		0.001	0.001	0.001	<0.001	0.001	0.002
Arsenic (As)-Total	mg/L	0.005	0.0033	0.0025	0.0012	0.0071	0.0020	0.0021
Barium (Ba)-Total	mg/L		0.0381	0.0797	0.0186	0.0228	0.0379	0.0393
Beryllium (Be)-Total	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Bi)-Total	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Boron (B)-Total	mg/L		0.09	<0.03	0.33	<0.03	0.89	0.97
Cadmium (Cd)-Total	mg/L	0.000017	0.00002	0.00002	0.00003	0.00001	0.00016	0.00016
Calcium (Ca)-Total	mg/L		70.4	84.4	47.7	31.2	145	153
Cesium (Cs)-Total	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Cr)-Total	mg/L	0.0089(III), 0.001(VI)	0.004	0.001	<0.001	<0.001	0.002	0.003
Cobalt (Co)-Total	mg/L		0.0026	0.0004	0.0004	0.0003	0.0041	0.0047
Copper (Cu)-Total	mg/L	0.002-0.004	0.043	0.020	0.035	0.008	0.024	0.023
Iron (Fe)-Total	mg/L	3.00	28.7	0.18	0.09	0.25	0.90	0.91
Lead (Pb)-Total	mg/L	0.001-0.007	0.0009	<0.0005	<0.0005	0.0006	0.0007	0.0006
Magnesium (Mg)-Total	mg/L		7.24	14.7	11.0	4.20	22.3	23.6
Manganese (Mn)-Total	mg/L		0.376	0.0227	0.0117	0.0114	0.273	0.306
Mercury (Hg)-Total	mg/L	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)-Total	mg/L	0.073	0.0014	0.0012	0.0006	0.0003	0.0014	0.0016
Nickel (Ni)-Total	mg/L	0.025-0.15	0.015	0.009	0.006	0.004	0.024	0.026
Phosphorus (P)-Total	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium (K)-Total	mg/L		6.4	5.9	10.9	1.6	20.6	21.9
Rubidium (Rb)-Total	mg/L		0.0091	0.0110	0.0018	0.0023	0.0058	0.0062
Selenium (Se)-Total	mg/L	0.001	0.002	0.002	0.005	0.002	0.008	0.008
Silver (Ag)-Total	mg/L	0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)-Total	mg/L		13.8	52.5	106	12.5	158	168
Strontium (Sr)-Total	mg/L		0.216	0.378	0.244	0.0876	0.776	0.837
Tellurium (Te)-Total	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thallium (Tl)-Total	mg/L	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001
Tin (Sn)-Total	mg/L		<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
Titanium (Ti)-Total	mg/L		0.0341	0.0016	<0.0009	0.0009	0.0021	0.0015
Tungsten (W)-Total	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0009
Uranium (U)-Total	mg/L		0.0011	0.0014	0.0005	0.0002	0.0012	0.0012
Vanadium (V)-Total	mg/L		0.003	<0.001	<0.001	<0.001	<0.001	0.001
Zinc (Zn)-Total	mg/L	0.03	0.02	0.02	0.02	0.01	0.08	0.08
Zirconium (Zr)-Total	mg/L		0.0009	<0.0004	<0.0004	<0.0004	0.0010	0.0004
Dissolved Metals								
Calcium (Ca)-Dissolved	mg/L		79.3	86.1	54.2	32.2	139	142
Iron (Fe)-Dissolved	mg/L		5.95	0.15	0.08	0.24	0.49	0.46
Magnesium (Mg)-Dissolved	mg/L		9.13	16.0	13.1	4.73	21.6	20.2
Manganese (Mn)-Dissolved	mg/L		0.162	0.0207	0.0130	0.0151	0.219	0.223
Potassium (K)-Dissolved	mg/L		7.65	6.18	12.9	1.87	19.3	22.5
Sodium (Na)-Dissolved	mg/L		14.8	55.6	126	14.1	143	138
Volatile Organic Compounds								
Benzene	mg/L	0.37	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethyl Benzene	mg/L	0.09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
o-Xylene	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
m+p-Xylenes	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Xylene, (total)	mg/L		<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Hydrocarbons								
F2 (C10-C16)	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34)	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F4 (C34-C50)	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Total Hydrocarbons (C6-C50)	mg/L		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F1-BTEX	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
F1 (C6-C10)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Notes:

1. Yellow denotes exceedances above CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater. Last Updated 2007.
2. Orange denotes values are below the detection limits, which are the lowest that ALS lab can reach, but are higher than CCME guidelines.



