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August 8, 2024

File: MV2019L3-0010

Ryan MacNeil
Civil Infrastructure Manager
Town of Hay River
Hay River NT X0E 1G1

Sent by email

Dear Ryan MacNeil,

Re: Post-Fire Monitoring Study Version 3 – Approved – Town of Hay River Municipal Licence – Hay River, NT

The Mackenzie Valley Land and Water Board (Board) met on August 1, 2024, and considered the Post-Fire Monitoring Study (PFMS) Version 3,¹ submitted by the Town of Hay River (Town) on April 19, 2024, as required by Water Licence (Licence) MV2019L3-0010 and the Board's direction in its July 28, 2023, Deferral Letter on PFMS Version 2.1.²

The Board has determined that the Post-Fire Monitoring Study, Version 3 meets the requirements of Part F, Condition 21, POST-FIRE MONITORING STUDY and Schedule 3, Condition 5 of the Licence and the Board's direction in its July 28, 2023, Deferral Letter on PFMS Version 2.1. The Board hereby approves the Post-Fire Monitoring Study, Version 3 as submitted.

In accordance with Part B, Condition 11 (COMPLY WITH SCHEDULE(S)), The Board has revised Schedule 1, Condition 1 of Licence MV2019L3-0010, to include the requirement of reporting on post-fire sampling, as follows:

- l) a summary of activities, data, and recommendations in accordance with the **Post-Fire Monitoring Study**, referred to in Condition POST-FIRE MONITORING STUDY.

¹ See MVLWB Online Registry www.mvlwb.com for [Hay River - Post Fire Monitoring Study Version 3 - Apr19 24](#).

² See MVLWB Online Registry for [Hay River - Deferral - Post-Fire Monitoring Study V2.1 - Jul28 23](#).

A revised Licence MV2019L3-0010 is attached with this revision.

Please direct questions or concerns regarding this letter to Kathy Racher via [email](#).

Yours sincerely,

A handwritten signature in blue ink that reads "Tanya MacIntosh". The signature is written in a cursive style with a long horizontal stroke at the beginning.

Tanya MacIntosh

Chair, Mackenzie Valley Land and Water Board

BCC'd to: Town of Hay River ORS Distribution List
 Oskar Pula, KBL
 Joshua Gauthier – Water Resource Officer, GNWT-ECC
 Wendy Bidwell – Senior Water Resource Officer, GNWT-ECC

Attached: Revised Licence MV2019L3-0010 – Current to August 8, 2024



Mackenzie Valley Land and Water Board
Water Licence

Pursuant to the *Mackenzie Valley Resource Management Act*, *Waters Act*, and *Waters 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 *Waters Act* and *Regulations* made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number:	MV2019L3-0010
Licence Type:	A
Water Management Area:	Northwest Territories 01
Location:	60° 51' N; 115°43' W
Purpose:	To use water and dispose of waste and associated uses
Description:	Municipal purposes
Quantity of Water not to be exceeded:	750,000 cubic metres (m ³) annually
Effective date of Licence:	January 31, 2021
Expiry date of Licence:	January 30, 2031

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

Handwritten signature of Mavis, Cli-Michaud in blue ink.

Mavis, Cli-Michaud, Chair

Handwritten signature of Amanda Gauthier in black ink.

Amanda Gauthier, Witness

Mackenzie Valley Land and Water Board

Approved by

Handwritten signature of Honorable Shane Thompson in blue ink.

Honorable Shane Thompson
Minister of Environment and Natural Resources

Type A Water Licence MV2019L3-0010
Town of Hay River – Municipal

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Part A: Scope and Defined Terms

Scope:

1. This Licence entitles the Town of Hay River to use Water and dispose of Waste for municipal purposes at the Town of Hay River, Northwest Territories.
2. The scope of this Licence is as described in the Preliminary Screening for Licence MV2019L3-0010, dated May 28, 2020.
3. This Licence is issued subject to the conditions contained herein with respect to the use of Water and the deposit of Waste 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. Any change made to the *Waters Act* and/or the Waters Regulations that affects licence conditions and defined terms will be deemed to have amended this Licence.
4. Compliance with the terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial, or municipal legislation.

Defined Terms:

Action Level – a predetermined qualitative or quantitative trigger which, if exceeded, requires the Licensee to take appropriate actions.

Analyst – an Analyst designated by the Minister under subsection 65(1) of the *Waters Act*.

Board – the Mackenzie Valley Land and Water Board established under subsection 99(1) of the *Mackenzie Valley Resource Management Act*.

Closure and Reclamation – the process and activities that facilitate the return of areas affected by the Undertaking to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and human activities.

Component-Specific Closure and Reclamation Plan (Component-Specific CRP) – a document, developed in accordance with this Licence, that clearly describes the Closure and Reclamation for a component of the Undertaking.

Construction – any activities undertaken during any phase of the Undertaking to construct or build any structures, facilities or components of, or associated with, the development of the Undertaking.

Discharge – a direct or indirect deposit or release of any Water or Waste to the Receiving Environment.

Effluent – a Wastewater Discharge.

Effluent Quality Criteria (EQC) – numerical or narrative limits on the quality or quantity of the Waste deposited to the Receiving Environment.

Defined Terms:

Engagement Plan – a document, developed in accordance with the MVLWB *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, that clearly describes how, when, and which engagement activities will occur with an affected party during the life of the Undertaking.

Engineered Structure – any structure or facility related to Water Use or the deposit of Waste that is designed by a Professional Engineer, including the Sewage Disposal Facilities, Solid Waste Disposal Facilities, Hydrocarbon-Contaminated Soil Treatment Facilities, and Water Treatment Plant associated with the Undertaking.

Freeboard – the vertical distance between the Water or Wastewater line and the lowest elevation of the effective Water or Wastewater containment crest on the upstream slope of a containment structure.

Greywater – all liquid Waste from showers, baths, sinks, kitchens, and domestic washing facilities, but does not include Toilet Waste.

Groundwater – as defined in section 1 of the Waters Regulations: all water in a zone of saturation below the land surface, regardless of its origin.

Hazardous Waste - a Waste which, because of its quantity, concentration, or characteristics, may be harmful to human health or the environment when improperly treated, stored, transported, or discharged.

Hydrocarbon-Contaminated Soil Treatment Facilities – the area(s) and Engineered Structures designated to contain and treat hydrocarbon-contaminated sediments and soil.

Inspector – an Inspector designated by the Minister under subsection 65(1) of the *Waters Act*.

Licensee – the holder of this Licence.

Maximum Grab Concentration – the concentration of a parameter that cannot be exceeded in any one analytical result.

Minister – the Minister of the Government of the Northwest Territories (GNWT) – Environment and Climate Change.

Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to practice as a Professional Engineer in the Northwest Territories as per the territorial *Engineering and Geoscience Professions Act* and whose professional field of specialization is appropriate to address the components of the Undertaking at hand.

Professional Geoscientist – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to practice as a Professional Geoscientist in the Northwest Territories as per the territorial *Engineering and Geoscience Professions Act* and whose professional field of specialization is appropriate to address the components of the Undertaking at hand.

Progressive Reclamation – Closure and Reclamation activities conducted during the operating phase of the Undertaking.

Defined Terms:

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

Receiving Environment – the natural environment that, directly or indirectly, receives any deposit of Waste from the Undertaking.

Remediation – the removal, reduction, or neutralization of substances, Wastes, or hazardous materials from a site in order to prevent or minimize any adverse effects on the environment and public safety, now or in the future.

Runoff – the overland flow of Water or Wastewater that occurs when precipitation, meltwater, or other Water is not absorbed by the land.

Seepage – any Water or Waste that drains, passes through, or escapes from any structure designed to contain, withhold, divert, or retain Water or Waste. Seepage may be referred to as leachate with respect to the Waste Disposal Facilities.

Sewage – all Toilet Wastes and Greywater.

Sewage Disposal Facilities (SDF) – the area(s) and structures designated to contain and treat Sewage.

Solid Waste Disposal Facilities (SWDF) – the area(s) and structures designated to contain solid Waste.

Spill Contingency Plan (SCP) – a document developed for the Undertaking in accordance with INAC's *Guidelines for Spill Contingency Planning*.

Surveillance Network Program (SNP) – a monitoring program required by this Licence and detailed in Annex A.

Toilet Wastes – all human excreta and associated products, not including Greywater.

Unauthorized Discharge – a Discharge of any Water or Waste not authorized under this Licence.

Undertaking – as described in Part A, Conditions 1 and 2 (Scope).

Waste – as defined in section 1 of the *Waters Act*:

- a) a substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of the water to an extent that is detrimental to its use by people or by an animal, fish or plant, or
- b) water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, that it would, if added to other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water to the extent described in paragraph (a), and includes
- c) a substance or water that, for the purposes of the *Canada Water Act*, is deemed to be waste,
- d) a substance or class of substances prescribed by regulations made under subparagraph 63(1)(b)(i),
- e) water that contains a substance or class of substances in a quantity or concentration that is equal to or greater than a quantity or concentration prescribed in respect of that substance or class of substances by regulations made under subparagraph 63(1)(b)(ii), and

Defined Terms:

- f) water that has been subjected to a treatment, process or change prescribed by regulations made under subparagraph 63(1)(b)(iii).

Waste Disposal Facilities – the area(s) and structures designated for the disposal of Waste, including, but not limited to, the Sewage Disposal Facilities, Solid Waste Disposal Facilities, and Hydrocarbon-Contaminated Soil Treatment Facilities.

Wastewater – any Water that is generated by Undertaking activities or originates on-site, and which contains Waste, and may include, but is not limited to, Runoff, Seepage, Sewage, and Effluent.

