Mackenzie Valley Land and Water Board
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May 25, 2017 File: MV2009L3-0005

Mr. Earle Dumas
Town of Hay River
HAY RIVER NT X0E 1G1 Email: earled@northwestel.net

Dear Earle Dumas:

Request for Surveillance Network Program (SNP) Changes
Town of Hay River – Water Licence MV2009L3-0005

The Mackenzie Valley Land and Water Board (the Board) met on May 25, 2017 and reviewed the Town of Hay River's (Town) requested changes to four of the SNP stations for municipal Water Licence (Licence) MV2009L3-0005.

The Board hereby approves the following changes to the Licence SNP:

Table 1: Summary of SNP changes

SNP Station	Revision
0053-8 (Biotreatment Pad leachate)	• Leachate must meet criteria listed in Biotreatment Pad Operations and Maintenance Plan Version 2.4 before discharge; • Nutrients added to parameters; • Leachate may be discharged if certain conditions are met; and • Inspector approval required prior to discharge of treated leachate to sewage lagoon
0053-5 (surface run-off or seepage from the Solid Waste Disposal Facilities)	• Include the three groundwater monitoring wells at the north perimeter of the facilities (BH02, BH03, BH04) and the control well at the main gated entrance to the facility (BH01); • First year of sampling to be completed monthly during periods of flow to establish baseline; and • Sampling frequency becomes twice annually (at spring break-up and prior to freeze up) after the first year of sampling
0053-3 (discharge pipe between lagoon and swampland)	• Sampling frequency revised to monthly during periods of flow; and • Sampling parameters to match station 0053-2.

…/2

0053-2 (point of compliance for monitoring final effluent quality before discharge to Great Slave Lake)	• Location moved to a point downstream for sampling ease (N 60° 49.747'; W 115° 52.169') • Original location inactivated

Licence MV2009L3-0005 (attached) has been updated to reflect these changes to the SNP.

The Board notes and appreciates the Town's significant progress in submitting outstanding plans and reports required by the Licence. The Board reminds the Town to adhere to the SNP requirements of the Licence for each sampling station, and encourages the Town to collaborate on sampling events with the Inspector. The Board reminds the Town to include all SNP sampling results with their Annual Report, due March 31 each year. Board staff will provide the Town with a revised Annual Report template to assist with SNP reporting.

The Board further reminds the Town to revise their Water Monitoring Plan in accordance with changes made to the Licence SNP.

The Town shall adhere to the commitments made in their responses to reviewer comments dated March 14, 2017. The full cooperation of the Town of Hay River is anticipated and appreciated.

If you have any questions or concerns, please contact Erica Janes at (867) 766-7466 or email ejanes@mvlwb.com.

Yours sincerely,

Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution List
Judy Goucher, SAO, Town of Hay River
Shawn Samborksy, KBL Environmental Ltd.

Attachment: Updated Water Licence MV2009L3-0005
Reasons for Decision

Pursuant to the *Mackenzie Valley Resource Management Act* and Regulations, the Mackenzie Valley Land and Water Board, hereinafter referred to as the Board, hereby grants to:

Town of Hay River
(Licensee)

of 73 Woodland Drive, Hay River, NT X1A 1G1
(mailing address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence number:	MV2009L3-0005
Licence type:	A
Water management area:	Northwest Territories 01
Location:	60°51' N; 115°43' W
Purpose:	Use of water and disposal of waste
Description:	Municipal purposes
Quantity of water **not to be exceeded**:	750, 000 cubic meters annually
Effective date of licence:	May 31, 2010
Expiry date of licence:	May 30, 2020

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

Mackenzie Valley Land and Water Board

Chair

Witness

Approved by

Minister of Indian Affairs and Northern Development

Part A: Scope and Definitions

Scope

This Licence entitles the Town of Hay River to use Waters and dispose of Waste for municipal purposes at the Town of Hay River, Northwest Territories, located at: 60º51' N and 115º43' W.

Definitions

In this Licence, **MV2009L3-0005:**

"Act" means the *Northwest Territories Waters Act.*

"Analyst" means an Analyst designated by the Minister under subsection 35(1) of the Act.

"Average Concentration" means the discrete average of four consecutive analytical results, or if less than four analytical results, the discrete average of the analytical results collected during a batch decant, and as submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.

"Average Concentration for Faecal Coliform" means the running geometric mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.

"Biotreatment Pad" comprises the area and associated engineered infrastructure designed to contain and treat hydrocarbon contaminated soils, as defined in Hazco Environmental Services "Biopad – General Layout" drawing number HR-2, dated June 2003.

"Board" means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*.

"Coarse-Grained Soil" means coarse-textured soil having a median grain size of >75 µm as defined by the American Society for Testing and Materials D422-63 Standard Test Methods for Particle-Size Analysis of Soils or subsequent edition.

"Engineer" means a professional Engineer registered to practice in the Northwest Territories in accordance with the *Engineering and Geoscience Professions Act*, S.N.W.T. 2006, c.16.

"Fine-Grained Soil" means fine-textured soil having a median grain size of <75 µm as defined by the American Society for Testing and Materials D422-63 Standard Test Methods for Particle-Size Analysis of Soils or subsequent edition.

"Freeboard" means the vertical distance between the Water line and the lowest elevation of the effective Water containment crest on a dam or dyke's upstream slope.

"Greywater" means all liquid Wastes from showers, baths, sinks, kitchens, and domestic washing facilities but does not include Toilet Wastes.

"Inspector" means an Inspector designated by the Minister under subsection 35(1) of the *Act*.

"Licensee" means the holder of this Licence.

"Minister" means the Minister of Indian Affairs and Northern Development.

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

"Pumpout Sewage" means all Toilet Wastes and/or Greywater collected by means of a vacuum truck for disposal at the Sewage Disposal Facilities.

"Record Drawings" mean as-built drawings that have been verified by an Engineer.

"Regulations" means the Regulations proclaimed pursuant to Section 33 of the Act.

"Sewage" means all Toilet Wastes and Greywater.

"Sewage Disposal Facilities" comprises the area and engineered structures designed to contain and treat Sewage as identified in UMA Engineering Limited Town of Hay River Sewage Treatment System Improvements drawing number 00-CM1003, dated September 29, 2006, as well as the adjacent wetland area.

"Solid Waste Disposal Facilities" comprises the area and associated structures designed to contain solid Wastes, as identified in UMA Engineering Limited Landfill Layout Hay River, NWT, Figure 8 of the Water Licence Application.

