



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
918 Nunavut Drive
Iqaluit, NU, X0A 3H0

Your file - Votre référence
(3BM-GRI2025)
Our file - Notre référence
GCDOcs#XXXXXXXX

January 16, 2026

Robert Hunter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: robert.hunter@nwb-oen.ca

**Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of the
Licence Renewal/Amendment Application for the Hamlet of Grise Fiord Project
#3BM-GRI2025, Type B Water Licence**

Dear Robert,

Thank you for the December 16, 2025 invitation to review the Application for the Renewal / Amendment of the Hamlet of Grise Fiord Type B Water Licence #3BM-GRI2025.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

The applicant shall provide confirmation from the Nunavut Water Board that all outstanding water license fees have been paid in full prior to approval of this application.

If there are any questions or concerns, please contact me at 873-452-2525 or jordan.beer@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Jordan Beer, M.Sc.,
Water Management Coordinator



Technical Review Memorandum

Date: January 16, 2026

To: Robert Hunter - Licensing Administrator, Nunavut Water Board

From: Jordan Beer – Water Management Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada’s Review of the Licence Renewal/Amendment Application for the Hamlet of Grise Fiord Project, Type B Water Licence

Region: Kitikmeot Kivalliq Qikiqtani

A. BACKGROUND

The hamlet of Grise Fiord is located within the Qikiqtani Region, Nunavut, on the southern shore of Ellesmere Island, at the geographic coordinates of 76° 25' N and 82° 54' W. The municipality operates a Water Supply Facility, a Solid Waste Facility and a Sewage Disposal Facility under the Type B Municipal License no. 3BM-GRI2025.

The Government of Nunavut Community of Government Services (GN-CGS) is applying, on behalf of the hamlet of Grise Fiord, for a 22 year renewal and amendment of their Type B Water License. Currently, the hamlet’s water intake system consists of collecting water from glacial runoff and Airport River in summer and storing this water in two 4,000 m³ storage tanks and one 1,500 m³ storage tank. Trucks are used to distribute water to the community and to collect sewage. Sewage is deposited in a single cell lagoon Sewage Disposal Facility, then decanted annually into a Wetland Treatment Area before reaching the Final Receiving Area of Jones Sound. The solid waste facility is co-located with the sewage lagoon at the far east end of town due south of the airport runway. Proposed amendments include the construction of a new Water Treatment Facility, an increase in maximum annual withdrawal rate from 8,000 cubic metres to 13,200 cubic metres, and a decrease in maximum permissible BOD₅, cBOD, and TSS concentrations in effluent grab samples. The application also indicates the intention to improve the solid waste treatment facility within the next 2 years, but the associated documents are not provided as part of this amendment / renewal.

CIRNAC provides the following comments and recommendations pertaining to the application package. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C.



Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	Improved Annual Reporting
R-02	Lagoon Sample Exceedances
R-03	Spill Contingency and Fuel Storage
R-04	Wetland Treatment Area
R-05	Lagoon Runoff
R-06	Lagoon Emergency Discharge
R-07	Lagoon Seepage
R-08	Landfill Surface Water Management
R-09	Hazardous Waste Storage Berm/Liner Timeline
R-10	Landfill Capacity
R-11	Solid Waste Separation
R-12	Open Burning Ash Monitoring
R-13	Landfill Wind Management
R-14	Airport River Flow Rate
R-15	Aggregate Quality

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

Table 2: Documents Reviewed and Referenced

[Copilot: in your review of each document capture the precise name of the document as listed in the document, that will be the document title. Then for the second column, identify the author of the document, and the precise date if possible and provide the file number if applicable and any revisions.]



