

# Type A Water Licence MV2021L3-0003

## City of Yellowknife – Municipal

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## Part A: Scope and Defined Terms

Scope:	Condition Title
1. This Licence entitles the Licensee to use Water and deposit Waste for municipal undertakings at the City of Yellowknife, Northwest Territories.	<b>SCOPE</b>
The scope of this Licence includes the following:	
a) Withdrawal of Water for municipal purposes; b) Deposit of Waste to the Solid Waste Disposal Facilities; c) Deposit of Waste to the Sewage Disposal Facilities; d) Construction, operation, and maintenance of the Solid Waste Disposal Facilities; e) Construction, operation, and maintenance of the Sewage Disposal Facilities; f) Construction, operation, and maintenance of the Water Treatment Facilities; and g) Progressive Reclamation and associated Closure and Reclamation activities.	
2. The scope of this Licence is as described in the Preliminary Screening Determination for Water Licence MV2021L3-0003, dated June 25, 2021.	<b>SCOPE – PRELIMINARY SCREENING</b>
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 <i>Waters Act</i> and/or the Waters Regulations that affect licence conditions and defined terms will be deemed to have amended this Licence.	<b>LEGISLATION SUBJECT TO CHANGE</b>
4. Compliance with this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial, or municipal legislation.	<b>LEGISLATIVE COMPLIANCE</b>

## Defined Terms:

**Acid Rock Drainage** – acidic Water, often with elevated sulphate concentrations, that occurs as a result of oxidation of sulphide minerals contained in rock or other materials that are exposed as a result of natural weathering processes, Construction, or Project activities.

**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 Project 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 Project.

**Construction** – any activities undertaken during any phase of the Project to construct, build, upgrade, or replace any structures, facilities or components of, or associated with, the Project.

**Dam** – a structure that meets the definition of a Dam as per the *Dam Safety Guidelines* and is intended to contain, withhold, divert, or retain Water or Waste.

**Dam Class** – the category of dam based on its failure consequences, as described in the *Dam Safety Guidelines*.

**Dam Safety Guidelines** – the Canadian Dam Association (CDA) *Dam Safety Guidelines*, including the *CDA Dam Safety Guidelines Technical Bulletins*.

**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.

**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 Project.

**Engineered Structure** – any structure or facility related to Water Use or the deposit of Waste that is designed by a Professional Engineer, including but not limited to the Sewage Disposal Facilities, Solid Waste Disposal Facilities, Water Treatment Facilities associated with the Project.

**Fiddler's Lake Treatment System (FLTS)** – the components of the Sewage Disposal Facilities comprising the Fiddler's Lake Lagoon (Lakes F8, F7 and F6) and the downstream network of lakes, ponds, streams, creeks and wetlands (including Lakes F5, F4, F3), ending at the outflow of Lake F3.

## Defined Terms:

**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.

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

**Licensee** – the holder of this Licence.

**Maximum Average Concentration** – the concentration of a parameter that cannot be exceeded by the running average of any four consecutive analytical results, collected in accordance with the sampling and analysis requirements specified in the Surveillance Network Program (SNP).

**Maximum Grab Concentration** – the concentration of a parameter that cannot be exceeded in any one analytical result, collected in accordance with the sampling and analysis requirements specified in the Surveillance Network Program (SNP).

**Metal Leaching** – the release of metals and metalloids in leachate, Seepage, or drainage from rock or other materials associated with the Project.

**Minister** – the Minister of the Government of the Northwest Territories (GNWT) – Environment and Natural Resources.

**Old Landfill Cell** – Original waste disposal cell used since the start of operations of the Solid Waste Disposal Facilities.

**Ordinary High-Water Mark** – the usual or average level to which a Watercourse rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing Watercourses (rivers, streams), this refers to an active channel/bank-full level, which is often the 1:2-year flood flow return level. In inland lakes, wetlands or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by Water so as to leave a mark on the land and where the natural vegetation changes from predominantly aquatic vegetation to terrestrial vegetation (excepting Water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

**Potentially Acid Generating (PAG) Rock** – any rock that has the potential to produce Acid Rock Drainage.

**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 Project at hand.

## Defined Terms:

**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 Project at hand.

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

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

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

**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 Solid Waste Disposal Facilities.

**Sewage** – all Toilet Wastes and Greywater.

**Sewage Disposal Facilities (SDF)** – the area(s) and structures designated to contain and treat Sewage, including the Fiddler's Lake Treatment System.

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

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

**Sump** – a human-made excavation or a natural depression designated for depositing Water and/or Waste.

**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.

**Traditional Knowledge** – the cumulative, collective body of knowledge, experience and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual, and political change.

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

## Defined Terms:

**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
- 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 and Solid Waste Disposal Facilities.

**Wastewater** – any Water that is generated by Project 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 Quality Objective** – a numerical concentration or narrative statement that has been established to protect the aquatic environment of the receiving waters at a specified site.

**Watercourse** – as defined in section 1 of the *Waters Regulations*: a natural watercourse, body of Water or Water supply, whether usually containing Water or not, and includes Groundwater, springs, swamps, and gulches.

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

**Water Treatment Facilities** – the area(s) and structures designed to collect, treat, and supply Water for the Project.

**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

Condition	Condition Title
1. The Licensee shall ensure a copy of this Licence is maintained at the Waste Disposal and Water Treatment Facilities at all times.	<b>COPY OF LICENCE</b>
2. The Licensee shall take every reasonable precaution to protect the environment.	<b>PRECAUTION TO PROTECT ENVIRONMENT</b>
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.	<b>REFERENCES</b>
4. The Licensee shall ensure all submissions to the Board: <ul style="list-style-type: none"> <li>a) Are in accordance with the <i>MVLWB Document Submission Standards</i>;</li> <li>b) Include a conformity statement or table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and</li> <li>c) Include any additional information requested by the Board.</li> </ul>	<b>SUBMISSION FORMAT AND CONFORMITY</b>
5. The Licensee shall ensure management plans are submitted to the Board in a format consistent with the <i>MVLWB Standard Outline for Management Plans</i> , unless otherwise specified.	<b>MANAGEMENT PLAN FORMAT</b>
6. The Licensee shall comply with all plans, programs, manuals and studies, including revisions, approved pursuant to the conditions of this Licence.	<b>COMPLY WITH SUBMISSIONS AND REVISIONS</b>
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.	<b>ANNUAL REVIEW</b>
8. The Licensee may propose changes at any time by submitting revised plans, programs, manuals and studies to the Board, for approval, a minimum of 45 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board.	<b>REVISIONS</b>
9. The Licensee shall revise any submission and submit it as per the Board's directive.	<b>REVISE AND SUBMIT</b>
10. If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.	<b>SUBMISSION DATE</b>

11.	The Licensee shall comply with the <b>Schedules</b> , 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 <b>Surveillance Network Program</b> , 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, the 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, 2023, and no later than every March 31 thereafter, the Licensee shall submit an <b>Annual Water Licence Report</b> 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 <b>Engagement Plan</b> , 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

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## Part D: Water Use

1. The Licence shall only obtain Water for the Project as set out in the following table.

**WATER SOURCE AND  
MAXIMUM VOLUME**

Water Source Name	Location and Coordinates	Type of Watercourse (e.g., river, lake, etc.)	Purpose of Water Use	Maximum Quantity
Yellowknife River	62.52138° N, 114.31769° W	River	Drinking water	4,000,000 m <sup>3</sup> /year
Yellowknife Bay	62.45112 °N, 114.35188° W	Lake	Equipment maintenance	300 m <sup>3</sup> /month

2. The Licensee shall only withdraw Water using the Water Treatment Facilities, unless otherwise authorized temporarily in writing by an Inspector.

**WATER  
WITHDRAWAL –  
FACILITIES**

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**

## Part E: Construction

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.
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.
3. The Licensee shall maintain records of Construction materials for all structures and make them available at the request of the Board or an Inspector.
4. The Licensee shall maintain geochemical records of Construction materials for landfill cells at the Solid Waste Disposal Facilities and make them available at the request of the Board or an Inspector.

**OBJECTIVE –  
CONSTRUCTION**

**ENGINEERED  
STRUCTURES –  
GENERAL**

**CONSTRUCTION  
RECORDS**

**GEOCHEMICAL  
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 <b>Design and Construction Plan</b> . 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.	<b>DESIGN AND CONSTRUCTION PLAN</b>
6.	A minimum of 90 days prior to the commencement of Construction of any Engineered Structures, the Licensee shall submit to the Board, <b>Design Drawings</b> 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.	<b>DESIGN DRAWINGS</b>
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 Construction. Written notification shall be provided to the Board and an Inspector if any changes occur.	<b>NOTIFICATION – CONSTRUCTION</b>
8.	The Licensee shall ensure that all Engineered Structures are constructed in accordance with the <b>Design Drawings</b> and approved <b>Design and Construction Plan(s)</b> .	<b>CONSTRUCT AS DESIGNED – ENGINEERED STRUCTURE(S)</b>
9.	<p>Within 180 days of the completion of the Construction of each Engineered Structure, the Licensee shall submit to the Board, an <b>As-Built Report</b> stamped and signed by a Professional Engineer, which shall include, but not be limited to, the following information:</p> <p>a) final as-built drawings of the Engineered Structure(s), stamped and signed by a Professional Engineer;</p> <p>b) documentation, with rationale, of field decisions that deviate from the <b>Design and Construction Plans</b> and/or <b>Design Drawings</b>; and</p> <p>c) any data used to support these decisions.</p>	<b>AS-BUILT REPORT – ENGINEERED STRUCTURE(S)</b>

## Part F: Waste and Water Management

1.	The Licensee shall manage Waste and Water with the objective of minimizing the impacts of the Project on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.	<b>OBJECTIVE – WASTE AND WATER MANAGEMENT</b>
2.	The Licensee shall operate and maintain the Waste Disposal Facilities to prevent structural failure and to the satisfaction of an Inspector.	<b>PREVENT STRUCTURAL FAILURE</b>

**BIENNIAL  
GEOTECHNICAL  
INSPECTION**

3. The Licensee shall ensure that geotechnical inspections of all dams, berms, dykes, and control structures associated with Sewage Disposal Facilities are conducted every two years by a Professional Engineer. The Licensee shall:
- a) A minimum of two weeks prior to the biennial geotechnical inspection, provide written notification to an Inspector; and
  - b) Within 90 days of completing the geotechnical inspection, submit the Professional Engineer’s full Geotechnical Inspection Report to the Board and an Inspector. The Report shall include:
    - 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 year’s inspection.

**TRAPPER’S LAKE  
DYKE GEOTECHNICAL  
INSPECTION**

4. The Licensee shall ensure that a geotechnical inspection of all dykes and control structures constructed at Trapper’s Lake to divert the drainage flow from the Fiddler’s Lake Treatment System to the Grace Lake system, is conducted every four years by a Professional Engineer at a time of high-water levels. The Licensee shall:
- a) A minimum of two weeks prior to the inspection, provide written notification to an Inspector; and
  - b) Within 90 days of completing the inspection, submit the Professional Engineer’s full Geotechnical Inspection Report to the Board and an Inspector. The Report shall include:
    - 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 year’s geotechnical inspection.

**DAMS – GENERAL**

5. The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Wastes, and which meet the definition of a Dam as per the *Dam Safety Guidelines* are designed, constructed, maintained, and monitored to meet or exceed the *Dam Safety Guidelines*.

**DAM SAFETY REVIEW**

6. The Licensee shall conduct a **Dam Safety Review** of the control structure of the Fiddlers Lake Treatment System by December 31, 2023, and every 10 years thereafter, or at a frequency approved by the Board. The Dam Safety Review shall be conducted in accordance with the *Dam Safety Guidelines* by a Professional Engineer.