"**Surveillance Network Program**" means a monitoring program established to define environmental sampling and analysis requirements, to collect data on surface Water and groundwater quality, and to assess discharge quality and licence compliance, and the potential for impacts to the environment.

"Toilet Wastes" means all human excreta and associated products but does not include Greywater.

"Waste(s)" means Waste as defined by Section 2 of the Act.

"Waste Disposal Facilities" mean all facilities designated for the disposal of Waste, and includes the Solid Waste Disposal Facilities and Sewage Disposal Facilities.

"Water(s)" mean any Waters as defined by Section 2 of the Act.

"Water Licence Application" means the application filed with the Board on June 16, 2009 and all associated correspondence filed by the Licensee and listed on the Board's Public Registry.

"Water Supply Facilities" comprises the area and associated intake infrastructure, as identified in Stanley Associates Engineering Limited's Town of Hay River Intake Pumphouse Site Plan drawing number 694-50-4-G2, dated September 1977.

Part B: General Conditions

B.1 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 deposition of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters 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 automatically amended to conform with such Regulations.

B.2 Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable federal, territorial, and municipal legislation.

B.3 The Licensee shall file an annual report with the Board not later than March 31 of the year following the calendar year reported which shall contain the information as set in Schedule 1, item 1, included in this Licence.

B.4 The Licensee shall comply with the Surveillance Network Program annexed to this Licence, and with any amendment(s) to the said Surveillance Network Program, as approved by the Board.

B.5 The Licensee shall comply with the Schedules annexed to this Licence, and with any amendments to the said Schedules, as approved by the Board.

B.6 The Surveillance Network Program, Schedules, and compliance dates specified in the Licence may be modified at the discretion of the Board.

B.7 Meters, devices, or other such methods used for measuring the volumes of Waters used and Waste discharged shall be installed, operated, and maintained by the Licensee to the satisfaction of an Inspector.

B.8 The Licensee shall maintain, to the satisfaction of an Inspector, the necessary signs to identify the stations of the Surveillance Network Program.

B.9 The Licensee shall maintain all signs posted to inform the public of Water Supply Facilities and Waste Disposal Facilities and shall post any additional signage as required, to the satisfaction of an Inspector.

B.10 The Licensee shall ensure a copy of this Licence is maintained at the Hay River municipal office(s), the Solid Waste Disposal Facilities and the Water Supply Facility office, at all times.

Part C: Conditions Applying to Water Use

C.1 The Licensee shall obtain all Water from Great Slave Lake using the Water Supply Facilities for municipal undertakings as described in the Water Licence Application received by the Board on June 16, 2009 or as otherwise approved by the Board.

C.2 The total amount of Water obtained from Great Slave Lake for municipal purposes shall not exceed 750,000 cubic metres per year.

C.3 The maximum amount of Water obtained shall not exceed 90,000 cubic metres per month.

C.4 The Water intake hoses used on the Water pumps shall be equipped with a screen with a mesh size and screen design sufficient to ensure no entrainment or impingement of fish, as outlined in Fisheries and Oceans Canada "Freshwater Intake End-of-Pipe Fish Screen Guideline" (1995) or subsequent approved editions.

Part D: Conditions Applying to Waste Disposal

D.1 The Licensee shall direct all piped and pumpout Sewage through the Sewage lagoons and wetlands that comprise the Sewage Disposal Facilities or as otherwise approved by the Board. Discharge from the Sewage Disposal Facility will be from the wetland to Great Slave Lake.

D.2 Only one lagoon treatment cell within the Sewage Disposal Facility may be taken out of operation for conducting maintenance work at any time. Only with the approval of the Inspector can more than one treatment cell be taken out of operation at any time.

D.3 All Sewage effluent discharged from the Sewage Disposal Facilities at Surveillance Network Program Station Number 0053-2 shall meet the following effluent quality requirements:

Parameter	**Maximum Average Concentration**	**Maximum Grab Sample**
Faecal Coliform (FC)	1000 FC per 100 ml	2000 FC per 100 ml
BOD_5	20mg/L	30mg/L
Total Suspended Solids	20 mg/L	40mg/L
Oil and Grease	no visible sheen	

The Waste discharged shall have a pH between 6 and 9.

D.4 The Licensee shall complete monitoring of wastewater effluent quality for carbaceous biological oxygen demand (CBOD) and biological oxygen demand (BOD) for a minimum of three years. The study findings, including a trend analysis, shall be submitted to the Board for approval in a report that is completed before August 31, 2014.

D.5 A Freeboard limit of 1 meter shall be maintained at all times at all constructed berms, dykes, and dams within the Sewage Disposal Facilities or as recommended by an Engineer and approved by the Inspector.

D.6 The Licensee shall maintain the Sewage Disposal Facilities to the satisfaction of an Inspector.

D.7 The Licensee shall, by October 31, 2010, submit to the Board, for approval, a sludge management plan for the Sewage Disposal Facilities that includes, but is not limited to estimates of the quantities of sludge likely to be produced; frequency of extraction of sludge from the lagoons; operational procedures developed for removal and disposal; recommendations for chemical and biological composition analysis for sludge removed from the lagoons; storage, treatment and disposal of sludge; and recommendation for monitoring of run-off and seepage Waters from the sludge disposal area.

D.8 The Licensee shall dispose of all solid Wastes at the Solid Waste Disposal Facilities or as otherwise approved by the Board.

D.9 The Licensee shall, by October 31, 2010, submit to the Board a review of available site surface and groundwater quality and quantity information. Following this review and at the direction of the Board, the Licensee shall submit, for approval, a drainage and seepage study for the Solid Waste Disposal Facilities that includes, but is not limited to, the information as set in Schedule 2, item 1, included in this Licence.

D.10 The Licensee shall, by October 31, 2010, submit to the Board a study into the Solid Waste Disposal Facilities operations to measure, define, and identify the remaining lifespan of the facilities and volumes of Waste the facilities can accept.

D.11 The Licensee shall, within 90 days of the issuance of this Licence, submit to the Board a snow disposal plan including, but not limited to, a topographic map identifying areas currently used or planned to be used for snow disposal.

D.12 The Licensee shall annually review the Snow Disposal Plan and shall modify the plan as required.

D.13 The Licensee shall maintain all dams, berms, dykes, and control structures associated with Waste Disposal Facilities and Water Supply Facilities to the satisfaction of an Engineer. Inspection of all dams, berms, dykes, and control structures shall be completed once every two years by an Engineer. All results are to be reported to the Board within 60 days of the inspection.