Document Title	Author, File No., Rev., Date
210719 3BM-GRI2025 Annual Report 2020 Tech Review-OASE	Nunavut Water Board, July 2021
240301 3BM-GRI2025 2024-02-27 NPC Letter re 150230 Amendment to Municipality of Grise Fiord-IMLE	Nunavut Planning Commission, February 2024
250331 3BM-GRI2025 Grise Fiord 2024 Annual Report-ILAE	Applicant (Hamlet of Grise Fiord), March 2025
250602-25XN006-Cover Ltr Re Screening Decision Report-OR1E	Nunavut Impact Review Board, June 2025
250602-25XN006-Notice of Release of SDR-OR1E	Nunavut Impact Review Board, June 2025
250602-25XN006-Screening Decision Report-OR1E	Nunavut Impact Review Board, June 2025
251216 3BM-GRI2025 2020 Grise Fiord Annual Report-ILAE	Applicant (Hamlet of Grise Fiord), March 2021
251216 3BM-GRI2025 2021 Grise Fiord Annual Report-ILAE	Applicant (Hamlet of Grise Fiord), March 2022
251216 3BM-GRI2025 2022 Grise Fiord Annual Report-ILAE	Applicant (Hamlet of Grise Fiord), March 2023
251216 3BM-GRI2025 2023 Grise Fiord Annual Report-ILAE	Applicant (Hamlet of Grise Fiord), March 2024
251216 3BM-GRI2025 2025 Plan for Compliance-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Cover Letter Amendment and Renewal - December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Executive Summary - Grise Fiord Water Licence Renewal - IU-ILAS	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Letter of Authorization-ILAE	Applicant (Hamlet of Grise Fiord), March 2025
251216 3BM-GRI2025 NPC 149228 Renewal and Amendment of Water Licence 3BM-GRI1520-ILAE	Nunavut Planning Commission, November 2019
251216 3BM-GRI2025 NPC 150165 New Water Treatment Plant Water Licence 3BM-GRI2025-ILAE	Nunavut Planning Commission, October 2023



Document Title	Author, File No., Rev., Date
251217 3BM-GRI2025 Executive Summary - Grise Fiord Water Licence Renewal - EN-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251217 3BM-GRI2025 Grise Fiord Application for Water Licence Amendment and Renewal - December 16 2025_V2-ILAE	Department of Community and Government Services (On Behalf of Applicant), December 2025
251216 3BM-GRI2025 Amendment Justification Letter - December 2025-ILAE	Transportation and Infrastructure Nunavut, December 2025
251216 3BM-GRI2025 Grise Fiord OM Plan Sewage Disposal Facilities December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Grise Fiord OM Plan Solid Waste Disposal Facility December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Grise Fiord OM Plan Water Supply Facilities December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Grise Fiord Water Supply Facility IFC Detailed Design Drawings-ILAE	Government of Nunavut, December 2025
251216 3BM-GRI2025 Grise Fiord Water Treatment Plant Schematic Design Report Nov 2023-ILAE	Applicant (Hamlet of Grise Fiord), December 2023
201008 3BM-GRI1520 Spill Contingency Plan for Grise Fiord Oct. 06 2020 Final Edit-ILAE	Applicant (Hamlet of Grise Fiord), October 2020
141110 3BM-GRI0911 Final QAQC Plan September 2014-IMLE	Applicant (Hamlet of Grise Fiord), September 2014



C. RESULTS OF REVIEW

1. Improved Annual Reporting

Comment:

The annual reports provided by the hamlet of Grise Fiord between 2021 and 2025 did not meet the requirements listed within water license GRI-2025 (henceforth referred to as “the License”). The document “251216 3BM-GRI2025 2025 Plan for Compliance-ILAE” provides a plan to improve reporting compliance, but does not address all issues from previous years. This is a concern because the Nunavut Water Board cannot adequately evaluate compliance with water usage, waste discharge and other license conditions without accurate reporting. In particular:

