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March 7, 2023

File: MV2019L1-0001

Patrick Smith  
Northwest Territories Power Corporation  
4 Capital Drive  
HAY RIVER NT X0E 1G2

Sent via email

Dear Patrick Smith:

**Re: Approval of Request to change submission date**

The Mackenzie Valley Land and Water Board (Board) met on March 2, 2023 and reviewed Northwest Territories Power Corporation (NTPC or Licensee) January 16, 2023 request to defer the submission dates of required reports and studies. As outlined below in Table 1 are the new submission dates.

**Table 1 - Updated Submission Date for Licence MV2019L1-0001**

Condition	Plan/Report/Study	Submission Date
Part E, condition 5	Thermal Plume Delineation Study Report	March 7, 2023

Attached is a copy of the updated Type A, Licence MV2019L1-0001, which shows the new submission dates. A copy of this Licence and all related correspondence and documents have been filed on MVLWB's [Public Registry](#).

If you have any questions or concerns, please contact [Shelagh Montgomery](#) in writing.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mavis Cli-Michaud".

Mavis Cli-Michaud  
MVLWB, Chair

BCC'd: Akaitcho Distribution List

Attached: Water Licence MV2019L1-0001



Mackenzie Valley Land and Water Board  
Water Licence

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

Northwest Territories Power Corporation  
(Licensee)

of 4 Capital Drive, Hay River NT X0E 1G2  
(Mailing Address)

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

Licence Number:	MV2019L1-0001
Licence Type:	A
Water Management Area:	Northwest Territories 03
Location:	114° 23' 00" W - 62° 28' 10" N
Purpose:	To use water and dispose of waste and associated uses
Description:	Industrial
Quantity of Water <u>not to be exceeded</u> :	50,000 cubic metres (m <sup>3</sup> )/day
Effective date of Licence:	October 18, 2019
Expiry date of Licence:	October 17, 2044

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

Handwritten signature of Mavis Cli-Michaud in blue ink.

Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair

Handwritten signature of Amanda Gauthier in black ink.

Amanda Gauthier, Witness

Approved by

Handwritten signature of the Minister of Environment and Natural Resources in black ink.

Minister of Environment and Natural Resources

**MV2019L1-0001**  
**Northwest Territories Power Corporation - Jackfish Hydro Facility**  
**Type A Water Licence**

**Part A: Scope and Definitions**

Scope

1. This Licence entitles the Licensee to use Water, and deposit Waste for industrial activities at the Jackfish Power Generation Facility. **SCOPE**  
  
The scope of this Licence includes the following:
  - a) Withdrawal of Water for the cooling of the power generators;
  - b) Depositing of Waste; and
  - c) Progressive Reclamation and associated Closure and Reclamation activities.
  
2. 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. Whenever new Regulations are made or existing Regulations are amended by the Commissioner in Executive Council under the *Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations. **REGULATIONS  
SUBJECT TO  
CHANGE**
  
3. Compliance with the defined terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial or municipal legislation. **LEGISLATIVE  
COMPLIANCE**

Definitions<sup>1</sup>:

**Defined Terms**

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

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

**Aquatic Effects Monitoring Program (AEMP)** – a monitoring program developed for the Project in accordance with this Licence and the MVLWB/GNWT *Guidelines for Aquatic Effects Monitoring Programs*

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

**Closure Criteria** – has the same meaning as that in the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advance Mineral Exploration and Mine Sites in the Northwest Territories*.

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<sup>1</sup> Defined terms are capitalized throughout the License, including when used in other definitions.  
MV2019L1-0001 – Northwest Territories Power Corporation – Industrial

## Defined Terms

**Closure Objectives** – has the same meaning as that in the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advance Mineral Exploration and Mine Sites in the Northwest Territories*.

**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.

**Closure and Reclamation Plan (CRP)** – a document, developed in accordance with this Licence and the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*, that clearly describes the Closure and Reclamation for the Project.

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

**Discharge Water** – wastewater specifically used for the cooling of the pumps associated with the power generators.

**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.

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

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

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

**Modification** - in respect of a structure, means a change, other than an expansion, that does not alter the purpose or function of a structure.

**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.

**Project** – the undertaking described in Part A, condition 1.

**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.

**Response Framework** – a systematic approach to responding to the results of a monitoring program through adaptive management actions.

**Response Plan** – a document describing the actions that will be taken by a Licensee in response to an Action Level exceedance.