Water – as defined in section 1 of the *Waters Act*: water under the administration and control of the Commissioner, whether in a liquid or frozen state, on or below the surface of land.

Water Management Area – a geographical area of the Northwest Territories established by section 2 and Schedule A of the Waters Regulations.

Waters Regulations – the regulations proclaimed pursuant to section 63 of the *Waters Act*.

Water Treatment Plant – the area(s) and structures designed to collect, treat, and supply Water for the Undertaking.

Water Use – as defined in section 1 of the *Waters Act*: a direct or indirect use of any kind, including, but not limited to,

- a) a diversion or obstruction of waters,
- b) an alteration of the flow of waters, and
- c) an alteration of the bed or banks of a river, stream, lake or other body of water, whether or not the body of water is seasonal, but does not include a use connected with shipping activities that are governed by the *Canada Shipping Act, 2001*.

Part B: General Conditions

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| 1. | The Licensee shall ensure a copy of this Licence is maintained at the municipal office at all times. | COPY OF LICENCE |
| 2. | The Licensee shall take every reasonable precaution to protect the environment. | PRECAUTION TO PROTECT ENVIRONMENT |
| 3. | All references to policies, guidelines, codes of practice, statutes, regulations, or other authorities shall be read as a reference to the most recent versions, unless otherwise noted. | REFERENCES |
| 4. | The Licensee shall ensure all submissions to the Board: <ul style="list-style-type: none"> a) Are in accordance with the MVLWB <i>Document Submission Standards</i>; b) Include a conformity statement or table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and c) Include any additional information requested by the Board. | SUBMISSION FORMAT AND CONFORMITY |
| 5. | The Licensee shall ensure management plans are submitted to the Board in a format consistent with the MVLWB <i>Standard Outline for Management Plans</i> , unless otherwise specified. | MANAGEMENT PLAN FORMAT |
| 6. | The Licensee shall comply with plans, programs, manuals and studies, including revisions, approved pursuant to the conditions of this Licence. | COMPLY WITH SUBMISSIONS AND REVISIONS |
| 7. | The Licensee shall conduct an annual review of all plans, programs, manuals and studies and make any revisions necessary to reflect changes in operations, contact information, or other details. No later than March 31 each year, the Licensee shall send a notification letter to the Board, listing the documents that have been reviewed and do not require revisions. | ANNUAL REVIEW |
| 8. | The Licensee may propose changes at any time by submitting revised plans, programs, manuals, or studies to the Board, for approval, a minimum of 60 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board. | REVISIONS |
| 9. | The Licensee shall revise any submission and submit it as per the Board's directive. | REVISE AND SUBMIT |
| 10. | If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day. | SUBMISSION DATE |
| 11. | The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any updates to the Schedules as may be made by the Board. | COMPLY WITH SCHEDULE(S) |
| 12. | The Licensee shall comply with the Surveillance Network Program , which is annexed to and forms part of this Licence, and any updates to the Surveillance Network Program as may be made by the Board. | COMPLY WITH SURVEILLANCE NETWORK PROGRAM |

13.	The Schedules, Surveillance Network Program, and any compliance dates specified in this Licence may be updated at the discretion of the Board.	UPDATES TO COMPLIANCE DATE(S)
14.	The Licensee shall comply with all directives issued by the Board in respect of the implementation of the conditions of this Licence.	COMPLY WITH BOARD DIRECTIVES
15.	The Licensee shall ensure signs are posted for all active Surveillance Network Program stations. All sign(s) shall be located and maintained to the satisfaction of an Inspector.	POST SURVEILLANCE NETWORK PROGRAM SIGN(S)
16.	The Licensee shall install, operate, and maintain meters, devices, or other such methods for measuring the volumes of Water used and Waste discharged to the satisfaction of an Inspector.	MEASURE WATER USE AND WASTE DISCHARGED
17.	Beginning March 31, 2022 and no later than every March 31 thereafter, the Licensee shall submit an Annual Water Licence Report to the Board and an Inspector. The Report shall be in accordance with the requirements of Schedule 1, Condition 1.	ANNUAL WATER LICENCE REPORT
18.	The Licensee shall comply with the Engagement Plan , once approved.	ENGAGEMENT PLAN
19.	The Licensee shall immediately provide written notification to the Board and an Inspector of any non-compliance with the conditions of this Licence.	NOTIFICATION – NON-COMPLIANCE WITH CONDITIONS
20.	The Licensee shall immediately provide written notification to the Board of any non-compliance with a Board directive issued in respect of the implementation of the conditions of this Licence.	NOTIFICATION – NON-COMPLIANCE WITH DIRECTIVES
21.	The Licensee shall ensure that a copy of any written authorization issued to the Licensee by an Inspector is provided to the Board.	COPY – WRITTEN AUTHORIZATION
22.	The Licensee shall replace or repair any monitoring wells that are, or become, inoperable to the satisfaction of an Inspector. For greater certainty, a "dry well" is not an inoperable well within the meaning of this Licence.	INOPERABLE WELL

Part C: Security Requirements

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Part D: Water Use

1.	The Licensee shall only obtain Water for the Undertaking from Great Slave Lake. The Licensee may withdraw up to 750,000 m ³ /year of Water from this source.	WATER SOURCE AND MAXIMUM VOLUME
2.	The Licensee shall only withdraw Water using the Water Treatment Plant, unless otherwise authorized temporarily in writing by an Inspector.	WATER WITHDRAWAL – FACILITIES

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| 3. | The Licensee shall construct and maintain the Water intake(s) with a screen designed to prevent impingement or entrapment of fish. | WATER INTAKE
SCREEN |
| 4. | Prior to locating a Water intake in a fish-bearing Watercourse, the Licensee shall obtain written authorization for the location from an Inspector. | WATER INTAKE
LOCATION –
AUTHORIZATION |

Part E: Construction

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| 1. | The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Waste are designed, constructed, and maintained to minimize the escape of Waste to the Receiving Environment. | OBJECTIVE –
CONSTRUCTION |
| 2. | The Licensee shall ensure that all Engineered Structures are constructed and maintained in accordance with the recommendations of the Professional Engineer responsible for the design, including, but not limited to, recommendations regarding field supervision and inspection requirements. | ENGINEERED
STRUCTURES –
GENERAL |
| 3. | The Licensee shall only use material that is clean and free of contaminants and is from a source that has been authorized in writing by an Inspector. | CONSTRUCTION
MATERIAL –
SOURCE(S) |
| 4. | The Licensee shall maintain records of Construction materials for all structures and make them available at the request of the Board or an Inspector. | CONSTRUCTION
RECORDS |
| 5. | A minimum of 90 days prior to the commencement of Construction of any Engineered Structures, the Licensee shall submit to the Board, for approval, a Design and Construction Plan . The Plan shall be in accordance with the requirements of Schedule 2, Condition 1. The Licensee shall not commence Construction of the Engineered Structure(s) prior to Board approval of the Plan. | DESIGN AND
CONSTRUCTION PLAN |
| 6. | A minimum of 90 days prior to the commencement of Construction of any Engineered Structures, the Licensee shall submit to the Board, Design Drawings stamped and signed by a Professional Engineer. A minimum of 90 days prior to implementing any proposed changes to the Design Drawings, the Licensee shall submit revised Design Drawings to the Board. | DESIGN DRAWINGS |
| 7. | A minimum of ten days prior to the commencement of Construction of any Engineered Structure(s), the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the Construction commencement date, and the name and contact information for the individual responsible for overseeing the Construction. Written notification shall be provided to the Board and an Inspector if any changes to the commencement date or contact information occur. | NOTIFICATION –
CONSTRUCTION |
| 8. | The Licensee shall ensure that all Engineered Structures are constructed in accordance with the Design Drawings and approved Design and Construction Plan(s) . | CONSTRUCT AS
DESIGNED –
ENGINEERED
STRUCTURE(S) |

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| <p>9. Within 180 days of the completion of the Construction of each Engineered Structure, the Licensee shall submit to the Board, an As-Built Report stamped and signed by a Professional Engineer, which shall include, but not be limited to, the following information:</p> <ul style="list-style-type: none"> a) final as-built drawings of the Engineered Structure(s), stamped and signed by a Professional Engineer; b) documentation, with rationale, of field decisions that deviate from the Design and Construction Plan(s) and/or Design Drawings; and c) any data used to support these decisions. | <p>AS-BUILT REPORT –
ENGINEERED
STRUCTURE(S)</p> |
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Part F: Waste and Water Management

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| <p>1. The Licensee shall manage Waste and Water with the objective of minimizing the impacts of the Undertaking on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.</p> | <p>OBJECTIVE – WASTE
AND WATER
MANAGEMENT</p> |
| <p>2. The Licensee shall minimize erosion by implementing suitable erosion control measures that shall be located and maintained to the satisfaction of an Inspector.</p> | <p>EROSION CONTROL</p> |
| <p>3. The Licensee shall operate and maintain the Waste Disposal Facilities to prevent structural failure and to the satisfaction of an Inspector.</p> | <p>PREVENT
STRUCTURAL FAILURE</p> |
| <p>4. The Licensee shall ensure that geotechnical inspections of all dams, berms, dykes, and control structures associated with Waste Disposal Facilities and Water Treatment Plant are conducted every two years by a Professional Engineer. The Licensee shall:</p> <ul style="list-style-type: none"> a) A minimum of two weeks prior to the biennial inspection, provide written notification to an Inspector; and b) Within 90 days of completing the biennial inspection, submit the Professional Engineer’s full Inspection Report to the Board and an Inspector. The Report shall include: <ul style="list-style-type: none"> i. a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the Professional Engineer, including rationale for any decisions that deviate from the Professional Engineer’s recommendations; and ii. a summary of any actions taken by the Licensee to address the recommendations made following the previous inspection. | <p>BIENNIAL
GEOTECHNICAL
INSPECTION</p> |
| <p>5. The Licensee shall immediately notify the Board and an Inspector of the exceedance of Effluent Quality Criteria at SNP station 0053-2.</p> | <p>EFFLUENT QUALITY
CRITERIA –
EXCEEDANCE</p> |
| <p>6. The Licensee shall notify an Inspector, in writing, of the acceptance of Sewage, solid Waste, or contaminated soil from industrial, commercial and institutional operators working outside of the local government boundaries of the Town of Hay River.</p> | <p>SEWAGE AND SOLID
WASTES –
MUNICIPAL</p> |