- a. The daily quantities in cubic metres of fresh Water obtained at the Water Supply Facility were not reported, as required by Parts B-1a, B-1b, B-2, H-1 and H-2 of the License.
- b. The daily quantities in cubic metres of sewage Waste discharged were not reported, as required by Part B-1c and B-2 of the License.
- c. The monthly and yearly quantities of water obtained from all sources was reported in L in 2020, 2023, and presumably in 2022 despite the table header listing m³. Quantities must be listed in m³ as per Part B-1b of the License.
- d. The monthly and yearly effluent discharge quantities were reported as required under Part B-1c and B-2 of the License, but the values were inaccurate. Reports assume total sewage discharge is equal to the total water added to the water reservoir each year, but the inspection reports from 2022 and 2023 note that this does not account for water used for dust suppression and other purposes.
- e. The monthly and annual quantities of solid waste accepted at the Solid Waste Facilities were not accurately reported as required by part B-1c of the License. No solid waste quantities were reported in the 2020-2023 reports and all monthly quantities were the same in 2024, indicating a lack of detailed monthly records.
- f. A summary of major maintenance work was not included in the 2022 annual report as required by part B-1d of the License, despite the inspection reports indicating repairs to Tank #1 and Tank #3 in 2022.
- g. No unauthorized discharges were reported between 2020 and 2024 as required by Part B-1e, F-6b and F-6c of the License. However, inspection reports from 2022 and 2023 describe spills adjacent to the repair of the water storage tank, within the solid waste facility, and unauthorized discharges from the sewage lagoon.
- h. The 2023 CIRNAC inspection report was included in the 2023 annual report, but was missing pages and no summary was provided as required by Part B-1i of the License. There was also no summary for the 2022 CIRNAC inspection report.



- i. Inspections of all engineered facilities related to the management of Water and Waste were not conducted in 2020, 2021, or 2024, as required by part F-4 of the License.
- j. Samples taken from GRI-2 and GRI-4 were not analyzed for Biochemical Oxygen Demand, oil and grease, cobalt, fecal coliforms, nitrite or nickel in 2023, as required by Part H-5 of the License.
- k. Reports do not include an interpretation and discussion of results from the Monitoring Program, as required by Part H-8 of the License.
- l. Sample IDs used in the 2022, 2023 and 2024 annual reports do not match the proper monitoring station names, making it difficult to evaluate results.

Recommendation:

(R-01) CIRNAC recommends that the applicant provide an updated plan for compliance that addresses how they will:

- (R-01a) report the daily quantity of fresh Water obtained at the Water Supply Facility and/or for all purposes under the license.
- (R-01b) report the daily quantity of sewage Waste discharged.
- (R-01c) improve the accuracy of their sewage discharge reporting to account for water used for dust suppression and other purposes.
- (R-01d) improve accuracy when reporting monthly and yearly quantities of every type of Waste accepted at the Solid Waste Facilities.
- (R-01e) provide a summary of all modifications and/or major maintenance work carried out on the Water Supply Facilities, Waste Disposal Facilities, and all associated structures.
- (R-01f) report all unauthorized discharges and a summary of follow-up actions taken.
- (R-01g) include a summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities.
- (R-01h) ensure inspections are completed annually and included in annual report.
- (R-01i) ensure samples from GRI-2 and GRI-4 are analyzed for all parameters listed in Part H-5 of the License, and results are included in annual report.
- (R-01j) include interpretations and discussions of results from the Monitoring Program.
- (R-01l) ensure sample ID names used in annual reports match the listed monitoring station names from the License.



2. Lagoon Sample Exceedances

Comment:

Water quality results indicate that lagoon water exceeded Canadian Council of Ministers of the Environment (CCME)'s Water Quality Guidelines for the Long Term Protection of Aquatic life for copper, iron, and mercury in 2021 and 2024. This is a concern because the lagoon effluent is decanted directly into a wetland.

Recommendation:

(R-02a) CIRNAC recommends that the applicant provide a plan for how they will bring the lagoon water effluent in compliance with the CCME Water Quality Guidelines before decanting into the wetland.

(R-02b): CIRNAC recommends adding the following maximum thresholds to Part D-3 of the renewed license, regulating discharge water quality at GRI-4:

Parameter:	Maximum Concentration of Any Grab Sample:
Copper	$0.2 * e^{\{0.8545[\ln(\text{hardness})]-1.465\}}$
Iron	300 µg/L
Mercury	0.026 µg/L

(R-02c): CIRNAC recommends adding Dissolved Organic Carbon (DOC) to the sample analysis requirements listed in part H-5 of the License. This will allow regulators to assess whether Zinc concentrations exceed CCME guidelines.

