



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

Your file - Votre référence  
3AM-PAN1828  
Our file - Notre référence  
GCDOCS# 129297322

September 16, 2024

Richard Dwyer  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU, X0B 1J0  
sent via e-mail: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

**Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of the 2023 Annual Report for Water Licence 3AM-PAN1828 for the Municipality of Pangnirtung in the Qikiqtani Region of Nunavut**

Dear Mr. Dwyer,

Thank you for the July 15, 2024 invitation to review the referenced Annual Report, submitted by the Licensee. This annual review is for Pangnirtung's Type A Water Licence No. 3AM-PAN1828.

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*. **CIRNAC has 8 unresolved recommendations.** Please find CIRNAC's comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact me at [michelle.blade@rcaanc-cirnac.gc.ca](mailto:michelle.blade@rcaanc-cirnac.gc.ca) or Andrew Keim at 305-501-4047 or [andrew.keim@rcaanc-cirnac.gc.ca](mailto:andrew.keim@rcaanc-cirnac.gc.ca).

Sincerely,

Michelle Blade,  
Regulatory and Science Advisor



## **Technical Review Memorandum**

**Date:** September 16, 2024

**To:** Richard Dwyer, Manager of Licensing, Nunavut Water Board (NWB)

**From:** Michelle Blade, Regulatory and Science Advisor, CIRNAC

**Subject:** **Crown-Indigenous Relations and Northern Affairs Canada's Review of the 2023 Annual Report for Water Licence 3AM-PAN1828 for the Municipality of Pangnirtung in the Qikiqtani Region of Nunavut**

**Region:**     ☐ Kitikmeot     ☐ Kivalliq     ☒ Qikiqtani

---

### **A. BACKGROUND**

The Hamlet of Pangnirtung is located on Baffin Island, in the Qikiqtani Region of Nunavut, with an estimated population of 1,800. The Hamlet operates a potable water treatment and supply facility (including a water storage reservoir), a wastewater treatment plant, and a solid waste management facility. The wastewater treatment plant underwent a major upgrade in 2016 including construction of a new truckfill station. In addition, the Hamlet plans to construct a new landfill by 2024.

Specific terms and conditions of note in the water licence include the following:

- the term of the Licence will be 10 years, expiring in 2028, although the Board recognizes that during the Board's consideration of the Application the Hamlet requested a 15 year term, the Board, noting that this is the Hamlet's first Type "A" Licence and also recognizing that various planned activities for the Hamlet's municipal services, including construction of a new solid waste management facility proposed in 2024 will be undertaken during the term of the Licence, the Panel decided that 10 years was a more appropriate term;
- continued management of municipal waste (sewage treatment) and industrial waste (fish processing plant) generated by the relevant facilities operated by the hamlet;
- the allowable withdrawal volumes and the rate of withdrawal from the water source (the Duval River) were increased and these changes are in keeping with the Type "A" water use licensing criteria; and
- a new and more stringent monitoring program, including an extensive monitoring campaign for 2018, is included under the new Type "A" Licence, reflecting both the authorized increases in water use, the current state of the solid waste management facility, and the proposed future construction of a new landfill in 2024.

On June 30, 2023, CIRNAC submitted 7 recommendations for the 2022 Annual Report for Water Licence 3AM-PAN1828. On August 23, 2023 the Nunavut Water Board provided deadlines for the Licensee to respond to CIRNAC's recommendations. The deadlines were

either October 18, 2023 or March 31, 2024. The Licensee did not respond to any of CIRNAC’s 2022 Annual Report recommendations.

No CIRNAC inspection was conducted for Water Licence 3AM-PAN1828 in 2023; a CIRNAC inspection was conducted on July 5, 2024.

CIRNAC provides the following comments and recommendations pertaining to the 2023 Annual Report and the outstanding recommendations from the 2022 Annual Report. 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 Sections C and D.

Table 1: Summary of Recommendations

Recommendation Number	Subject	Status
R-01	Sources of water and quantity used	2022 – Unresolved 2023 – Unresolved
R-02	Sewage discharge quantity reporting requirements	2022 – Unresolved 2023 – Unresolved
R-03	Effluent discharge quality reporting requirements	2022 – Unresolved 2023 – Unresolved
R-04	Sludge removal reporting	2022 – Unresolved 2023 – Unresolved
R-05	Duval River instantaneous flow and mean annual discharge measurements	2022 – Unresolved 2023 – Unresolved
R-06	Four updated documents	2022 – Unresolved 2023 – Unresolved
R-07	Monitoring Program Stations PAN-4, PAN-5 and PAN-6	2022 – Unresolved 2023 – Unresolved
R-08	Installation of appropriate flow-metering equipment	2023 – Unresolved

B. DOCUMENTS REVIEWED

The following table (Table 2) provides a summary of the documents reviewed under the submission.