- |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 7. | Prior to March 31 of the year following the year in which the Dam Safety Review was conducted, the Licensee shall submit the Professional Engineer’s <b>Dam Safety Review Report</b> to the Board. The Report shall include 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 a summary of any actions taken by the Licensee to address the recommendations made following the previous Dam Safety Review. | <b>DAM SAFETY REVIEW<br/>REPORT</b> |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|

**Sewage**

- |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                              |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 8.  | The Licensee shall comply with the <b>Sewage Disposal Facilities Operation and Maintenance Plan</b> , once approved. By May 1, 2024, the Licensee shall submit to the Board, for approval, a revised Plan. The Plan shall be in accordance with the requirements of Schedule 3, Condition 1.                                                                                                                                                                                             | <b>SEWAGE DISPOSAL<br/>FACILITIES<br/>OPERATION AND<br/>MAINTENANCE PLAN</b> |
| 9.  | The Licensee shall construct, operate, and maintain the Sewage Disposal Facilities to the design specifications and engineering standards, such that: <ul style="list-style-type: none"> <li>a) Any constructed structures/facilities are maintained and operated so as to prevent structural failure; and</li> <li>b) Any deterioration of constructed structures/facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately.</li> </ul> | <b>SEWAGE DISPOSAL<br/>FACILITIES</b>                                        |
| 10. | 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.                                                                                                                                                                                                                                                                                                                 | <b>SEWAGE DISPOSAL<br/>FACILITIES –<br/>FREEBOARD</b>                        |
| 11. | The Licensee shall deposit all piped and pumpout Sewage to the Sewage Disposal Facilities or as otherwise approved by the Board.                                                                                                                                                                                                                                                                                                                                                         | <b>SEWAGE – SEWAGE<br/>DISPOSAL FACILITIES</b>                               |
| 12. | The Licensee shall discharge all Effluent from Sewage Disposal Facilities as described in the approved Sewage Disposal Facilities Operation and Maintenance Plan.                                                                                                                                                                                                                                                                                                                        | <b>EFFLUENT<br/>DISCHARGE –<br/>SEWAGE DISPOSAL<br/>FACILITIES</b>           |

13. The Licensee shall ensure that Sewage Effluent from the Sewage Disposal Facilities at SNP station 0032-F3 has a pH value between 6.0 and 9.0, and meets the following Effluent Quality Criteria (EQC):

**EFFLUENT QUALITY CRITERIA - SEWAGE DISPOSAL FACILITIES**

Parameter	Effluent Quality Criteria	
	Maximum Average Concentration (MAC)	Maximum Grab Concentration (MGC)
5-day Carbonaceous Biochemical Oxygen Demand (CBOD <sub>5</sub> )	20 mg/L	30 mg/L
Fecal coliforms (FC)	200 FC/100 mL	400 FC/100 mL
Oil and Grease	-	5 mg/L
Total Ammonia (as Nitrogen) <sup>1</sup>		
Summer/open water <sup>2</sup>	10 mg/L	15 mg/L
Winter/under ice <sup>3</sup>	15 mg/L	20 mg/L
Total Phosphorus (as Phosphorus (P)) <sup>1</sup>	3.5 mg/L	5.0 mg/L
Total suspended solids	20 mg/L	40 mg/L
Acute Toxicity		
Rainbow Trout	Minimum 70% survival in a static pass/fail bioassay test as outlined in Part B of the Surveillance Network Program.	
<i>Daphnia magna</i>		

1. Effluent Quality Criteria (EQC) for total ammonia and total phosphorus apply at the time of Water Licence issuance until Board approval of the EQC Re-evaluation Report outlined in Part F, EFFLUENT QUALITY CRITERIA RE-EVALUATION REPORT.
2. Summer/open-water is defined as May 1 to October 31.
3. Winter/under-ice is defined as November 1 to April 30.

14. The Licensee shall ensure that Discharge from Lake F3 shall not be acutely toxic to aquatic life as determined at SNP station 0032-F3 by the test methods referenced in Part C of the Surveillance Network Program.

**EFFLUENT QUALITY – TOXICITY – SEWAGE DISPOSAL FACILITIES**

15. The Licensee shall notify an Inspector and the Board at least ten days prior to initiating decant of the Sewage Disposal Facilities.

**DECANT NOTIFICATION – SEWAGE DISPOSAL FACILITIES**

16. All bagged Toilet Wastes shall be disposed in accordance with the Sewage Disposal Facilities Operations and Maintenance Plan.

**BAGGED TOILET WASTES – DISPOSAL**

17. If Water quality data from any sample collected at Surveillance Network Program station 0032-F3 exceeds the EQC specified in Part F, EFFLUENT QUALITY CRITERIA - SEWAGE DISPOSAL FACILITIES, or is determined to be acutely toxic as per Part F, EFFLUENT QUALITY – TOXICITY – SEWAGE DISPOSAL FACILITIES, the Licensee shall:

**EFFLUENT QUALITY CRITERIA – EXCEEDANCE – SEWAGE DISPOSAL FACILITIES**

- a) Notify the Board and an Inspector immediately;
- b) Report the spill immediately in accordance with the **Spill Contingency Plan** referred to in Part H, SPILL CONTINGENCY PLAN;

- c) Within 30 days of initially reporting the incident, or within a timeframe authorized by an Inspector, submit a detailed report on the occurrence, including a summary of corrective actions taken, to the Board and an Inspector.

18.	By April 30, 2024, the Licensee shall submit to the Board, for approval, a <b>Wetland Delineation Study Report</b> , signed by a Professional Engineer. The Report shall be in accordance with the requirements of Schedule 3, Condition 2.	<b>WETLAND DELINEATION STUDY REPORT</b>
19.	By March 31, 2025, the Licensee shall submit to the Board, for approval, a <b>Great Slave Lake Monitoring Program Design Plan</b> . The Plan shall be in accordance with the requirements of Schedule 3, Condition 3.	<b>GREAT SLAVE LAKE MONITORING PROGRAM DESIGN PLAN</b>
20.	By June 30, 2033, the Licensee shall submit to the Board, for approval, a <b>Treatment Evaluation Report</b> . The Report shall be in accordance with the requirements of Schedule 3, Condition 4.	<b>TREATMENT EVALUATION REPORT</b>
21.	By June 30, 2033, the Licensee shall submit to the Board, for approval, an <b>Effluent Quality Criteria Re-evaluation Report</b> . The Report shall be in accordance with the requirements of Schedule 3, Condition 5.	<b>EFFLUENT QUALITY CRITERIA RE- EVALUATION REPORT</b>
22.	By June 30, 2033, the Licensee shall submit to the Board, for approval, a <b>Fiddler’s Lake Treatment System Adaptive Management Plan</b> . The Plan shall be in accordance with the requirements of Schedule 3, Condition 6.	<b>FIDDLER’S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN</b>
23.	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 <i>Government of the Northwest Territories’ Environmental Guideline for Contaminated Site Remediation</i> and that Fecal coliforms and <i>Salmonella</i> meet the <i>Canadian Council for Minister’s of the Environment Guidelines for Compost Quality</i> .	<b>SLUDGE REMOVAL - GUIDELINES</b>
24.	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.	<b>SLUDGE REMOVAL – NOTIFICATION</b>

**Solid Waste**

25.	The Licensee shall comply with the <b>Solid Waste Disposal Facilities Operation and Maintenance Plan</b> until such time as the Solid Waste Disposal Facilities Design, Operations and Closure Plan is approved.	<b>SOLID WASTE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN</b>
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26.	By December 31, 2025, the Licensee shall submit to the Board, for approval, a <b>Solid Waste Disposal Facilities Design, Operations and Closure Plan</b> . The Plan shall be in accordance with the requirements of Schedule 3, Condition 7.	<b>SOLID WASTE DISPOSAL FACILITIES – DESIGN, OPERATIONS AND CLOSURE PLAN</b>
27.	The Licensee shall construct, operate, and maintain the Solid Waste Disposal Facilities to the design specifications and engineering standards, such that: <ul style="list-style-type: none"> <li>a) Any constructed structures/facilities are maintained and operated so as to prevent structural failure; and</li> <li>b) Any deterioration of constructed structures/facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately.</li> </ul>	<b>SOLID WASTE DISPOSAL FACILITIES</b>
28.	The Licensee shall deposit all solid Waste to the Solid Waste Disposal Facilities, as described in the approved <b>Solid Waste Disposal Facilities Design, Operations and Closure Plan</b> .	<b>SOLID WASTE – SOLID WASTE DISPOSAL FACILITIES DESIGN, OPERATIONS AND CLOSURE PLAN</b>
29.	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> .	<b>SOLID WASTE – GUIDANCE DOCUMENT</b>
30.	The Licensee is prohibited from incinerating materials at the Solid Waste Disposal Facilities, unless otherwise authorized in writing by an Inspector.	<b>SOLID WASTE – NO INCINERATION</b>
31.	The Licensee shall maintain the Solid Waste Disposal Facilities to the satisfaction of an Inspector.	<b>SOLID WASTE DISPOSAL FACILITIES – INSPECTOR SATISFACTION</b>
32.	The Licensee shall notify an Inspector, in writing, of the acceptance of solid Waste from industrial, commercial and institutional operators working outside of the local government boundaries of the City of Yellowknife.	<b>SOLID WASTES - MUNICIPAL</b>
33.	The Licensee shall comply with the <b>Compost Facilities Operation and Maintenance Plan</b> , once approved. Within six months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised Plan, which shall be in accordance with the requirements of Schedule 3, Condition 8.	<b>COMPOST FACILITIES OPERATION AND MAINTENANCE PLAN</b>

34.	The Licensee shall notify the Board and an Inspector in writing, five days prior to discharge of Effluent from the Compost Facilities to the Fiddler’s Lake Treatment System/Sewage Disposal Facilities. The notification shall include analytical results of the Effluent.	NOTIFICATION – COMPOST FACILITIES EFFLUENT TO SEWAGE DISPOSAL FACILITIES
35.	The Licensee shall comply with the <b>Hazardous Waste Management Plan</b> until such time as the Solid Waste Disposal Facilities Design, Operations and Closure Plan is approved.	HAZARDOUS WASTE MANAGEMENT PLAN
36.	By January 31, 2024, the Licensee shall submit to the Board, for approval, a <b>Drainage Study</b> for the Solid Waste Disposal Facilities. The Study shall be in accordance with the requirements of Schedule 3, Condition 9.	DRAINAGE STUDY
37.	By November 1, 2027, the Licensee shall submit to the Board, for approval, a revised <b>Groundwater Monitoring Plan</b> for the Solid Waste Disposal Facilities. The Plan shall be in accordance with the requirements of Schedule 3, Condition 10.	GROUNDWATER MONITORING PLAN – REVISED
38.	By May 1, 2027, the Licensee shall submit to the Board, for approval, <b>Hydrogeological Study</b> for the Solid Waste Disposal Facilities signed by a Professional Engineer. The Study shall be in accordance with the requirements of Schedule 3, Condition 10 (e).	HYDROGEOLOGICAL STUDY
39.	By May 1, 2027, the Licensee shall submit to the Board, for approval, <b>Groundwater Trendline Analysis</b> . The Analysis shall be in accordance with the requirements of Schedule 3, Condition 10 (f).	GROUNDWATER TRENDLINE ANALYSIS
40.	By June 30, 2022, the Licensee shall submit to the Board, for approval, an assessment of the feasibility to separate leachate from sewage at the Baling Facility.	ASSESSMENT OF BALING FACILITY WASTE SEPARATION
41.	By March 31, 2024, the Licensee shall submit to the Board, for approval, a <b>Leachate Management Plan</b> for the Solid Waste Disposal Facilities. The Plan shall be in accordance with the requirements of Schedule 3, Condition 11.	LEACHATE MANAGEMENT PLAN
42.	By March 31, 2027, the Licensee shall submit to the Board, for approval, a <b>Landfill Gas Assessment</b> for the Solid Waste Disposal Facilities. The Plan shall be in accordance with the requirements of Schedule 3, Condition 12.	LANDFILL GAS ASSESSMENT