**Runoff** – the overland flow of Water or Wastewater that occurs when precipitation, meltwater, or other Water is not absorbed by the land, and instead drains downslope towards a Watercourse.

## Defined Terms

**Seepage** – any Water or Waste that drains, passes through, or escapes from any structure designed to contain, withhold, divert, or retain Water or Waste.

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

**Temporary Closure** – a state of care and maintenance, with the intent of resuming activities in the near future.

**Waste** – any substance defined as Waste by section 1 of the *Waters Act*.

**Waste Management Plan (WMP)** – a document, developed in accordance with the MVLWB *Guidelines for Developing a Waste Management Plan*, that describes the methods of Waste management from Waste generation to final disposal.

**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, and Discharge Water.

**Water** – any Water as per section 1 of the *Waters Act*.

**Watercourse** – a natural watercourse, body of Water or Water supply, whether usually containing Water or not, and includes Groundwater, springs, swamps, and gulches.

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

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

**Water Use** – a use of Water as per section 1 of the *Waters Act*.

## Part B: General Conditions

Condition	Title
1. The Licensee shall ensure a copy of this Licence is maintained on site at all times.	COPY OF LICENCE
2. The Licensee shall take every reasonable precaution to protect the environment.	PRECAUTION TO PROTECT ENVIRONMENT
3. All references to policies, guidelines, codes of practice, statutes, regulations, or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted.	USE UP-TO-DATE REFERENCES
4. The Licensee shall ensure all submissions to the Board: a) Are in accordance with the MVLWB <i>Document Submission Standards</i> ; b) Include a conformity table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and c) Include any additional information requested by the Board.	SUBMISSION FORMAT AND CONFORMITY
5. The Licensee shall ensure management plans are submitted to the Board in a format consistent with the MVLWB <i>Standard Outline for Management Plans</i> , unless otherwise specified.	MANAGEMENT PLAN FORMAT
6. The Licensee shall comply with all plans, programs, manuals approved pursuant to the conditions of this Licence, including such revisions made as per the conditions of this Licence, and as approved by the Board.	COMPLY WITH SUBMISSIONS AND REVISIONS
7. The Licensee shall conduct an annual review of all plans, programs, manuals, 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 as well as the ones which do require revisions.	ANNUAL REVIEW
8. The Licensee may propose changes at any time by submitting revised plans, programs, manuals, or studies to the Board, for approval, a minimum of 90 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board.	REVISIONS
9. The Licensee shall revise any submission and submit it as per the Board's directive.	REVISE AND SUBMIT
10. If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.	SUBMISSION DATE
11. The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any updates to the Schedules as may be made by the Board.	COMPLY WITH SCHEDULE(S)
12. The Licensee shall comply with the Surveillance Network Program (SNP), which is annexed to and forms part of this Licence, and any updates to the SNP as may be made by the Board.	COMPLY WITH SNP
13. The Schedules and any compliance dates specified in this Licence may be updated at the discretion of the Board.	UPDATES TO COMPLIANCE DATE(S)

Condition	Title
14. The Licensee shall install, operate, and maintain meters/measuring, devices, loggers or other such methods used for measuring/monitoring the volumes of Water used and Waste Discharged to the satisfaction of an Inspector and in accordance with the approved <b>Standard Operating Procedures and Quality Assurance and Quality Control Plan</b> .	<b>MEASURE WATER USE AND WASTE DISCHARGED</b>
15. Beginning March 31, 2020 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.	<b>ANNUAL WATER LICENCE REPORT</b>
16. Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a <b>Standard Operating Procedures and Quality Assurance and Quality Control Plan</b> .	<b>STANDARD OPERATING PROCUDRES AND QUALITY ASSURANCE AND QUALITY CONTROL PLAN</b>
17. The Licensee shall comply with the <b>Engagement Plan</b> , once approved.	<b>ENGAGEMENT PLAN</b>
18. The Licensee shall immediately provide written notification to the Board and an Inspector of any non-compliance with the conditions of this Licence or any direction from the Board pursuant to the conditions of this Licence.	<b>NOTIFICATION – NON-COMPLIANCE</b>

## Part C: Conditions Applying to Water Use

Condition	Title
1. The Licensee shall only obtain fresh Water for the Project from Jackfish Lake. The Licensee may withdraw up to 50,000 m <sup>3</sup> /day of Water from this source.	<b>WATER SOURCE AND MAXIMUM VOLUME</b>
2. The Licensee shall construct and maintain the Water intake(s) with a screen designed to prevent impingement or entrapment of fish.	<b>WATER INTAKE SCREEN</b>



