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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **1BR-KRK1112**

January 18, 2011

Tom Livingston, Regional Municipal Engineer
Department of Community & Government Services
Government of Nunavut
Helen Magsagak Building
Cambridge Bay, NU X0B 0C0

Email: tlivingston@gov.nu.ca

RE: NWB Licence No. 1BR-KRK1112; Renewal and Amendment of 1BR-KRK0609

Dear Mr. Livingston,

Please find attached water licence No. **1BR-KRK1112** (Licence) issued to the Government of Nunavut – Department of Community & Government Services (GN-CGS) by the Nunavut Water Board (NWB or Board) 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 will be in contravention of the NLCA and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWSRTA). However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least three months prior to the Licence expiry date.

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

The NWB strongly recommends that the Licensee consult the comments received by interested persons on issues identified. This information is attached for your consideration.¹

Sincerely,



Thomas Kabloona
Nunavut Water Board
Chair

TK/kt/pb

Enclosure: Licence No. **1BR-KRK1112**
Comments

cc: Kitikmeot Distribution List

¹ Indian and Northern Affairs Canada, April 24, 2010; Environment Canada, April 23, 2010 and Kitikmeot Inuit Association, April 19, 2010



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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

DECISION

LICENCE NUMBER: 1BR-KRK1112

This is the decision of the Nunavut Water Board (NWB) with respect to an application dated September 15, 2009 for renewal and amendment of a water licence made by:

GOVERNMENT OF NUNAVUT, DEPARTMENT OF COMMUNITY & GOVERNMENT SERVICES

to allow for the disposal of waste during operation of the hydrocarbon impacted soil landfarm treatment facility (Landfarm) located approximately 1.5 km southeast of the Hamlet of Kugaaruk within the Kitikmeot Region, Nunavut and generally located at the geographical coordinates as follows:

Latitude: 68°23' N

Longitude: 89°49' W

DECISION

After having been satisfied that the application was for a project located within an area in which there is no approved land use plan and following a 12.4.4(a) screening decision by the Nunavut Impact Review Board (NIRB) in accordance with Article 12 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 NWB decided that the application could proceed through the regulatory process. After reviewing the submission of the Applicant and considering the representations made by interested persons, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the NLCA and of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSTRTA), waived the requirement to hold a public hearing, and determined that:

Licence No. 1BR-KRK0609 be renewed and amended as Licence No. 1BR-KRK1112 subject to the terms and conditions contained therein. (Motion #: 2010-23-L13)

SIGNED this 17th day of January 2011 at Gjoa Haven, NU.

Thomas Kabloona
Nunavut Water Board
Chair

TK/kt/pb

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NWB LICENCE No. 1BR-KRK1112

I. BACKGROUND

An environmental site investigation conducted in 2001 for the Nunavut Public Works and Services Department revealed several areas of contaminated soil in the vicinity of a bulk fuel storage facility in the Hamlet of Kugaaruk. The site investigation report estimated that approximately 3,500 m³ of soil contaminated primarily with fuel oil at concentrations exceeding the Canada Wide Standards for residential areas, would need to be removed.

To treat the contaminated soil, the Nunavut Public Works and Services Department arranged for the design and construction of a hydrocarbon impacted soil landfarm facility (Landfarm) at a location approximately 1.5 km south-east of the community. The Landfarm was constructed prior to the issuance of a water licence. The Landfarm is located beside a gravel road east of the landfill and sewage lagoon servicing the Hamlet of Kugaaruk. The Landfarm consists of a soil treatment cell and a water retention cell, both of which are surrounded by compacted earth berms approximately 1.5 metres in height. The interior walls of the berms and the base of the cells are equipped with impermeable liners, geotextile liners and sand beds. The treatment cell is sized to accept the entire estimated volume of contaminated soil at one time. The water retention cell is designed to store run-off from the treatment cell and has been sized to hold the equivalent of at least one year's precipitation. In 2007, approximately 2172 m³ of contaminated soil was placed in the Landfarm.

Effluent from the Landfarm is discharged at a controlled rate over the containment berm onto a splash pad designed to minimize the potential for erosion and maximize dispersion. Local drainage patterns from the Landfarm lead to St. Peter's Bay, approximately 1.2 km downstream of the Landfarm. In the event that containment water does not meet discharge criteria, it is either re-circulated onto the soil treatment area or treated with granular activated carbon prior to re-testing and release.

II. PROCEDURAL HISTORY

The Government of Nunavut Department of Community Government Services (GN-CGS or Licensee) was issued water licence 8BR-KRK0609 dated October 13, 2006 by the Nunavut Water Board (NWB) for the disposal of waste during operations at the hydrocarbon impacted soil landfarm facility (Landfarm) located within the Hamlet of Kugaaruk, Nunavut. This Licence expired on August 31, 2009. On August 6, 2010 the NWB issued an errata to the Licence, to change each occurrence of the licence number 8BR-KRK0609 to 1BR-KRK0609.