**Water**

43.	The Licensee shall comply with the <b>Water Treatment Facilities Operation and Maintenance Plan</b> , once approved. By May 31, 2026, the Licensee shall submit to the Board, for approval, a revised Plan, which shall be in accordance with the requirements of Schedule 3, Condition 13.	WATER TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN
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|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 44. | By October 1, 2025, the Licensee shall submit to the Board, for approval, a <b>Flocculant Optimization Study</b> . The Study shall be in accordance with the requirements of Schedule 3, Condition 13(j).                                                        | <b>FLOCCULANT<br/>OPTIMIZATION<br/>STUDY</b>        |
| 45. | The Licensee shall comply with the <b>Stormwater Management Plan</b> , once approved. By November 1, 2024, the Licensee shall submit to the Board, for approval, a revised Plan, which shall be in accordance with the requirements of Schedule 3, Condition 14. | <b>STORMWATER<br/>MANAGEMENT PLAN<br/>- REVISED</b> |

### Part G: Aquatic Effects Monitoring Plan

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### Part H: Spill Contingency Planning

- |    |                                                                                                                                                                                                                                                |                                                        |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 1. | The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters.                                                                                                                                    | <b>OBJECTIVE –<br/>PREVENT WASTE<br/>INTO WATER</b>    |
| 2. | The Licensee shall comply with the <b>Spill Contingency Plan</b> , once approved. Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised <b>Spill Contingency Plan</b> . | <b>SPILL CONTINGENCY<br/>PLAN</b>                      |
| 3. | The Licensee shall ensure that spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project.                                                                                                  | <b>SPILL PREVENTION<br/>AND RESPONSE<br/>EQUIPMENT</b> |
| 4. | The Licensee shall restore all areas affected by spills and Unauthorized Discharges due to Project activities to the satisfaction of an Inspector.                                                                                             | <b>CLEAN UP SPILLS</b>                                 |

### Part I: Closure and Reclamation

- |    |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                      |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 1. | The Licensee shall not commence Closure and Reclamation of any component of the Solid Waste Disposal Facilities prior to approval of the <b>Solid Waste Disposal Facilities Design Operations and Closure Plan</b> required in Part F, Condition SOLID WASTE DISPOSAL FACILITIES – DESIGN, OPERATIONS AND CLOSURE PLAN.                                                                                 | <b>CLOSURE AND<br/>RECLAMATION -<br/>SOLID WASTE<br/>DISPOSAL FACILITIES</b>                         |
| 2. | Six months prior to commencing Closure and Reclamation of any component of the Sewage Disposal Facilities, the Licensee shall submit to the Board, for approval, a <b>Component-Specific Closure and Reclamation Plan</b> . 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. | <b>COMPONENT-<br/>SPECIFIC CLOSURE<br/>AND RECLAMATION<br/>PLAN – SEWAGE<br/>DISPOSAL FACILITIES</b> |

3. The Licensee shall endeavor to carry out approved Progressive Reclamation as soon as is reasonably practicable.

**PROGRESSIVE  
RECLAMATION**

4. The Licensee shall not conduct Progressive Reclamation except as approved by the Board.

**PROGRESSIVE  
RECLAMATION –  
CARRY OUT AS  
APPROVED**

**Signed on behalf of the Mackenzie Valley Land and Water Board:**

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**Tanya Macintosh, Chair**

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**Amanda Gauthier, Witness**

## Schedule 1: Annual Water Licence Report

### Condition

1. The **Annual Water Licence Report** referred to in Part B 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 Part C, Condition WATER SOURCE AND MAXIMUM VOLUME of this Licence;
  - b) A summary of the calibration and status of the meters and devices referred to in Part B, Condition MEASURE WATER USE AND WASTE DISCHARGED of this Licence;
  - c) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, referred to in Part B, Condition ENGAGEMENT PLAN of this Licence;
  - d) A summary of how Traditional Knowledge was incorporated into decision making;
  - e) A summary of Construction activities conducted in accordance with Part E of this Licence;
  - f) A summary of major maintenance activities conducted in accordance with this Licence;
  - g) A summary of the results and any actions taken as a result of the following inspections:
    - i. Inspections conducted to fulfill Part F, Conditions BIENNIAL GEOTECHNICAL INSPECTION and TRAPPER'S LAKE DYKE INSPECTION; and
    - ii. Dam Safety Reviews conducted as required in Part F, Conditions DAMS – GENERAL, DAM SAFETY REVIEW, and DAM SAFETY REVIEW REPORT.
  - h) A summary of activities conducted in accordance with the approved **Sewage Disposal Facilities Operations and Maintenance Plan** referred to in Part F, Condition SEWAGE DISPOSAL FACILITIES OPERATIONS AND MAINTENANCE PLAN - REVISED of this Licence, including:
    - i. A summary of approved updates or changes to the process or facilities required for the management of Wastewater;
    - ii. Monthly and annual quantities, in cubic metres, of Wastewater deposited at the Sewage Disposal Facilities;
    - iii. Monthly and annual quantities, in cubic metres, of Waste deposited at the Sewage Disposal Facilities from the Solid Waste Disposal Facility, identified by source and type of Waste;
    - iv. Monthly and annual quantities, in cubic metres, of Waste deposited at the Sewage Disposal Facilities from the Water Treatment Facilities, identified by source and type of Waste;
    - v. Monthly and annual quantities, in cubic metres, of Waste deposited at the Sewage Disposal Facilities from operators outside of municipal boundaries;
    - vi. Monthly and annual quantities, in cubic metres, of Waste deposited at the Sewage Disposal Facilities from cleaning storm sewer catch basins;

## Condition

- vii. Monthly and annual quantities, in cubic meters, of all sludge removed from the Sewage Disposal Facilities;
  - viii. Monthly and annual quantities, in cubic metres, of all Wastewater Discharges, identified by Discharge location;
  - ~~ix. Monthly and annual flow volume, in cubic metres, at SNP 0032-10 and SNP 0032-F1;~~
  - ~~x. Prior to commencing flow measurements at SNP 0032-10 and SNP 0032-F1, an update on the progress of the planning and logistics for conducting future flow measurements;~~
  - xi. Tabular summaries of all data and information generated under the SNP pertaining to the Sewage Disposal Facilities annexed to this Licence, including comparison to EQC listed in Part F, Condition EFFLUENT QUALITY CRITERIA - SEWAGE DISPOSAL FACILITIES;
  - xii. Temporal plots of the concentrations of all parameters with EQC, as follows:
    - a. All data collected within the sampling year; and
    - b. All data collected within the previous five years to the current year of reporting; and
  - xiii. Temporal plots of total phosphorous, total and un-ionized ammonia, total aluminum, chromium, iron, manganese, and zinc, and dissolved aluminum concentrations at SNP stations 0032-F1, 0032-F3, and 0032-F11, as follows:
    - a. All data collected within the sampling year; and
    - b. All data collected within the previous five years to the current year of reporting.
- i) A summary of activities conducted in accordance with the approved Sludge Management requirement of the Sewage Disposal Facilities Operation and Maintenance Plan, referred to in Part F, Condition SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED and Schedule 3, Condition 1(h) of this Licence, including:
- i. A summary of sludge management activities;
  - ii. Tabulated results of sludge sampling in the years when desludging is conducted; and
  - iii. Results of depth surveys and volume measurements.
- j) A summary of activities conducted in accordance with the approved **Fiddler's Lake Treatment System Adaptive Management Plan**, referred to in Part F, Condition FIDDLER'S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN of this Licence, including:
- i. Until such time as water quality objectives and action levels are developed under the approved Fiddler's Lake Treatment System Adaptive Management Plan required in Part F, Condition FIDDLER'S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN of this Licence, the City shall:
    - a. Compare water quality data at SNP station 0032-F1 *against CCME Canadian Environmental Quality Guidelines Water Quality Guidelines for the Protection of Aquatic Life* (CCME-PAL);
    - b. Provide a summary of parameters with concentrations that exceed CCME-PAL; and
    - c. Temporal plots for the previous five years for parameters that exceed CCME-PAL;

## Condition

- ii. After water quality objectives and Action Levels have been developed and approved under the approved Fiddler's Lake Treatment System Adaptive Management Plan required in Part F, Condition FIDDLER'S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN of this Licence, the City shall provide:
    - a. Compare water quality data at SNP station 0032-F1 against water quality objectives;
    - b. Provide a summary of parameters with concentrations that exceed water quality objectives or Action Levels; and
    - c. Temporal plots for the previous five years for parameters that exceed water quality objectives or Action Levels;
  - iii. A description of corrective actions taken in response to any Action Level exceedances.
- k) A summary of activities conducted in accordance with the approved the **Solid Waste Disposal Facilities Design, Operations, and Closure Plan**, referred to in Part F, Condition SOLID WASTE DISPOSAL FACILITIES DESIGN, OPERATIONS, AND CLOSURE PLAN of this Licence, including:
- i. A summary of approved updates or changes to the process or facilities required for the management of Waste under the plan;
  - ii. Monthly and annual quantities by location of Waste managed under the plan;
  - iii. Monthly and annual quantities of Waste removed from the Solid Waste Disposal Facilities;
  - iv. Tabular summaries of all data and information generated at surface water sampling locations at the Solid Waste Disposal Facilities, as required by the SNP annexed to this Licence
  - v. A summary and interpretation of any monitoring results;
  - vi. A list of any Action Level exceedances;
  - vii. A description of actions taken in response to any Action level exceedances;
  - viii. A summary of activities undertaken to install and maintain fencing at the Solid Waste Disposal Facilities; and
  - ix. A summary of long-term planning for the Solid Waste Disposal Facilities, including but not limited to a schedule, and implications and proposed changes to facilities, adjustments to operational activities, closure and reclamation activities, and surface water and groundwater monitoring.
- l) A summary of activities conducted in accordance with the approved **Groundwater Monitoring Plan**, referred to in Part F, Condition GROUNDWATER MONITORING PLAN – REVISED of this Licence, including:
- i. A summary of updates or changes to the Groundwater Monitoring Plan and associated SNP stations;
  - ii. A summary of the groundwater wells sampled;
  - iii. A Figure showing the groundwater wells sampled;
  - iv. Summary of well integrity, any repairs recommended for the monitoring wells, including proposed plans and timelines for repairs;
  - v. Any deviations from the Groundwater Monitoring Plan, including samples that were not collected, rationale for omissions, and implications;

## Condition

- vi. Tabular summaries of groundwater monitoring results, with comparisons as follows:
    - a. Until such time as groundwater criteria at the Solid Waste Disposal Facilities are developed and approved, the City shall:
      - i. Compare groundwater data to the Alberta Tier 1 Groundwater Remediation Guidelines for Commercial/Industrial Land Use and Coarse-grained Soil (Tier 1 CL/IL CS) (Alberta Government 2019);
      - ii. Follow the groundwater performance standards listed above in (vi)(a)(i);
    - b. Once site-specific groundwater criteria and Action Levels at the Solid Waste Disposal Facilities are developed and approved, the City shall:
      - i. Compare groundwater data against the groundwater criteria and Action Levels and clearly identify exceedances;
      - ii. Identify corrective actions taken in response to criteria or Action Level exceedances;
  - vii. Tabular summaries of quality control (QC) samples collected (e.g., blanks, splits, duplicates) and a summary of any limitations affecting interpretation of the groundwater data;
  - viii. Temporal plots for each sampling location of any parameters that exceed the criteria outlined in (vi); and
  - ix. Identification and interpretation of any trends.
- m) A summary of activities conducted in accordance with the approved **Water Treatment Facilities Operations and Maintenance Plan**, referred to in Part F, Condition WATER TREATMENT FACILITIES OPERATIONS AND MAINTENANCE PLAN - REVISED of this Licence, including:
- i. A summary of approved updates or changes to the process or facilities required for the management of Water and Wastewater; and
  - ii. Monthly and annual quantities, in cubic metres, of all Discharges, identified by Discharge location.
- n) A summary of activities conducted in accordance with the approved **Stormwater Management Plan**, referred to in Part F, Condition STORMWATER MANAGEMENT PLAN – REVISED of this Licence, including:
- i. A Figure showing the stormwater stations sampled during the year;
  - ii. A summary of the sampling conducted at each stormwater location;
  - iii. Any deviations from the Stormwater Monitoring Plan, including samples that were not collected, rationale for omissions, and implications
  - iv. Tabular summaries of all data and information generated as part of the Stormwater Management Plan with a comparison of stormwater data against the guidelines outlined in the Stormwater Management Plan;
  - v. Tabular summaries of quality control (QC) samples collected (e.g., blanks, splits, duplicates), and a summary of any limitations affecting interpretation of the stormwater data;

