



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

Your file - Votre référence
3BM-ARC1924
Our file - Notre référence
GCDOCS# 133297263

February 10, 2025

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

**Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of the
Licence Amendment and Renewal Application for the Hamlet of Arctic Bay, Type
B Water Licence No. 3BM-ARC1924**

Dear Richard,

Thank you for the January 10, 2025 invitation to review the referenced licence amendment and renewal application, submitted by the Government of Nunavut Department of Community and Government Services on behalf of the Municipality of Arctic Bay, for Type B Water Licence No. 3BM-ARC1924.

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 (867) 975-3876 or lauren.perrin@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Lauren Perrin
Water Management Specialist

Canada 



Technical Review Memorandum

Date: February 10, 2025

To: Richard Dwyer – Manager of Licensing, Nunavut Water Board

From: Lauren Perrin- Water Management Specialist, CIRNAC

Subject: **Crown-Indigenous Relations and Northern Affairs Canada's Review of the Licence Amendment and Renewal Application for the Hamlet of Arctic Bay, Type B Water Licence No. 3BM-ARC1924**

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

The Municipality of Arctic Bay is submitting to the Nunavut Water Board (NWB) a Water Licence Renewal and Amendment Application for Water Licence No. 3BM-ARC1924. The Municipality is also seeking a twenty-three year renewal of the Licence which would be valid until 2047. The projected population of the Hamlet in the year 2047 is 1,418 people.

The Municipality of Arctic Bay utilizes Marcil Lake for potable water. Water is pumped from Marcil Lake throughout the year into the adjacent water treatment plant for municipal purposes. Between May 2025 and September 2027, the Municipality intends to construct a new water treatment plant that pumps water from the same water source placed adjacent to the existing water treatment plant. Based on the estimated population projection of 1,418 by 2047, an increase to the annual water use withdrawal limit from Marcil Lake from 59,900 cubic metres to 75,000 cubic metres is requested. No changes to the daily water use withdrawal limit of 299 cubic metres is required. The Municipality of Arctic Bay is also requesting amendments to various items of the existing water licence.

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
1	Water quantity increase
2	Existing Licence Expired & non-compliance
3	Measuring water withdrawal levels
4	Geotechnical and geothermal performance of Wastewater treatment facility
5	Water quality of solid waste facility run-off
6	Water Volume and Water Level Measurements
7	Sewage Spill Cleanup-Dilution
8	QA/QC Sampling Locations GPS Coordinates



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

Document Title	Author, File No., Rev., Date
241219 3BM-ARC1924 Hamlet of Arctic Bay Annual Report 2019-ILAE.pdf	Nunavut Water Board, January 10, 2025
241219 3BM-ARC1924 Municipality of Arctic Bay 2022 Annual Report-ILAE.pdf	Nunavut Water Board, January 10, 2025
241219 3BM-ARC1924 Municipality of Arctic Bay 2023 Annual Report-ILAE.pdf	Nunavut Water Board, January 10, 2025
241219 3BM-ARC1924 Plan for Compliance 2024-ILAE.xlsx	Nunavut Water Board, January 10, 2025
241219 3BM-ARC1924 Water Licence Amendment and Renewal Application-ILAE.pdf	Nunavut Water Board, January 10, 2025
250107 3BM-ARC1924 Arctic Bay Environmental Emergency Contingency Plan November 2024 with Appendices-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250107 3BM-ARC1924 Arctic Bay Environmental Monitoring and QA QC Plan November 2024 with Appendices-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250107 3BM-ARC1924 Arctic Bay OM Plan Sewage Disposal Facility November 2024 with Appendices-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250109 3BM-ARC1924 Amend Renew Application - Applicant Response to NWB request-ILAE.pdf	
250109 3BM-ARC1924 Arctic Bay Environmental Emergency Contingency Plan November 2024 with Appendices V2-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250109 3BM-ARC1924 Arctic Bay Environmental Monitoring and QA QC Plan November 2024 with Appendices V2-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250109 3BM-ARC1924 Arctic Bay OM Plan Sewage Disposal Facility November 2024 with Appendices V2-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250109 3BM-ARC1924 Arctic Bay OM Plan Solid Waste Disposal Facility November 2024 with Appendices-ILAE.pdf	Government of Nunavut Community and Government services and Dillon Consulting Limited, November 2024
250120 3BM-ARC1924 2020 Annual Report-ILAE.pdf	Nunavut Water Board, January 10, 2025



C. RESULTS OF REVIEW

1. Water quantity increase

Comment:

CIRNAC does not have concerns with allowing the new yearly maximum requested to be 72,000 cubic metres. CIRNAC's concern lays with the capacity of the sewage lagoon as well as the capacity for the wetlands to be able to treat the increased amount of wastewater being only able to contain 59 900 m³ at the sewage lagoon.

Recommendation:

(R-01) CIRNAC recommends the applicant provide confirmation that the lagoon is capable of holding the increased capacity too meet expected treatment times to meet discharge criteria.

2. Existing Licence Expired & non-compliance

Comment:

CIRNAC notes that the existing water licence expired in August of 2024 and the proponent is applying for a 23 year water licence at the same time as a number of non compliance issues have been identified and outlined in "Plan for compliance Licence No. 3BM-ARC1924". For example, B-1, B-1.e, B-3, F-7, F-8, I-2, I-6, I-7, I-12, I-13, I-16. These issues remain outstanding and have not been addressed.