Appendix E
Landfarm Sampling Results

TABLE 1: Soil Analytical Results - Landfarm Assessment

Location	Section 1			Section 2		Section 3		Section 4			Section 5		GNWT Environmental Guideline for Contaminated Site Remediation
Sample Identification	Q1(0.3m)	Dup 1	Q1(1.2m)	Q2(0.3m)	Q2(1.2m)	Q3(0.3m)	Q3(1.2m)	Q4(0.3m)	Q4(1.2m)	Dup 2	Q5(0.3m)	Q5(1.2m)	
Sample Type	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Residential - Coarse Grained Surface Soil
Sample Depth Below Grade (m)	0.3 m	0.3 m	1.2 m	0.3 m	1.2 m	0.3 m	1.2 m	0.3 m	1.2 m	1.2 m	0.3 m	1.2 m	
Sample Date (M/D/Y)	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	7/31/2008	-
Moisture (%)	9.1	11	8.1	8.7	12	8.4	13	9.6	11	11	7.3	8.6	-
Hydrocarbons													-
Benzene	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.5 ^b
Toluene	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.8 ^b
Ethylbenzene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	1.2 ^b
Xylenes	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.14	<0.040	<0.040	1 ^b
F1-BTEX	<12	<12	<12	13	48	<12	37	<12	78	43	35	21	130 ^a
F2 (C10-C16)	100	73	250	150	450	59	370	19	300	280	26	340	450 ^a
F3 (C16-C34)	35	29	55	39	50	25	43	37	46	41	20	41	400 ^a
F4 (C34-C50)	12	<10	18	13	14	10	12	11	15	11	<10	11	2800 ^a

Notes:**Bold** - indicates exceedance of adopted criteria

All units are in parts per million (ppm) unless otherwise specified

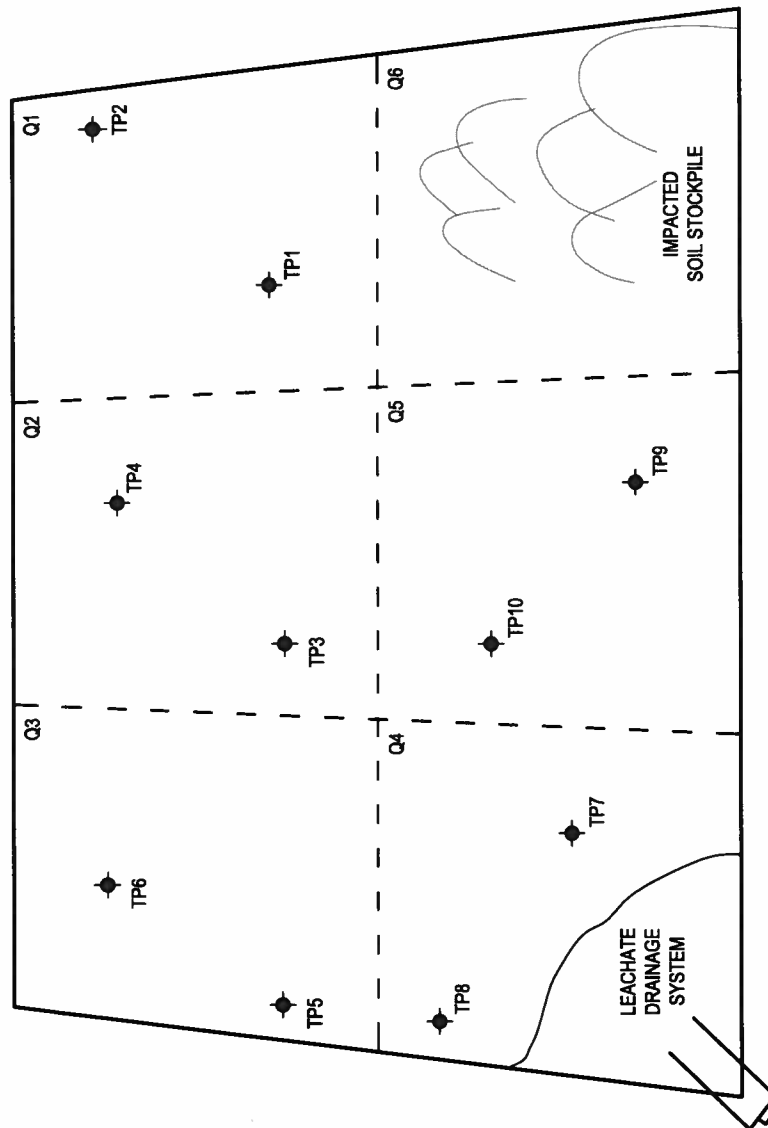
"-" indicates not analysed, no applicable standard, or not applicable