## Condition

- vi. Temporal plots for each sampling location of total suspended solids, total dissolved solids, nitrate, total phosphorus, total arsenic, and any metals with concentrations that exceed the guidelines outlined in the Stormwater Management Plan; and
  - vii. Identification and interpretation of any trends.
- o) A summary of activities conducted in accordance with the approved **Spill Contingency Plan**, referred to in Part H, 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 Part H, Condition REPORT SPILLS of this Licence; and
  - ii. An outline of any spill training carried out.
- p) A summary of any Closure and Reclamation work completed;
- q) Tabular summaries of all data and information generated under the SNP annexed to this Licence, in Excel format.
- r) A list of any non-compliance(s) with the conditions of this Licence or any directive from the Board pursuant to the conditions of this Licence;
- s) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector;
- t) A tabular summary of all existing Dams and their respective Engineer of Record, and Dam classifications under the Canadian Dam Safety Guidelines, and Dam Safety Review schedules as per the Dam Safety Guidelines;
- u) Any other details requested by the Board by November 1 of the year being reported.
- v) A summary of the current status and future plans for all plans, programs, manuals and studies required by this Licence.

## Schedule 2: Construction

### Condition

1. The **Design and Construction Plan(s)** referred to in Part E, 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;
    - iii. 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.
    - iv. A design alternatives analysis;
    - v. Design specifications and performance parameters;
    - vi. Stability analyses;
    - vii. A description of how the design has been optimized for Closure and Reclamation;
    - viii. A description of how climate change projections and considerations have been incorporated into the design;
    - ix. A description of any instrumentation that will be installed as part of the facilities, including locations and rationale; and
    - x. 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 proposed Construction schedule and project milestones;
    - 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, including Acid Rock Drainage and Metal Leaching potential.
    - 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.



## Condition

- 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 response 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: Waste and Water Management

### Condition

1. The **Sewage Disposal Facilities (SDF) Operation and Maintenance Plan** referred to in Part F, Condition SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN 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);

## Condition

- h) Sludge Management:
  - i. Parameters to be included as part of the laboratory analysis of sediment samples collected as part of each desludging event, including, but not limited to, total metals, and emerging contaminants;
  - ii. Production rate of sludge;
  - iii. Method of sludge containment and de-watering;
    - a. Site location and maintenance;
    - b. Sludge removal methods
    - c. Measures implemented to mitigate the generation and distribution of suspended solids;
    - d. Details on contingencies for sludge production should phosphorus treatment result in increased TSS concentrations; and
    - e. Sludge drying;
  - iv. Sludge Disposal;
    - a. Sampling procedures and approvals;
    - b. Planned uses; and
    - c. Disposal location(s), details and contingencies should dewatered sludge not meet criteria for reuse;
  - v. Delineation of triggers for future desludging events;
  - vi. Reporting; and
  - vii. 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. Details on management of storm sewer catch basin materials deposited at the SDF;
  - ii. Accurately describe the treatment system and associated monitoring locations;
  - iii. Revise Figure 4 in Appendix A to illustrate the pathway from Lift Station 13 to Lift Station 5;
  - iv. Public education on water consumption; and
  - v. Any updates to the Plan based on the Fiddler's Lake Treatment System Adaptive Management Plan.

## Condition

2. The **Wetland Delineation Study Report** referred to in Part F, Condition WETLAND DELINEATION STUDY REPORT shall include but not be limited to:
  - a) Clearly defined objectives of the **Wetland Delineation Study**;
  - b) An updated Fiddlers Lake Treatment System Overview Map that includes description of the system drainage:
    - i. Any additional outflows (b) delineation of drainage in the area around the honey bag pit;
    - ii. flow pathway(s) through the Fiddler's Lake Drainage Area ;
    - iii. current or historical flow diversions in the Fiddlers Lake Drainage Area;
    - iv. clearly delineated watershed boundaries (e.g., Fiddler's Lake, Beta, Alpha, Mac, Kam Drainage Areas);
    - v. main outflow location from the Fiddler's Lake Treatment System to Great Slave Lake (i.e., downstream of SNP 0032-F1 and 0032-F11);
    - vi. potential flow connections, if identified, between lakes in the Fiddler's Lake Drainage Area, and lakes to the south in the Beta Drainage Area; and
    - vii. any additional outflow location(s) to Great Slave Lake from the Fiddler's Lake Treatment System or immediate downstream waterbodies, if identified.
  - c) Information supporting the Fiddler's Lake Treatment System Overview Map, including:
    - i. a description of the best practice field procedures used;
    - ii. evidence from field investigations, including but not limited to photographs; and
    - iii. a summary of relevant field measurements or data.
  - d) Summary of findings
    - i. Identified outflow(s) to Great Slave Lake, with rationale;
    - ii. Changes from previous understanding on flow direction in the Fiddler's Lake Drainage Area, Beta Drainage Area, and other applicable drainage areas; and
    - iii. Estimated effects from variable hydrological conditions, such as wet or dry years.
  - e) Proposed changes, with rationale, to the SNP annexed to this Licence; and
  - f) A summary of any actions taken to address the recommendations, including rationale for any decisions that deviate from the recommendations.
3. The **Great Slave Lake Monitoring Program Design Plan** referred to in Part F, Condition GREAT SLAVE LAKE MONITORING PROGRAM DESIGN PLAN shall include but not be limited to:
  - a) Objectives and purpose of the **Great Slave Lake Monitoring Program**;
  - b) A summary of previous monitoring and how it informed the revised design plan;

## Condition

- c) Details of the sampling design, including a description of the areas to be monitored:
    - i. Maps showing all proposed sampling locations; and
    - ii. Rationale for locations, including:
      - a. how reference locations were selected;
      - b. information from the Wetland Delineation Study such as outflow location(s) to Great Slave Lake; and
      - c. spatial extent compared to zone of influence from FLTS effluent.
  - d) A summary of how the proposed study addresses the recommendations from past monitoring program(s);
  - e) A description of the sampling and analysis to be conducted:
    - i. Field measurements;
    - ii. Analytical parameters;
    - iii. Sample media;
    - iv. Sampling methods; and
    - v. Quality assurance and quality control procedures.
  - f) A description of procedures to analyze and interpret data collected; and
  - g) A description of how the Great Slave Lake Monitoring Program will be incorporated into the Surveillance Network Program annexed to this Licence.
4. The **Treatment Evaluation Report** referred to in Part F, Condition TREATMENT EVALUATION REPORT shall include but not be limited to:
- a) Options analysis for total phosphorus and ammonia treatment, including but not limited to Phoslock and chemical treatment:
    - i. A list of potential treatment approaches to improve phosphorus and ammonia concentrations in the Fiddler's Lake Treatment System;
    - ii. Exploration of concepts for the various treatment approaches;
      - a. Descriptions;
      - b. Assumptions;
      - c. Photographs, diagrams;
      - d. Applicability to Northern climate; and
      - e. Location in the FLTS where the treatment would occur;

## Condition

- iii. To the extent practicable, outline:
    - a. Expected treatment efficacies (i.e., reduction in Total Phosphorus and Total Ammonia Nitrogen loadings or concentrations to the FLTS and receiving environment);
    - b. Timeline for improvements in Total Phosphorus and Total Ammonia Nitrogen to occur under typical conditions; and
    - c. Climate change considerations;
  - iv. Information on treatment implementation and operational feasibility, including cost/benefit analysis; and
  - v. Environmental trade-off assessment:
    - a. An evaluation of potential increases to water and sediment concentrations of various parameters (e.g., aluminum, iron, chloride and/or sulphate), downstream from the lagoon in the FLTS resulting from an alternate treatment method;
    - b. Impacts of potential concentration increases; and
    - c. Mitigations.
- b) Decision framework and criteria for selecting a treatment option;
  - c) Linkage to proposed EQC from **Effluent Quality Criteria Re-evaluation Report**;
  - d) Final selected treatment option; and
  - e) Timeline for treatment implementation and necessity and recurring treatment events, if applicable.
5. The **Effluent Quality Criteria Re-evaluation Report**, referred to in Part F, Condition EFFLUENT QUALITY CRITERIA RE-EVALUATION REPORT that includes, but is not limited to:
- a) Tabulated and graphical summaries of Total Phosphorus and Total Ammonia Nitrogen data from SNP stations 0032-10, 0032-F3, 0032-F1, and 0032-F11, as well as data from the inlet to Lake F3;
  - b) Tabulated flow measurements (SNP stations 0032-10 and 0032-F1);
  - c) Calculation of Total Phosphorus and Total Ammonia Nitrogen loadings to Great Slave Lake;
  - d) Updated determination of the hydraulic retention time of the Fiddler's Lake Lagoon, as well as the remaining FLTS (wetlands and lakes);
  - e) Analysis of impacts of decant timing on ammonia concentrations by month;
  - f) A description of effects on water quality and loadings from the desludging activities;

## Condition

- g) An assessment based on Part F, Condition TREATMENT EVALUATION REPORT, on predicted lagoon discharge water quality after treatment implementation;
  - h) Proposed technology-based Effluent Quality Criteria for Total Phosphorus and Total Ammonia Nitrogen, with rationale and assumptions, that are lower or equal to the EQC listed in Part F, Condition EFFLUENT QUALITY CRITERIA – SEWAGE DISPOSAL FACILITIES;
  - i) Proposed changes to the EQC listed in Part F, Condition EFFLUENT QUALITY CRITERIA – SEWAGE DISPOSAL FACILITIES and Licence SNP, if required; and
  - j) Proposed date for revised EQC implementation.
6. The **Fiddler’s Lake Treatment System Adaptive Management Plan** referred to in Part F, Condition FIDDLER’S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN shall include but not be limited to:
- a) Updated versions of figures originally presented in the Fiddler’s Lake Treatment System Adaptive Management Plan, including:
    - i. Watershed boundaries, flow paths and outflow(s) from Part F WETLAND DELINEATION STUDY and Schedule 3, Condition 2; and
    - ii. Existing and proposed SNP stations;
  - b) An updated assessment of water quality data collected from the Fiddler’s Lake Treatment System, including but not limited to:
    - i. Effluent quality summary statistics and temporal plots for EQC parameters at SNP 0032-F3;
    - ii. Loading calculations for key parameters of potential concern (POPC) at SNP 0032-10 and SNP 0032-F1;
    - iii. Identification of POPC, with rationale, in accordance with Appendix 2 of the Board’s *Guidelines for Effluent Mixing Zones* (2017);
    - iv. Water quality data collected at receiving environment station SNP 0032-F1 since 2018, compared to *CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*;
    - v. Revised calculations for un-ionized ammonia at SNP 0032-F1, using field temperature and pH measurements;
    - vi. Proposed water quality objectives for on-going comparison at SNP 0032-F1;
    - vii. Updated temporal plots for EQC parameters listed for SNP 0032-F3 and POPC at SNP 0032-F1, plotted with water quality objectives if applicable; and
    - viii. summary of findings and trends.
  - c) Details on current and planned desludging activities, including but not limited to, basis for planning, and criteria and triggers for future de-sludging events;
  - d) Delineation of tiered action levels for stations SNP 0032-F1 and at least one station in Great Slave Lake;