D.14 The Licensee shall, within six months of the issuance of this Licence, submit to the Board as-built plans and Record Drawings, signed and stamped by an Engineer, of:

a) The Sewage Disposal Facilities lagoon, associated structures and sludge storage area; and
b) The Solid Waste Disposal Facilities and Biotreatment Pad.

D.15 The Licencee shall, within six months of the issuance of this Licence, submit to the Board a surveyed description of the wetland and associated structures that comprise part of the Sewage Disposal Facilities. It should include, but not be limited to, a description of the wetlands in terms of hydrological patterns, including an evaluation of where Sewage is flowing and identification of which portion of the wetland is impacted.

D.16 The Licensee shall ensure all treated soil from the Biotreatment Pad that will be used for capping material of landfill cells will meet the following criteria prior to incorporation:

Parameter	Maximum Grab Sample
pH	6–8
Benzene	5.0 mg/kg
EthylBenzene	20 mg/kg
Toluene	0.8 mg/kg
Xylene	20 mg/kg

As outlined for Industrial undertakings in the GNWT “Guideline for Contaminated Site Remediation” or subsequent approved editions, total petroleum hydrocarbons shall meet the following criteria prior to incorporation:

Total Petroleum Hydrocarbons	Fine Grained Soils	Coarse Grained Soils
Fraction 1 (C6-C10)	660 mg/kg	310 mg/kg
Fraction 2 (>C10-C16)	1500 mg/kg	760 mg/kg
Fraction 3 (>C16-C34)	2500 mg/kg	1700 mg/kg
Fraction 4 (>C34)	6600 mg/kg	3300 mg/kg

If testing for particle size is not completed by the Licensee to determine if soil is Coarse or Fine-grained, soil must be treated to achieve the Coarse-grained soil criteria.

Part E: Conditions Applying to Modifications

E.1 The Licensee may, without written approval from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

a) The Licensee has notified the Board in writing of such proposed Modifications at least 60 days prior to beginning the Modifications;
b) Such Modifications do not place the Licensee in contravention of either the Licence or the Act;
c) The Board has not, during the 60 days following the notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than 60 days; and
d) The Board has not rejected the proposed Modifications.

E.2 Modifications for which all of the conditions referred to in Part E, item 1, have not been met, can be carried out only with the written approval of the Board.

E.3 The Licensee shall provide to the Board as-built plans and Record Drawings, signed and stamped by an Engineer that notes “issued for construction” or similar phrase, of Modifications referred to in Part E within 90 days of completion of the Modifications.

Part F: Conditions Applying to Closure and Reclamation

F.1 The Licensee shall, by December 2010, submit to the Board, for approval, an interim closure and reclamation plan for the Solid Waste Disposal Facilities. The plan shall include, but not be limited to, the information as set in Schedule 3, item 1, included in this Licence.

F.2 The Licensee shall submit to the Board, for approval, a final closure and reclamation plan at least six months prior to abandoning any Waste Disposal Facilities. The plan shall include, but not be limited to, the information as set in Schedule 3, item 1, included in this licence.

F.3 The Licensee shall implement the plan specified in Part F, items 1 and 2 as and when approved by the Board.

Part G: Conditions Applying to Construction

G.1 Prior to construction of any dams, dykes or control structures intended to contain, withhold, divert or retain Waters or Wastes, the Licensee shall submit to the Board, at least 60 days prior to construction, final design drawings stamped and signed by an Engineer, which notes “issued for construction” or similar phrase.

G.2 Construction of designed structures shall be carried out as approved by the Board.

G.3 The Licensee shall provide to the Board as-built plans and Record Drawings, signed and stamped by an Engineer, of the constructed facilities referred to in Part G, item 1 within 90 days of completion.

Part H: Conditions Applying to Operation and Maintenance

H.1 The Licensee shall, within three months of the issuance of this Licence, submit to the Board for approval an updated plan for the operation and maintenance of the Waste Disposal Facilities. With regard to the Solid Waste Disposal Facilities and the Sewage Disposal Facilities, the Operation and Maintenance Plan shall be completed in accordance with Government of Northwest Territories, Municipal and Community Affairs 1996 “Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories”. This plan shall include, but not be limited to, the information as set in Schedule 4, item 1, included in this Licence.

H.2 The Licensee shall implement the updated plan specified in Part H, item 1 as and when approved by the Board.

H.3 The Licensee shall annually review the updated Operations and Maintenance Plan and shall modify the plan to identify changes in operations and technology and the results from research and other studies. All proposed updates or revisions to the plan shall be submitted to the Board for approval and included as an update in the Annual Report.

Part I: Conditions Applying to Spill Contingency Planning

I.1 The Licensee shall, by March 31, 2011, submit to the Board for approval a spill contingency plan in accordance with Indian and Northern Affairs Canada’s 2007 “Guidelines for Spill Contingency Planning”. The Spill Contingency Plan shall apply to the Waste Disposal Facilities, the Biotreatment Pad, and the Water Supply Facilities.

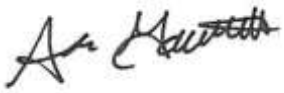
I.2 The Licensee shall review the Spill Contingency Plan annually and modify the plan as necessary to reflect changes in operation, technology, and staffing. Any proposed updates or revisions shall be submitted to the Board for approval.

I.3 The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130) any spills of Waste, as outlined in Indian and Northern Affairs Canada's 2007 "Guidelines for Spill Contingency Planning", which are reported to or observed by the Licensee, within the Town of Hay River boundaries or in the areas of the Water Supply Facilities or Waste Disposal Facilities.

I.4 If, during the period of this Licence, an unauthorized discharge of Waste occurs or if such a discharge is foreseeable, the Licensee shall:

a) Employ the Spill Contingency Plan;
b) Report the incident immediately via the 24-Hour Spill Report Line at (867) 920-8130; and
c) Submit to an Inspector a detailed report on each occurrence not later than 30 days after initially reporting the event.