On September 15, 2009, the NWB received a letter from Wardrop Engineering Inc. (Wardrop), requesting renewal of water licence 1BR-KRK0609 on behalf of the GN-CGS (Applicant or Licensee). On November 20, 2009 the NWB also received an application form and an English project summary, and on December 4, 2009 the NWB received an Inuktitut project summary. On December 8, 2009, the NWB informed Wardrop and GN-CGS that their request for renewal was deficient and provided a list of the deficiencies that needed to be addressed before the application could proceed. On February 25, 2010, Wardrop provided the NWB with the outstanding reports identified in the NWB's December 8, 2009 correspondence and in addition to a renewal, requested an amendment to the water quality limits for discharge from the Landfarm retention cell.

The complete renewal and amendment application (Application) included the following documents:

- Letter from D. Ediger and L. Stone, Wardrop, to P. Beaulieu, NWB, Subject: NWB Water Licence No. 8BR-KRK0609 – Request for Renewal, dated September 15, 2009;
- Project Summary Soil Treatment Landfarm in the Hamlet of Kugaaruk Nunavut Water Board Licence No. 8BR-KRK0609;
- Completed Water Licence Schedule III Application form signed by D. Ediger, Wardrop, dated November 18, 2009;
- Translated Project Summary;
- Letter from K. So, GN-CGS, to P. Beaulieu, NWB, Re: NWB Licence No. 8BR-KRK0609, dated December 9, 2009;
- Letter from D. Ediger and L. Stone, Wardrop, to P. Beaulieu, NWB, Subject: NWB Water Licence No. 8BR-KRK0609 – Submission of Reports, dated February 25, 2010;
- Report entitled “Soil Remediation Landfarm Hamlet of Kugaaruk Annual Report 2006-2008” Document No. 0222880805-REP-V0004-00, prepared by Wardrop for GN-CGS, dated February 2010;
- Report entitled “Soil Sampling – Former Tank Farm Site, Kugaaruk, Nunavut” Document No. 0222880804-REP-V0001-00, prepared by Wardrop for GN-CGS, dated July 2007;
- Report entitled “Former Tank Farm Site Remediation, Kugaaruk, Nunavut” Document No. 0222880801-REP-V0001-01, prepared by Wardrop for GN-CGS, dated August 2008;
- Report entitled “Interim Abandonment and Reclamation Plan Kugaaruk Soil Landfarm” Document No. 0222880805-REP-V0001-00, prepared by Wardrop for GN-CGS, dated February 2010;
- Report entitled “Operations and Maintenance Manual Kugaaruk Landfarm Facility NWB Licence No. 8BR-KRK0609” Document No. 02220880805-OPM-V0001-00, prepared by Wardrop for GN-CGS, dated February 2010;
- Report entitled “Quality Assurance and Quality Control Plan for the Kugaaruk Landfarm Facility NWB Licence No. 8BR-KRK0609” Document No. 0222880805-PQP-V0001-00, prepared by Wardrop for GN-CGS, dated February 2010;
- Report entitled “Kugaaruk Landfarm Spill Contingency Plan” Document No. 0222880805-REP-V0005-00, prepared by Wardrop for GN-CGS, dated February 2010;
- Drawing signed and stamped by S. Sebastian, P.Eng., entitled “Landfarm Water Handling Facilities, Kugaaruk Nunavut, Overall Site Plan” Drawings No. 022880805-SKT-V0002-00, prepared by Wardrop for GN-CGS, dated 10/02/01;
- Revised drawing stamped by S. Sebastian, P.Eng., entitled “Landfarm Water Handling Facilities, Kugaaruk Nunavut, Overall Site Plan” Drawings No. 022880805-SKT-V0002-01, prepared by Wardrop for GN-CGS, dated 10/02/01; and
- Email from D. Ediger, Wardrop, to P. Beaulieu, NWB, Subject: Licence 8BR-KRK0609 Kugaaruk Landfarm - Splash Pad Drawing Revision, dated May 10, 2010.

On March 24, 2010, following a preliminary internal review of the Application, the NWB concluded that the Application met the requirements of section 48(1) of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWSRTA or Act) and forwarded notice of the Application to regulators, council of the municipality most affected by the project and other interested parties. All parties were invited to make representations to the NWB within thirty (30) days.

Comments were submitted by Indian and Northern Affairs Canada (INAC), Environment Canada (EC), and the Kitikmeot Inuit Association (KIA) on or before April 24, 2010. No public concern was expressed during the notice period. Therefore, the NWB waived the requirement to hold a public hearing and proceeded with the application process.

On May 10, 2010, the Nunavut Impact Review Board (NIRB) issued its screening decision report and notice of indication for the Landfarm. Based on its assessment of ecosystemic and socio-economic impacts, NIRB indicated to the Minister that the project could proceed without a review, subject to specific terms and conditions.

Based upon the results of the detailed assessment of the 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 and has issued water licence 1BR-KRK1112.

III. ISSUES

Term of Licence

In accordance with section 45 of the Act, the NWB may issue a licence for a term not exceeding twenty-five years. In determining an appropriate term of a water licence, the Board considers a number of factors, including the results of the compliance record of the Applicant.