## Part D: Conditions Applying to Modifications

Condition	Title
<p>1. The Licensee may, without written approval from the Board, carry out a Modification to the existing or planned undertaking provided the following requirements are met:</p> <ul style="list-style-type: none"> <li>a) The Licensee has notified the Board and an Inspector, in writing, of such proposed Modification at least 90 days prior to the beginning of the Modification;</li> <li>b) The Modification does not place the Licensee in contravention of either this Licence or the Act;</li> <li>c) The Board has not, during the 60 days following notification of the proposed Modification, informed the Licensee that further information is required or that a review of the proposal will require more than 60 days;</li> <li>d) An Inspector has authorized the proposed Modification and provided a letter of notification to the Board; and</li> <li>e) The Board has not rejected the proposed Modification.</li> </ul>	<p><b>MODIFICATION REQUIREMENTS</b></p>
<p>2. Modifications for which all of the conditions referred to in Part D, condition 1 have not been met, may only be carried out with written approval from the Board.</p>	<p><b>MODIFICATION – WRITTEN APPROVAL REQUIRED</b></p>
<p>3. Within 90 days of the completion of the Modification referred to in Part D, condition 1, the Licensee shall submit to the Board an <b>As-built Report</b>, stamped and signed by a Professional Engineer, which shall include final as-built drawings and specifications of the modified structure.</p>	<p><b>AS-BUILT REPORT – MODIFICATION</b></p>

## Part E: Conditions Applying to Waste and Water Management

Condition	Title
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 comply with the <b>Waste Management Plan</b> once approved.	<b>WASTE MANAGEMENT PLAN</b>
3. The Licensee shall direct all Discharge Water from the Jackfish Lake Power Generating Facility to Jackfish Lake as described in the approved Waste Management Plan.	<b>DISCHARGE WATER – JACKFISH LAKE POWER GENERATING FACILITY</b>
4. By May 31, 2021 the Licensee shall submit to the Board a <b>Thermal Plume Delineation Study Design Plan</b> . The Plan shall be in accordance with the requirements of Schedule 2, Condition 1 and shall be submitted to the Board for approval.	<b>THERMAL PLUME DELINEATION STUDY DESIGN</b>
5. The Licensee shall submit to the Board for approval, a <b>Thermal Plume Delineation Study Report</b> by March 7, 2023. The Plan shall be in accordance with the requirements of Schedule 2, condition 2.	<b>THERMAL PLUME DELINEATION STUDY REPORT</b>

## Part F: Conditions Applying to Aquatic Effects Monitoring Program

Condition	Title
<p>1. The Licensee shall design and implement an Aquatic Effects Monitoring Program (AEMP) in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i> to meet the following objectives:</p> <ul style="list-style-type: none"> <li>a) To determine the short- and long-term effects of the Project on the Receiving Environment;</li> <li>b) To assess the efficacy of mitigation that is used to minimize the effects of the Project on the Receiving Environment;</li> <li>c) To identify the need for additional mitigation measures to reduce or eliminate Project-related effects; and</li> <li>d) To provide an early warning system where the results of the <b>AEMP</b> are used to avoid adverse effects through the Response Framework and/or regular evaluation of the <b>AEMP</b>.</li> </ul>	<p><b>OBJECTIVE – AEMP</b></p>
<p>2. The Licensee shall submit to the Board, for approval, an <b>AEMP Design Plan</b> by April 30, 2023. The Plan shall be in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i> and will incorporate the results from the Thermal Plume Delineation Study Report.</p>	<p><b>AEMP DESIGN PLAN</b></p>
<p>3. Three years following implementation of the <b>AEMP Design Plan</b>, and every five years thereafter, or as directed by the Board, the Licensee shall submit to the Board, for approval, an <b>AEMP Re-Evaluation Report</b>. The Report shall be in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i> and shall evaluate the overall effectiveness of the AEMP to date.</p>	<p><b>AEMP RE-EVALUATION REPORT</b></p>
<p>4. Three years following implementation of the <b>AEMP Design Plan</b> and every five years thereafter, or as directed by the Board, the Licensee shall submit to the Board, for approval, a revised <b>AEMP Design Plan</b>, which incorporates the results from the <b>AEMP Re-evaluation Report</b>. The revised Plan shall be in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i>.</p>	<p><b>AEMP DESIGN PLAN – REVISED</b></p>
<p>5. Beginning March 31, 2024, and no later than March 31 of each year thereafter, the Licensee shall submit to the Board, for approval, an <b>AEMP Annual Report</b>. The Report shall be in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i> and the requirements of Schedule 3, condition 1.</p>	<p><b>AEMP ANNUAL REPORT</b></p>
<p>6. If any low Action Level established in the approved <b>AEMP Design Plan</b> is exceeded, the Licensee shall, at a minimum, implement the response actions described in the approved <b>AEMP Design Plan</b>, and report the exceedance in the <b>AEMP Annual Report</b>.</p>	<p><b>LOW ACTION LEVEL EXCEEDANCE</b></p>
<p>7. If any moderate or high Action Level established in the approved <b>AEMP Design Plan</b> is exceeded, the Licensee shall:</p> <ul style="list-style-type: none"> <li>a) Within the timeframe identified in the approved <b>AEMP Design Plan</b> notify the Board and an Inspector; and</li> <li>b) Within the timeframe identified in the approved <b>AEMP Design Plan</b> or as otherwise directed by the Board, submit an <b>AEMP Response Plan</b> to the Board for approval. The Response Plan shall be in accordance with the MVLWB/GNWT <i>Guidelines for Aquatic Effects Monitoring Programs</i>.</li> </ul>	<p><b>MODERATE OR HIGH ACTION LEVEL EXCEEDANCE</b></p>