Signed on behalf of the Mackenzie Valley Land and Water Board



Mavis Cli-Michaud, Chair **Amanda Gauthier, Witness**

Schedule 1 – General Conditions

1. The Annual Report referred to in Part B, item 3 shall include, but not be limited to, the following:

    a) The monthly and annual quantities in cubic metres of fresh Water obtained from all sources;
    b) The monthly and annual quantities in cubic metres of each and all Waste discharged through the Waste Disposal Facilities;
    c) The monthly and annual quantities of Waste removed from the Waste Disposal Facilities;
    d) Comparison of Waste volumes accepted to the remaining storage volume at the Solid Waste Disposal Facility;
    e) Comparison of Waste volumes accepted to the remaining storage volume at the Biotreatment Pad;
    f) Volume of treated soil removed from the Biotreatment Pad and analytical results for soil chemistry and particle size analysis;
    g) Results of any leachate testing and analysis and how leachate is discharged or stored;
    h) Results of any inspection of all dams, berms, dykes, and control structures;
    i) Updates or revisions to the Waste Disposal Facilities Operation and Maintenance Plan;
    j) Updates or revisions to the Snow Disposal Plan;
    k) Updates or revisions to the Spill Contingency Plan;
    l) A summary of Modifications and/or major maintenance work carried out on the Water Supply Facilities and Waste Disposal Facilities, including all associated structures;
    m) Tabular summaries of all data generated under the Surveillance Network Program;
    n) Comparison of the Surveillance Network Program data to the Water Licence regulated limits and sampling and analysis requirements;
    o) Groundwater monitoring analyses from the Solid Waste Disposal Facilities;
    p) A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
    q) A summary of any studies requested by the Board that relate to Waste disposal, Water use, or reclamation and a brief description of any future studies planned;
    r) A list of unauthorized discharges;
    s) The inclusion of all correspondence between the Inspector and the Licensee; and,
    t) Any other details on Water use or Waste disposal requested by the Board by November 1 of the year being reported.

Schedule 2 – Conditions Applying to Waste Disposal

1. The Solid Waste Disposal Facilities Drainage Study shall include, but not be limited to, the following:

    a) Conceptual model of leachate generation, surface Water flow, and groundwater flow;
    b) Validation of the conceptual model of leachate generation, surface Water flow, and groundwater flow;
    c) Recommended subsurface monitoring locations and implementation schedule for any changes;
    d) Leachate management and monitoring after closure;
    e) Water balance for the Solid Waste Disposal Facilities to characterize the quantity and quality of leachate generated;
    f) Determination of the applicability of the existing Surveillance Network Program stations and recommendation of new stations if the study determines that the existing stations are not adequately placed to monitor quality and quantity of all surface Water out points; and
    g) Establishment of a general understanding of the composition of leachate across the Solid Waste Disposal Facilities site.

Schedule 3 – Conditions Applying to Closure and Reclamation

1. The Closure and Reclamation Plan shall include, but not be limited to, the following:

    a) Contaminated site remediation;
    b) Leachate management, monitoring plan, and annual reporting details;
    c) An implementation schedule;
    d) Maps delineating all disturbed areas, borrow material locations, and site facilities;
    e) Consideration of altered drainage patterns;
    f) Type and source of cover materials;
    g) Future area use;
    h) Hazardous Wastes;
    i) Details for the abandonment of the Biotreatment Pad;
    j) On-going reclamation details of the existing Solid Waste Disposal Facilities; and
    k) Monitoring and annual reporting details regarding leachate and surface and subsurface runoff during and after closure.

Schedule 4 – Conditions Applying to Operation and Maintenance

2. The Operations and Maintenance Plan shall include, but not be limited to, the following:

   a) Frequency of inspection of dams, dykes, and drainage courses;
   b) Removal of floating materials from the Sewage Disposal Facilities;
   c) Wastewater collection, treatment, and storage details;
   d) Sludge management;
   e) Optimizing effluent discharge quality;
   f) Runoff and drainage control within and around the facilities and restoration of erosion;
   g) Treatment of contaminated drainage;
   h) Prevention of windblown debris;
   i) A hazardous Waste management plan that shall be completed in general accordance with Government of Northwest Territories, Department of Environment and Natural Resources 2009 Developing a Community Hazardous Waste Management Plan;
   j) Segregation of domestic, metal, and recyclable Waste materials;
   k) Method and frequency of site maintenance, including burning where permitted;
   l) Details of Waste compaction and soil cover application including schedules and management criteria;
   m) Locations for Water sampling, and Water sampling and analysis requirements;
   n) A map depicting all existing and planned Surveillance Network Program stations including the latitude and longitude of each;
   o) Details for the operation and maintenance of the Biotreatment Pad including, but not limited to:
      i. management of each lot of soil accepted to the Biotreatment Pad (e.g., location of material accepted to the Biotreatment Pad);
      ii. sources of contaminated soil, volume, and characteristics;
      iii. frequency and mode of tillage;
      iv. frequency and extent of additives;
      v. frequency of testing to determine progress of treatment;
      vi. how future increases in soil volume will be managed; and
      vii. how leachate will be discharged or stored.

   p) A quality assurance/quality control plan for “Surveillance Network Program” sampling. The Quality Assurance/Quality Control Plan for sampling and transport of Water samples shall be completed in accordance with Indian and Northern Affairs Canada’s “Quality Assurance (QA) and Quality Control (QC) Guidelines” for Use by Class “A” Licensees in Meeting Surveillance Network Program Requirements and for Submission of a QA/QC Plan, 1996; and,
   q) A copy of the Water Licence.

Mackenzie Valley Land and Water Board
Surveillance Network Program

Licensee: Town of Hay River

Licence Number: MV2009L3-0005

Effective Date of Licence: May 31, 2010

Effective Date of Surveillance Network Program (SNP): May 31, 2010

Location and Description of Surveillance Network Stations

Station Number	**Description**
0053-1	Raw Water supply from Great Slave Lake at intake pumphouse. Rationale: To determine the quality of Great Slave Lake Water for use as a municipal potable Water supply source.
0053-2a	Inactive. Swampland effluent from the upstream end of the constricted area of the ditch leading to Great Slave Lake, approximately 200 meters downstream from the confluence of the swampland discharge and the drainage ditch. Rationale: Site of compliance. To monitor final effluent quality before discharge into Great Slave Lake.
0053-2b	Swampland effluent from the upstream end of the constricted area of the ditch leading to Great Slave Lake, downstream from station 0053-2a and the confluence of the swampland discharge and the drainage ditch. Approximate coordinates: N 60° 49.747'; W 115° 52.169'. Rationale: Site of compliance. To monitor final effluent quality before discharge into Great Slave Lake.