3. Spill Contingency and Fuel Storage

Comment:

No spill contingency plan was submitted as part of this application, so it was assumed that the municipality will continue to use the version submitted in October 2020. The spill contingency plan and the various operation and maintenance plans are missing important information on how spills will be prevented and managed. Of particular concern:

- a) There are no measures listed in The Operation and Maintenance Plan for Sewage Disposal Facilities or The Spill Contingency Plan For Grise Fiord to prevent spills during the collection, transport, and offload of sewage. The concern is that this will lead to preventable spills during operations.



- b) The design report and schematic drawings for the new water treatment facility do not specify the volume of fuel that will be stored on site. The concern is that fuel storage volumes greater than 4,000 L require secondary containment.
- c) The Spill Contingency Plan For Grise Fiord does not describe the storage capacity or the amount of contaminants normally stored at facilities. The concern is that this information is legally required under the Consolidation of Spill Contingency Planning and Reporting Regulations, section 4(2).

Recommendation:

(R-03a): CIRNAC recommends that the applicant update either The Operation and Maintenance Plan for Sewage Disposal Facilities or The Spill Contingency Plan For Grise Fiord to clearly indicate what measures will be taken to prevent spills during sewage collection, transport, and disposal into the lagoon (e.g. drip trays).

(R-03b): CIRNAC recommends that the applicant clarify the volume of fuel that will be stored at the new Water Treatment Facility, and that appropriate containment measures will be installed.

(R-03c): CIRNAC recommends that the applicant submit an updated spill contingency plan containing the storage capacity and the amount of contaminants normally stored at facilities (including the existing water treatment facility, proposed water treatment facility, the lagoon, the landfill, and any other bulk fuel storage locations within the municipality).

4. Wetland Treatment Area

Comment:

The Operation and Maintenance Plan for Sewage Disposal Facilities lacks important information related to the operation, maintenance, and function of the Wetland Treatment Area. Of particular concern:

- a) The extent of the Wetland Treatment Area is not specified. The concern is that without clear boundaries, there is no clear restriction on where the applicant can decant the lagoon effluent.
- b) The retention time of the Wetland Treatment Area is not specified. The concern is that the applicant cannot currently assess whether the retention time is sufficient to treat desired contaminants.
- c) There is no monitoring plan specified for the Wetland Treatment Area. The CSA W203:19 “guidelines for wastewater treatment in northern communities using lagoon and wetland systems” specifies minimum water quality and visual inspection standards for wetland treatment area maintenance. The concern is that the applicant



currently has no way of knowing if the lagoon effluent discharge is polluting freshwater in the Wetland Treatment Area.

- d) The average effluent discharge rate is listed as unknown. The concern is that discharge rates may be exceeding the Wetland Treatment Area's capacity.

Recommendation:

(R-04a): CIRNAC recommends that the applicant clearly define the extent of the Wetland Treatment Area.

(R-04b): CIRNAC recommends that the applicant undertake studies to determine the retention time of the Wetland Treatment Area.

(R-04c): CIRNAC recommends that the applicant update section 8.0 of the Operation and Maintenance Plan for Sewage Disposal Facilities to include CSA W203:19's guidelines for wetland maintenance and water quality monitoring.

(R-04d): CIRNAC recommends that the applicant undertake studies to determine the average effluent discharge flowrate.

5. Lagoon Runoff

Comment:

The Operation and Maintenance Plan for Sewage Disposal Facilities states that the "Runoff from the Sewage Disposal Facility is monitored on an annual basis so that grading directs surface water away from the lagoon berms". It is unclear whether this statement is referring to runoff flowing towards the Sewage Disposal Facility or runoff flowing away from the Sewage Disposal Facility. This is a concern because if there is runoff flowing away from the Sewage Disposal Facility, it may be contaminated.

Recommendation:

(R-05) CIRNAC recommends that the applicant clarify whether runoff is known to flow out of the Sewage Disposal Facility, and if so, provide a plan to prevent, contain or treat this runoff moving forward.