**Table 2: Documents Reviewed**

Document Title	Author, File No., Rev., Date
Annual Report for the Hamlet of Pangnirtung, 2023	Author unknown, 25 June 2024
Pangnirtung WWTF Aftercare Service – Site Visit #16 (SUMMARY REPORT)	EXP., FRE-00232735-A5, 6 February 2024
Concerns of Pang WI and Annual Reports 2022 and 2023	Bhabesh Roy, email to Nunavut Water Board, 13 July 2024
Certificate of Analysis, Final Report	CADUCEON Environmental Laboratories, REPORT No: 23-019773, 11 August 2023
Certificate of Analysis, Final Report	CADUCEON Environmental Laboratories, REPORT No: 23-022501, 11 September 2023
Certificate of Analysis, Final Report	CADUCEON Environmental Laboratories, REPORT No: 23-025578, 11 October 2023
Licence No: 3AM-PAN1828 Type “A”; Hamlet of Pangnirtung; 2023 Annual Report Review	Nunavut Water Board, 23 August 2023
3AM-PAN1828 Updated 2022 Annual Report, including the Hamlet of Pangnirtung – Hydrological Desktop Study	Government of Nunavut, Community and Government Services (GN-CGS) on behalf of the Municipality of Pangnirtung
Crown-Indigenous Relations and Northern Affairs Canada’s Review of the 2023 Annual Report for Water Licence 3AM-PAN1828 for the Municipality of Pangnirtung in the Qikiqtani Region of Nunavut	CIRNAC, 30 June 2023
TYPE “A” WATER LICENCE NO: 3AM-PAN1828	Nunavut Water Board, 04 May 2018
TYPE “A” WATER LICENCE NO: 3AM-PAN1828 Reasons for Decision	Nunavut Water Board, 04 May 2018
Water Licence Inspection Form	CIRNAC, 22 June 2022
Licence No. 3AM-PAN1828 Type “A”; Hamlet of Pangnirtung; 2018 Annual Report Review	Nunavut Water Board, 20 May 2020



## C. RESULTS OF 2022 ANNUAL REPORT REVIEW

### 1. Sources of water and quantity used

#### **Comment:**

Water licence 3AM-PAN1828 allows for withdrawal of 120,000 cubic metres of water per annum from the Duval River at Monitoring Station No. PAN-1. The Licensee was required, within six (6) months of approval of the water licence, to install the appropriate flow-metering equipment required to accurately record the quantity of Water withdrawn from the Duval River. The Licensee shall limit the withdrawal of Water from the Duval River to the months of July and August. The 2022 Annual Report provides the monthly and annual quantities in cubic metres of freshwater obtained from all sources as reported in the On Tap Water Delivery System, with over 3,887 cubic metres of water withdrawn every month.

#### **2022 Annual Report Recommendation:**

(R-01) CIRNAC recommends the Licensee provide the name or origin of the undefined sources of water tabulated in the 2022 Annual Report. In compliance with the water licence, CIRNAC recommends the daily, monthly, and annual quantity of freshwater withdrawn from Duval River at Monitoring Station No. PAN-1 is reported in the 2022 Annual Report. CIRNAC recommends a reason is provided for any withdrawals from Duval River that took place outside of the months of July and August.

#### **Licensee response:**

No response.

#### **CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-01 for the 2022 Annual Report. Similarly, the 2023 Annual Report provides the monthly and annual quantities in cubic metres of freshwater obtained from all sources, with over 3,508 cubic metres of water withdrawn every month in 2023. Water licence 3AM-PAN1828 allows for withdrawal of 120,000 cubic metres of water per annum from the Duval River at Monitoring Station No. PAN-1, limited to the months of July and August. CIRNAC recommends the Licensee:

- provide the name or origin of all water sources for both the 2022 and 2023 calendar years,
- the daily, monthly, and annual quantity of freshwater withdrawn from Duval River at Monitoring Station No. PAN-1 is reported for both the 2022 and 2023 calendar years, and
- provides reason for any withdrawals from Duval River that took place outside of the months of July and August in the 2022 and 2023 calendar years.