0053-3	At the discharge pipe where effluent from the lagoon discharges to the swampland. Rationale: To monitor Water quality prior to discharge into the wetland sewage treatment system.
0053-4	Raw sewage at the No. 1 lift station. Rationale: To characterize the quality of the Sewage.
0053-5a	Surface run off or seepage from the Solid Waste Disposal Facilities. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0053-5 b,c,d,e	Groundwater surrounding the Solid Waste Disposal Facilities at monitoring wells BH01, BH02, BH03, BH04. Rationale: To monitor Groundwater quality associated with the Solid Waste Disposal Facilities.
0053-6	Return Water at pumphouse. Rationale: To determine Water quality of return Water into Great Slave Lake.
0053-7	Groundwater from the Biotreatment Pad Rationale: To monitor Water quality associated with runoff and seepage from the Biotreatment Pad.
0053-8	Leachate from the Biotreatment Pad Rationale: To monitor Water quality prior to discharge to the Sewage Disposal Facilities.

Sampling and Analysis Requirements

1. The effluent from Station Numbers 0053-2 a and b and 0053-3 shall be sampled at commencement and monthly during periods of flow and analyzed for the following parameters:

[3]Nutrients	[4]Major ions
Faecal Coliform (FC)	Faecal Streptococci
Suspended Solids	Oil and Grease

[2]Field parameters	BOD_5
Total Organic Carbon	CBOD

2. Station Number 0053-5a shall be sampled monthly during periods of flow and analyzed for the following parameters:

Nitrate and Nitrite	Faecal Coliform
Total Phenols	Oil and Grease
[1]ICP-MS Metal Scan(Total)	Total Petroleum Hydrocarbons
[2]Field parameters	[4]Major Ions
BOD_5	Groundwater Level

3. Station Numbers 0053-5 b, c, d, and e shall be sampled monthly during periods of flow and analyzed for the following parameters:

Nitrate and Nitrite	Faecal Coliform
Total Phenols	Oil and Grease
[1]ICP-MS Metal Scan(Total)	Total Petroleum Hydrocarbons
[2]Field parameters	[4]Major Ions
BOD_5	Groundwater Level

4. After the first year of sampling, Station Numbers 0053-5 b, c, d, and e shall be sampled twice annually, once after spring-thaw and once before fall freeze-up.

5. The effluent from Station Number 0053-6 shall be sampled monthly during periods of flow and analyzed for the following parameter:

   Total Chlorine

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 Analyst.

7. All analyses shall be performed in a laboratory approved by the Analyst.

8. The Licensee shall maintain records of the results of any analysis done for coliform, chlorine, and turbidity at the main pumphouse.

9. The Licensee shall obtain one representative sample from each of the groundwater wells that make up Station 0053-7 once during spring break up and again before freeze-up in the fall for the following parameters:

pH
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
Electrical conductivity
[1]ICP-MS Metal Scan(Total)
methyl *tert*-butyl ether
Water levels

10. The Licensee shall obtain a representative sample based on Table 1 for treated soil and test for the following parameters prior to final disposal of soil from the Biotreatment Pad:

pH
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
Electrical conductivity
[1]ICP-MS Metal Scan(Total)

Volume of Soil (cubic metres)	**Number of Composite Samples***
1 – 50	1
51 – 500	2
501- 1000	3
1001 - 2000	4
2001 – 5000	5
Each additional 1000	1 additional

* A composite sample should consist of no less than 3 representative grab samples.

11. Leachate from the Biotreatment Pad (Station Number 0053-8), shall be sampled if leachate is to be discharged from the Biotreatment Pad and analyzed for the following parameters.

[2]Field Parameters
Nutrients[3]
Benzene, Toluene, Ethylbenzene, and Xylene
Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions)
[1]ICP-MS Metal Scan(Total)
methyl *tert*-butyl ether
water levels

12. 10 days prior to discharging leachate from the Biotreatment Pad (SNP 0053-8) to the Sewage Disposal Facilities, the Licensee shall submit the results of analysis to the Board and the Inspector.

13. Leachate from the Biotreatment Pad (SNP 0053-8) shall meet the discharge criteria outlined in the approved Biotreatment Pad Operation and Maintenance Plan.

14. The Licensee shall obtain Inspector approval prior to discharging leachate from the Biotreatment Pad (SNP 0053-8) to the Sewage Disposal Facilities.

Notes:

[1]ICP-MS Metal Scan (Total) shall include, at a minimum, the following parameters:

Aluminium	Arsenic
Beryllium	Boron
Cadmium	Chromium
Cobalt	Copper
Iron	Lead
Manganese	Mercury
Molybdenum	Nickel
Selenium	Silver
Strontium	Vanadium
Zinc	

[2]Field parameters include the following measurements:

pH	Temperature
Conductivity	Dissolved Oxygen

[3]Nutrients include the following parameters:

Total Ammonia	Total Phosphorus
Nitrate-Nitrogen	Ortho Phosphorus
Total Dissolved Phosphorus	Total Organic Carbon
Total Kjeldahl Nitrogen	

[4]Major ions include the following parameters:

Calcium	Magnesium
Chloride	Sodium
Alkalinity	Fluoride
Total Dissolved Solids	Potassium
Sulphate	Total Hardness

Flow Measurement Requirements

The Licensee shall measure and record the monthly quantity of Water in cubic metres taken from and returned to Great Slave Lake.

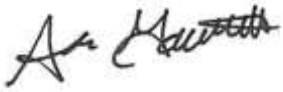
The volume of effluent discharged from Station Number 0053-2 shall be measured and recorded monthly in cubic metres.

Reports

The Licensee shall submit all of the information generated by Parts B and C of the Surveillance Network Program annually as specified in Part B, item 3 of this Licence.

Signed on behalf of the Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair



Amanda Gauthier, Witness

Annex A Schedule

Supplemental information to be submitted by Licensee as required through Licence Conditions

Licence Condition	Report Title/Require Action	Timeline for Submission
B.3 (Schedule 1, item 1)	Annual Report	March 31 each year
B.8	Identify SNP station(s) with signage.	At all times
B.9	Identify Water Supply and Waste Disposal Facilities with signage.	At all times
B.10	Copies of Water Licence in the Town of Hay River office(s), Solid Waste Disposal Facilities, and Water Supply Facilities	At all times
D.2	Notify Inspector prior to conducting maintenance work on lagoon cells.	Prior to maintenance activities
D.4	BOD and CBOD trend analysis	August 31, 2014
D.7	Sludge Management Plan	October 31, 2010
D.9 (Schedule 2, item 1)	Solid Waste Disposal Facility Drainage Study	October 31, 2010
D.10	Solid Waste Disposal Facilities Operations Report to measure, define, and identify the remaining lifespan of the facilities and volumes of Waste the facilities can accept.	October 31, 2010