## PART G: Conditions Applying to Spill Contingency Planning

	Condition	Title
1.	The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters.	<b>OBJECTIVE – PREVENT WASTE INTO WATER</b>
2.	The Licensee shall comply with the <b>Spill Contingency Plan</b> , once approved.	<b>SPILL CONTINGENCY PLAN</b>
3.	During the period of this Licence, if a spill or an Unauthorized Discharge occurs or is foreseeable, the Licensee shall: <ol style="list-style-type: none"> <li data-bbox="168 541 1198 569">a) Implement the approved <b>Spill Contingency Plan</b> referred to in Part G, Condition 2;</li> <li data-bbox="168 575 1240 642">b) Report it immediately using the NU-NT Spill Report Form by one of the following methods:               <ul style="list-style-type: none"> <li data-bbox="212 648 581 676">• Telephone: (867) 920-8130</li> <li data-bbox="212 682 496 709">• Fax: (867) 873-6924</li> <li data-bbox="212 716 542 743">• E-mail: <a href="mailto:spills@gov.nt.ca">spills@gov.nt.ca</a></li> <li data-bbox="212 749 800 777">• Online: Spill Reporting and Tracking Database</li> </ul> </li> <li data-bbox="168 783 873 810">c) Within 24 hours, notify the Board and an Inspector; and</li> <li data-bbox="168 816 1240 961">d) Within 30 days of initially reporting the incident, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Written notification shall be provided to the Board and an Inspector if any changes occur.</li> </ol>	<b>REPORT SPILLS</b>
4.	The Licensee shall ensure that spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project.	<b>SPILL PREVENTION AND RESPONSE EQUIPMENT</b>
5.	The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector.	<b>CLEAN UP SPILLS</b>

## PART H: Conditions Applying to Closure and Reclamation

	Condition	Title
1.	Within 24 months following the effective date of this Licence, the Licensee shall submit to the Board, for approval, an <b>Interim Closure and Reclamation Plan</b> . The Plan shall be in accordance with the requirements of Schedule 4, condition 1.	<b>CLOSURE AND RECLAMATION PLAN</b>
2.	Two years prior to the expiration of this Licence, the Licensee shall submit to the Board, for approval, an updated <b>Interim Closure and Reclamation Plan</b> .	<b>CLOSURE AND RECLAMATION PLAN – UPDATE</b>