**CIRNAC considers recommendation R-01 unresolved for both 2022 and 2023 calendar years.**

## **2. Sewage discharge quantity reporting requirements**

### **Comment:**

Water licence 3AM-PAN1828 requires reporting of the daily, monthly, and annual quantities in cubic metres of any discharges to and from the Wastewater Treatment Facilities at Monitoring Stations PAN-2 (Raw Sewage from pump-out truck) and monthly flow from PAN-3 (effluent from wastewater treatment plant). The 2022 Annual Report states: the water consumption volume is considered equal to the discharge volume because there is no meter at the end of the discharge pipe.

### **2022 Annual Report Recommendation:**

(R-02) CIRNAC recommends the Licensee devise a reporting system for measuring the quantity of any discharges to and from the Wastewater Treatment Facilities at Monitoring Stations PAN-2 (Raw Sewage from pump-out truck) and PAN-3 (effluent from wastewater treatment plant).

### **Licensee response:**

No response.

### **CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-02 for the 2022 Annual Report. Similarly, the 2023 Annual Report states: the water consumption volume is considered equal to the discharge volume because there is no meter at the end of the discharge pipe. CIRNAC recommends the Licensee provide details on a reporting system for measuring the quantity of any discharges to and from the Wastewater Treatment Facilities at Monitoring Stations PAN-2 (Raw Sewage from pump-out truck) and PAN-3 (effluent from wastewater treatment plant) in accordance with Schedule H Table 2 of Water licence 3AM-PAN1828.

**CIRNAC considers recommendation R-02 unresolved for both 2022 and 2023 calendar years.**

## **3. Effluent discharge quality reporting requirements**

### **Comment:**

Water licence 3AM-PAN1828 requires all effluent discharged from the Wastewater Treatment Plant at Monitoring Program Station PAN-3 not exceed the effluent quality limits



defined in Part E Item 3 of the water licence. The 2022 Annual Report submitted only one analytical result for Monitoring Program Station PAN-3 collected on June 22, 2022. The June 22, 2022 analytical result collected from Monitoring Program Station PAN-2 exceeded the maximum concentration of any grab sample for biochemical oxygen demand, fecal coliforms, total suspended solids, and oil and grease. Between April 5 and May 27, 2022, a spill of 9,434 cubic metres of raw sewage was reported when the hamlet deposited its sewage directly to the receiving environment, due to inoperability of the Wastewater Treatment Plant bypass function. The spill report has been closed.

**2022 Annual Report Recommendation:**

(R-03) CIRNAC recommends the Licensee include all dates of discharge from the Sewage Disposal Facility, and reasoning if Monitoring Program Station PAN-3 analytical results are not available for all discharge dates.

**Licensee response:**

No response.

**CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-03 for the 2022 Annual Report. Similarly, the 2023 Annual Report submitted two analytical results for Monitoring Program Station PAN-3 collected on July 31, 2023 and August 8, 2023. The July 31, 2023 analytical result was outside the acceptable range for pH, and exceeded the maximum concentration for fecal coliforms. The August 8, 2023 analytical result was within the effluent quality limits. A summary of all dates of discharge from the Sewage Disposal Facility was not included in the 2023 Annual Report. CIRNAC recommends the Licensee include all dates of discharge in 2022 and 2023 from the Sewage Disposal Facility, and reasoning if Monitoring Program Station PAN-3 analytical results are not available for all discharge dates.

**CIRNAC considers recommendation R-03 unresolved for both 2022 and 2023 calendar years.**

#### **4. Sludge removal reporting**

**Comment:**

Water licence 3AM-PAN1828 requires reporting of the monthly and annual quantities in cubic metres of sludge removed from the Wastewater Treatment Plant. CIRNAC was unable to locate the sludge removal values in the 2022 Annual Report.

**2022 Annual Report Recommendation:**

(R-04) CIRNAC recommends the Licensee include the 2022 sludge removal measurements in the 2022 Annual Report, or provide reason for why this was not done.



**Licensee response:**

No response.

**CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-04 for the 2022 Annual Report. Similarly, CIRNAC was unable to locate the sludge removal values in the 2023 Annual Report. CIRNAC recommends the Licensee include the 2022 and 2023 sludge removal measurements in the 2023 Annual Report, or provide reason for why this was not done.