## Condition

- e) 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
- f) Proposed changes, with rationale, to the Licence SNP;
- g) Proposed changes, with rationale, to the timing and duration of Fiddler's Lake Lagoon decant;
- h) Proposed changes, with rationale, to Water Treatment Facilities residuals or sludge management with corresponding revisions to be submitted in a revised Water Treatment Facilities Operations and Maintenance Plan (Schedule 3, Condition 13);
- i) A **Great Slave Lake Monitoring Program Report**, including but not limited to:
  - i. A summary of activities conducted under the Great Slave Lake Monitoring Program from the preceding three years of monitoring;
  - ii. A plain language summary and interpretation of major results;
  - iii. An accurate description of the monitoring locations and any SNP stations used for evaluation of data;
  - iv. Tabular summaries of all data (including Excel format) and information generated under the Great Slave Lake Monitoring Program;
  - v. An interpretation of the results, including an evaluation of spatial effects in Great Slave Lake from the Fiddler's Lake Treatment System;
  - vi. Data for reference area(s) in Great Slave Lake that are not influenced by effluent from the Fiddler's Lake Treatment System, with rationale for their locations;
  - vii. A comparison of results to action levels as defined in the Fiddler's Lake Treatment System Adaptive Management Plan;
  - viii. Recommendations, with rationale, for changes to the Great Slave Lake Monitoring Program; and
  - ix. Any other information specified in the approved Great Slave Lake Monitoring Program Design Plan.
- j) An **Inlet of Lake F3 Special Study**, including but not limited to:
  - i. Tabular summaries of Water quality analytical results (including Excel format) at the inlet of Lake F3 twice per year (once in freshet, and once in fall) for a duration of two years;
  - ii. Analysis of the four water samples for: field parameters, total suspended solids, major ions, nutrients, CBOD5, fecal coliforms, oil and grease, total metals, total petroleum hydrocarbons, and acute toxicity (Rainbow Trout and *Daphnia magna*);
  - iii. A comparison of water quality and toxicity between the inlet and outlet of Lake F3 and an explanation how water quality changes through Lake F3; and
  - iv. A summary of findings from the Inlet of Lake F3 Special Study.
- k) Proposed resubmission schedule for future revisions to the Fiddler's Lake Treatment System Management Plan.



## Condition

7. The **Solid Waste Disposal Facilities Design, Operations and Closure Plan** referred to in Part F, Condition SOLID WASTE DISPOSAL FACILITIES – DESIGN, OPERATIONS AND CLOSURE PLAN shall include but not be limited to:
- a) Site Description;
    - i. Facility design details, including current figures that reflect site features, conditions and boundary (including fencing present), all SNP sampling locations, and includes surface water sampling locations and drainage on- and off-site;
    - ii. Location, including GPS coordinates and map(s);
    - iii. Date of commissioning;
    - iv. Local ground conditions and permafrost considerations;
    - v. A revised map that clearly shows both surficial and regional groundwater flow within and outside the boundary of the SWDF, and that identifies all potential receiving water bodies for groundwater inputs from the SWDF;
    - vi. Details and frequency of typical operation, maintenance and monitoring activities; and
    - vii. Closure and Reclamation planning and post-closure monitoring;
  - b) Facility 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 and Progressive Closure;
    - i. Design Drawings;
    - ii. Management of Surface Water and Leachate for operations and closure;
    - iii. Timeline and detailed plans for progressive closure of the historical waste cell;
    - iv. Details on progressive closure timelines and plans for previously-used areas at the SWDF;
    - v. Final cover detailed design, including:
      - a. selection criteria and rationale;
      - b. potential material sources;

## Condition

- c. practices; and
  - d. conducting and reporting on a side slope stability analysis;
- 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. Plans for creating a designated area of storage of end-of-life vehicles;
  - ii. Compaction practices and frequencies;
  - iii. Management of storm sewer catch basin materials that are brought to the SWDF for re-use;
  - iv. Details on the management of any PAG rock on site and any associated water management information, including rationale;
  - v. Intermediate cover sources, practices and frequencies;
  - vi. Design details and analyses of slope stability and surface of landfill roads; and
  - vii. Contingencies.
- m) Wildlife Control;
- i. Information on animal access to site, including:
    - a. details on inspections of and required repairs to geomembrane liners; and
    - b. Clarification of which sections of fencing at the SWDF are electrified;
  - ii. Controls; and
  - iii. Response plans to wildlife on site;
- n) Litter Control;
- o) Surface Water Management;
- i. Surface Water and ponded water inspections and mitigations;
  - ii. Outline mitigations for managing leachate from the historical waste cell; and
  - iii. Details on the management of any PAG rock on site and any associated water management information, including rationale

## Condition

- p) Record-Keeping;
  - i. Forms used for Record Keeping;
  - ii. Reporting requirements for all aspects of the SWDF; and
  - iii. Locations of records;
- q) Inspection and Monitoring;
  - i. Daily/Weekly/Monthly Inspections;
  - ii. Annual Inspections; and
  - iii. Inspection Forms;
- r) Hazardous Waste Management;
  - i. Specific Practices for each Waste Type; and
  - ii. Contact Person;
- s) Tipping Fees;
- t) Surveillance Network Program;
- u) Emergency Planning;
  - i. Details regarding the use and related fire risk mitigations taken with shredded tires as intermediate cover material; and
  - ii. Response procedures in the event of a fire at the SWDF;
- v) Document References;
- w) With respect to closure and reclamation of the Solid Waste Disposal Facilities, the **Design, Operations and Closure Plan** shall be submitted in accordance with 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* (2017);
- x) Reclamation Completion Report;
  - i. Details, including figures and photos, of the final reclamation work;
  - ii. An explanation of any work that deviated from the approved design;
  - iii. An inventory of the infrastructure removed and that remaining;
  - iv. All engineered As-built reports; and
  - v. Descriptions of any monitoring that is still required.

## Condition

- y) The following additional information directed by the Board:
- i. Indicate that City staff determine whether construction and demolition debris is suitable for use as cover material via visual inspection, prior to stockpiling and storage on site;
  - ii. Indicate that e-waste is stockpiled on site, then taken to a local processing facility, and ultimately shipped to a Southern processing facility;
  - iii. Indicate the source of daily cover material(s), and how it is determined suitable for use;
  - iv. Include a section on fencing that details any concerns, actions taken and rationale associated with wildlife/human access, windblown litter, or other items related to fencing at the SWDF;
  - v. Remove any references to Ventus Geospatial Thermal Imaging results; and
  - vi. Indicate that landfill gas passive vents will be installed at the time of liner installation at the historical landfill cell.
8. The **Compost Facilities Operation and Maintenance Plan** referred to in Part F, Condition COMPOST FACILITIES OPERATION AND MAINTENANCE PLAN shall include but not be limited to the following additional information:
- a) Clear reference to the Plan following the *Alberta Code of Practice for Compost Facilities*;
  - b) Details on pond cleaning: frequency, methods, identify any changes to water management;
  - c) Details on sampling and disposal of Effluent from the compost runoff retention pond, with direct reference to the sampling requirements for SNP station 0032-18A listed in Annex A of this Licence;
  - d) The following additional information directed by the Board:
    - i. Ensure that figures included in Appendix A include all current site features and details relevant to this Licence;
    - ii. A description of the conditions under which runoff is used from the storage tank vs. the retention pond, to water windrows;
    - iii. Clarification of the 'approved water source';
    - iv. Detailed contingencies for managing and using finished compost that meets the various criteria identified in the Plan; and
    - v. Indicate that regular monitoring is required to ensure the compost does not exceed 75°C.
9. The **Drainage Study** for the Solid Waste Disposal Facilities referred to in Part F, Condition DRAINAGE STUDY shall include but not be limited to:
- a) Information regarding surface water drainage conditions:
    - i. Updated surface drainage mapping, including:
      - a. On-site and off-site flow directions for run-on and run-off;
      - b. The entire extent of the current site with layout and features;

## Condition

- c. All nearby waterbodies;
- d. Planned areas of expansion (i.e. Cells C and D) and corresponding monitoring locations;
- e. Clearly labelled points where run-off is migrating off-site;
- f. Quarry areas on site that have been identified as containing PAG rock; and
- g. Drainage management infrastructure on-site and off-site.

### b) Information regarding the monitoring:

- i. A description, including detailed rationale, of the surface water monitoring activities required to identify Project-related impacts on surface water quality and quantity based on plans for future expansion of the SWDF and post-closure;
- ii. The location and purpose, with rationale, of all existing and proposed surface water SNP stations, including a map that includes the full extent of the planned expansion at the SWDF;
- iii. Identification, with rationale, of any existing SNP stations slated for decommissioning;
- iv. A description of monitoring protocols, methodologies, parameters, and frequencies specific to each type of monitoring identified in item (b)(i) above, including but not limited to:
  - a. Identification of emerging contaminants to be periodically monitored;
- v. A description of the quality assurance and quality control measures followed for each monitoring type;
- vi. Linkages to other monitoring programs required under this Licence; and
- vii. Any other information about the monitoring that will be performed to meet the objectives in Part F, Condition OBJECTIVE – WASTE AND WATER MANAGEMENT;

### c) Information regarding responses to monitoring results:

- i. Identification, with rationale, of parameters of concern that should be used as indicators of potential impacts from Project-related activities on the Receiving Environment;
- ii. Until such time as surface runoff criteria are developed and approved, provide temporal plots and compare surface runoff data against guidance from Alberta, British Columbia and/or *CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*, with rationale;
- iii. Outline how existing data (site-specific conditions) will be applied in the development of the surface runoff criteria and Action Levels;
- iv. Specify the surface runoff criteria and where they will apply;
- v. A description of how the results of surface water monitoring will be compared to surface runoff criteria;
- vi. A description of how the Licensee will link the results of monitoring to corrective actions necessary to ensure that the surface runoff criteria are met. This description shall include:
  - a. Definitions, with rationale, for Action Levels applicable to surface water quality and quantity; and
  - b. For each Action Level, a description of how exceedances of the criteria will be assessed and generally, which types of corrective actions will be taken for the Action Level exceeded, including consideration of additional SNP stations, further surface runoff containment, or other strategies to prevent off-site migration;

## Condition

- vii. Once site-specific surface runoff criteria are developed and approved, revise temporal plots for key parameters;
  - d) Plans to revise the SWDF Drainage Study based on future site expansion, and how this information relates to the **Solid Waste Disposal Facilities Design, Operations and Closure Plan**;
  - e) Response to the recommendations of the Drainage Study, and a description of how operations and closure at the SWDF are impacted by the results of the Drainage Study, including:
    - i. proposed actions and revision timelines for the Design, Operations, and Closure Plan and other Plans, if applicable; and
    - ii. Consideration of the relationship between analytical results from groundwater and surface water sampling.
10. The **Groundwater Monitoring Plan** for the Solid Waste Disposal Facilities referred to in Part F, Condition GROUNDWATER MONITORING PLAN – REVISED shall include but not be limited to:
- a) Information regarding groundwater conditions:
    - i. A description of the underlying and surrounding hydrogeology;
    - ii. Include a map and coordinates of every existing and planned groundwater monitoring well, including rationale for installation of new wells;
    - iii. Delineate the full extent of planned expansion at the SWDF; and
    - iv. Clearly show both surficial and regional groundwater flow within and outside the boundary of the SWDF, and identify all potential receiving water bodies for groundwater inputs from the SWDF
  - b) A summary of upgradient well data including:
    - i. Upgradient well data collected to date;
    - ii. Identification of upgradient well data gaps; and
    - iii. A description of methods for filling in data gaps or methods for approximating upgradient conditions if necessary.
  - c) Information regarding groundwater monitoring:
    - i. A description, including detailed rationale, of the site-specific Groundwater monitoring activities required to identify Project-related impacts on Groundwater quality and quantity based on plans for future expansion of the SWDF and post-closure;
    - ii. Identification, with rationale, of any existing wells slated for decommissioning;
    - iii. The location and purpose, with rationale, of all existing and proposed SNP Groundwater monitoring stations, including a map that includes the full extent of the planned expansion at the SWDF;