a - Eco - Soil Contact Standards, as published by GNWT "Guidelines for Contaminated Site Remediation" November (2003).

b - Residential/Parkland land use standards.



ROAD



LEGEND:

◆ - TESTPIT AND SAMPLE LOCATION



CLIENT

Government of Nunavut
Department of Community
and Government Services



EBA Engineering
Consultants Ltd.

Landfarm Assessment
Rankin Inlet, NU

Detailed Site Plan

PROJECT NO.
Y22101066.001

OFFICE
EDM

DATE
August 2008

DWN MM KL
CWD KL
REV KL

Figure 2



Appendix F

INAC Inspection Report, 2008

WATER USE INSPECTION REPORT

Date: July 22nd, 2008	Licensee Rep. (Name/Title): Joe Strickland- C&GS – Gov't of Nunavut
Licensee: Government of Nunavut	Licence No.: NWB3GRA0207 - Expired

WATER SUPPLY

Source(s): Nipissar Lake	Quantity used: Unknown – NI
Owner/Operator: C&GS Gov. Of Nunavut	Water and Sewage services provided by GN

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: A	Storage Structure: A	Treatment Sys: A	Chemical Storage: NA
Flow Meas. Device: NI	Conveyance Lines: A	Pumping Stations: A	Screen : NI

Comments: The Government of Nunavut has an expired water license for these services. No annual reports, sampling results, Operations manuals or spill contingency plans were noted during the inspection. A spill has occurred at the Potable in-take. Efforts to clean it up were on-going- a report is expected within 10 days.

WASTE DISPOSAL

Sewage: Sewage Treatment System (Prim./Sec/Ter.): Direct discharge to Marine Environ.

Natural Water Body: Hudson bay	Continuous Discharge (land or water): Continuous	
Seasonal Discharge: NA	Wetlands Treatment: NA	Trench: NA

Solid Waste: Non-combustible waste consolidated at waste metals area.

Owner/Operator: Municipality of Rankin Inlet

Landfill: U- No evidence of segregation	Burn & Landfill: U	Other: Hydrocarbon waste
-----------------------------------------	--------------------	--------------------------

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: U	Decant Structure: NA	Erosion: NA
Discharge Meas. Device: NA	Dyke Inspection: NA	Seepages: NA
Dams, Dykes: NA	Freeboard: NA	Spills: U
Construction: NA	O&M Plan: U	A&R Plan: U
Periods of Discharge: Cont.	Effluent Discharge Rate: NA	

Comments: The Dept of Community and Government Services operates the water and waste water services within Rankin Inlet. The mechanical treatment system is off line and untreated waste is discharges to the marine environment. No notification was provided. Missing are files on Abandonment and reclamation plans, Operations and maintenance plans as well as outstanding annual reports. The water license has expired.

FUEL STORAGE:

Waste Oil Storage: None noted at site

Owner/Operator: Government of Nunavut

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners: A	Water within Berms: A	Evidence of Leaks: NI
Drainage Pipes: A	Pump Station & Catchments Berm: NI	
Pipeline Condition: A	Condition of Tanks: A	

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected		Owner /Operator: Government of Nunavut – CG&S - None	
2		INAC: Potable water source & Dump Leachates	
Signs Posted	SNP: One sign at treatment		Warning: U
Records & Reporting: Annual reporting is not up to date			
Geotechnical Inspection: N/A			

Non-Compliance of Act or Licence: The Government of Nunavut is currently in Non-Compliance with Nunavut Water and Nunavut Surface Rights Tribunals Act. Application for a new Water license is on-going and must be completed by the period of the next inspection. Modifications in Operation must be reported.

A.Keim
Inspector's Name

Sent by E-mail
Inspector's Signature