Sewage

- 7. Within 12 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Sewage Disposal Facilities Operation and Maintenance Plan**. The Plan shall be in accordance with the requirements of Schedule 3, Condition 1. **SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED**

- 8. The Licensee shall construct, operate, and maintain the Sewage Disposal Facilities to the design specifications and engineering standards, such that:
 - a) Any constructed structures/facilities are maintained and operated so as to prevent structural failure; and
 - b) Any deterioration or erosion of constructed structures/facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately.**SEWAGE DISPOSAL FACILITIES**

- 9. The Licensee shall maintain a Freeboard limit of one metre at the Sewage Disposal Facilities, or as recommended by a Professional Engineer and as approved by the Board. **SEWAGE DISPOSAL FACILITIES – FREEBOARD**

- 10. The Licensee shall direct all piped and pumpout Sewage to the Sewage Disposal Facilities or as otherwise approved by the Board. Discharge from the Sewage Disposal Facilities will be from the wetland to Great Slave Lake. **SEWAGE – SEWAGE DISPOSAL FACILITIES**

- 11. The Licensee shall discharge all Effluent from the Sewage Disposal Facilities as described in the approved **Sewage Disposal Facilities Operation and Maintenance Plan**. **SEWAGE DISPOSAL FACILITIES - EFFLUENT DISCHARGE**

- 12. The Licensee shall ensure that Sewage Effluent from the Sewage Disposal Facilities at SNP 0053-2 has a pH value equal to or greater than 6, and meets the following Effluent Quality Criteria (EQC):

Parameter	Maximum Grab Concentration
Fecal Coliforms (FC)	2000 FC/100mL
Carbonaceous Biological Oxygen Demand	27 mg/L
Total Suspended Solids	40 mg/L
Oil and Grease	5 mg/L

SEWAGE DISPOSAL FACILITIES - EFFLUENT QUALITY CRITERIA

- 13. Prior to removal of sludge from the Sewage Disposal Facilities for re-use, the Licensee shall ensure all sludge meets the remediation criteria in the *Government of the Northwest Territories’ Environmental Guideline for Contaminated Site Remediation* and that Fecal coliforms and *Salmonella* meet the *Canadian Council for Minister’s of the Environment Guidelines for Compost Quality*. **SLUDGE REMOVAL - GUIDELINES**

- 14. A minimum of 10 days prior to the removal of sludge from the Sewage Disposal Facilities for re-use, the Licensee shall submit analytical results and written notification to the Board and an Inspector. **SLUDGE REMOVAL – NOTIFICATION**

Solid Waste

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| 15. Within 12 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised Solid Waste Disposal Facilities Operation and Maintenance Plan . The Plan shall be in accordance with the requirements of Schedule 3, Condition 2. | SOLID WASTE
DISPOSAL FACILITIES
OPERATION AND
MAINTENANCE PLAN
– REVISED |
| 16. The Licensee shall construct, operate, and maintain the Solid Waste Disposal Facilities to the design specifications and engineering standards, such that:

a) Any constructed structures/facilities are maintained and operated so as to prevent structural failure; and

b) Any deterioration or erosion of constructed structures/facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately. | SOLID WASTE
DISPOSAL FACILITIES |
| 17. The Licensee shall deposit all solid Waste to the Solid Waste Disposal Facilities, as described in the approved Solid Waste Disposal Facilities Operation and Maintenance Plan . | SOLID WASTE – SOLID
WASTE DISPOSAL
FACILITIES |
| 18. The Licensee shall act in accordance with the best practices outlined in Environment and Climate Change Canada’s <i>Solid Waste Management for Northern and Remote Communities: Planning and Technical Guidance Document</i> . | SOLID WASTE –
GUIDANCE
DOCUMENT |
| 19. The Licensee is prohibited from incinerating materials at the Solid Waste Disposal Facilities, unless otherwise authorized in writing by an Inspector. | SOLID WASTE – NO
INCINERATION |
| 20. The Licensee shall maintain the Solid Waste Disposal Facilities to the satisfaction of an Inspector. | SOLID WASTE
DISPOSAL FACILITIES
– INSPECTOR
SATISFACTION |

Monitoring at the Solid Waste Disposal Facilities

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| 21. Within 6 months following the effective date of this Licence, the Licensee shall submit to the Board, a Surface Water Infiltration Test on the current groundwater monitoring well at SNP station 0053-5b. The Test shall be in accordance with the requirements of Schedule 3, Condition 3. | SURFACE WATER
INFILTRATION TEST |
| 22. Within 36 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a Groundwater Monitoring Plan . The Plan shall be in accordance with the requirements of Schedule 3, Condition 4. | GROUNDWATER
MONITORING PLAN |
| 23. Within 12 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a Post-Fire Monitoring Study . The Study shall be in accordance with the requirements of Schedule 3, Condition 5. | POST-FIRE
MONITORING STUDY |

Hydrocarbon-Contaminated Soil Treatment Facilities

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|---|---|
| <p>24. The Licensee shall ensure that all Hydrocarbon-Contaminated Soil Treatment Facilities are designed, constructed, maintained, monitored, and closed to meet or exceed the MVLWB/IWB/GNWT <i>Guideline for Design, Operation, Maintenance, and Closure of Petroleum Hydrocarbon-Contaminated Soil Treatment Facilities in the Northwest Territories</i>.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT – GUIDELINE</p> |
| <p>25. Within 12 months of the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan, in accordance with the requirements of Schedule 3, Condition 6.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED</p> |
| <p>26. The Licensee shall maintain a Freeboard limit of 1 metre at the Retention Pond, or as recommended by a Professional Engineer and as approved by the Board.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES – FREEBOARD</p> |
| <p>27. The Licensee shall maintain the Hydrocarbon-Contaminated Soil Treatment Facilities to the satisfaction of an Inspector.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES – INSPECTOR SATISFACTION</p> |
| <p>28. The Licensee shall only accept soil that meets the criteria of Schedule 3, Condition 7.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - ACCEPTANCE CRITERIA</p> |
| <p>29. Prior to accepting soil to the Hydrocarbon Contaminated Soil Facilities, the Licensee shall submit soil analysis results as described in the approved Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan, to an Inspector, unless otherwise authorized by an Inspector.</p> | <p>HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - ACCEPTANCE CRITERIA - SUBMIT RESULTS</p> |

**HYDROCARBON-
CONTAMINATED SOIL
TREATMENT
FACILITIES - EFFLUENT
QUALITY CRITERIA**

30. The Licensee shall ensure that Effluent discharged from the Water Retention Pond (SNP station 0053-8) or the Above Ground Storage Tanks has a pH value between 6.5 and 9, and meets the following Effluent Quality Criteria (EQC):

Parameter	Maximum Grab Concentration (mg/L)
Chloride	120-640 ^c
Chlorine	0.0005
Fluoride	0.12
Sulphate	128-429 ^b
Total Suspended Solids	20
Benzene	0.37
Toluene	0.002
Ethylbenzene	0.09
Xylenes	0.03
F1 (C6 – C10)	0.15
F2 (C10 – C16)	0.11
F3 (C16 – C34)	Below detection
F4 (C34 – C50)	Below detection
Methyl tertiary-butyl ether (MTBE)	10
Aluminum	0.005 -0.1 ^a
Arsenic	0.005
Boron	1.5
Cadmium	0.00009
Chromium, Hexavalent (Cr ⁶⁺)	0.001
Chromium, Trivalent (Cr ³⁺)	0.0089
Cobalt	0.0025
Copper	0.002-0.004 ^b
Iron	0.3
Lead	0.001-0.007 ^b
Mercury, Total	0.000026
Molybdenum	0.073
Nickel	0.025-0.15 ^b
Selenium	0.001
Silver	0.00025
Zinc	0.03
Ammonia (uniodized)	0.019
Ammonia (total)	0.021-231 ^{a,d}
Nitrate as Nitrogen	13-550 ^c
Nitrite as Nitrogen	0.06 NO ₂ -N
Cyanide	0.005
Total Phenols	0.004

^a pH-dependent parameter

^b hardness-dependent parameter

^c guideline dependent on short- or long-term exposure scenario

^d guideline varies with temperature

31. The Licensee shall direct all Effluent from the Hydrocarbon-Contaminated Soil Treatment Facilities as described in the approved Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan.

HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - EFFLUENT DISCHARGE

32. Prior to removing treated soil from the Hydrocarbon-Contaminated Treatment Facilities for reuse, the Licensee shall ensure all treated soil meets the remediation criteria in the most current version of the *Government of the Northwest Territories' Environmental Guideline for Contaminated Site Remediation*.

HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - REUSE CRITERIA

33. The Licensee shall ensure that any representative soil samples collected and analyzed meet the following sampling requirements, at a minimum:

HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - SOIL SAMPLING REQUIREMENTS

Soil Volume (m ³)	Sample Quantity
1-50	1
51-100	2
101-1,000	3
1,001-2,000	4
2,001-4,000	5

34. The Licensee shall submit Water quality data for samples collected from SNP station 0053-8 (Water Retention Pond) or the Above Ground Storage Tanks to the Board and an Inspector as follows:

HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - EFFLUENT DISCHARGE - SUBMIT WATER QUALITY DATA

- a) No later than 10 days prior to commencing or resuming Discharge of Effluent as identified in the approved Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan; and
- b) No later than 10 days prior to commencing or resuming Discharge of Effluent as identified in the approved Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan following an exceedance of the Effluent Quality Criteria specified in Condition HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES – EFFLUENT QUALITY CRITERIA.

Water

35. Within 12 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Water Treatment Plant Operation and Maintenance Plan**, in accordance with the requirements of Schedule 3, Condition 8.

WATER TREATMENT PLANT OPERATION AND MAINTENANCE PLAN – REVISED

36. The Licensee shall notify an Inspector and the Board at least 14 days prior to the discharge of sludge from the Water Treatment Plant to the final disposal location.

NOTIFY INSPECTOR – WATER TREATMENT PLANT SLUDGE DISCHARGE

Snow Disposal

37. Within 12 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Snow Disposal Plan**. The Plan shall include, but not be limited to, a topographic map identifying areas currently used or planned to be used for snow disposal.

**SNOW DISPOSAL
PLAN – REVISED**

Part G: Aquatic Effects Monitoring Program

Intentionally left blank.

Part H: Spill Contingency Planning

1. The Licensee shall ensure that Unauthorized Discharges associated with the Undertaking do not enter any Waters.
2. Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised **Spill Contingency Plan**.
3. If a spill or an Unauthorized Discharge occurs or is foreseeable, the Licensee shall:
- Implement the approved Spill Contingency Plan referred to in Part H, Condition 2;
 - Report it immediately using the NU-NT Spill Report Form by one of the following methods:
 - Telephone: (867) 920-8130
 - Fax: (867) 873-6924
 - E-mail: spills@gov.nt.ca
 - Online: Spill Reporting and Tracking Database
 - Notify the Board, an Inspector and Kát’odeeche First Nation (by email: kfnenvironmental@katlodeeche.com) immediately; and
 - Within 30 days of initially reporting the incident, or within a timeframe authorized by an Inspector, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Written notification shall be provided to the Board and an Inspector if any changes occur.
4. The Licensee shall ensure that spill prevention infrastructure and spill response equipment is in place.
5. The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector.

**OBJECTIVE – PREVENT
WASTE INTO WATER**

**SPILL CONTINGENCY
PLAN – REVISED**

REPORT SPILLS

**SPILL PREVENTION
AND RESPONSE
EQUIPMENT**

CLEAN UP SPILLS

Part I: Closure and Reclamation

- | | |
|---|--|
| <p>1. Six months prior to the closure of any component of the Sewage Disposal Facilities, the Licensee shall submit to the Board, for approval, a Component-Specific Closure and Reclamation Plan. The Plan shall be in accordance with the requirements of Schedule 4, Condition 1. The Licensee shall not commence activities described in the Plan prior to Board approval.</p> | <p>COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SEWAGE DISPOSAL FACILITIES</p> |
| <p>2. Six months prior to the closure of any component of the Solid Waste Disposal Facilities, the Licensee shall submit to the Board, for approval, a Component-Specific Closure and Reclamation Plan. The Plan shall be in accordance with the requirements of Schedule 4, Condition 2. The Licensee shall not commence activities described in the Plan prior to Board approval.</p> | <p>COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES</p> |
| <p>3. Six months prior to the closure of any component of the Hydrocarbon-Contaminated Soil Treatment Facilities, the Licensee shall submit to the Board, for approval, a Component-Specific Closure and Reclamation Plan. The Plan shall be in accordance with the requirements of Schedule 4, Condition 3. The Licensee shall not commence activities described in the Plan prior to Board approval.</p> | <p>COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES</p> |
| <p>4. Within 36 months following the effective date of this Licence, and every five years thereafter, the Licensee shall submit to the Board, for approval, an Interim Closure and Reclamation Plan for the Solid Waste Disposal Facilities. The Plan shall be in accordance with the requirements of Schedule 4, Condition 4.</p> | <p>INTERIM CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES</p> |
| <p>5. The Licensee shall endeavor to carry out approved Progressive Reclamation as soon as is reasonably practicable.</p> | <p>PROGRESSIVE RECLAMATION</p> |
| <p>6. The Licensee shall not conduct Progressive Reclamation except as approved by the Board.</p> | <p>PROGRESSIVE RECLAMATION – CARRY OUT AS APPROVED</p> |

Signed on behalf of the Mackenzie Valley Land and Water Board



Tanya MacIntosh, Chair



Amanda Gauthier, Witness

Schedule 1
Annual Water Licence Report

1. The **Annual Water Licence Report** referred to in Part B, Condition ANNUAL WATER LICENCE REPORT of this Licence shall include, but not be limited to, the following information about activities conducted during the previous calendar year:
 - a) The monthly and annual quantities in cubic metres of fresh Water obtained from all sources, as required in Condition WATER SOURCE AND MAXIMUM VOLUME of this Licence;
 - b) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, referred to in Condition ENGAGEMENT PLAN of this Licence;
 - c) A summary of Construction activities conducted in accordance with Part E of this Licence;
 - d) A summary of major maintenance activities conducted in accordance with this Licence;
 - e) A summary of the results and any actions taken as a result of the following inspections:
 - i. Any inspection of all dams, berms, dykes, and control structures; and
 - ii. Inspections conducted to fulfill Condition BIENNIAL GEOTECHNICAL INSPECTION of this Licence.
 - f) A summary of activities conducted in accordance with the approved **Sewage Disposal Facilities Operation and Maintenance Plan**, referred to in Condition SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED of this Licence, including:
 - i. A summary of approved updates or changes to the **Sewage Disposal Facilities Operation and Maintenance Plan**;
 - ii. Monthly and annual quantities in cubic metres of all Sewage deposited into the Sewage Disposal Facilities;
 - iii. Monthly and annual quantities in cubic metres of all Sewage deposited into the Sewage Disposal Facilities by commercial and industrial operators working outside the municipal boundaries of the Town of Hay River;
 - iv. Monthly and annual quantities of Wastewater Discharged from the Sewage Disposal Facilities, by location;
 - v. A summary of sludge management activities, including results of depth and volume measurements, sludge removal, quantity and quality of sludge removed, final sludge disposal location, and/or treatment;
 - vi. A list and discussion of any exceedances of Effluent Quality Criteria defined in Condition SEWAGE DISPOSAL FACILITIES - EFFLUENT QUALITY CRITERIA of this Licence; and
 - vii. A description of actions taken in response to any Effluent Quality Criteria exceedances;
 - viii. A summary of activities conducted in accordance with the **Component-Specific Closure and Reclamation Plan**, referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SEWAGE DISPOSAL FACILITIES of this Licence, including:
 - a. Details of any Progressive Reclamation undertaken;
 - b. A discussion on whether planning and implementation remains on schedule, and a summary of any new scheduling setbacks; and
 - c. A summary of engagement conducted regarding Component-Specific Closure and Reclamation.

- g) A summary of activities conducted in accordance with the approved **Solid Waste Disposal Facilities Operation and Maintenance Plan**, referred to in Condition SOLID WASTE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED of this Licence, including:
- i. A summary of approved updates or changes to the **Solid Waste Disposal Facilities Operation and Maintenance Plan**;
 - ii. Monthly and annual quantities of any Waste removed from the Solid Waste Disposal Facilities;
 - iii. Estimated remaining volumes for Waste disposal at the Solid Waste Disposal Facilities, including any drone survey results;
 - iv. Details on any plans for siting and constructing a new Solid Waste Disposal Facilities;
 - v. A list of training completed by SWDF staff;
 - vi. A summary of activities conducted in accordance with the **Component-Specific Closure and Reclamation Plan**, referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES and the **Interim Closure and Reclamation Plan**, referred to in Condition INTERIM CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES of this Licence, including:
 - a. Details of any Progressive Reclamation undertaken;
 - b. A discussion on whether planning and implementation remains on schedule, and a summary of any new scheduling setbacks; and
 - c. A summary of engagement conducted regarding Component-Specific Closure and Reclamation.
- h) A summary of activities conducted in accordance with the approved **Hydrocarbon-Contaminated Soil Treatment Facilities Operations and Maintenance Plan**, referred to Condition HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES OPERATIONS AND MAINTENANCE PLAN - REVISED of this Licence, including:
- i. A summary of approved updates or changes to the **Hydrocarbon-Contaminated Soil Treatment Facilities Operations and Maintenance Plan**;
 - ii. Monthly and annual quantities, in cubic metres, of all Effluent discharged from the **Hydrocarbon-Contaminated Soil Treatment Facilities**, by location;
 - iii. Monthly and annual quantities, in cubic metres, of contaminated materials including soil, rock, snow, and ice placed in the Facilities;
 - vii. A summary of treated soil removed from the Facilities, including:
 - a. Volume of soil;
 - b. Analytical results, including soil chemistry and soil particle size;
 - c. The locations and land use activity of the receiving site(s);
 - iv. A summary of how the contaminated soil was managed during the previous calendar year, including relevant operational details and methods and dates of soil tilling;
 - v. Record of inspections of the Hydrocarbon-Contaminated Soil Treatment Facilities;
 - vi. A summary of activities conducted in accordance with the **Component-Specific Closure and Reclamation Plan**, referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN - HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES and the **Interim Closure and Reclamation Plan**, referred to in Condition INTERIM CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES of this Licence, including:
 - a. Details of any Progressive Reclamation undertaken;
 - b. A discussion on whether planning and implementation remains on schedule, and a summary of any new scheduling setbacks; and