D.11	Snow Disposal Plan	Within 90 days of issuance of the Water Licence
D.12	Review of the Snow Disposal Plan and submission of updates/revision.	Annually – Annual Reporting Requirement
D.13	Inspection of constructed berms, dykes, and dams within the Sewage Disposal Facility.	Once every two years during the summer season by an Engineer
D.14	As-built plans and Record Drawings of the Sewage Disposal Facilities, lagoon and associated structures, sludge storage area, Solid Waste Facilities, and Biotreatment Pad.	Within six months of issuance of the Water Licence
D.15	A surveyed description of the wetland and associated structures that comprise part of the Sewage Disposal Facilities	Within six months of issuance of the water Licence
E.1	Notification of Modification	60 days prior to the proposed Modification
E.3	Modifications to Water Supply Facilities and Waste Disposal Facilities	Within 90 days of completion of the Modifications
F.1 (Schedule 3, item 1)	Interim Closure and Reclamation Plan for the Solid Waste Disposal Facility	December 31, 2010
F.2 (Schedule 3, Item 1)	Final Closure and Reclamation Plan	At least six months prior to abandoning any Waste Disposal Facilities
G.1	Final design drawings for the construction of any dams, dykes, or control structures	Prior to construction

G.3	As-built plans and Record Drawings	Within 90 days of completion
H.1 (Schedule 4, item 1)	Updated plan for the operation and maintenance of the Waste Disposal Facilities (Note that this can be one plan or one plan for each Facility.)	Within three months of issuance of the Water Licence
H.3	Review of Operation and Maintenance Plan and submission of updates/revision	Annually – Annual Reporting Requirement
I.1.	Spill Contingency Plan in accordance with Indian and Northern Affairs Canada's 2007 "Guidelines for Spill Contingency Planning"	March 31, 2011
I.2.	Review of Spill Contingency Plan and submission of updates/revision	Annually – Annual Reporting Requirement

Mackenzie Valley Land and Water Board
7th Floor - 4922 48th Street
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

Reasons for Decision

Issued pursuant to section 72.25 of the *Mackenzie Valley Resource Management Act* and section 54 of the *Waters Act*

Surveillance Network Program (SNP) revisions	
Preliminary Screener	MVLWB
Reference/File Number	MV2009L3-0005
Applicant	Town of Hay River (Town)
Project	Municipal Water Licence – revisions to SNP stations 0053-2, 0053-3, 0053-5 and 0053-8.

Decision from Mackenzie Valley Land and Water Board
Meeting of

May 25, 2017

With respect to this revision, notice was given in accordance with sections 63 and 64 of the *Mackenzie Valley Resource Management Act* (MVRMA) and section 43 of the *Waters Act*. There was no public hearing held in association with this revision.

1.0 Background

SNP for Water Licence MV2009L3-0005

The Reasons for Decision written at Licence issuance speak to the SNP:

> *"The requirements and criteria for monitoring the characteristics of Water and Waste associated with the Town of Hay River's Water use and Waste disposal for municipal purposes are outlined in the Surveillance Network Program (SNP), which is included in the Water Licence. The SNP calls for extensive and ongoing sampling and analysis to be conducted at the stations identified in the Schedule. The number of stations, the sampling frequency, and the list of variables reflect the information that was considered necessary to determine the effectiveness of the Water treatment at the Waste Disposal Facilities and to monitor potential downstream and groundwater effects. The Board believes that the conditions specified in the SNP will ensure that adequate monitoring data are collected to characterize Waters and wastewaters, to assess compliance with the effluent quality criteria, and evaluate the Water treatment options."*

"… The Town agreed to this condition [Part B, item 9] during the public hearing. SNP Station 0053-8 only requires sampling if leachate is to be discharged from the Biotreatment Pad into the environment to ensure that no parameters of major concern are released."

Table 1 provides details for the SNP for the stations for which changes have been requested:

Table 1: SNP stations proposed for revision

SNP Station Number	Description
0053-2	Swampland effluent from the upstream end of the constricted area of the ditch leading to Great Slave Lake, approximately 200 meters downstream from the confluence of the swampland discharge and the drainage ditch. Rationale: Site of compliance. To monitor final effluent quality before discharge into Great Slave Lake.
0053-3	At the discharge pipe where effluent from the lagoon discharges to the swampland. Rationale: To monitor Water quality prior to discharge into the wetland sewage treatment system.
0053-5	Surface run off or seepage from the Solid Waste Disposal Facilities. Rationale: To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0053-8	Leachate from the Biotreatment Pad Rationale: To monitor Water quality prior to discharge to the Sewage Disposal Facilities.

Submission Description

On July 29, 2016, the Government of the Northwest Territories Water Resources Officer (Inspector) requested changes to three of the Licence's eight SNP stations, as follows:

1. **SNP 0053-8** (Biotreatment Pad leachate)
   - Discharge to lagoon not permitted until March/April 2016 hydrocarbon spill closed and the Licence contains EQC that the Inspector can compare sampling results to.

2. **SNP 0053-5** (Surface run-off or seepage from the Solid Waste Disposal Facilities)
   - Include sampling for the three groundwater monitoring wells at the north perimeter of the facilities and the control well at the main gated entrance to the facilities.
   - Compare samples to CCME and other applicable guidelines in the absence of Licence EQC.
   - Sampling should coincide with sampling of groundwater wells at Biotreatment Pad (SNP station 0053-7).

- Frequency could be reduced to twice a year at spring break-up and prior to freeze up (from 'monthly during periods of flow' required by Licence) once a baseline of results is established and there are no exceedances to discharge guidelines.

3. **SNP 0053-2** (point of compliance for monitoring final effluent quality before discharge to Great Slave Lake)
    - Move the sampling location downstream to a more accessible point (which has been used since 2013 because of accessibility issues with the original location).

On September 13, 2016, Board staff organized a conference call with the Town and reviewers, to discuss the Government of the Northwest Territories (GNWT) - Inspector's proposed SNP changes (summary notes attached). During this call, Board staff indicated that:

- EQC for discharge are typically included in the body of a Type A water license (the Town's Licence MV2009L3-0005 does not include EQC for discharging from SNP station 0053-8: the Biotreatment Pad retention pond, and
- To add EQC would require amendment of the Licence MV2009L3-0005.