## Condition

- iv. A description of monitoring protocols, methodologies, parameters, and frequencies specific to each type of monitoring identified in item (c)(i) above, including but not limited to:
    - a. Monitor for both total and dissolved metals for one year, then monitor dissolved metals thereafter
    - b. Update nutrients and major ions in the Table entitled 'Groundwater Monitoring Parameters' to match the categories outlined in Annex A of this Licence, and include dissolved metals in addition to total metals; dissolved metals should be analyzed for the same metals listed in the total metals category;
    - c. Include total phenols in the list of parameters to be monitored;
  - v. A description of the quality assurance and quality control measures followed;
  - vi. Linkages to other monitoring programs required under this Licence; and
  - vii. Any other information about the monitoring that will be performed to meet the objectives in Part F, Condition OBJECTIVE – WASTE AND WATER MANAGEMENT;
- d) Information regarding responses to monitoring results:
- i. Identification, with rationale, of POPC that should be used as indicators of potential impacts from Project-related activities on the aquatic Receiving Environment;
  - ii. A description of how the results of groundwater monitoring will be compared to site-specific groundwater criteria from the Groundwater Trendline Analysis Report required in Schedule 3, Condition 10(f);
  - iii. A description of how the Licensee will link the results of monitoring to corrective actions necessary to ensure that the site-specific groundwater criteria 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 criteria will be assessed and generally, which types of corrective actions will be taken for the Action Level exceeded, including consideration of additional well installation.
- e) Completion of a **Hydrogeological Study** of the existing and planned extent of the SWDF:
- i. Supporting information for items a) and c) i, ii, iii, iv above;
  - ii. Response to recommendations included in the Study, including timelines for actions and rationale;
  - iii. Based on the outcomes of the SWDF Drainage Study, an evaluation of any resulting impacts to the Hydrogeological Study design; and
  - iv. A description of how the recommendations from the Study have been implemented, and how they influence the Design, Operations and Closure Plan for the SWDF and the Groundwater Monitoring Plan;
- f) Completion of a **Groundwater Trendline Analysis Report**:
- i. Supporting information for item (b) (i, ii, iii) and (d)(i) above;
  - ii. Site-specific groundwater criteria and Action Levels, with rationale;
  - iii. Establish where the site-specific groundwater criteria will be met;

## Condition

- iv. Explain how background conditions will be considered;
  - v. Plans for obtaining and using nearby regional data from other sources;
  - vi. Tabular summaries (including Excel format) of all data and information generated under the Groundwater Monitoring Plan;
  - vii. Identification of POPC, with rationale;
  - viii. Temporal plots for POPC and a summary of findings and trends;
  - ix. Determine, provide rationale for, and use a conversion factor for total and dissolved metals; and
  - x. A description of how the recommendations from the Study have been implemented, and how they influence the Design, Operations and Closure Plan for the SWDF and the Groundwater Monitoring Plan;
- g) The following additional information directed by the Board:
- i. Refer to groundwater monitoring well MW-9 as the "upgradient" well, rather than the "background" well;
  - ii. Provide coordinates for upgradient well MW-9 installed in 2021; and
  - iii. Update Table entitled 'Groundwater Monitoring Schedule' to include MW-6.

11. The **Leachate Management Plan** for the Solid Waste Disposal Facilities referred to in Part F, Condition LEACHATE MANAGEMENT PLAN shall include but not be limited to:

- a) Details on the types and sources of leachate requiring management, including operational Cells, the Baling Facility, and any runoff ponds, including but not limited to:
  - i. Inspection;
  - ii. Management;
  - iii. Testing;
  - iv. Disposal; and
  - v. Contingencies.
- b) Detail on mitigations taken to reduce leachate volumes;
- c) Schedule for changes to leachate management practices for each source;
- d) Summary of leachate management and treatment infrastructure, including but not limited to:
  - i. Establishing maximum acceptable leachate head levels and triggers and strategies to further minimize water infiltration to SWDF cells; and
  - ii. A proposal for Groundwater monitoring required for the Leachate Management Facility (including implications to the Licence SNP);
- e) An outline of the proposed mitigations for managing leachate from the Old Landfill Cell;



## Condition

- f) How the Leachate Management Plan influences the SWDF Design, Operations and Closure Plan and other plans.
12. The **Landfill Gas Assessment** referred to in Part F, Condition LANDFILL GAS ASSESSMENT shall include but not be limited to:
- a) A Report on the methodology and findings of the Landfill Gas Assessment;
  - b) A summary of how the recommendations from the Landfill Gas Assessment will be incorporated into the SWDF Design, Operations and Closure Plan, including relevant timelines, and if not, rationale for not incorporating recommendations.
13. The **Water Treatment Facilities (WTF) Operation and Maintenance Plan** referred to in Part F, Condition WATER TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN shall include but not be limited to:
- b) 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;
  - c) Facility staff contact information;
  - d) Security and control;
    - i. Control of public access; and
    - ii. Signage;
  - e) Facility design details, including current figures;
  - f) Raw water sources;
    - i. Detailed characteristics;
    - ii. Withdrawal flow rates;
    - iii. Intake description and details; and
    - iv. Source water protection;
  - g) 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;

## Condition

- h) Water Treatment Facilities Residual Waste;
  - i. Backwash Sludge:
    - a. Sampling procedures;
    - b. Chemical composition data;
    - c. Volume produced, with rationale;
    - d. Disposal frequency, location and details; and
    - e. Identification of sampling location.
  - ii. Clean-in-Place (CIP)/Enhanced Flux Maintenance (EFM) neutralized waste:
    - a. Sampling procedures;
    - b. Chemical composition data;
    - c. Volume produced, with rationale;
    - d. Disposal frequency, location and details; and
    - e. Identification of sampling location.
- i) Facility operation, maintenance and record-keeping.
- j) Results and recommendations of a **Flocculant Optimization Study**, including but not limited to:
  - i. Clarification of current treatment products, frequency of dosing, and waste residuals;
  - ii. Strategies to reduce need for aluminum-based coagulant based on the results of the Flocculant Optimization Study;
  - iii. Information on alternate flocculants to generate a better-quality sludge;
  - iv. Current and planned use of aluminum-based or other coagulants at the WTF;
  - v. Recommendations for WTF residual management, including optimizing solids content in thickened sludge, and waste minimization methods in accordance with the Board's *Water and Effluent Quality Management Policy* (2011); and
  - vi. Responses to recommendations made and timelines for implementation.
- k) The following additional information directed by the Board:
  - i. Detail on the disposal practices for spent or damaged WTF membrane modules;
  - ii. Additional detail on set points for pH and conductivity that must be met prior to discharge of CIP/EFM residuals to the sanitary sewer system;
  - iii. Diagrams and explanation of conditions under which City staff may release the contents of the overflow chamber of the WTF to Yellowknife Bay;
  - iv. Remove references to the submarine pipeline replacement; and
  - v. Feasibility assessment of the installation of flow meters on all WTF waste residuals streams, and a response to recommendations made, including timelines for implementation.

## Condition

14. The **Stormwater Management Plan** referred to in Part F, Condition STORMWATER MANAGEMENT PLAN – REVISED shall include but not be limited to:
- a) A description of system components, including figures showing all developed areas within the City;
  - b) Land development design and best practices, including timelines;
  - c) A discussion of snow disposal, outlining areas currently used or to be used for snow disposal, and the methods for managing drainage Water from the snow disposal area(s);
  - d) Pollution control practices, including but not limited to:
    - i. Litter control;
    - ii. Stormwater outlet controls:
      - a. An evaluation of the effectiveness of existing screens and trash interceptors;
      - b. An evaluation of the need to install additional screens and trash interceptors;
    - i. Stormwater system clean-outs;
    - ii. Unauthorized discharges; and
    - iii. Back-up power to lift stations;
  - e) Sediment and erosion control measures;
  - f) Detailed descriptions, with rationale, of the Stormwater Monitoring Program, including but not limited to:
    - i. sampling locations with geographic coordinates;
    - ii. sampling frequency;
    - iii. sampling methods;
    - iv. sampling parameters;
    - v. analysis and reporting; and
    - vi. Quality assurance and quality control procedures followed;
  - g) Reporting and analysis of the data collected in the **Stormwater Trend Analysis (SWTA)**, including but not limited to:
    - i. A description of how POPCs will be identified, in accordance with the Board's *Water and Effluent Quality Management Policy (2011)*;
    - ii. Comparison of stormwater quality parameters with the guidelines outlined in the Stormwater Management Plan Table entitled 'CCME Surface Water Quality Guidelines and Stormwater Quality Interpretation';
    - iii. Details on the method used to establish background stormwater conditions for guideline comparisons;
    - iv. Runoff profiles corresponding to land use;
    - v. Loading estimates to downstream waterbodies for each land type identified;

## Condition

- vi. Tabular summaries (including Excel format) of all data and information generated under the Stormwater Monitoring Program;
  - vii. Time trend analyses for each sampling location, using historical data where available;
  - viii. Identify key areas of concern based on concentrations or loadings, management targets, potential mitigations or improvements, and how those areas fit within the larger drainage management strategy;
  - ix. Identify how the Board's May 15, 2013 requirement to "estimate potential impacts to the watercourses, with an emphasis on effects to fish bearing watercourses" will be met with loading estimates; and
  - x. Recommendations for the establishment of stormwater SNP stations;
- h) An analysis of stormwater treatment options, including descriptions of best practices and a decision-making framework for implementing any treatment options;
- i) Details on public education measures undertaken, and planned, to improve public awareness of source control of stormwater quality, including but not limited to the dissemination of the results of the Stormwater Trend Analysis to the public;
- j) The following additional information as directed by the Board:
- i. Proposed changes to the Licence SNP, based on the results of the Stormwater Trend Analysis;
  - ii. Any other recommendations for stormwater monitoring and/or treatment;
  - iii. Include details on types of hydrocarbons being monitored;
  - iv. Include monitoring of Dissolved Organic Carbon;
  - v. Clarify that *CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*, with rationale guidelines for manganese and zinc were developed for the dissolved metal fraction, and address any associated challenges with data comparisons;
  - vi. Provide the results of a site survey of the Dehcho Blvd. Snow Dump to demonstrate off-site drainage patterns, along with any resulting recommended changes to the Licence SNP;
  - vii. Current details on design and development standards and their implications for stormwater management; and
  - viii. Revised maps that reflect existing Licence SNP stations.

## Schedule 4: Conditions Applying to Closure and Reclamation

### Condition

1. With regard to Sewage Disposal Facilities being closed, the **Component-Specific Closure and Reclamation Plan** referred to in Part I, 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 site 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.

**Annex A: Surveillance Network Program**  
**Annexed to Water Licence MV2021L3-0003 Part B, Condition 12**  
**City of Yellowknife**

**Table of Contents:**

Part A: Reporting Requirements

Part B: Sampling and Analysis Requirements

Part C: SNP Station Descriptions and Monitoring Requirements

**Part A: Reporting Requirements**

1. The effective date of this Surveillance Network Program (SNP) is May 31, 2022.
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.
4. The Licensee shall submit Quarterly SNP Reports for January through March, April through June, July through September, and October through December. Quarterly Reports shall contain all of the information generated by Parts A, B and C of the Surveillance Network Program and shall be submitted within 30 days of the end of the quarter being reported.

**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 the 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** (QA/QC Plan) which includes both field and laboratory requirements shall be submitted to an Analyst, for approval, not less than within (90) days of issuance of the Licence.
6. The Licensee shall act in accordance with the approved QA/QC Plan and shall review the Plan annually or as directed by the Board and make any necessary revisions to reflect changes in operations. Revisions to the Plan shall be submitted to an Analyst, for approval.
7. If the Quality Assurance and Quality Control Plan is not approved by the Analyst, the Licensee shall revise the Plan according to the Analyst's direction and re-submit it to the Analyst for a decision.