- c. A summary of engagement conducted regarding Component-Specific Closure and Reclamation.
- i. A summary of groundwater monitoring activities conducted in accordance with referred to in Part F and Annex A of this Licence, including:
 - i. A summary of updates or changes to the **Groundwater Monitoring Plan and/or Annex A of this Licence**;
 - ii. A summary of groundwater monitoring results;
 - iii. Trend analyses for parameters of potential concern, graphed by parameter;
 - iv. Action Level exceedances;
 - v. Corrective actions taken in response to Action Level exceedances;
 - vi. Summary of well integrity, any repairs recommended for the monitoring wells, including proposed plans and timelines for repairs; and
 - vii. Summary of any repairs completed on the monitoring wells.
- i) A summary of activities conducted in accordance with the approved **Water Treatment Plant Operation and Maintenance Plan**, referred to in Condition WATER TREATMENT PLANT OPERATION AND MAINTENANCE PLAN – REVISED of this Licence, including:
 - i. A summary of approved updates or changes to the **Water Treatment Plant Operation and Maintenance Plan**;
 - ii. Monthly and annual quantities of any Wastewater discharged from the Water Treatment Plant, by location; and
 - iii. Monthly and annual quantities of any sludge removed from the Water Treatment Plant.
- j) A summary of activities conducted in accordance with the approved **Snow Disposal Plan**, referred to in Condition SNOW DISPOSAL PLAN - REVISED of this Licence, including but not limited to:
 - i. A summary of approved updates or changes to the **Snow Disposal Plan**;
- k) A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, referred to in Condition SPILL CONTINGENCY PLAN – REVISED of this Licence, including:
 - i. A list and description for all Unauthorized Discharges, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e., open or closed), in accordance with the reporting requirements in Condition REPORT SPILLS of this Licence; and
 - ii. An outline of any spill training carried out.
- l) A summary of activities, data, and recommendations in accordance with the **Post-Fire Monitoring Study**, referred to in Condition POST-FIRE MONITORING STUDY.
- m) Tabular summaries of all data and information generated under the SNP annexed to this Licence, and comparisons of data from SNP stations 0053-2 and 0053-8 to EQC referred to in Condition SEWAGE DISPOSAL FACILITIES – EFFLUENT QUALITY CRITERIA and Condition HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES – EFFLUENT QUALITY CRITERIA, respectively.
- n) Summary of quality assurance/quality control practices and rationale for any data that not collected or data that was deemed invalid;

- o) A summary of any studies requested by the Board that relate to Waste disposal or Water use and a brief description of any future studies planned;
- p) A list of any non-compliance(s) with the conditions of this Licence or any directive(s) from the Board pursuant to the conditions of this Licence;
- q) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector; and
- r) Any other details on Waste disposal or Water use requested by the Board by November 1 of the year being reported.

Schedule 2 Construction

1. The **Design and Construction Plan(s)** referred to in Condition DESIGN AND CONSTRUCTION PLAN shall include, but not be limited to, the following:
 - a) Information regarding the design of the facilities:
 - i. A description of the facilities to be constructed;
 - ii. The proposed location(s) of the facilities, with GPS coordinates and a map to scale; Relevant background information for the area beneath the footprint of the facilities, as deemed adequate by the Professional Engineer responsible for the design, including:
 - a. the results and data from geotechnical and geochemical investigations; hydrogeological investigations; and programs to characterize soil, rock, Groundwater, ground ice, and ground temperature conditions to the depth expected to be affected by the facilities; and
 - b. any other relevant information.
 - iii. A design alternatives analysis;
 - iv. Design specifications and performance parameters;
 - v. Stability analyses;
 - vi. A description of how the design has been optimized for Closure and Reclamation;
 - vii. A description of how climate change projections and considerations have been incorporated into the design;
 - viii. A description of any instrumentation that will be installed as part of the facilities, including locations and rationale; and
 - ix. A description of any operations and maintenance requirements associated with the design of the facilities.
 - b) Information regarding the Construction of the facilities:
 - i. A Construction schedule, including sequencing information;
 - ii. A description of the materials recommended for Construction, including, but not limited to:
 - a. sources;
 - b. quantities;
 - c. physical characteristics; and
 - d. geochemical characteristics.
 - iii. A description of any potential effects on the Receiving Environment associated with Construction of the facilities; and
 - iv. A description of any mitigation measures that will be undertaken to minimize the potential impacts identified above.
 - c) Information regarding monitoring during Construction, including:
 - i. A description of any monitoring that will be conducted to detect potential impacts to the Receiving Environment and evaluate the effectiveness of the mitigation measures described above, including, but not limited to:
 - a. locations;

- b. parameters;
 - c. frequencies; and
 - d. rationale.
 - ii. Linkages to other monitoring programs required in this Licence.
- d) Information regarding responses to monitoring results during Construction, including:
- i. Definitions, with rationale, for Action Levels applicable to the performance of the mitigation measures; and
 - ii. For each Action Level, a description of how exceedances of the Action Level will be assessed and, generally, which types of actions may be taken by the Licensee if the Action Level is exceeded.
- e) A **Quality Control Plan** stamped by a Professional Engineer, a component of which includes a plan for a Professional Engineer to supervise and field check Construction activities.

Schedule 3
Conditions Applying to Waste and Water Management

1. The **Sewage Disposal Facilities (SDF) Operation and Maintenance Plan** referred to in Condition SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED shall include but not be limited to:
 - a) Site Description:
 - i. Facility design details, including current figures;
 - ii. Location, including GPS coordinates and map(s);
 - iii. Date of commissioning;
 - iv. Local ground conditions and permafrost considerations;
 - v. Details and frequency of typical operation, maintenance and monitoring activities; and
 - vi. Closure and Reclamation planning and post-closure monitoring;
 - b) SDF Staff;
 - i. Facility staff contact information; and
 - ii. Staff Training;
 - c) Security and Control
 - i. Control of public access; and
 - ii. Signage;
 - d) Wastewater Generation and Conveyance:
 - i. System details, including maps;
 - ii. Volume and frequency of influent deposits; and
 - iii. How unacceptable substances are kept out;
 - e) Influent Wastewater Quality;
 - f) System Capacity and Design Data:
 - i. System design details, including flow volumes; and
 - ii. Effluent Quality Criteria for which the system was designed;
 - g) Effluent Discharge:
 - i. Frequency, rate and timing of discharge;
 - ii. Discharge location and Receiving Environment details; and
 - iii. Discharge notification(s);
 - h) Sludge Management:
 - i. Characterization and production rate of sludge;
 - ii. Method of sludge containment and de-watering;
 - a. Site location and maintenance;
 - b. Sludge removal method; and

- c. Sludge drying;
 - iii. Sludge Disposal;
 - a. Sampling procedure and approvals;
 - b. Planned uses; and
 - c. Disposal location(s) and details;
 - iv. Future desludging events and reporting; and
 - v. Figures showing site features and layout;
 - i) Surface Water Management;
 - j) Record keeping:
 - i. Forms used for Record Keeping;
 - ii. Reporting requirements for all aspects of the SDF; and
 - iii. Locations of records;
 - k) Water Quality Monitoring/Surveillance Network Program:
 - i. Locations;
 - ii. Standard sampling procedures; and
 - iii. Background water quality information;
 - l) The following additional information as directed by the Board:
 - i. Nuisance control;
 - ii. Vegetation present; and
 - iii. Site inspection templates (daily, weekly, monthly and annual).
2. The **Solid Waste Disposal Facilities (SWDF) Operation and Maintenance Plan** referred to in Condition SOLID WASTE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED shall include but not be limited to:
- a) Site Description;
 - i. Facility design details, including current figures;
 - ii. Location, including GPS coordinates and map(s);
 - iii. Date of commissioning;
 - iv. Local ground conditions and permafrost considerations;
 - v. Details and frequency of typical operation, maintenance and monitoring activities; and
 - vi. Closure and Reclamation planning and post-closure monitoring;
 - b) SWDF Staff;
 - i. Facility staff contact information; and
 - ii. Staff Training;
 - c) Security and Control;

- i. Control of public access; and
 - ii. Signage;
- d) Facility Operations;
 - i. Hours/Days of Operation;
 - ii. Weigh Scale;
 - iii. Hazardous Waste Reception and Transfer; and
 - iv. Heavy Equipment Used;
- e) Facility Design;
 - i. Drawings; and
 - ii. Surface Water/Leachate Design;
- f) Accepted Materials;
- g) Waste Generation and Site Capacity;
- h) Community Waste Collection and Handling;
- i) Waste Screening;
- j) Unacceptable Wastes;
- k) Record-Keeping for Unacceptable Wastes;
- l) Landfilling Operations;
 - i. Compaction practices and frequencies;
 - ii. Intermediate cover sources, practices and frequencies; and
 - iii. Final cover sources, practices and frequencies;
- m) Litter and Wildlife Control;
 - i. Controls; and
 - ii. Response plans to wildlife on site;
- n) Surface Water Management;
 - i. Surface Water and ponded water Inspections;
- o) Record-Keeping;
 - i. Forms used for Record Keeping;
 - ii. Reporting requirements for all aspects of the SWDF; and
 - iii. Locations of records;
- p) Inspection and Monitoring;