The results of the NWB's internal compliance assessment indicate the following issues of non-compliance:

- The 2006-2008 annual report does not address the following: item (iii) List of unauthorized discharges and a summary of follow-up actions taken; item (iv) Revisions to the Spill Contingency Plan and Abandonment and Restoration Plan; item (v) Progressive reclamation work undertaken; item (vi) dust control and the mitigation of surface water ponding in the LTF as per Part D Item 6; item (viii) tabular summaries for all data and information generated under the "Monitoring Program"; item (ix) an analysis of data collected during the "Monitoring Program" (as per Part I) and a brief description of any future studies planned by the Licensee; item (x) site photographs with complimentary documentation detailing the Water Treatment Facilities, LTF infrastructure, and general site.
- The 2009 annual report due March 2010 is not on file in accordance with Part B Item 1 of the expired water licence 1BR-KRK0609.
- Notice of planned discharge from the Landfarm cell was not provided in 2008 in accordance with Part D Item 1 of the expired water licence 1BR-KRK0609.
- Analytical results of the water sample collected from the bottom on the retention cell in 2009 has not been provided as committed to through email correspondence between the Inspector and Wardrop, dated September 10, 2010.
- As-built drawings of the Landfarm have not been submitted in accordance with Part F Item 2 of the expired water licence 1BR-KRK0609.
- As-built drawings of the groundwater wells have not been submitted in accordance with Part F Item 3 of the expired water licence 1BR-KRK0609.
- The Monitoring Program outlined in the expired water licence 1BR-KRK0609 has not been conducted in accordance with Part I Items 1, 2, 3, 5, 7, and 14 of the expired water licence 1BR-KRK0609.

In its Application, Wardrop proposed a multi-year schedule with a 2012 completion date. Additional information in the Application indicates that treatment of contaminated soils in the Landfarm may continue into 2011 (to be decided following review of the 2010 soil sample results) and that site monitoring will continue for a two (2) year period following removal of soil from the treatment cell to

ensure that there are no residual impacts. This additional information suggests that the activity at the site may continue until 2013.

The NWB has decided to issue the Licence for a term of two (2) years, expiring in 2012, consistent with the completion date proposed by the Applicant. The two (2) year Licence term is intended to provide the Licensee time to take immediate action towards implementing plans and achieving full compliance with all Licence requirements. If additional time is required to complete the project including completion of on-site monitoring, the Licensee must apply for a Licence renewal.

The Board notes that the cover letter to the Application submitted on September 15, 2009 indicates that upon completion of the project, the GN-CGS may be interested in leaving the Landfarm in place for future use. The Licensee is advised that future use of the Landfarm beyond the 2012 expiry date will require a Licence renewal. Upon submission of an application to renew the Licence in approximately 21 months, the Board fully expects the Licensee to be in compliance with the Licence.

Annual Report

As noted above, the 2006-2008 annual report was deficient and the 2009 annual report has not been submitted as required by Part B Item 1 of water licence 1BR-KRK0609. The NWB would like to emphasize the requirement to produce an annual report for submission not later than March 31st of the year following the calendar year being reported. The requirement to produce annual reports is to ensure that the NWB has an accurate and timely annual update of activities during a calendar year. This information is maintained on the NWB's public registry and is available to interested parties upon request.

Effluent Discharge

Part D Items 2 and 14 of the expired water licence 1BR-KRK0609 required the Licensee to treat any surface drainage from within the Landfarm by the Water Treatment Facilities and Part I Item 5 of the expired licence required the Licensee to ensure that waters leaving the Water Treatment Facilities as discharge were below the Canadian Council of Ministers of Environment (CCME) *Canadian Water Quality Guidelines for the Protection of Aquatic Life* for surface water reception.

In its Application, the Applicant requested an amendment to the manner in which effluent is discharged from the Landfarm and the effluent quality limits for discharge from the Landfarm. Specifically, due to the implementation of the Splash Pad which allows effluent discharge to be dissipated over a relatively large surface area immediately downstream, the Applicant proposed the application of criteria from Schedule 6 of *the British Columbia Contaminated Sites Regulations* (B.C. Regulations 375/96) as the effluent quality limits for discharge from the Landfarm. The B.C. Regulations 375/96 are applicable to groundwater flowing into surface water that supports aquatic life. Taking into consideration the granular surficial deposits as well as the Splash Pad, the Applicant anticipates that the discharge will percolate into the soil resulting in a discharge that is more accurately represented as groundwater flow than surface water flow.

In its written submission dated April 24, 2010, INAC recommended that the NWB set effluent criteria similar to those in other water licences for landfarms including pH, suspended solids, oil and grease, ammonia-N, lead, benzene, toluene, and ethyl benzene. The Board also notes email correspondence from the INAC inspector, A. Keim, to D. Ediger, dated August 30, 2010 in which the inspector requested that samples of effluent from the Landfarm be analyzed for the following parameters prior to discharge: pH,

Total Suspended Solids (TSS), oil and grease, lead, benzene, toluene, and ethylbenzene, and recommended specific limits for each parameter.

EC, in its written submission dated April 23, 2010, recommended that the consultant refer to the *Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils*, Science Applications International Corporation (SAIC Canada), March 2006 (Federal Guidelines), for information addressing landfarming projects. According to these Federal Guidelines, there are no criteria for discharge of leachate to groundwater, therefore provincial/ territorial guidelines are recommended for leachate discharged to groundwater.