In this case, it was agreed that the Town could include a proposed mechanism and criteria for discharge of water from the Biotreatment Pad facility (SNP station 0053-8) in the Biotreatment Pad Operations and Maintenance Plan, with comments and recommendations to be made during that review process (see Biotreatment Pad Operations and Maintenance Plan Version 2.3 May 25, 2017 Staff Report).

Following this conference call, on September 30, 2016, the Town submitted additional information for reviewers to consider in the review of the Biotreatment Pad Operations and Maintenance Plan Version 2.2, which directly related to the discussion around the SNP changes. This included specifications for the proposed mobile water treatment system, and proposed discharge criteria for Biotreatment Pad retention pond leachate at SNP station 0053-8. On October 5, 2016, the review of both the GNWT-Inspector's requested SNP changes and the Biotreatment Pad Operations and Maintenance Plan Version 2.2 were re-opened to allow for consideration of this additional information; the reviewer comment deadline was extended to October 19, 2016. The Town's responses were due November 30, 2016, but were not submitted until December 15, 2017.

<u>Linkages with Biotreatment Pad Operations and Maintenance Plan</u>

The Government of the Northwest Territories - Department of Environment and Natural Resources (GNWT-ENR) submitted review comments for the Biotreatment Pad Operations and Maintenance Plan V2.2 on October 19, 2016, but on January 16, 2017, the GNWT-ENR indicated that a number of their comments had not been submitted in October, due to a system oversight. They requested that the reviewer comment period be extended to allow inclusion of these comments. On January 17, 2017, the distribution list was notified of this request, seeking feedback from reviewers and from the Town. As no objections were raised to GNWT-ENR's request, the additional comments were added to the review, and the Town was granted until February 28, 2017 to respond.

The January 16, 2017 GNWT-ENR letter is relevant to the proposed SNP changes, because in it, GNWT-ENR revised their position on discharging leachate from the Biotreatment Pad retention pond, and agreed that if the leachate at SNP station 0053-8 met established discharge criteria, and Inspector notification given

and approval granted, it would be acceptable to discharge the leachate to the lagoon. In addition, GNWT-ENR made the following recommendations related to the SNP in the January 16, 2017 letter:

1. For SNP station 0053-8:
    a. Update proposed discharge criteria tables (in Biotreatment Pad Operations and Maintenance Plan) to include all Licence parameters, and update of the O&M plan to include procedures for collection of field parameters and how these results will be tracked and reported to Inspectors.
    b. Recommend discharge criteria or licence EQC for ammonia, total nitrogen, phosphorus and the F3 & F4 hydrocarbon fractions as Inspectors require criteria to compare to prior to discharge approval.
    c. Recommend lowering the oil & grease parameter level in Table 2 (*Treated Water Sewage Lagoon Discharge Guidelines*) to be more comparable to EQC in municipal licences or *Schedule II: Standards for Non-point Sources Discharges* when discharging treated sewage effluent to the receiving environment.

2. For SNP station 0053-3:
    a. MV2009L3-0005 should contain effluent quality criteria, increased sampling frequency and updated sampling parameters to monitor lagoon system effluent prior to discharge to receiving environment for total petroleum hydrocarbons, ammonia, total nitrogen and phosphorus (Lagoon Effluent Discharge to Swampland)

3. For SNP station 0053-2:
    a. MV2009L3-0005 should contain updated sampling parameters including total petroleum hydrocarbons, ammonia, total nitrogen and phosphorus. Effluent Quality Criteria to be updated to include total petroleum hydrocarbons.

On January 24, 2017, a meeting with the Town, Inspector, and other interested parties was held in Hay River to discuss outstanding operational issues and timelines for outstanding submissions under the Licence (summary notes attached).

Representatives from the following were present in person or on the phone:

- Town of Hay River,
- KBL Ltd. (contractor to the Town),
- Kátł'odeeche First Nation,
- GNWT-GNWT-ENR Water Resources, and
- GNWT-GNWT-ENR Water Resources Officer.

The meeting provided a valuable opportunity to discuss and work through the Town's Licence requirements and outstanding operational issues with stakeholders in person. In particular, it was valuable to discuss the several interconnected submissions that the Town was working toward submitting to the Board, including the Biotreatment Pad Operations and Maintenance Plan and the Solid Waste Disposal Facilities Operations and Maintenance Plan, as well as the proposed SNP changes and the Water Monitoring Plan developed by the Town.

2.0 Public Review

By October 19, 2016, all comments and recommendations on the proposed SNP changes were received from five reviewers:

- Environment and Climate Change Canada (ECCC);
- Government of the Northwest Territories department of Environment and Natural Resources (GNWT-ENR);
- Kátł'odeeche First Nation (KFN);
- KBL Ltd., and
- Board staff.

The Town responded on December 15, 2016, and then revised their response on March 13 and 14, 2017, in response to additional information having been provided and discussed in the ensuing time period.

Although this was a somewhat convoluted review process, reviewers and the Town were supportive of the changes to SNP stations initially recommended by the Inspector. Additional suggestions were made by reviewers through the review process, and during the conference call to discuss the proposed changes. In addition, GNWT-ENR's additional proposed changes to SNP stations 0053-8, 0053-3 and 0053-2 recommended in their January 16, 2017 letter were reviewed as part of the Biotreatment Pad Operations and Maintenance Plan V2.2, and responded to by the Town on March 30, 2017.

In their December 15, 2016 letter, the Town stated that their Water Monitoring Plan (reviewed separately) includes:

1. proposed criteria for the groundwater monitoring wells that comprise SNP station 0053-5, and that these wells will be sampled with SNP 0053-7 wells, twice yearly, as requested by GNWT-ENR;
2. revised frequency for monitoring of groundwater monitoring wells that comprise SNP station 0053-5, to twice yearly;
3. the revised location for SNP 0053-2, and that sampling will take place at the new location.

SNP station 0053-8

The Board notes the general agreement among parties that Biotreatment Pad leachate (SNP station 0053-8) may be discharged to the lagoon, with conditions stipulated by GNWT-ENR and ECCC, and inclusion of discharge criteria in the Biotreatment Pad Operations and Maintenance Plan. The Board further notes that as part of the Biotreatment Pad Operations and Maintenance Plan V2.2 review, the addition of discharge criteria to the Biotreatment Pad Operations and Maintenance Plan, including hydrocarbons and nutrients for SNP station 0053-8, renders the resampling for these parameters at SNP stations 0053-2 and 0053-3 unnecessary.