- i. Daily/Weekly/Monthly Inspections;
 - ii. Annual Inspections; and
 - iii. Inspection Forms;
 - q) Hazardous Waste Management;
 - i. Specific Practices for each Waste Type; and
 - ii. Contact Person;
 - r) Tipping Fees;
 - s) Closure and Post-Closure Plan;
 - t) Surveillance Network Program;
 - u) Emergency Planning;
 - v) Document References;
 - w) The following additional information directed by the Board:
 - i. Update References used in developing the **Solid Waste Disposal Facilities Operation and Maintenance** Plan;
 - ii. Include a current topographic/drainage map of the Solid Waste Disposal Facilities;
 - iii. Update the Security and Control section to include details on the management of windblown debris;
 - iv. Update the Accepted Materials section to include specific details on acceptance procedures for vehicles, construction and demolition (C&D) Waste, and the removal of freon;
 - v. Updated the Accepted Materials section to include plans to reduce and manage the current household wastes cell;
 - vi. Update the Inspections and Monitoring section to include information on Leachate monitoring and inspections;
 - vii. Update the Inspections and Monitoring section to include information on landfill gas monitoring and inspections;
 - viii. Update the Emergencies section to include procedures referenced from the SWANA Northern Lights Chapter template; and
 - ix. Update the Emergencies section to include detail on:
 - a. Fire prevention;
 - b. Fire response;
 - c. Water supply for fire suppression;
 - d. Management of fire suppressant, water and re-circulated water.
3. The **Surface Water Infiltration Test**, referred to in Condition SURFACE WATER INFILTRATION TEST of this Licence shall include, but not be limited to, the following information:
- a) The results of surface water infiltration test on the existing groundwater well at SNP 0053-5b to determine if surface water is entering the well bore; and
 - b) Based on previous well data and the results of the aforementioned Surface Water Infiltration Test, a discussion on the integrity of the well and wellbore at SNP 0053-5b, including rationale for

maintaining the existing well and well bore, repairing the existing well or well bore, or proposed plans and geographical coordinates to drill a new well at SNP 0053-5b.

4. The **Groundwater Monitoring Plan**, referred to in Condition GROUNDWATER MONITORING PLAN of this Licence shall include, but not be limited to, the following information:
 - a) Information regarding Groundwater conditions:
 - i. A description of the underlying and surrounding hydrogeology, including appropriate maps and flow diagrams, as assessed by a hydrologist, hydrogeologist, or equivalent professional; and
 - ii. A summary of baseline data including:
 - a. Baseline data collected to date;
 - b. Identification of baseline data gaps; and
 - c. A description of methods for filling in baseline data gaps or methods for approximating baseline conditions if necessary.
 - b) Information regarding monitoring:
 - i. Identification, with rationale, of parameters of concern that should be used as indicators of potential impacts from Undertaking-related activities on the aquatic Receiving Environment;
 - ii. A description, including detailed rationale, of the site-specific Groundwater monitoring activities required to identify Undertaking-related impacts on Groundwater quality and quantity;
 - iii. The location and purpose, with rationale, of all existing and proposed Groundwater monitoring stations, including a map, as provided by Professional Engineer, hydrologist, hydrogeologist, or equivalent professional;
 - iv. A description of monitoring protocols, methodologies, parameters, and frequencies specific to each type of monitoring identified in item (b)(i) above;
 - v. A description of the quality assurance and quality control measures followed for each monitoring type; and
 - vi. Linkages to other monitoring programs required under this Licence; and Any other information about the monitoring that will be performed to meet the objectives in Part F, Condition 1.
 - c) Information regarding responses to monitoring results:
 - i. A description of how the results of Groundwater monitoring will be compared to quantity and quality predictions, and used to update predictions as required;
 - ii. A description of how the Licensee will link the results of monitoring to those corrective actions necessary to ensure that the objectives listed in Condition OBJECTIVE – WASTE AND WATER MANAGEMENT are met. This description shall include:
 - a. Definitions, with rationale, for Action Levels applicable to groundwater quality and quantity; and
 - b. For each Action Level, a description of how exceedances of the Action Level will be assessed and generally, which types of corrective actions will be taken for the Action Level exceeded, including consideration of additional well installation.

5. The **Post-Fire Monitoring Study**, referred to in Condition POST-FIRE MONITORING STUDY, shall include but not be limited to:
- a) Analytical results and tabulated results of monitoring conducted in 2021, as proposed in the Town of Hay River's Technical Session presentation: *Solid Waste Disposal Facilities Post-Fire Water Quality Monitoring* and the Recommendations in the *Town of Hay River Post-Fire Final Landfill Fire Sampling Report* by Beckingham Environmental, as well as polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs) analyses for water samples taken in the Hay River;
 - b) Analyses of results, comparing to previous data or appropriate guidelines;
 - c) Quality assurance and quality control measures;
 - d) Based on monitoring results, provide rationale for including or not including additional SNP locations, parameters and/or sampling frequencies to the existing SNP;
 - e) Based on monitoring results, provide rationale for the completion of the Post-Fire Monitoring Study, and if further remedial action specific to the fire is required.
6. The **Hydrocarbon Contaminated Soil Treatment Facilities Operation and Maintenance Plan**, referred to in Condition HYDROCARBON CONTAMINATED SOIL TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED of this Licence shall include, but not be limited to:
- a) the applicable contents of the MVLWB/IWB/GNWT *Guideline for Design, Operation, Maintenance, and Closure of Petroleum Hydrocarbon-Contaminated Soil Treatment Facilities in the Northwest Territories*;
 - b) The following additional information directed by the Board:
 - i. Acceptance and reuse criteria;
 - a. Tracking forms for acceptance and removal of soils;
 - ii. Standard operating procedures, including but not limited to;
 - a. Secondary containment for Above Ground Storage Tanks;
 - iii. Site inspection templates (daily, weekly, monthly and annual) including but not limited to:
 - a. Water Retention Pond freeboard;
 - b. Water Retention Pond perimeter fencing;
 - c. Above Ground Storage Tanks;
 - d. windblown debris;
 - e. seepage through containment berms;
 - f. mud tracking;
 - g. clay liner damage; and
 - h. photographic records;
 - iv. Water monitoring procedures for SNP station 0053-8;

7. As per Condition HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES – ACCEPTANCE CRITERIA, all soil accepted into the Hydrocarbon-Contaminated Soil Treatment Facilities shall have a pH value between 6 and 8 and meet the following criteria:

Parameter	Soil Maximum Grab Concentration (mg/kg)
Antimony	40
Arsenic (inorganic)	12
Barium	2000
Beryllium	8
Cadmium	22
Chromium (total)	87
Cobalt	300
Copper	91
Lead	600
Mercury	50
Molybdenum	40
Nickel	89
Selenium	2.9
Silver	40
Thallium	1
Tin	300
Uranium	300
Vanadium	130
Zinc	360
F1 (C6 – C10)	<3% dry weight
F2 (>C10 – C16)	<3% dry weight
F3 (>C16 – C34)	<3% dry weight
F4 (>C34)	<3% dry weight

8. The **Water Treatment Plant Operation and Maintenance Plan**, referred to in Condition WATER TREATMENT PLANT OPERATION AND MAINTENANCE PLAN – REVISED of this Licence shall include, but not be limited to:
- a) Site description;
 - i. Location of all facility components, including GPS coordinates and maps;
 - ii. Date of commissioning; and
 - iii. Details and frequency of typical operation, maintenance and monitoring activities;
 - b) Facility staff contact information;
 - c) Security and control;
 - i. Control of public access; and
 - ii. Signage;
 - d) Facility design details, including current figures;
 - e) Raw water sources;
 - i. Detailed characteristics;
 - ii. Withdrawal flow rates;
 - iii. Reservoir storage details;

- iv. Intake description and details; and
 - v. Source water protection;
- f) Water treatment process;
- i. Description of pre-treatment and treatment technologies and chemicals used;
 - ii. Details regarding water demand, production and distribution; and
 - iii. Annual water usage and treated water storage capacity;
- g) Water Treatment Plant Residuals;
- i. Sludge:
 - a. Sampling procedures;
 - b. Chemical composition data;
 - c. Volume produced; and
 - d. Disposal frequency, location and details;
 - ii. Backwash:
 - a. Sampling procedures;
 - b. Chemical composition data;
 - c. Approximate volume produced, with rationale;
 - d. Disposal frequency, location and details; and
 - e. Identification of sampling location; and
- h) Facility operation, maintenance and record-keeping.

Schedule 4
Conditions Applying to Closure and Reclamation

1. With regard to Sewage Disposal Facilities being closed, the **Component-Specific Closure and Reclamation Plan** referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SEWAGE DISPOSAL FACILITIES shall include, but not be limited to:
 - a) Logistical considerations;
 - b) Intended future use of the land after closure;
 - c) Remediation of contaminated material;
 - d) As-built drawings of the entire wastewater treatment facilities, including an accurate plot plan;
 - e) Geographic positioning systems coordinates, and permanent location markers;
 - f) Soil testing results from lagoon and wetland areas;
 - g) Contaminated site remediation, if required, such as removal of contaminated soil from unlined lagoon and wetland;
 - h) Removal of equipment and structures that will not be used during the closure phase;
 - i) Consideration for altered drainage patterns;
 - j) Choice of capping material, and availability;
 - k) Cover monitoring for stability, erosion, and settlement;
 - l) Post-closure monitoring plan of sludges, sediments, surface water, groundwater, and erosion to ensure that the site does not pose unacceptable risks to human or environmental health;
 - m) Environmental management systems (if necessary) for leachate, groundwater, and surface water; and
 - n) Signage installation indicating closure in progress, and facilities no longer accepting wastewater.