Recommendation:

(R-02) CIRNAC recommends the applicant address the issues of non-compliance prior to the Board considering any application for a renewal water licence.

Additionally, CIRNAC recommends that the applicant water licence renewal application be reduced to 5 years until such time that the new water e treatment plant is constructed and the non compliance issues are addressed adequately.

3. Measuring water withdrawal levels

Comment:

The applicants document for "plan for compliance 2024" states that they are in compliance even though the water withdrawal levels are not being recorded at the pump house. Further stating that the quantities are determined by the quantity of water delivered via trucks and this will be continued until a new water treatment plant is commissioned.



According to the applicants plans a new water treatment plant isn't scheduled to be completed until Fall 2027, if the funding comes through from the Government of Nunavut.

The applicant is not in compliance with Part B: Subsection 5 of the licence. "The Licensee shall install flow meters or other such devices, or implement suitable methods required for the measuring of Water volumes as required under Part I, Item 3".

Recommendation:

(R-03) CIRNAC recommends the applicant fix or install the required flowmeter to record proper water quantity measures from all sources.

4. Geotechnical and geothermal performance of Wastewater treatment facility

Comment:

The applicant stated the "Municipality does not have the technical capacity to perform the geotechnical assessment and analysis and CGS does not have a geotechnical engineer that can provide support to the Municipality to meet this requirement".

It is CIRNAC's assertion that the lack of funding is not a reason for this condition to be dropped from the Water Licence or for the applicant to continue to be in non-compliance..

Recommendation:

(R-04) CIRNAC recommends the water board keep this condition with the new water licence.

5. Water quality of solid waste facility run-off

Comment:

In the 2019 renewal application CIRNAC reviewed the sampling results from annual reports over the years. As the run-off from the facilities is not authorized, the licence does not include discharge criteria. Reported concentrations were compared with Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQG-PAL), as the water sampled is directly into the environment and is not captured or treated in any way by the proponent..

Run-off samples from the dump (ARC-6)(n=5) met the guidelines in almost all cases. Exceedances were found in iron concentrations in 4 of the 5 samples, and were on average



6 times above the CWQG-PAL. Other sporadic exceedances include aluminum (2014), benzo(a)pyrene (2015), zinc (2018) and phenolics (2018).

The state of the landfill, metal dump and hazardous waste area is a concern consistently raised in CIRNAC inspection reports since 2016.

In the most recent inspection report dated July 2022 the CIRNAC inspector made a comment that there were concerns around the conditions applying to waste disposal and management. Of particular concern is the hazardous waste, which is not in secondary containment and has an ephemeral stream running through it. Water runs through the dump and hazardous waste area uncontrolled where the quality is degraded.

Recommendation:

(R-05) CIRNAC recommends the applicant provide an update how mitigation measures taken to-date contain water run-off, and how waste disposal in general is being properly managed within the facility.

6. Water Volume and Water Level Measurements

Comment:

In the Environmental Monitoring Program and Quality Assurance/Quality Control Plan for Municipal Water licence. 3ARC-1924 includes measuring the monthly and annual volume of water pumped from ARC-1. The municipality states this can be accomplished by installing a flow meter on the intake pipe

Recommendation:

(R-06) CIRNAC recommends the applicant install a flow meter on the intake pipe immediately, to record accurate water volume and level measurements.

7. Sewage Spill Cleanup-Dilution

Comment:

Section 5.4 Mitigative Measures: Sewage states that “A small spill (truck leak or household tank leak) is not a significant environmental issue, site control containment and clean up can be accomplished without significant concerns. Dilution with water is an effective remedy for



any residual.” The document also states that the mitigative measures to follow a large spill should be to “Dilute with water pumped from local streams”. Dilution is not a form of treatment.

The applicant is reminded that is sewage contamination is a hazardous waste and can persist for weeks or months, posing a health risk to the community at large. Sewage contains harmful bacteria, viruses, and parasites that can cause a variety of illnesses, including: Gastrointestinal issues (diarrhea, vomiting), children and elders and those with a compromised immune system are especially vulnerable.

The Environmental Guideline for the General Management of Hazardous Waste states that “Hazardous waste must not be mixed or diluted with another substance, or divided into smaller quantities, simply to avoid meeting the definition of a hazardous waste.” (Department of Environment Government of Nunavut, 2010).

Recommendation:

(R-07) CIRNAC recommends the applicant remove dilution as a form of treatment to cleaning up a sewage spill.

Reference:

Department of Environment Government of Nunavut. (2010). *Environmental Guideline for the General Management of Hazardous Waste*. Retrieved February 4, 2025 from https://www.gov.nu.ca/sites/default/files/publications/2022-01/Guideline%20-%20General%20Management%20of%20Hazardous%20Waste%20%28revised%20Oct%202010%29_0.pdf

8. QA/QC Sampling Locations GPS Coordinates

Comment:

For compliance purposes it is important to include GPS coordinates of sampling locations as identified in the Environmental Monitoring and QA/QC Plan.

Recommendation:

(R-08) CIRNAC recommends the applicant provide GPS coordinates of the sampling sites as identified in the Environmental Monitoring and QA/QC Plan.