The Board has considered the Applicant's request as well as parties' recommendations and has decided that in the absence of Nunavut specific guidelines for discharge to groundwater and given the lack of information provided in the Application regarding the permafrost and groundwater regime to maintain that discharge will percolate into the groundwater, the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life* for surface water reception shall continue to apply to effluent discharged from the Landfarm in accordance with the Federal Guidelines. As such, the Board has set effluent quality limits in Part D Item 4 of this Licence renewal/ amendment for pH, benzene, toluene, and ethylbenzene that are consistent with the CCME Guidelines. In addition, the Board has set effluent quality limits for TSS, oil and grease, and lead that are consistent with INAC's recommendations.

In addition, the Applicant indicated in its Application that if the analysis of effluent from the retention cell of the Landfarm exceeds effluent quality criteria, treatment of water will be conducted prior to discharging, as opposed to treating all surface drainage from within the Landfarm by the Water Treatment Facilities, as required by Part I Item 5 of the expired licence. No comments were received from parties regarding this issue. As such, the Board accepts the Applicant's proposed manner of discharge and has amended the licence accordingly.

Waste Disposal

In reviewing the Licensee's 2006-2008 Annual Report, the Board understands that no waste rock was received at the Landfarm. Therefore, the Board has removed references to Stockpile Rejects Rock, in this Licence renewal/ amendment.

As-Built Drawings

As noted above, as-built drawings of the Landfarm have not been submitted in accordance with Part F Item 2 of the expired water licence 1BR-KRK0609 and details regarding the construction and installation of the groundwater wells have not been submitted in accordance with Part F Item 3 of the expired water licence. The Board continues to require these submissions, where in Part E Items 1 and 2 of this Licence renewal/ amendment, indicates a submission six months following the issuance of this Licence.

In addition, the Board requires the submission of as-built drawings of the Splash Pad within six months of issuance of this Licence, or six months following completion of its construction, as a condition in Part E Item 3 of this Licence renewal/ amendment.

Operations and Maintenance Manual

Part D Item 9 of the expired water licence 1BR-KRK0609 required the Licensee to submit to the Board for approval thirty (30) days prior to any discharge of soil and waters from the Landfarm, an Operations

and Maintenance (O&M) Manual. The Licensee submitted a report entitled “Operations and Maintenance Manual, Kugaaruk Landfarm Facility, NWB Licence No. 8BR-KRK0609” to the Board in February 2010 as part of its Application for renewal and amendment.

In reviewing the O&M Manual, the Board acknowledges that the Manual was not submitted in a timely manner. The Board also notes Environment Canada’s (EC) comments in its written submission dated April 23, 2010 in which EC recommends that the Licensee refer to the *Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils*, SAIC, 2006 as it relates to the future operations of the Landfarm and that the Licensee sample for soil and groundwater contamination annually and after the project life in the area where un-tested Landfarm Effluent was discharged.

In addition, to assist the Licensee and its contractors in carrying out the procedures relating to the Landfarm, the Board generally requires all operational plans including the Spill Contingency Plan and Quality Assurance / Quality Control (QA/QC) Plan to be consolidated into the overall O&M Manual. As such, the Board is requiring the Licensee as a condition in Part E Item 4 of the Licence renewal and amendment, to submit to the Board for approval within ninety (90) days of Licence issuance, a revised O&M Manual.

Drilling

The Licensee’s Operations and Maintenance Manual indicates that an additional groundwater monitoring well will be installed in summer 2010 upslope of the Landfarm in order to establish baseline conditions for the local study area. The Licence renewal and amendment has been amended to include standard conditions related to drilling operations for the purposes of installing future monitoring wells.

Spill Contingency Plan

Part G Item 1 of the expired water licence 1BR-KRK0609 required the Licensee to keep on the site of operations, a Spill Contingency Plan. The Licensee submitted a report entitled “Kugaaruk Landfarm Spill Contingency Plan” to the Board in February 2010 as part of its Application for renewal and amendment.

In reviewing the Spill Contingency Plan, the Board notes Indian and Northern Affairs Canada’s (INAC) comments in its written submission dated April 24, 2010 in which INAC recommends specific references for the Plan. As such, the Board is requiring the Licensee as a condition in Part H Item 1 of the Licence renewal and amendment, to submit to the Board for review within ninety (90) days of Licence issuance a revised Spill Contingency Plan. The revised Plan shall be incorporated into the Operations and Maintenance Manual described above.

Abandonment and Restoration

Part H Item 1 of the expired water licence 1BR-KRK0609 required the Licensee to submit to the Board for approval six (6) months following issuance of the Licence a stand alone Interim Abandonment and Reclamation Plan. The Licensee submitted a report entitled “Interim Abandonment and Reclamation Plan Kugaaruk Soil Landfarm” to the Board in February 2010 as part of its Application for renewal and amendment.

In reviewing the Plan, the Board acknowledges that the Plan was not submitted in a timely manner, and that no comments were submitted from parties during the Application review process. The Board has approved the Plan and requires the Licensee as a condition in Part I Item 1 of the Licence renewal and

amendment, submit to the Board for review within ninety (90) days of Licence issuance, a revision to the Plan taking into consideration the requirements of the Licence as well as the Government of Nunavut's Environmental Guideline for Site Remediation, January 2009.