2. With regard to Solid Waste Disposal Facilities being closed, the **Component-Specific Closure and Reclamation Plan** referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES shall include, but not be limited to, the applicable contents of Tables 8.1 and 8.2 of Environment and Climate Change Canada’s *Solid Waste Management for Northern and Remote Communities: Planning and Technical Guidance Document*.

3. With regard to Hydrocarbon-Contaminated Soil Treatment Facilities being closed, the **Component-Specific Closure and Reclamation Plan** referred to in Condition COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES shall include, but not be limited to, the applicable contents of MVLWB/IWB/GNWT *Guideline for Design, Operation, Maintenance, and Closure of Petroleum Hydrocarbon-Contaminated Soil Treatment Facilities in the Northwest Territories*.
4. The **Interim Closure and Reclamation Plan** referred to in CONDITION INTERIM CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES shall include, but not be limited to:
 - a) The applicable contents of Tables 8.1 and 8.2 of *Environment and Climate Change Canada’s Solid Waste Management for Northern and Remote Communities: Planning and Technical Guidance Document*;
 - b) The following specific Board directives:
 - i. The expected lifespan of the Solid Waste Disposal Facilities, including information from annual drone surveys conducted to date;
 - ii. Details of the planning and schedule for closure of the Solid Waste Disposal Facilities, with specific details on progressive closure of certain sections or components of the Facilities;
 - iii. Details on the management of historical Hazardous Waste;
 - iv. Updated, clear figures;
 - v. Details on the Town’s response to the *Town of Hay River Interim Closure and Reclamation Plan (ICRP Version 1.3) for Solid Waste Disposal Facilities MV2009L3-0005*, Stantec Consulting Ltd., including implementation timelines;
 - vi. Details on the management of landfill gas during closure and post-closure, including controls and monitoring;
 - vii. Details on the prevention and management of landfill fires during closure and post-closure;
 - viii. Details on the remediation of contaminants during closure;
 - ix. Details on post-closure surface water and leachate management;
 - x. Details on post-closure surface and groundwater monitoring and determination of closure water quality criteria;
 - xi. Contingency plans for post-closure illegal dumping and nuisance control; and
 - xii. Detail on final cover design and borrow materials.

Annex A: Surveillance Network Program
Annexed to Water Licence MV2019L3-0010 Part B, Condition 12
Town of Hay River

Table of Contents:

Part A: Reporting Requirements

Part B: Sampling and Analysis Requirements

Part C: Surveillance Network Program Station Descriptions

Part A: Reporting Requirements

1. The effective date of this Surveillance Network Program (SNP) is January 31, 2021.
2. The Licensee shall include all of the data and information required in Part C of this Annex in the Annual Water Licence Report, as specified in Condition ANNUAL WATER LICENCE REPORT of this Licence.
3. The Licensee shall also provide SNP data at other times, if requested by an Inspector or the Board.

Part B: Sampling and Analysis Requirements

1. More frequent sample collection or provision of data may be required at the request of an Inspector.
2. The location of sampling stations is subject to the approval of an Inspector. The Licensee shall work with an Inspector to determine suitable locations for sampling stations.
3. All sample collection, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* at the time of analysis, or by other such methods approved by an Analyst.
4. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.
5. A **Quality Assurance/Quality Control Plan** for SNP sampling.

Part C: SNP Station Descriptions and Monitoring Requirements

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
0053-1	Raw Water supply from Great Slave Lake at intake pumphouse.	60°51'16.7148" N 115°48'41.285" W	Continuous	<ul style="list-style-type: none"> • Volume (m³) 	To determine the quantity of Water withdrawn from Great Slave Lake for municipal purposes.
0053-2	Swampland effluent from the upstream end of the constricted area of the ditch leading to Great Slave Lake, approximately 200 metres downstream from the confluence of the swampland discharge and the drainage ditch.	60°49' 44.8392" N 115°52'10.142" W	Monthly during periods of flow	<ul style="list-style-type: none"> • Field parameters² • Nutrients³ • Major ions⁴ • Faecal Coliforms • Total Suspended Solids • Oil and Grease • CBOD 	Site of compliance. To monitor final Effluent quality before discharge into Great Slave Lake.
0053-3	At the discharge pipe where effluent from the Sewage Disposal Facilities discharges to the swampland.	60°49'8.9724" N 115°49'36.595" W	Monthly during periods of flow	<ul style="list-style-type: none"> • Field parameters² • Nutrients³ • Major ions⁴ • Faecal Coliforms • Total Suspended Solids • Oil and Grease • CBOD 	To monitor Effluent quality prior to discharge into the wetland sewage treatment system.
0053-5a	Background groundwater monitoring well (new; southeast of 0053-5b)	Exact Location TBD with an Inspector.	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Dissolved)¹ • Nitrate • Nitrite • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) 	To monitor the quality and elevation of groundwater flowing towards the Solid Waste Disposal Facilities.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				<ul style="list-style-type: none"> Total Petroleum Hydrocarbons (F1 + F2 CCME Fractions) Oil and Grease Total Phenols Methyl <i>tert</i>-butyl ether Dissolved organic carbon Water level (masl) 	
0053-5b	Background groundwater monitoring well	60°45'32.8644" N 115°50'13.236" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> Field parameters² Major ions⁴ ICP-MS Metal Scan (Dissolved)¹ Nitrate Nitrite Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) Total Petroleum Hydrocarbons (F1 + F2 + CCME Fractions) Oil and Grease Total Phenols Methyl <i>tert</i>-butyl ether Dissolved organic carbon Water level (masl) 	To monitor the quality and elevation of groundwater flowing towards the Solid Waste Disposal Facilities.
0053-5c	Sentinel groundwater monitoring well (new location)	TBD: equidistant between SNP 0053-5d and SNP 0053-5e, along the existing walking path.	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> Field parameters² Major ions⁴ ICP-MS Metal Scan (Dissolved)¹ Nitrate Nitrite 	To monitor the quality and elevation of groundwater flowing from the Solid Waste Disposal Facilities to the Hay River.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				<ul style="list-style-type: none"> • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) • Total Petroleum Hydrocarbons (F1 + F2 CCME Fractions) • Oil and Grease • Total Phenols • Methyl <i>tert</i>-butyl ether • Dissolved organic carbon • Water level (masl) 	
0053-5d	Sentinel groundwater monitoring well: furthest north	60°45'41.022" N 115°49'55.412" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Dissolved)¹ • Nitrate • Nitrite • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) • Total Petroleum Hydrocarbons (F1 + F2 CCME Fractions) • Oil and Grease • Total Phenols • Methyl <i>tert</i>-butyl ether • Dissolved organic carbon • Water level (masl) 	To monitor the quality and elevation of groundwater flowing from the Solid Waste Disposal Facilities to the Hay River.
0053-5e	Sentinel groundwater monitoring well	60°45'35.0568" N 115°49'47.669" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Dissolved)¹ 	To monitor the quality and elevation of groundwater flowing from the Solid

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				<ul style="list-style-type: none"> • Nitrate • Nitrite • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) • Total Petroleum Hydrocarbons (F1 + F2 CCME Fractions) • Oil and Grease • Total Phenols • Methyl <i>tert</i>-butyl ether • Dissolved organic carbon Water level (masl) 	Waste Disposal Facilities to the Hay River.
0053-5f	Sentinel groundwater monitoring well (new): furthest south	TBD	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Dissolved)¹ • Nitrate • Nitrite • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) • Total Petroleum Hydrocarbons (F1 + F2 CCME Fractions) • Oil and Grease • Total Phenols • Methyl <i>tert</i>-butyl ether • Dissolved organic carbon • Water level (masl) 	To monitor the quality and elevation of groundwater flowing from the Solid Waste Disposal Facilities to the Hay River.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
0053-6	Return water at pumphouse	60°51'57.6432" N 115°45'29.401" W	Monthly during periods of flow	Total Chlorine	To determine Water quality of return Water into Great Slave Lake.
0053-8	Effluent from the Hydrocarbon Contaminated Soil Treatment Facilities Water Retention Pond or Above Ground Storage Tanks	60°45'32.4504" N 115°50'4.031" W	Sampling required prior to Discharge of Effluent to the Sewage Disposal Facilities.	<ul style="list-style-type: none"> • Field Parameters² • Nutrients³ • Major ions⁴ • Dissolved Organic Carbon • Total Suspended Solids • Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) • Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions) • ICP-MS Metal Scan (Total)¹ • Cyanide • methyl <i>tert</i>-butyl ether • Total Phenols • Volume 	To monitor Effluent quality prior to Discharge to the Sewage Disposal Facilities.
0053-9a	Surface water at Solid Waste Disposal Facilities (run-off collection pond at south corner)	Approximately: 60°45'29.1924" N 115°49'51.55" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Total)¹ • Nitrate • Nitrite • Faecal Coliforms • BOD₅ • Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions) • Oil and Grease • Total Phenols 	To monitor quality of accumulated run-off from the Solid Waste Disposal Facilities.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
0053-9b	Surface water at Solid Waste Disposal Facilities (run-off collection pond along east side)	Approximately: 60°45'35.2656" N 115°49'51.33" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Total)¹ • Nitrate • Nitrite • Faecal Coliforms • BOD₅ • Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions) • Oil and Grease • Total Phenols 	To monitor quality of accumulated run-off from the Solid Waste Disposal Facilities.
0053-9c	Surface water at Solid Waste Disposal Facilities (run-off collection pond along south-east margin)	Approximately: 60°45'32.454" N 115°49'43.835" W	Twice annually, once in spring and once in fall.	<ul style="list-style-type: none"> • Field parameters² • Major ions⁴ • ICP-MS Metal Scan (Total)¹ • Nitrate • Nitrite • Faecal Coliforms • BOD₅ • Total Petroleum Hydrocarbons (F1 + F2 + F3 + F4 CCME Fractions) • Oil and Grease • Total Phenols 	To monitor quality of accumulated run-off from the Solid Waste Disposal Facilities.
0053-10a	Surface water in the Hay River (upstream of SWDF)	60° 45'16.63" N 115° 49'15.17" W	Every other year, during periods of flow	<ul style="list-style-type: none"> • Field Parameters² • Nitrate • Nitrite • Faecal Coliforms • Oil and Grease • BOD₅ 	To monitor Water quality in the Hay River upstream of the Solid Waste Disposal Facilities.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				<ul style="list-style-type: none"> Total Petroleum Hydrocarbons Total Phenols Major Ions ICP-MS Metal Scan (Total)¹ 	
0053-10b	Surface water in the Hay River (adjacent to the SWDF)	60° 45'42.62" N 115° 49'50.19" W	Every other year, during periods of flow	<ul style="list-style-type: none"> Field Parameters² Nitrate Nitrite Faecal Coliforms Oil and Grease BOD₅ Total Petroleum Hydrocarbons Total Phenols Major Ions ICP-MS Metal Scan (Total)¹ 	To monitor Water quality in the Hay River adjacent to the Solid Waste Disposal Facilities.
0053-10c	Surface water in the Hay River (downstream of the SWDF)	TBD: upstream of current location.	Every other year, during periods of flow	<ul style="list-style-type: none"> Field Parameters² Nitrate Nitrite Faecal Coliforms Oil and Grease BOD₅ Total Petroleum Hydrocarbons Total Phenols Major Ions ICP-MS Metal Scan (Total)¹ 	To monitor Water quality in the Hay River downstream of the Solid Waste Disposal Facilities.
0053-11	Water Treatment Plant backwash residuals	TBD	To be determined	To be determined, based on the revised Water Treatment Plant Operation and Maintenance Plan.	To monitor Water quality discharged to Great Slave Lake