Signed on behalf of the Mackenzie Valley Land and Water Board



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Mavis Cli-Michaud, 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, condition 15 of this Licence shall include, but not be limited to, the following information about activities conducted during the previous calendar year:
  - a) A brief summary of Project activities;
  - b) The monthly and annual quantities in cubic metres of fresh Water obtained from all sources and thermal data from intake and Discharge data loggers, as required in Part B, condition 14 and Part C, condition 1 of this Licence;
  - c) A summary of the calibration and status of the meters and devices referred to in Part B, condition 14 of this Licence;
  - d) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, referred to in Part B, condition 17 of this Licence;
  - e) A summary of Modification activities conducted in accordance with Part D of this Licence;
  - f) A summary of major maintenance activities conducted in accordance with this Licence;
  - g) A summary of activities conducted in accordance with the approved **Waste Management Plan**, referred to in Part E, condition 2 of this Licence, including:
    - i. A summary of approved updates or changes to the process or facilities required for the management of Waste;
    - ii. A summary of approved updates or changes to the process or facilities required for the management of Waste
  - h) A summary of monitoring results and any Action Level exceedances as per the approved AEMP, required in Part F, condition 7 of this Licence;
  - i) A summary of activities conducted in accordance with the approved Spill Contingency Plan, required in Part G, condition 2 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 G, condition 4 of this Licence; and
    - ii. An outline of any spill training carried out.
  - j) A summary of any Closure and Reclamation work completed.
  - k) Tabular summaries of all data and information generated under the monthly SNP annexed to this Licence, in Excel format.
  - l) 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;
  - m) A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector;
  - n) Any other details requested by the Board by November 1 of the year being reported.

## Schedule 2: Thermal Plume Delineation

### Condition

1. The **Thermal Plume Delineation Study Design Plan** referred to in Part E, condition 6 of this Licence shall include, but not be limited to, the following:
  - a) Seasonal delineation (spring freshet, late summer, late fall, and late under ice) of the thermal plume, include a calculation of maximum extent of plume as a percentage of lake area;
  - b) Temperature, dissolved oxygen profiles and any other parameters deemed relevant to the understanding of the thermal plume and the lake stratification;
  - c) An assessment of aquatic habitat within the thermal plume zone(s); and
  - d) Seasonal chemical characterization<sup>2</sup> at a minimum of one station located outside of the potential plume but situated such that potential influence of inflow(s) can be characterized and one station located at or near the outflow of Jackfish Lake. Station locations and rational to be included.
2. The **Thermal Plume Delineation Study Report** referred to in Part E, condition 7 of this Licence shall include, but not be limited to, the following:
  - a) Maps illustrating the extent of the thermal plume and any seasonal changes documented;
  - b) Graphical representation of the thermal profile and applicable water quality data;
  - c) Identification of the worse case thermal plume scenario of the four seasonal conditions identified in Schedule 1, item 1a;
  - d) Discussion of results and potential impacts to the aquatic ecosystem in Jackfish Lake and recommendations to inform the Aquatic Effects Design Report; and
  - e) Tabular summaries of all data and information generated under the Thermal Plume Delineation Study, in Excel format.

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<sup>2</sup> Chemical characterization shall include, but not be limited to the following parameters:

- Field parameters (pH, Electrical Conductivity [EC], Temperature, Dissolved Oxygen [DO])
- Major Ions
- Total Suspended Solids (TSS)
- pH
- Oil and Grease (Hexane Extractable)
- Total Petroleum Hydrocarbons (F1, F2, F3, F4 CCME Fractions)
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX)
- Total and Dissolved Metals (Metals shall include but not be limited to analysis of the following parameters: Aluminum, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Thallium, Uranium, and Zinc)

### Schedule 3: Aquatic Effects Monitoring Program

#### Condition

1. The **AEMP Annual Report** referred to in Part F, condition 5 of this Licence shall include, but not be limited to, the following:
  - a) A plain language summary and interpretation of the major results obtained in the preceding calendar year;
  - b) A summary of activities conducted under the AEMP;
  - c) A summary of any spills, activities, or other considerations within the report time frame that could influence the results of the AEMP;
  - d) Tabular summaries of all data and information generated under the AEMP, in Excel format;
  - e) A comparison of monitoring results from the annual AEMP and results from the Thermal Plume Delineation Study Report including an interpretation of the results, including an evaluation of any identified environmental effects and their potential ecological significance that occurred as a result of the Project;
  - f) A comparison of monitoring results to Action Levels as defined in the approved **AEMP Design Plan**;
  - g) For any low Action Level exceedances, a summary of the nature and extent of the exceedance, as well as a description of actions in response to the exceedance;
  - h) An evaluation of any adaptive management response actions implemented;
  - i) Recommendations, with rationale, for changes to any aspect of the **AEMP Design Plan**; and
  - j) Any other information specified in the approved **AEMP Design Plan**.