In addition, consistent with other water licences issued by the Board, the Board requires the Licensee as a condition in Part I Item 2 of the Licence renewal and amendment to submit to the Board for approval at least six (6) months prior to abandoning any facilities or upon submission of final design drawings for the construction of new facilities to replace existing ones, a Final Abandonment and Restoration Plan for the facilities being decommissioned.

Monitoring

As noted above, the Monitoring Program outlined in the expired water licence 1BR-KRK0609 has not been conducted in accordance with Part I Items 1, 2, 3, 5, 7, and 14 of the expired licence. This is an area of non-compliance that the NWB anticipates will be improved upon over the two (2) year term of the Licence renewal and amendment. In addition, the Board has amended the Licence to include specific Monitoring Program Stations outlined in Part J Item 1 for effluent discharged from the Landfarm and groundwater monitoring wells.

In its O&M Manual, the Applicant proposed to conduct site monitoring once per year during late August. As proposed by EC in its previous written submission dated September 2, 2005 as well as the Government of Nunavut Department of Environment in its previous written submission dated June 28, 2006 regarding the Application for a new licence for the Landfarm, and as required by Part I of the expired licence 1BR-KRK0609, the Board, in Part J of the Licence renewal and amendment, is continuing to require groundwater monitoring twice per year as well as sampling of soil treated in the Landfarm no less frequently than once every four (4) months, during the period of active land treatment. The purpose of sampling the soil treated in the Landfarm is to monitor contaminant levels until analytical results indicate that the soil is below acceptable levels as determined under Part D Item 9 of the Licence renewal and amendment. The Licensee is expected to update its O&M Manual accordingly.

As proposed by the Applicant in its O&M Manual, the Board is requiring the Licensee as conditions in Part J of the Licence renewal and amendment to: (1) monitor the static depth to groundwater level on the same schedule as groundwater monitoring, (2) maintain the groundwater monitoring wells installed by the Licensee downgradient of the Landfarm; and (3) install and maintain a groundwater monitoring well upgradient of the Landfarm for background data collection.

To address EC's comment in its written submission dated September 2005, regarding the deposit of landfarm soil following treatment, the Board is requiring the Licensee as conditions in Part J Items 13 and 14, to determine the GPS coordinates of all locations where remediated soil is deposited and record the date, amounts, soil quality and final destination of all treated soil removed from the Landfarm.

Part I Item 10 of the expired licence 1BR-KRK0609 required the Licensee to submit to the Board for approval within sixty (60) days of licence issuance, a QA/QC Plan. The Licensee submitted a report entitled "Quality Assurance and Quality Control Plan for the Kugaaruk Landfarm Facility NWB Licence No. 8BR-KRK0609" to the Board in February 2010 as part of its Application for renewal and amendment. Consistent with other water licences issued by the Board, the Board is requiring the Licensee as a condition in Part J Item 17 of the Licence renewal and amendment, to resubmit the Plan with a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence. The Plan is to be included with the O&M Manual described above.



NUNAVUT WATER BOARD WATER LICENCE

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

GOVERNMENT OF NUNAVUT, DEPARTMENT OF
COMMUNITY & GOVERNMENT SERVICES

(Licensee)

HELEN MAGSAGAK BUILDING, CAMBRIDGE BAY, NU X0B 0C0

(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 and amendment:

Licence Number/Type: 1BR-KRK1112 TYPE "B"

Water Management Area: NUNAVUT 07

Location: KUGAARUK LANDFARM, HAMLET OF KUGAARUK
KITIKMEOT REGION, NUNAVUT

Classification: INDUSTRIAL UNDERTAKING

Purpose: DEPOSIT OF WASTE

Quantity of Water use not
to Exceed: NO WATER USE AUTHORIZED UNDER THE LICENCE

Date of Licence Issuance: JANUARY 17, 2011

Expiry of Licence: DECEMBER 31, 2012

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

Thomas Kabloona,
Nunavut Water Board
Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. SCOPE

- a. This Licence allows for the disposal of Waste for an undertaking classified as Industrial as per schedule II of the *Regulations* at the Kugaaruk hydrocarbon impacted soil landfarm treatment facility (Landfarm), located 1.5 km south-east of the Hamlet of Kugaaruk within the Kitikmeot Region, Nunavut;
- b. This Licence is issued subject to 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 Act, or other statutes imposing more stringent conditions relating to the quantity, type or manner under which any such Waste may be so deposited, this Licence shall be deemed 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 all applicable legislation, guidelines and directives.

2. DEFINITIONS

In this Licence: **1BR-KRK1112**

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

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

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

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

“Applicant” means the Licensee;

“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 facility;

“Engineer” means a professional engineer registered to practice in Nunavut in accordance with

the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2* and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

“Final Discharge Point” means the point at which the Licensee no longer exerts care and/or control over the quality and/or quantity of the Effluent from a treatment process;

“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;

“Landfarm” comprises the area and associated infrastructure, including the soil disposal cell, water retention cell, and Splash Pad, designed to contain and remediate hydrocarbon impacted soils as described in the application for water licence filed by the Applicant on May 25th, 2005 and as illustrated in drawings signed and stamped by S. Sebastian entitled “Contaminated Soil Site Plan and Section”, drawings no’s 01-4109-C1001 Rev C and 01-4109-C1002 Rev B.