SNP station 0053-5

SNP station 0053-5 should include sampling for the three groundwater monitoring wells at the north perimeter of the facilities and the control well at the main gated facility entrance. The Town has agreed with this change, and has included proposed criteria for the groundwater monitoring that comprise SNP station 0053-5 in the Water Monitoring Plan, to be sampled twice per year at spring break-up and prior to freeze up, in conjunction with sampling at SNP station 0053-7 (groundwater from Biotreatment Pad). The Board agrees that due to lack of an established baseline, the Town should monitor these wells monthly during periods of flow for one year, to establish baseline and determine appropriate monitoring months.

If after one year of monthly monitoring during periods of flow, no exceedances of the Federal Interim Groundwater Quality Guidelines are observed, the Town could reduce sampling frequency to twice yearly.

SNP station 0053-3

The Board agrees that as part of the Biotreatment Pad Operations and Maintenance Plan V2.2 review, the following revisions to the Licence SNP should be made:

- Increasing the sampling frequency of 0053-3 to 'monthly during periods of flow'; and
- Updating the sampling parameters for 0053-3 to be the same as 0053-2.

SNP station 0053-2

The Board agrees that a new SNP station can be established at the location where sampling has occurred for 0053-2 since 2013, rendering 0053-2 inactive, but available to be reactivated if upstream sampling is required in future. The Board notes that changes to the EQC in the body of the Licence MV2009L3-0005 can be addressed at the time of Licence renewal.

3.0 Decision

After reviewing the requests for changes to the SNP submitted, the written comments received by the Board and the Staff report prepared for the Board, the Board, having due regard to the facts and circumstances, the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA and the *Waters Act* and Regulations made thereunder, has determined that there are no significant issues or concerns with the requests to make changes to SNP stations 0053-8, 0053-5, and 0053-3 and 0053-2, but that the inclusion of total petroleum hydrocarbons to 0053-2 and 0053-3 is not necessary. However, the Board notes that some requested changes are better addressed through revisions to the Biotreatment Pad Operations and Maintenance Plan, and the Water Monitoring Plan. The Board further notes that the Town's Water Monitoring Plan shall be updated in concert with changes to the SNP and the Biotreatment Pad Operations and Maintenance Plan, and that inclusion of EQC may be a topic of discussion during the renewal of Licence MV2009L3-0005.

Table 2 below summarizes the revisions to the SNP for Licence MV2009L3-0005.

Table 2: Summary of suggested and accepted SNP changes

SNP Station Number	Summary of All Suggested Changes	Accepted SNP Changes
0053-8 (Biotreatment Pad Leachate)	Include discharge criteria for leachate from the Biotreatment Pad in the Biotreatment Pad Operations and Maintenance Plan (see Biotreatment Pad Operations and Maintenance Plan V2.3 Board package) Add nitrogen and phosphorus to monitored parameters (ECCC comment 3, Town September 30, 2016 letter) Leachate discharged must meet CCME CEQG Protection of Aquatic Life Guidelines and Federal Interim Groundwater Quality Guidelines for Total Hydrocarbons (ECCC comment 3, Town September 30, 2016	• Criteria for discharge have been added to the Biotreatment Pad Operations and Maintenance Plan (BTPOMP). • A condition that leachate must meet these criteria has been added to the SNP. • Nutrients have been added as a parameter for SNP 0053-8. • Criteria have been added to the BTPOMP.

	letter attached) and xylenes (Town September 30, 2016 letter) Treated leachate that meets appropriate standards could be discharged to the lagoon system (ECCC comment 3, GNWT-ENR January 16, 2017 letter)), or onsite provided it is non-deleterious (ECCC comment 3) Alternate treatment and/or storage should be available in the event that treated leachate does not meet standards (ECCC comment 3) Inspector approval required prior to discharge of treated leachate to lagoon (GNWT-ENR January 16, 2017 letter)	• Conditions have been added to the SNP that allow the town to discharge Biotreatment Pad leachate from SNP 0053-8 if certain conditions are met. • This change has been added to the BTPOMP. • This condition has been added to the SNP.
0053-5 (surface run-off or seepage from Solid Waste Disposal Facilities)	Include three groundwater monitoring wells at the north perimeter of the facilities (BH02, BH03, BH04) and the control well at the main gated entrance to the facility (BH01) First year of sampling to be completed monthly during periods of flow, to establish a baseline If no exceedances of the Federal Interim Groundwater Quality Guidelines are shown in the first year of sampling, revise sampling frequency to twice per year, at spring break-up and prior to freeze-up (to coincide with sampling of 0053-7) Compare samples with CCME and other applicable guidelines	• These have been added to SNP 0053-5. • This has been added to the SNP. The Town shall update the Water Monitoring Plan accordingly. • Sampling frequency becomes twice annually after the first year of sampling and establishing a baseline. This has been added to the SNP. The Town shall update the Water Monitoring Plan accordingly. • The Water Monitoring Plan (currently under separate review) will outline the criteria that groundwater samples will be evaluated against and the corrective actions that will be taken should exceedances of those criteria occur.
0053-3 (discharge pipe between lagoon and swampland)	Add sampling frequency to match 0053-2 (monthly during periods of flow) Add sampling parameters to match 0053-2, including Total Petroleum Hydrocarbons, Ammonia, Total Nitrogen and Phosphorus.	• This change has been made to the SNP. • This change has been made to the SNP. Hydrocarbons have not been included as SNP 0053-8 will ensure that hydrocarbons exceeding the criteria outlined in the BTPOMP will not be discharged to the Sewage Disposal Facilities.

0053-2 (point of compliance for monitoring final effluent quality before discharge to Great Slave Lake)	Move from original location to a point downstream (N 60° 49.747'; W 115° 52.169') for sampling ease Inactivate original location so that it can be re-activated if upstream comparison sampling is required Add Total Petroleum Hydrocarbons to sampling parameters	• This change has been made to the SNP. • This change has been made to the SNP. • Hydrocarbons have not been included because SNP 0053-8 will ensure that hydrocarbons exceeding the criteria outlined in the BTPOMP will not be discharged to the Sewage Disposal Facilities.

Water Licence MV2009L3-0005 contains provisions that the Board feels necessary to ensure and monitor compliance with the MVRMA and the *Waters Act* and the Regulations made thereunder and to provide appropriate safeguards in respect of the Applicant's use of the waters and/or deposit of waste affected by the Licence. The Board will provide additional referenced material or documents if requested in writing to do so.

SIGNATURE

Mackenzie Valley Land and Water Board

May 25, 2017

Mavis Cli-Michaud, Chair

Date