## Schedule 4: Closure and Reclamation

### Condition

1. The **Interim Closure and Reclamation Plan** referred to in Part H, condition 1 of this Licence shall include, but not be limited to the following information:
  - a) A plain language summary of the Plan;
  - b) A description of the overall goals for Closure and Reclamation of the Project, including expected future land use;
  - c) A description of the Closure and Reclamation planning team;
  - d) A description of engagement related to Closure and Reclamation planning, including a summary of completed and planned engagement, and links to the **Engagement Plan** referred to in Part B, Condition 17 for the Project;
  - e) A list of any other regulatory instruments required for Closure and Reclamation of the Project;
  - f) A description of the pre-existing and current Project environment, including, but not limited to:
    - i. climatic conditions;
    - ii. physical conditions;
    - iii. chemical conditions;
    - iv. biological conditions; and
    - v. any physical or chemical assessments of soil, water, and permafrost.
  - g) A description of the Project, including, but not limited to:
    - i. site history;
    - ii. Project development;
    - iii. current status of the Project;
    - iv. maps delineating all disturbed areas, borrow material locations, site facilities, hydrological features, and elevation contours; and
    - v. photographs.
  - h) A description of each Project component, including, but not limited to:
    - i. areas affected by spills or Unauthorized Discharges; and
    - ii. other areas affected by Project activities.
  - i) For the Project site, a description of Closure and Reclamation plans, including, but not limited to:
    - i. Closure Objectives and Criteria;
    - ii. preferred Closure and Reclamation option and method for each Project component identified in condition (h) above;
    - iii. design drawings, signed and stamped by a Professional Engineer, for any Engineered structures if applicable;
    - iv. Water management and restoration of natural drainage;
    - v. predicted environmental effects during and after Closure and Reclamation activities;
    - vi. post-closure monitoring, maintenance, and reporting;
    - vii. uncertainties and contingencies;
    - viii. climate change considerations; and
    - ix. Closure and Reclamation Research plans.

## Condition

- j) A description of any planned Progressive Reclamation;
- k) A plan for Temporary Closure, including, but not limited to the following information:
  - i. Temporary Closure goals and objectives;
  - ii. a description of activities and methods;
  - iii. a description of monitoring, maintenance, and reporting;
  - iv. contingencies; and
  - v. an implementation schedule.
- l) An implementation schedule that includes Progressive Reclamation and final Closure and Reclamation activities.

## ANNEX A: SURVEILLANCE NETWORK PROGRAM - annexed to Water Licence MV2019L1-0001

**LICENSEE:** Northwest Territories Power Corporation

**LICENCE NUMBER:** MV2019L1-0001

**EFFECTIVE DATE OF LICENCE:** October 18, 2019

**EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM (SNP):** October 18, 2019

### Part A – Surveillance Network Program Description and Monitoring Requirements

1) The location of sampling sites and specific monitoring requirements are as follows:

a) **Surveillance Network Program (SNP) 00-1:**

<b>Description:</b>	SNP 00-1a,b,c,d – Intakes to the K (2 intakes), EMD (1 intake), and CAT (1 intake) plants
<b>Location:</b>	SNP 00-1a - K plant intake 1 SNP 00-1b - K plant intake 2 SNP 00-1c - EMD plant intake SNP 00-1d - CAT plant intake
<b>Sampling Frequency:</b>	Continuous in-situ measurements during periods of discharge to Jackfish Lake
<b>Sampling Parameters:</b>	Water Temperature Flow

b) **Surveillance Network Program (SNP) 00-2:**

<b>Description:</b>	SNP 00-2a,b,c - Discharges from the K, EMD and CAT plants, respectively
<b>Location:</b>	SNP 00-2a - K plant SNP 00-2b - EMD SNP 00-2c - CAT plant
<b>Sampling Frequency:</b>	Continuous in-situ measurements during periods of Discharge to Jackfish Lake
<b>Sampling Parameters:</b>	Water Temperature

c) **Surveillance Network Program (SNP) JF01-06**

<b>Description:</b>	JF01-06 – Groundwater Monitoring Well
<b>Location:</b>	Located at the Lease Boundary near the lake shore near the warehouse near K Plant
<b>Sampling Frequency:</b>	Twice a year during June and September
<b>Sampling Parameters</b>	<ul style="list-style-type: none"> <li>• Field parameters (pH, Electrical Conductivity [EC], Temperature, Dissolved Oxygen [DO])</li> <li>• Major Ions</li> <li>• Total Suspended Solids (TSS)</li> <li>• Oil and Grease (Hexane Extractable)</li> <li>• pH</li> <li>• Total Petroleum Hydrocarbons (F1, F2, F3, F4 CCME Fractions)</li> <li>• Benzene, Toluene, Ethylbenzene, Xylene (BTEX)</li> <li>• Dissolved Metals (Metals shall include but not be limited to analysis of the following parameters: Aluminum, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Thallium, Uranium, and Zinc)</li> </ul>