Notes:

¹ICP-MS Metal Scan shall include, at a minimum, the following parameters:

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

²Field parameters shall include the following measurements:

pH	Temperature
Conductivity	Dissolved Oxygen

³Nutrients shall include the following parameters:

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

⁴Major ions shall include the following parameters:

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

Signed on behalf of the Mackenzie Valley Land and Water Board



Tanya MacIntosh, Chair



Amanda Gauthier, Witness

Annex B: Concordance Table
Annexed to Water Licence MV2019L3-0010 - Items Requiring Submission

This table summarizes the information the Licensee is required to submit as per the Water Licence conditions. It supplements the Water Licence. If there are any discrepancies between this table and the body of the Water Licence, the Water Licence conditions prevail.

Table 1: Concordance Table of Items Requiring Submission

Condition	Requirement	Timeline
ANNUAL REVIEW	Conduct annual review of all plans, programs, manuals and studies and make any revisions necessary to reflect changes in operations, contact information, or other details.	No later than March 31 each year.
ANNUAL WATER LICENCE REPORT	Submit Annual Water Licence Report in accordance with the requirements of Schedule 1.	Beginning March 31, 2022 and no later than every March 31 thereafter.
DESIGN AND CONSTRUCTION PLAN	Submit Design and Construction Plan for approval, in accordance with Schedule 2, Condition 1.	Minimum of 90 days prior to commencement of Construction of any Engineered Structures.
DESIGN DRAWINGS	Submit Design Drawings, stamped and signed by a Professional Engineer, to the Board.	Minimum of 90 days prior to commencement of Construction of any Engineered Structures.
NOTIFICATION - CONSTRUCTION	Provide written notification to Board and Inspector.	Minimum of 10 days prior to commencement of Construction of any Engineered Structures.
AS-BUILT REPORT – ENGINEERED STRUCTURE(S)	Submit As-Built Report, stamped and signed by a Professional Engineer, to the Board.	Within 180 days of completion of Construction of each Engineered Structure.
BIENNIAL GEOTECHNICAL INSPECTION	Ensure that geotechnical inspections of all dams, berms, dykes, and control structures associated with Waste Disposal Facilities and Water Treatment Plant are conducted every two years by a Professional Engineer, and submit full Inspection Report to Board and Inspector.	Inspection every two years; submit Inspection Report within 90 days.
EFFLUENT QUALITY CRITERIA - EXCEEDANCE	Notify Board and inspector of EQC exceedance at SNP station 0053-2.	Immediately.
SEWAGE AND SOLID WASTES - MUNICIPAL	Notify Inspector of acceptance of Sewage, solid Waste or contaminated soil from industrial, commercial and institutional operators working outside of the local government boundaries of the Town of Hay River.	When it occurs.

SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED	Submit revised Sewage Disposal Facilities Operation and Maintenance Plan in accordance with requirements of Schedule 3, Condition 1, for approval.	Within 12 months of Licence effective date.
SLUDGE REMOVAL – NOTIFICATION	Submit analytical results and written notification to Board and Inspector.	Minimum of 10 days prior to sludge removal from Sewage Disposal Facilities for re-use.
SOLID WASTE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED	Submit revised Solid Waste Disposal Facilities Operation and Maintenance Plan in accordance with requirements of Schedule 3, Condition 2, for approval.	Within 12 months of Licence effective date.
SURFACE WATER INFILTRATION TEST	Submit Surface Water Infiltration Test to the Board, in accordance with requirements of Schedule 3, Condition 3.	Within six months of Licence effective date.
GROUNDWATER MONITORING PLAN	Submit Groundwater Monitoring Plan in accordance with requirements of Schedule 3, Condition 4, for approval.	Within 36 months of Licence effective date.
POST-FIRE MONITORING STUDY	Submit Post-Fire Monitoring Study in accordance with requirements of Schedule 3, Condition 5, for approval.	Within 12 months of Licence effective date.
HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED	Submit revised Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan in accordance with the requirements of Schedule 3, Condition 6.	Within 12 months of Licence effective date.
HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - ACCEPTANCE CRITERIA - SUBMIT RESULTS	Submit soil analysis results as described in the approved Hydrocarbon-Contaminated Soil Treatment Facilities Operation and Maintenance Plan, to an Inspector, unless otherwise authorized by an Inspector.	Prior to accepting soil to the Hydrocarbon Contaminated Soil Facilities.
HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES - EFFLUENT DISCHARGE - SUBMIT WATER QUALITY DATA	Submit Water quality data for samples collected from SNP station 0053-8 (Water Retention Pond) or the Above Ground Storage Tanks to the Board and an Inspector.	No later than 10 days prior to commencing or resuming Discharge of Effluent.
WATER TREATMENT PLANT OPERATION AND MAINTENANCE PLAN – REVISED	Submit revised Water Treatment Plant Operation and Maintenance Plan in accordance with the requirements of Schedule 3, Condition 8, for approval.	Within 12 months of Licence effective date.
NOTIFY INSPECTOR – WATER TREATMENT PLANT SLUDGE DISCHARGE	Notify Inspector and Board prior to discharge of sludge from the Water Treatment Plant to the final disposal location.	Minimum of 14 days prior to discharge of sludge.

SNOW DISPOSAL PLAN – REVISED	Submit revised Snow Disposal Plan for approval.	Within 12 months of Licence effective date.
SPILL CONTINGENCY PLAN – REVISED	Submit revised Spill Contingency Plan for approval.	Within 90 days of Licence effective date.
REPORT SPILLS	Notify Board, Inspector and Kát’odeeche First Nation of spill or Unauthorized Discharge. Submit detailed report of spill/Unauthorized Discharge to Board and Inspector.	Notification: immediately. Detailed reporting: within 30 days of initial reporting.
COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SEWAGE DISPOSAL FACILITIES	Submit a Component-Specific Closure and Reclamation Plan in accordance with the requirements of Schedule 4, Condition 1, for approval.	Six months prior to the closure of any component of the Sewage Disposal Facilities.
COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES	Submit a Component-Specific Closure and Reclamation Plan in accordance with the requirements of Schedule 4, Condition 2, for approval.	Six months prior to the closure of any component of the Solid Waste Disposal Facilities.
COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – HYDROCARBON-CONTAMINATED SOIL TREATMENT FACILITIES	Submit a Component-Specific Closure and Reclamation Plan in accordance with the requirements of Schedule 4, Condition 3, for approval.	Six months prior to the closure of any component of the Hydrocarbon-Contaminated Soil Treatment Facilities.
INTERIM CLOSURE AND RECLAMATION PLAN – SOLID WASTE DISPOSAL FACILITIES	Submit an Interim Closure and Reclamation Plan for the Solid Waste Disposal Facilities, in accordance with the requirements of Schedule 4, Condition 4, for approval.	Within 36 months of Licence effective date, and every five years thereafter.

**Annex C:
Revision History Table**

Table 1: Updates and changes that have been made to Licence MV2019L3-0010 since issuance.

Date	Location of change	Description of change
March 27, 2023	Surveillance Network Program – stations 0053-11 and 0053-12	Updated requirements for SNP 0053-11 and addition of SNP 0053-12 to monitor sludge from the Water Treatment Plant
May 31, 2023	Surveillance Network Program – stations 0053-10a, 0053-10b, and 0053-10c	Sampling frequency reduced from annually to every other year
August 7, 2024	Schedule 1, Condition 1: Annual Reporting Requirements	Added subsection l): a summary of activities, data and recommendations in accordance with the Post-Fire Monitoring Study, referred to in Condition POST-FIRE MONITORING STUDY.