“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;

“Splash Pad” means the infrastructure design to minimize the potential for erosion during discharge of Effluent from the Landfarm as illustrated in the drawing stamped by S. Sebastian, P.Eng., entitled “Landfarm Water Handling Facilities, Kugaaruk Nunavut, Overall Site Plan” Drawings No. 022880805-SKT-V0002-01, prepared by Wardrop for GN-CGS, dated 10/02/01;

“Treatment Objective” means the treatment objective for the soil within the Kugaaruk Landfarm which is the Canadian Council of Ministers of the Environment (CCME) *Canada – Wide Standard for Petroleum Hydrocarbon (PHC) in Soil*, revised January 2008 as determined by the Government of Nunavut, Environmental Protection Division based on the 2009 *Environmental Guideline for Site Remediation*;

“Type A Soil” means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of lubricating oil and grease;

“Type B Soil” means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of fuel oil and/or diesel fuel and /or gasoline;

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

“Water” means water as defined in section 4 of the Act; and

“Water Treatment Facilities” means the activated carbon water treatment unit as described in the application for water licence filed by the Applicant on September 15, 2009.

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.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report with the Board for review, no later than March 31st of the year following the calendar year being reported, which shall contain the following information collected during that period:
 - a. A summary of all waste disposal activities including;
 - i. Quantity and quality of effluent discharged from the Landfarm;
 - ii. Characterization of soils placed in the Landfarm for treatment; and
 - iii. Quantity of soils placed in the Landfarm for treatment;
 - b. Tabular summaries of all data generated under the Monitoring Program, an analysis and interpretation of the results, and any follow-up measures that may be required;
 - c. The monthly and annual quantities in cubic metres of all Effluent discharged;
 - d. A summary of modifications and/or major maintenance work carried out on the Landfarm, including all associated structures and facilities;
 - e. An analysis of progress achieved in remediating the contaminated soil in the Landfarm;
 - f. The final destination of treated soil and intended use;
 - g. Modifications to the Monitoring Program in accordance with Part J, Item 20;
 - h. A list of unauthorized discharges and summary of follow-up action taken;

- i. A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
 - j. Any revisions to approved plans and manuals as required by Part B, Item 10, submitted in the form of an Addendum;
 - k. Detailed minutes of any public consultation and participation with local organizations and the residents of the community regarding licence Amendments;
 - l. 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
 - m. Any other details on Water use or Waste disposal requested by the Board by November 1st of the year being reported.
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. Metres, devices or other such methods used for measuring the volumes of 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 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 English, Inuktitut and/or Innuinaqtun.
6. The Licensee shall post signs in the appropriate areas to inform the public of the location of the Landfarm. All signage postings shall be in the Official Languages of Nunavut.
7. 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.
8. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.
9. 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 condition 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.
10. The Licensee shall review the Plans referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an addendum to be included with the Annual Report required by Part B, Item 1(j), complete with a revisions list detailing where significant content changes are made.
11. The Licensee shall ensure a copy of this Licence is maintained onsite at all times.

12. Any communication with respect to this Licence shall be made in writing to the attention of:

(a) Manager of Licensing:

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

(b) Inspector Contact:

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

13. The Licensee shall submit one (1) paper copy and one (1) electronic copy of all reports, studies, and plans to the Board or as otherwise requested by the Board. Reports or studies submitted to the Board by the Licensee shall include an executive summary in English and Inuktitut.
14. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board, is received by the Board and maintain on file a copy of the acknowledgment of receipt issued by the Manager of Licensing.
15. This Licence is assignable as provided in Section 44 of the Act.
16. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO WATER USE AND MANAGEMENT

1. The taking of freshwater for any purpose is not permitted.
2. The Licensee shall not remove any material from below the ordinary high water mark of any water body.
3. The Licensee shall not conduct any activity that will cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.
4. The Licensee shall implement and maintain sediment and erosion control measures prior to and during the operation to prevent entry of sediment and/or dust into Water.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT

1. The Licensee shall treat, to the Treatment Objective, Type B Soil in the Landfarm, or as otherwise approved by the Board.
2. The Licensee shall maintain the Landfarm to the satisfaction of the Inspector.
3. The Licensee shall provide at least fifteen (15) days written notice to the Inspector prior to any planned discharges from the Landfarm. The notice shall include an estimated discharge volume, Effluent quality or results of monitoring under Part J Item 7, and the proposed location for the discharge.
4. All Effluent discharged from the Landfarm at Monitoring Program Station KLF-1, shall not exceed the following Effluent quality limits:

Parameter	Maximum Concentration of any Grab Sample (mg/L)
pH	6.5 to 9
TSS	50
Oil and grease	15 and no visible sheen
Total Lead	0.001
Benzene	0.37
Toluene	0.002
Ethylbenzene	0.090

5. Effluent that exceeds Effluent quality limits in Part D Item 4 shall be treated until it meets the above limits, or it shall be considered hazardous waste and disposed off site at an approved facility.
6. The Licensee shall direct all Effluent from the Landfarm that meets the Effluent quality limits of Part D Item 4 to the Splash Pad, unless otherwise approved by the Board in writing.
7. The discharge location for all Effluent described in Part D Item 4 shall be located a minimum of thirty one (31) metres from the ordinary high water mark from any water body and where direct or indirect flow into a water body is not possible and no additional impacts are created.
8. The Licensee shall dispose of soils containing contaminants in excess of the Treatment Objectives off site at an approved treatment facility.
9. The Licensee shall, prior to the removal of any treated soil from the Landfarm confirm with the Government of Nunavut, Environmental Protection Service that the soils have been treated to meet all legislatively-required treatment objectives.