d) **Surveillance Network Program (SNP) MW2**

<b>Description:</b>	MW2 – Groundwater Monitoring Well
<b>Location:</b>	Located at the Lease Boundary near the lake shore between the EMD Plant and the Cat Plant
<b>Sampling Frequency:</b>	Twice a year during June and September
<b>Sampling Parameters</b>	<ul style="list-style-type: none"> <li>• Field parameters (pH, Electrical Conductivity [EC], Temperature, Dissolved Oxygen [DO])</li> <li>• Major Ions</li> <li>• Total Suspended Solids (TSS)</li> <li>• Oil and Grease (Hexane Extractable)</li> <li>• pH</li> <li>• Total Petroleum Hydrocarbons (F1, F2, F3, F4 CCME Fractions)</li> <li>• Benzene, Toluene, Ethylbenzene, Xylene (BTEX)</li> <li>• Dissolved Metals (Metals shall include but not be limited to analysis of the following parameters: Aluminum, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Thallium, Uranium, and Zinc)</li> </ul>

2. The location of sampling sites is subject to approval of the Inspector.
3. More frequent sample collection may be required at the request of an Inspector.

4. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" at the time of analysis, or by such other methods approved by an Analyst.
5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) or equivalent for the specific analyses to be performed or as approved by an Analyst.
6. The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary. Proposed modifications shall be submitted to an Analyst for approval.
7. The QA/QC Plan referred to in SNP Section A, Item 6 shall be implemented as approved by an Analyst.

## **Part B – Volume and Temperature Measurement Requirements**

- 1) All volume and temperature measurements shall be measured and recorded continuously (i.e., using electronic data storage chips or equivalent) during periods of Discharges and reported on a monthly basis:
  - a) The daily, monthly, and annual quantities of cooling water circulated from Surveillance Network Program Station Numbers 00-1a, 00-1b, 00-1c, and 00-1d shall be measured and recorded in cubic metres; and
  - b) The water temperature at Surveillance Network Program Station Numbers 00-1a, 00-1b, 00-1c, 00-1d, 00-2a, 00-2b, and 00-2c shall be measured and recorded in degrees Celsius.

## ANNEX B: Concordance Table of items Requiring Submission – annexed to Water Licence MV2019L1-0001

This table summarizes the information the Licensee is required to submit as per the Water Licence conditions.

Part of Licence	Item	Date
Annex A	Monthly SNP Report	Within 30 days of the end of the reporting month
Part B, condition 15	Annual Water Licence Report	March 31, 2020 and every March 31 thereafter.
Part B, condition 16	Standard Operating Procedures and Quality Assurance and Quality Control Plan	Within 90 days following issuance of this Licence
Part E, condition 4	Thermal Plume Delineation Study Design	A minimum of 90 days following the effective date of this Licence.
Part E, condition 5	Thermal Plume Delineation Study Report	March 7, 2023
Part F, condition 2	AEMP Design Plan	April 30, 2023
Part F, condition 3	Aquatic Effects Re-evaluation Report	Three years following implementation of the AEMP Design Plan and every five years thereafter, or as directed by the Board.
Part F, condition 4	AEMP Design Plan – Revised	Three years following implementation of the AEMP Design Plan and every five years thereafter, or as directed by the Board.
Part F, condition 5	AEMP Annual Report	March 31, 2024 and every year thereafter.
Part H, condition 1	Closure and Reclamation Plan	Within 24 months following the effective date of this Licence
Part H, condition 2	Closure and Reclamation Plan - Update	Three years prior to the expiration of this Licence

## ANNEX C: Table of Revision History – annexed to Water Licence MV2019L1-0001

Date	Location of change	Description of change
May 28, 2020	Part E, condition 4 Part E, condition 5 Part F, condition 2	- Compliance date change
April 21, 2021	Part E, condition 4 Part E, condition 5 Part F, condition 2 Part F, condition 5	- Compliance date change
March 7, 2023	Part E, condition 5	- Compliance date change