**Part C: SNP Station Descriptions and Monitoring Requirements**

**Table 1: SNP Station Quick Reference Table**

SNP station #	Location and rationale	Status
0032-1	Raw Water valve on Yellowknife River Water supply line in City Pumphouse #1	Active
0032-2	Wet well Water intake in City Pumphouse #1 on Yellowknife Bay	Active
2021-1	Water Treatment Facilities backwash sludge	Active
2021-2	Water Treatment Facilities Clean-in-Place/Enhanced Flux Maintenance (CIP/EFM) neutralized waste	Active
0032-10	Sewage Effluent at the control structure located at Lake F6	Active
0032-F1	Marker downstream of Lake F1 along the FLTS, approximately 1.5 km upstream of Great Slave Lake	Active
0032-F3	Marker upstream of the outflow from Lake F3 along the Fiddler’s Lake Treatment System	Active
0032-F11	At inflow of FLTS to Great Slave Lake	Active
0032-13	Surface Water at a point approximately 400 metres northwest of the SWDF above the confluence of an unnamed feeder creek	Active
0032-13A	Surface Water at a point approximately 400 metres northwest of the SWDF that captures the drainage from the facility and drainage from the snow disposal area	Active
0032-14	Surface Water upstream of the culvert located on Hwy #4, upstream of Fault Lake and downstream of confluence of unnamed feeder creek	Active
0032-15A	Surface Water on the west side of Highway #4	Active
0032-16	Surface Water upstream of culvert on Hwy #3, opposite Jackfish Lake	Active
0032-18A	Effluent from the lined retention pond at the Compost Facilities	Active
0032-19A	Leachate from the leachate collection sump in SWDF Cell A	Active
0032-19B	Leachate from the leachate collection sump in SWDF Cell B	Active
0032-20	Surface Water at the south end of Fault Lake where the run-off enters the lake	Active
0032-21	Surface Water at Vicinity Lake #3 within the boundaries of the SWDF	Active
TBD	SWDF Surface water Monitoring locations	Active
TBD	Stormwater Monitoring locations	Active
TBD	Groundwater Monitoring locations	Active

**Table 2: SNP Station Table**



SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
<b>SNP Stations associated with the Water Treatment Facilities</b>					
0032-1	Raw Water valve on Yellowknife River Water supply line in City Pumphouse #1.	62° 27' 3.797" N 114° 21' 8.880" W	Continuous	Volume (m <sup>3</sup> )	To determine the quantity of Water withdrawn from Yellowknife River for municipal purposes.
0032-2	Wet well Water intake in City Pumphouse #1 on Yellowknife Bay.	62° 27' 3.797" N 114° 21' 8.880" W	When water is withdrawn from Yellowknife Bay	Volume (m <sup>3</sup> )	To determine the quantity of Water withdrawn from Yellowknife Bay for municipal purposes.
2021-1	Water Treatment Facilities backwash sludge	62° 26' 59.946" N 114° 21' 10.238" W	Once annually in April or May	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> Total metals <sup>4</sup>	To determine the quantity and quality of WTF backwash sludge residual discharged to the FLTS.
2021-2	Water Treatment Facilities Clean-in-Place/Enhanced Flux Maintenance (CIP/EFM) neutralized waste	62° 26' 59.946" N 114° 21' 10.238" W	Once annually in April or May	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> Total metals <sup>4</sup>	To determine the quantity and quality of WTF CIP/EFM neutralized waste residual discharged to the FLTS.
<b>SNP stations associated with the Sewage Disposal Facilities</b>					
0032-10	Sewage Effluent at the control structure located at the outlet of Lake F6.	62°27'60" N 114°34'5.4" W	Monthly, during safe ice conditions and during open-water season	Field parameters <sup>1</sup> Total suspended solids Total ammonia Total phosphorus Fecal coliforms CBOD <sub>5</sub> Total petroleum hydrocarbons	To monitor Effluent quality prior to discharge to the FLTS.
			Twice yearly, at beginning and end of open-water season	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> CBOD <sub>5</sub> Fecal coliforms Oil and grease	

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				Total metals <sup>4</sup> Total petroleum hydrocarbons	
			Monthly, during decant	Flow measurements commencing 2025	To monitor volume of Effluent discharged from Fiddler's Lake Lagoon.
0032-F3	Marker upstream of the outflow from Lake F3 along the Fiddler's Lake Treatment System.	62°25'24.8" N 114°39'10" W	Weekly during decant and four weeks following decant	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> CBOD <sub>5</sub> Fecal coliforms Oil and grease	<b>Point of compliance.</b> To monitor Water quality near the outflow of Lake F3 and effectiveness of the FLTS, for comparison to Effluent Quality Criteria.
			Monthly all year	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> CBOD <sub>5</sub> Fecal coliforms Oil and grease  Total metals <sup>4</sup> Total petroleum hydrocarbons	
			Twice annually, at the beginning and end of the open-water season <sup>6,7</sup>	Acute Toxicity – Rainbow Trout and <i>Daphnia magna</i> <sup>8</sup>	
0032-F1	Marker downstream of Lake F1 along the FLTS, approximately 1.5 km upstream of Great Slave Lake.	62°24'49" N 114°44'11.9" W	Weekly during decant and four weeks following decant	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> CBOD <sub>5</sub> Fecal coliforms Oil and grease	To monitor Water quality of Lake F1 and effectiveness of the FLTS, prior to discharge to the Receiving Environment.
			Monthly all year	Field parameters <sup>1</sup> Total suspended solids	

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
				Major ions <sup>2</sup> Nutrients <sup>3</sup> CBOD <sub>5</sub> Fecal coliforms Oil and grease  Total metals <sup>4</sup> Total petroleum hydrocarbons Dissolved aluminum	
			Monthly, during decant	Flow Measurements commencing 2025	To monitor volume of Effluent discharged from FLTS to Great Slave Lake.
0032-F11	At inflow of FLTS to Great Slave Lake.	62°24'18" N 114°44'51.1" W	Beginning in 2023, monthly during open-water season, commencing at the beginning of open-water season.	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> Total metals <sup>4</sup> Total petroleum hydrocarbons	To monitor Water quality flowing into Great Slave Lake.
<b>SNP stations associated with the Solid Waste Disposal Facilities</b>					
0032-13	Surface Water at a point approximately 400 metres northwest of the Solid Waste Disposal Facilities above the confluence of an unnamed feeder creek.	62°28'35.75" N 114°23'24.40" W	Twice annually, at the beginning and end of the open-water season	Field parameters <sup>1</sup> Total suspended solids Major ions <sup>2</sup> Nutrients <sup>3</sup> Total metals <sup>4</sup> Petroleum hydrocarbons <sup>5</sup> Oil and Grease Total Phenols Fecal coliforms	To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0032-13A	Surface Water at a point approximately 400 metres northwest of the Solid Waste Disposal Facilities that captures the drainage from the facility and drainage from the snow disposal area.	62°28'39.54" N 114°22'50.75" W	Twice annually, at the beginning and end of the open-water season		To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities and snow disposal area.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
0032-14	Surface Water upstream of the culvert located on Hwy #4, upstream of Fault Lake and downstream of confluence of unnamed feeder creek.	62°28'39.36" N 114°22'15.76" W	Twice annually, at the beginning and end of the open-water season	CBOD <sub>5</sub> Methyl tert-butyl ether	To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0032-15A	Surface Water on the west side of Highway #4.	62°28'39.36" N 114°22'15.76" W	Twice annually, at the beginning and end of the open-water season		To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0032-16	Surface Water upstream of culvert on Hwy #3, opposite Jackfish Lake.	62°28'21.26" N 114°23'34.83" W	Twice annually, at the beginning and end of the open-water season		To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
0032-18A	Effluent from the lined retention pond at the Compost Facilities.	Approximately: 62° 28' 37.1" N 114° 23' 17.4 W	Prior to Discharge of Effluent from retention pond		To monitor final Effluent quality prior to Discharge.
0032-19A	Leachate from the leachate collection sump in SWDF Cell A.	Approximately: 62°28'43.5" N 114°22'28.2" W	Prior to Discharge of leachate from Cell A		To monitor final Effluent quality prior to Discharge.
0032-19B	Leachate from the leachate collection sump in SWDF Cell B.	Approximately: 62°28'41.6" N 114°22'29.9" W	Prior to Discharge of leachate from Cell B		To monitor final Effluent quality prior to Discharge.
0032-20	Surface Water at the south end of Fault Lake where the run-off enters the lake	62°28'38.6" N 114°21'52.5" W	Twice annually, at the beginning and end of open water season		To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.

SNP station	Location	Coordinates	Sampling Frequency	Sampling Parameters	Rationale
0032-21	Surface Water at Vicinity Lake #3 within the boundaries of the Solid Waste Disposal Facilities	62°28'28.5" N 114°23'11.4" W	Twice annually, at the beginning and end of the open- water season		To monitor Water quality associated with runoff and seepage from the Solid Waste Disposal Facilities.
TBD	SWDF Surface water Monitoring locations	TBD	TBD	TBD	Placeholder for SNP station(s) based on SWDF Surface Water Drainage Study
TBD	Stormwater Monitoring locations	TBD	TBD	TBD	Placeholder for SNP stations proposed as a result of the Stormwater Monitoring Program
TBD	Groundwater Monitoring locations	TBD	Twice annually, at the beginning and end of the open- water season	TBD	Placeholder for SNP stations proposed as a result of the Groundwater Monitoring Program

Notes:

<sup>1</sup>Field Parameters shall include the following measurements:

pH	Temperature
Conductivity	Dissolved Oxygen

<sup>2</sup>Major ions shall include the following parameters:

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

\* Total dissolved solids (calculated) shall be calculated as per the American Public Health Association's *Standard Methods for the Examination of Water and Wastewater, 21st Edition (2005)*:

$$\text{TDS}_{\text{calc}} \text{ (mg/L)} = (0.6 \times \text{Total Alkalinity as CaCO}_3) + \text{Na}^+ + \text{Mg}^+ + \text{K}^+ + \text{Ca}^{2+} + \text{SO}_4^- + \text{Cl}^- + \text{NO}_3^- + \text{F}^- + \text{SiO}_3^{2-}$$

<sup>3</sup>Nutrients shall include the following parameters:

Total Phosphorus	Nitrate
Dissolved Phosphorus	Nitrite
Ortho-phosphorus	Total Kjeldahl Nitrogen
Dissolved Organic Carbon	Total Ammonia (as nitrogen)
Total Organic Carbon	

<sup>4</sup>ICP-MS Metal Scan shall include, at a minimum, the following parameters:

Aluminum	Manganese
Antimony	Mercury
Arsenic	Molybdenum
Barium	Nickel
Beryllium	Rubidium
Boron	Selenium
Cadmium	Silver
Cesium	Strontium
Chromium	Thallium
Cobalt	Titanium
Copper	Uranium
Iron	Vanadium
Lead	Zinc
Lithium	

<sup>5</sup>Petroleum Hydrocarbons shall include the following parameters:

Fraction 1 (C1 – C10)	Fraction 2 (>C10-C16)
Fraction 3 (>C16-C34)	Fraction 4 (>C34)
BTEX (Benzene, Toluene, Ethylbenzene, and Xylene)	

<sup>6</sup>Timing of sample collection for acute toxicity testing shall be during spring break-up (April/May) and before winter freeze-up (October).

<sup>7</sup>Acute toxicity sampling must coincide with water quality sampling and analysis for the monthly SNP 0032-F3 parameter suite.

<sup>8</sup>Samples shall be provided to an accredited laboratory for the purpose of performing a static pass/fail bioassay for both Rainbow Trout and *Daphnia magna* per Environment Canada's Environmental Protection Series Biological Test Methods (Environment Canada. 2007. *Biological Test Method - Acute Lethality Test Using Rainbow Trout*. Method Development and Applications Section. Report EPS 1/RM/13. December 2000 (with May 2007 amendments), and Environment Canada. 2000. *Biological Test Method: Acute Lethality of Effluents to Daphnia Magna*. Method Development and Applications Section. Reference Method EPS 1/RM/14. December 2000). If greater than 30 percent mortality occurs, the samples should be collected for the LC50 Bioassay testing.