6. Lagoon Emergency Discharge

Comment:



The Operation and Maintenance Plan for Sewage Disposal Facilities states that “at some point, for a variety of reasons, impacted surface water may accumulate [in the] SDF”, resulting in a need to partially discharge the lagoon. The plan relies on discharging the lagoon in this scenario, but does not prescribe what actions will be taken if the effluent does not meet discharge quality requirements. The concern is that emergency overflow / flood scenarios could result in the unauthorized discharge of contaminated effluent.

Recommendation:

(R-06): CIRNAC recommends that the applicant provide a detailed contingency plan describing how the Sewage Disposal Facility will be managed in the event that surface water accumulates and the effluent does not meet water license quality requirements for discharge.

7. Lagoon Seepage

Comment:

The Operation and Maintenance Plan for Sewage Disposal Facilities states that the lagoon detention cell is impervious, but does not specify how this is achieved. The original design and construction report from 1998 notes that the lagoon is unlined, and that “seepage through the base of the site could occur on a seasonal basis” based on seepage observed during construction (Johnson et al., 1998). The concern is that the lagoon may be seeping contaminated materials into the surrounding environment.

Recommendation:

(R-07): CIRNAC recommends that the applicant clarify whether the original seepage concern was ever addressed, and if not, provide a plan to monitor and prevent future seepage from the lagoon.

8. Landfill Surface Water Management

Comment:

The Operation & Maintenance Plan for Solid Waste Disposal Facilities presents major gaps related to surface water management. Many of these same comments were raised by CIRNAC during the previous license review in 2020, with no evidence of progress or improvements since then. Of particular concern:



- a) Three seasonal streams currently run through the Solid Waste Management Facility, with no infrastructure in place to prevent leachate from entering these streams. The concern is that these streams will be contaminated by leachate or hazardous waste.
- b) Surface drainage from precipitation and spring freshet run through the Solid Waste Management Facility. The concern is that the runoff will absorb leachate and contaminate downstream waters.
- c) The Operation & Maintenance Plan does not contain any provisions for snow clearing. The “Solid Waste Management for Northern and Remote Communities Planning and Technical Guidance Document” recommends that class 2 landfills clear snow out of the waste disposal facility before it melts each spring. The concern is that snow melt will become contaminated with leachate and runoff to the surrounding environment.

Recommendation:

(R-08a): CIRNAC recommends the applicant provide a plan for how they will prevent leachate, hazardous waste and contaminants from entering the seasonal streams.

(R-08b): CIRNAC recommends that the applicant provide a plan to divert runoff around the Solid Waste Management Facility, or provide other equivalent measures to prevent leachate, hazardous waste and contaminants from entering runoff.

(R-08c): CIRNAC recommends that the applicant update The Operation & Maintenance Plan for Solid Waste Disposal Facilities to include spring snow clearing provisions.

9. Hazardous Waste Storage Secondary Containment

Comment:

The Operation & Maintenance Plan for Solid Waste Disposal Facilities states that the bulk metal / hazardous waste storage area is “filled but not bermed or lined”. The plan recommends that an engineered berm and liner system be installed, but does not propose a timeline or implementation plan. The concern is that delays in implementing this recommendation could allow hazardous leachate to contaminate the surrounding environment.

Recommendation:

(R-09) CIRNAC recommends the applicant provide a timeline for installing engineered berms and liner or other equivalent secondary containment systems at the bulk metal / hazardous waste storage area.



10. Landfill Capacity

Comment:

The Operation & Maintenance Plan for Solid Waste Disposal Facilities states that the current landfill site is at capacity, non-engineered, and has no environmental controls. The municipality has not submitted a proposal to expand the current solid waste management facility or open a new solid waste management facility as part of this application. The concern is that there is no interim plan to deal with ongoing municipal solid waste generation, which could result in waste overflow at the landfill.

Recommendation:

(R-10): CIRNAC recommends that the applicant update The Operation & Maintenance Plan for Solid Waste Disposal Facilities to describe how it will manage ongoing solid waste production while the existing landfill is at capacity.