PART E: CONDITIONS APPLYING TO CONSTRUCTION AND OPERATIONS

1. The Licensee shall submit to the Board for review within six months of issuance of this Licence, details regarding the construction and installation of the groundwater monitoring wells.

2. The Licensee shall submit to the Board for review within six months of issuance of this Licence, as-built drawings of the Landfarm, stamped and signed by an Engineer.
3. The Licensee shall submit to the Board for review, within six months of issuance of this Licence or six months following the completion of construction of the Splash Pad, whichever is later, as-built drawings of the Splash Pad stamped and signed by an Engineer.
4. The Licensee shall submit to the Board for approval within ninety (90) days of issuance of this Licence, a revision to the Operation and Maintenance (O&M) Manual entitled "Operations and Maintenance Manual, Kugaaruk Landfarm Facility" dated February 2010. The revision shall take into consideration the comments received during the application review process as well as the *Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils*, SAIC, 2006. The revision shall include the following:
 - a. Revisions to address the requirements of this Licence;
 - b. Site access and security measures;
 - c. Methods of characterizing contaminated soil planned for treatment in the Landfarm to determine whether soil is suitable for landfarming;
 - d. Plans for the ongoing monitoring to address previously un-tested Effluent discharged from the Landfarm;
 - e. Spill Contingency Plan required by Part H Item 1 of this Licence; and
 - f. Quality Assurance/ Quality Control (QA/QC) Plan required under Part J Item 17 of this Licence.
5. The Licensee shall not mix or blend petroleum hydrocarbon contaminated soils with non-contaminated soils for the expressed purpose of achieving the Treatment Objective.
6. The Licensee shall use clean material for construction, operation, and maintenance activities obtained from an approved source which has been demonstrated not to produce acid rock drainage and to be non-metal leaching.

PART F: CONDITIONS APPLYING TO DRILLING OPERATIONS

1. The Licensee is authorized to drill for the purpose of installing monitoring wells.
2. The Licensee shall not conduct any land based drilling within thirty one (31) metres of the ordinary high water mark of any water body, unless otherwise approved by the Board in writing.
3. The Licensee shall ensure that all drill waste, including chips, muds and salts (CaCl₂) in any quantity or concentration, from land-based drilling, shall be disposed of in a properly constructed sump or an appropriate natural depression located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body, where direct flow into a water body is not possible and no additional impacts are created.
4. If artesian flow is encountered, drill holes shall be immediately sealed and permanently capped to prevent induced contamination of groundwater or salinization of surface waters. The Licensee shall report all artesian flow occurrences within the Annual Report, including the location (GPS

coordinates) and dates.

5. The Licensee shall, where drilling activity has penetrated below the permafrost layer, record the depth of permafrost and location of the drill hole for inclusion in the annual report required by Part B Item 1.

PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee shall submit to the Board for approval in writing, construction drawings stamped and signed by an Engineer, 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 Landfarm 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. the proposed 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, have not been met, may only be carried out upon approval from the Board in writing.
4. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.
5. 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.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Licensee shall submit to the Board for review, within ninety (90) days of issuance of this Licence, a revision to the Plan entitled "Kugaaruk Landfarm Spill Contingency Plan" dated February 2010, in the format set out by the *Consolidation of Spill Contingency Planning and Reporting Regulations R-068-93*. The revision shall take into consideration the comments received during the application review process and shall be incorporated into the Operations and Maintenance Manual as required under Part E Item 4. The revision shall include:
 - a. Reference to the Nunavut Spill Report Line and Nunavut Spill Report Form; and
 - b. Contact information for the INAC Manager of Field Operations.

2. If, during the period of this Licence, an unauthorized discharge of Waste and/or Effluent occurs, or if such a discharge is foreseeable, the Licensee shall:
 - a. Employ the Spill Contingency Plan;
 - b. Report the incident immediately via the 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
 - c. For each spill occurrence, submit a detailed report to the Inspector, no later than thirty (30) days after initially reporting the event, which includes the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain, clean up and restore the spill site.
3. The Licensee shall prevent any chemicals, petroleum products or wastes associated with the project from entering water. All sumps and fuel caches shall be located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body and inspected on a regular basis.
4. The Licensee shall ensure that any equipment maintenance and servicing be conducted only in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.