## 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
<b>ANNUAL REVIEW</b>	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.	<b>No later than March 31 each year.</b>
<b>REVISIONS</b>	Submit revised plans, programs, manuals and studies to the Board, for approval.	A minimum of 45 days prior to the proposed implementation date for the changes.
<b>ANNUAL WATER LICENCE REPORT</b>	Submit an <b>Annual Water Licence Report</b> to the Board and an Inspector, in accordance with the requirements of Schedule 1, Condition 1.	Beginning March 31, 2023, and no later than every March 31 thereafter.
<b>DESIGN AND CONSTRUCTION PLAN</b>	Submit to the Board, for approval, a <b>Design and Construction Plan</b> , in accordance with the requirements of Schedule 2, Condition 1.	A minimum of 90 days prior to the commencement of Construction of any Engineered Structures.
<b>DESIGN DRAWINGS</b>	Submit to the Board, <b>Design Drawings</b> stamped and signed by a Professional Engineer.	A minimum of 90 days prior to the commencement of Construction of any Engineered Structures.
<b>NOTIFICATION – CONSTRUCTION</b>	Provide written notification to the Board and an Inspector.	A minimum of ten days prior to the commencement of Construction of any Engineered Structure(s).
<b>AS-BUILT REPORT – ENGINEERED STRUCTURE(S)</b>	Submit to the Board, an <b>As-Built Report</b> stamped and signed by a Professional Engineer.	Within 180 days of the completion of the Construction of each Engineered Structure.
<b>BIENNIAL GEOTECHNICAL INSPECTION</b>	<b>Geotechnical inspections</b> of all dams, berms, dykes, and control structures associated with Sewage Disposal Facilities, and submit full Inspection Report to the Board and an Inspector.	Inspection every two years; submit Inspection Report within 90 days.
<b>TRAPPER’S LAKE DYKE GEOTECHNICAL INSPECTION</b>	<b>Geotechnical inspection</b> of all dykes and control structures constructed at Trapper’s Lake to divert the drainage flow from the Fiddler’s Lake Treatment System to the Grace Lake system.	Inspection every four years; submit Inspection Report within 90 days.



Condition	Requirement	Timeline
<b>DAM SAFETY REVIEW REPORT</b>	Submit the Professional Engineer's <b>Dam Safety Review Report</b> to the Board, along with covering letter.	Prior to March 31 of the year following the year in which the Dam Safety Review was conducted.
<b>SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN - REVISED</b>	Submit to the Board, for approval revised <b>Sewage Disposal Facilities Operation and Maintenance Plan</b> in accordance with the requirements of Schedule 3, Condition 1.	<b>March 31, 2024</b>
<b>DECANT NOTIFICATION – SEWAGE DISPOSAL FACILITIES</b>	Notify an Inspector and the Board prior to initiating decant of the Sewage Disposal Facilities.	At least ten days prior to initiating decant.
<b>EFFLUENT QUALITY CRITERIA – EXCEEDANCE – SEWAGE DISPOSAL FACILITIES</b>	Notify the Board and an Inspector of EQC exceedance at SNP station 0032-F3.	Immediately.
<b>WETLAND DELINEATION STUDY REPORT</b>	Submit to the Board, for approval, a <b>Wetland Delineation Study Report</b> in accordance with the requirements of Schedule 3, Condition 2.	<b>December 31, 2022</b>
<b>GREAT SLAVE LAKE MONITORING PROGRAM DESIGN PLAN</b>	Submit to the Board, for approval, a <b>Great Slave Lake Monitoring Program Design Plan</b> in accordance with the requirements of Schedule 3, Condition 3.	<b>January 31, 2023</b>
<b>TREATMENT EVALUATION REPORT</b>	Submit to the Board, for approval, a <b>Treatment Evaluation Report</b> in accordance with the requirements of Schedule 3, Condition 4.	<b>December 31, 2027</b>
<b>EFFLUENT QUALITY CRITERIA RE-EVALUATION REPORT</b>	Submit to the Board, for approval, an <b>Effluent Quality Criteria Re-Evaluation Report</b> in accordance with the requirements of Schedule 3, Condition 5.	<b>December 31, 2027</b>
<b>FIDDLER'S LAKE TREATMENT SYSTEM ADAPTIVE MANAGEMENT PLAN</b>	Submit to the Board, for approval, a <b>Fiddler's Lake Treatment System Adaptive Management Plan</b> in accordance with the requirements of Schedule 3, Condition 6.	<b>December 31, 2027</b>
<b>SLUDGE REMOVAL – NOTIFICATION</b>	Submit analytical results and written notification to the Board and an Inspector.	A minimum of 10 days prior to the removal of sludge from the Sewage Disposal Facilities for re-use.
<b>SOLID WASTE DISPOSAL FACILITIES – DESIGN, OPERATIONS AND CLOSURE PLAN</b>	Submit to the Board, for approval, a <b>Solid Waste Disposal Facilities – Design, Operations And Closure Plan</b> in accordance with the requirements of Schedule 3, Condition 7.	<b>December 31, 2025</b>

Condition	Requirement	Timeline
<b>COMPOST FACILITIES OPERATION AND MAINTENANCE PLAN - REVISED</b>	Submit to the Board, for approval, a revised <b>Compost Facilities Operation And Maintenance Plan</b> in accordance with the requirements of Schedule 3, Condition 8.	<b>November 30, 2022</b>
<b>NOTIFICATION – COMPOST FACILITIES EFFLUENT TO SEWAGE DISPOSAL FACILITIES</b>	Notify the Board and an Inspector in writing of Effluent discharge from Compost Facilities to Fiddler’s Lake Treatment System/Sewage Disposal Facilities.	Five days prior to discharge.
<b>DRAINAGE STUDY</b>	Submit to the Board, for approval, a <b>Drainage Study</b> in accordance with the requirements of Schedule 3, Condition 9.	<b>December 31, 2022</b>
<b>GROUNDWATER MONITORING PLAN – REVISED</b>	Submit to the Board, for approval, a revised <b>Groundwater Monitoring Plan</b> in accordance with the requirements of Schedule 3, Condition 10.	<b>December 31, 2026</b>
<b>HYDROGEOLOGICAL STUDY</b>	Submit to the Board, for approval, a <b>Hydrogeological Study</b> in accordance with the requirements of Schedule 3, Condition 10(e).	<b>March 31, 2026</b>
<b>GROUNDWATER TRENDLINE ANALYSIS</b>	Submit to the Board, for approval, a <b>Groundwater Trendline Analysis</b> in accordance with the requirements of Schedule 3, Condition 10(f).	<b>March 31, 2026</b>
<b>ASSESSMENT OF BALING FACILITY WASTE SEPARATION</b>	Submit to the Board, for approval an <b>Assessment Of Baling Facility Waste Separation</b> .	<b>June 30, 2022</b>
<b>LEACHATE MANAGEMENT PLAN</b>	Submit to the Board, for approval, a <b>Leachate Management Plan</b> in accordance with the requirements of Schedule 3, Condition 11.	<b>September 30, 2022</b>
<b>LANDFILL GAS ASSESSMENT</b>	Submit to the Board, for approval, a <b>Landfill Gas Assessment</b> in accordance with the requirements of Schedule 3, Condition 12.	<b>March 31, 2025</b>
<b>WATER TREATMENT FACILITIES OPERATION AND MAINTENANCE PLAN - REVISED</b>	Submit to the Board, for approval, a revised <b>Water Treatment Facilities Operation And Maintenance Plan</b> in accordance with the requirements of Schedule 3, Condition 13.	<b>December 31, 2023</b>
<b>FLOCCULANT OPTIMIZATION STUDY</b>	Submit to the Board, for approval, a <b>Flocculant Optimization Study</b> in accordance with the requirements of Schedule 3, Condition 13(j).	<b>December 31, 2022</b>
<b>STORMWATER MANAGEMENT PLAN - REVISED</b>	Submit to the Board, for approval, a revised <b>Stormwater Management Plan</b> in accordance with the requirements of Schedule 3, Condition 14.	<b>December 31, 2023</b>

Condition	Requirement	Timeline
<b>SPILL CONTINGENCY PLAN – REVISED</b>	Submit to the Board, for approval, a revised <b>Spill Contingency Plan</b> .	<b>August 31, 2022</b>
<b>COMPONENT-SPECIFIC CLOSURE AND RECLAMATION PLAN – SEWAGE DISPOSAL FACILITIES</b>	Submit to the Board, for approval, a <b>Component-Specific Closure And Reclamation Plan</b> for the <b>Sewage Disposal Facilities</b> in accordance with the requirements of Schedule 4, Condition 1.	Six months prior to commencing Closure and Reclamation of any component of the Sewage Disposal Facilities.
<b>Annex A, Part A, Condition 4</b>	Submit Quarterly SNP Reports to the Board.	<b>Within 30 days of the end of the quarter being reported.</b>
<b>Annex A, Part B, Condition 5</b>	Submit to an Analyst, for approval, a <b>Quality Assurance/Quality Control Plan (QA/QC Plan)</b> which includes both field and laboratory requirements.	<b>Within 90 days of Licence issuance.</b>

## Annex C: Revision History Table

**Table 1: Updates and changes that have been made to Licence MV2021L3-0003 since issuance.**

Date	Location of change	Description of change
March 11, 2024	Part F: SEWAGE DISPOSAL FACILITIES OPERATION AND MAINTENANCE PLAN – REVISED	Submission deadline changed from March 31, 2024 to May 1, 2024
March 11, 2024	Part F: WETLAND DELINEATION STUDY REPORT	Submission deadline changed from December 31, 2023 to April 30, 2024
March 11, 2024	Part F: GREAT SLAVE MONITORING PROGRAM DESIGN PLAN	Submission deadline changed from January 31, 2023 to March 31, 2025
March 11, 2024	Part F: TREATMENT EVALUATION REPORT	Submission deadline changed from December 31, 2027 to June 30, 2033
March 11, 2024	Part F: EFFLUENT QUALITY CRITERIA RE-EVALUATION REPORT	Submission deadline changed from December 31, 2027 to June 30, 2033
March 11, 2024	Part F: FLTS ADAPTIVE MANAGEMENT PLAN	Submission deadline changed from December 31, 2027 to June 30, 2033
March 11, 2024	Part F: FLOW MEASUREMENTS AT SNP STATIONS 0032-10 AND 0032-F1	Start year changed from 2024 to 2025
March 11, 2024	Part F: DRAINAGE STUDY	Submission deadline changed from December 31, 2022 to January 31, 2024
March 11, 2024	Part F: GROUNDWATER MONITORING PLAN – REVISED	Submission deadline changed from December 31, 2026 to November 1, 2027
March 11, 2024	Part F: HYDROGEOLOGICAL STUDY	Submission deadline changed from March 31, 2026 to May 1, 2027
March 11, 2024	Part F: GROUNDWATER TRENDLINE ANALYSIS	Submission deadline changed from March 31, 2026 to May 1, 2027
March 11, 2024	Part F: LEACHATE MANAGEMENT PLAN	Submission deadline changed from January 31, 2023 to March 31, 2024
March 11, 2024	Part F: LANDFILL GAS ASSESSMENT	Submission deadline changed from March 31, 2025 to March 31, 2027
March 11, 2024	Part F: WTF OPERATION AND MAINTENANCE PLAN	Submission deadline changed from December 31, 2023 to May 31, 2026
March 11, 2024	Part F: FLOCCULANT OPTIMIZATION STUDY	Submission deadline changed from March 31, 2025 to October 1, 2025
March 11, 2024	Part F: STORMWATER MANAGEMENT PLAN (INCLUDES THE STORMWATER TREND ANALYSIS)	Submission deadline changed from December 31, 2023 to November 1, 2024