11. Solid Waste Separation

Comment:

The 2022 and 2023 inspection reports stated that bulk metals, bulk wood, domestic waste, and hazardous waste were not adequately separated in line with National Standards for the management of Solid Waste Facilities. This has been an ongoing comment from CIRNAC, with inspections reports as far back as 2006 noting little to no segregation of materials. The Operation & Maintenance Plan for Solid Waste Disposal Facilities describes one feature of the Solid Waste Management Facility as “An area that contains general household, commercial and institutional wastes, hazardous waste, construction and demolition waste, and other bulky materials”. The concern is that hazardous and bulky waste will continue to remain unsegregated, creating a greater leachate risk for surface waters.

Recommendation:

(R-11): CIRNAC recommends that the applicant provide an updated Operation & Maintenance Plan for Solid Waste Disposal Facilities that includes a detailed plan to achieve hazardous waste segregation (including milestone and timelines), prior to any renewed license being issued.

12. Open Burning Ash Monitoring

Comment:



Bottom ash, or the ash remaining after burning landfill waste, has the potential to be hazardous depending on what was burned. The Operation & Maintenance Plan for Solid Waste Disposal Facilities states that “any bottom ash not meeting the criteria set out in the Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities is considered to be a hazardous waste”, but the manual does not prescribe when or how the bottom ash will be tested for contamination. The concern is that contaminated ash will be landfilled, potentially resulting in hazardous leachate.

Recommendation:

(R-12) CIRNAC recommends that the applicant describe how and when it will monitor the quality of the bottom ash to ensure it is not hazardous. CIRNAC recommends testing the ash, at minimum, whenever there is reason to believe the burn pile contained materials other than paper products, paperboard packaging, untreated wood, or natural fiber textiles.

13. Landfill Wind Management

Comment:

Inspection reports from 2017, 2022 and 2023 inspection reports note wind-blown litter as a concern, particularly around the burnable waste section. The concern is that wind-blown litter can blow into nearby freshwater, resulting in contamination.

Recommendation:

(R-13): CIRNAC recommends that the applicant update The Operation & Maintenance Plan for Solid Waste Disposal Facilities to include provisions for managing wind-blown litter, such as fencing or a landfill cover system.

14. Airport River Flow Rate

Comment:

The applicant has not provided information on the instantaneous or mean annual flow rates of Airport River. The concern is that without this information, the Nunavut Water Board cannot assess whether Airport River can support the proposed increase in maximum annual water withdrawal rates.

Recommendation:

(R-14): CIRNAC recommends that the applicant provide data on instantaneous and annual flow rates based on the flow monitors installed by Dillon consulting in July 2023.



15. Aggregate Quality

Comment:

The Water Treatment Plant Schematic Design Report does not provide information on the quality of aggregate that will be used to construct the trail, intake pad and Water Treatment Plant Facility. The concern is that the aggregate may be potentially acid-generating or metal-leaching.

Recommendation:

(R-15): CIRNAC recommends the applicant confirm that the aggregate is non-potentially acid generating and non-metal leaching before beginning construction.

REFERENCES

- 1) Canadian Standards Association. (2019). Planning, design, operation, and maintenance of wastewater treatment in northern communities using lagoon and wetland systems (CSA W203:19). CSA Group.
- 2) Department of Indian and Northern Affairs Canada & Northwest Territories Water Board. (1996, July). Quality assurance (QA) and quality control (QC) guidelines for use by Class “B” licensees in collecting representative water samples in the field (DIAND Water Resources Division).
- 3) Environment and Climate Change Canada. (2017, March). Solid waste management for northern and remote communities: Planning and technical guidance document (Cat. No. En14-263/2016E-PDF; ISBN 978-0-660-06691-2). Government of Canada.
- 4) Government of Nunavut, Department of Environment. (2022). Contingency planning and spill reporting in Nunavut: A guide to the new regulations. Government of Nunavut.
- 5) Government of Nunavut, Department of Environment. (2023, March). Spill Contingency Planning and Reporting Regulations: Environmental guideline. Government of Nunavut.
- 6) Government of Nunavut, Department of Environment. (2012). Environmental guideline for the burning and incineration of solid waste.
- 7) Johnson, K., Craig, G., & Spry, S. (1998). Design and construction of sewage lagoon in Grise Fiord, NWT. In *International Conference on Permafrost, Yellowknife, Can Underwrit.*