PART I: CONDITIONS APPLYING TO ABANDONMENT, RESTORATION AND CLOSURE

1. The Plan entitled “Interim Abandonment and Reclamation Plan, Kugaaruk Soil Landfarm” dated February 2010 has been approved by the Board. The Licensee shall submit to the Board for review within ninety (90) days of issuance of this Licence, a revision to the Plan, submitted in the form of an Addendum, which shall take into consideration the requirements of this Licence and the Government of Nunavut’s Environmental Guideline for Site Remediation, January 2009.
2. The Licensee shall, at least six (6) months prior to abandoning any facilities or upon submission of final design drawings for the construction of new facilities to replace existing ones, submit to the Board for approval in writing, a Final Abandonment and Restoration Plan for the facilities being decommissioned. The Plan shall incorporate, where applicable, information on the following:
 - a. Waste disposal and treatment facilities;
 - b. Petroleum and chemical storage areas;
 - c. Any site affected by waste spills;
 - d. Leachate prevention;
 - e. An implementation schedule;
 - f. Maps delineating all disturbed areas, and site facilities;
 - g. Consideration of altered drainage patterns;
 - h. Type and source of cover materials;
 - i. Future area use;
 - j. Hazardous wastes; and
 - k. A proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.

3. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.
4. In order to promote growth of vegetation and the needed microclimate for seed deposition, all disturbed surfaces shall be prepared by ripping, grading, or scarifying the surface to conform to the natural topography.
5. Areas that have been contaminated by hydrocarbons shall be reclaimed to meet objectives as outlined in the Government of Nunavut's Environmental Guideline for Site Remediation, January 2009. The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the Government of Nunavut, Department of Environment and an Inspector.
6. The Licensee shall complete the restoration work within the time schedule specified in the approved Abandonment and Restoration Plan in Part I, Item 2, or as subsequently revised and approved by the Board.
7. The Licensee shall complete all restoration work prior to the expiry of this Licence.

PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall maintain Monitoring Program stations at the following locations:

Monitoring Program Station Number	Description	Frequency	Parameters
KLF-1	Effluent discharged from the Landfarm	Prior to discharge	Volume in accordance with Part J Item 5 Quality in accordance with Part J Item 6
KLF-2	Groundwater monitoring wells down gradient of the Landfarm	Twice per year (Once during spring freshet and once during mid-summer)	Quality in accordance with Part J Item 8 Static groundwater level in accordance with Part J Item 9
KLF-3	Groundwater monitoring well upgradient of the Landfarm	Twice per year (Once during spring freshet and once during mid-summer)	Quality in accordance with Part J Item 8 Static groundwater level in accordance with Part J Item 9

2. The Licensee shall confirm the locations and GPS coordinates for all Monitoring Program Stations referred to in Part H Item 1 with an Inspector.

3. The Licensee shall measure and record the volume of all soil from all locations entering the Landfarm.
4. The Licensee shall assess and record the concentration of F1 - F4 fractions in petroleum hydrocarbon contaminated soil entering the Landfarm Facility from all sources, as per the CCME *Canada-Wide Standard for Petroleum Hydrocarbons in (PHC) in Soil*.
5. The Licensee shall record the volume of all Effluent discharged from the Landfarm at Monitoring Program Station KLF-1.
6. The Licensee shall sample prior to discharge at Monitoring Program Station KLF-1, to verify compliance with the Effluent quality limits under Part D, Item 4.
7. The Licensee shall sample prior to discharge at Monitoring Program Station KLF-1 and analyze for the following parameters:

pH	Conductivity
Total Suspended Solids	Ammonia Nitrogen
Nitrate – Nitrite	Oil and Grease (visual)
Total Phenols	Sulphate
Total Hardness	Total Alkalinity
Sodium	Potassium
Magnesium	Calcium
Chloride	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel
Total Zinc	Total Phosphorous
Total Aluminum	Total Manganese
Total Cobalt	Total Arsenic
Total Petroleum Hydrocarbons (TPH)	
Polycyclic Aromatic Hydrocarbons (PAH)	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	

8. The Licensee shall sample twice per year, once during spring freshet and once during mid-summer, at Monitoring Program Stations KLF-2 and KLF-3 and analyze for the parameters listed under Part H Item 7.
9. During sampling events conducted under Part H, Item 8, the Licensee shall monitor the static depth to the groundwater level at Monitoring Program Stations KLF-2 and KLF-3.
10. The Licensee shall maintain groundwater monitoring wells MW-1 to MW-5 downgradient of the Landfarm at Monitoring Program Station KLF-2.
11. The Licensee shall install and maintain at least one groundwater monitoring well upgradient of the Landfarm at Monitoring Program Station KLF-3 for background data collection.
12. The Licensee shall sample soil being treated in the Landfarm no less frequently than once every

four (4) months during the period of active land treatment to monitor contaminant levels until analytical results are below acceptable levels as determined under Part D Item 9.

13. The Licensee shall determine the GPS coordinates of all locations where remediated soil is deposited.
14. The Licensee shall record the date, amount, soil quality and final destination of all treated soil removed from the Landfarm under Part D, Item 9.
15. 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.
16. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.
17. 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 J, Item 15 and Part J, Item 16. The Plan shall include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence and shall be incorporated into the Operations and Maintenance Manual required under Part E Item 4.
18. The Licensee shall review as per Part B, Item 10, the QA/QC plan submitted under Part J, Item 17 and modify it as necessary. Revised plans shall be submitted to the NWB with an approval letter from an accredited lab that meets standards set in Part J, Item 15 and Part J, Item 16.
19. The Licensee shall, include in the Annual Report required under Part B, Item 1, all monitoring data and analysis and information required by this Part.
20. Modifications to the Monitoring Program may be made only upon written request and subsequent approval of the Board in writing.