**CIRNAC considers recommendation R-04 unresolved for both 2022 and 2023 calendar years.**

**5. Duval River instantaneous flow and mean annual discharge measurements**

**Comment:**

Part D item 6 of water licence 3AM-PAN1828 states water withdrawn from the Duval River shall not exceed a rate of ten per cent (10%) of the instantaneous flow in the river, and all water withdrawal shall cease when the instantaneous flow in the river is below thirty per cent (30%) of the mean annual discharge. The Hamlet of Pangnirtung – Hydrological Desktop Study, submitted with the 2022 Annual Report, states monitoring and recording of daily discharge for the Duval River last occurred 40 years ago in 1983. The study recommends installation of flow gauges and levels to monitor the Duval River.

**2022 Annual Report Recommendation:**

(R-05) CIRNAC recommends the Licensee include the 2018 to 2022 Duval River instantaneous flow and mean annual discharge measurements in the 2022 Annual Report, or provide reason for why this was not done. If there are no flow gauges nor levels to monitor the Duval River installed, CIRNAC recommends the Licensee provide a timeline for when they will be in compliance with Part D item 6.

**Licensee response:**

No response.

**CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-05 for the 2022 Annual Report. Similarly, no instantaneous flow nor mean annual discharge measurements are in the 2023 Annual Report, nor reason provided for why this was not done. CIRNAC recommends the Licensee include the 2018 to 2023 Duval River instantaneous flow and mean annual discharge measurements in the 2023



Annual Report, or provide reason for why this was not done. If there are no flow gauges nor levels to monitor the Duval River installed, CIRNAC recommends the Licensee provide a timeline for when they will be in compliance with Part D item 6 of water licence 3AM-PAN1828.

**CIRNAC considers recommendation R-05 unresolved for both 2022 and 2023 calendar years.**

## **6. Four updated documents**

### **Comment:**

The following 4 documents were to be submitted with the 2019 Annual Report:

- an updated Water Reservoir Operations and Maintenance Manual;
- a standalone Drainage / Seepage Monitoring and Management Plan;
- an updated Spill Contingency Plan; and
- an updated Quality Assurance/Quality Control Plan.

CIRNAC is unable to locate the Annual Reports for 2019, 2020, and 2021.

### **2022 Annual Report Recommendation:**

(R-6) CIRNAC recommends the Licensee submit the 4 updated documents with the 2022 Annual Report, or provide reason for why this has not been done.

### **Licensee response:**

No response.

### **CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-06 for the 2022 Annual Report. Similarly, the four documents were not submitted with the 2023 Annual Report. CIRNAC recommends the Licensee submit the 4 updated documents with the 2023 Annual Report, or provide reason for why this has not been done.

**CIRNAC considers recommendation R-06 unresolved for both 2022 and 2023 calendar years.**

## **7. Monitoring Program Stations PAN-4, PAN-5 and PAN-6**

### **Comment:**



Part H item 3 of water licence 3AM-PAN1828 states the Licensee shall sample monthly at Monitoring Program Stations PAN-4 (run-off from sludge disposal area), PAN-5 (run-off from solid waste disposal facility) and PAN-6 (run-off from metal and hazardous waste storage area). The 2022 Annual Report has analytical results, collected on 14 July 2022 only, at Monitoring Program Stations PAN-4, PAN-5 and PAN-6.

**2022 Annual Report Recommendation:**

(R-7) CIRNAC recommends the Licensee submit the dates when observed discharge flow began and ended at each of Monitoring Program Stations PAN-4, PAN-5 and PAN-6, and provide reason for why only one analytical result was submitted for each station in 2022.

**Licensee response:**

No response.

**CIRNAC response:**

No additional information was provided by the Licensee to address CIRNAC recommendation R-07 for the 2022 Annual Report. Similarly, only one analytical result was submitted for Monitoring Program Stations PAN-4 on August 22, 2023 and none for PAN-5 nor PAN-6. The dates when observed discharge flow began and ended at each of Monitoring Program Stations PAN-4, PAN-5 and PAN-6, in accordance with Schedule H Table 2, were not reported in the 2023 Annual Report. In the 2023 Annual Report, the Licensee stated:

*"During summer, the leachate of the wastes site is uncontrolled. Especially during rainy season, the surface runoff moves too fast from the right side of the road to the left side of the road through the culverts towards the sea. Sometimes snow melting happens heavily once surface temperature rises suddenly. Both the actions from snow melt and rainfall, causes flooding in that area. No spill was recorded during this reporting period."*

On June 24, 2024, CIRNAC inspectors observed leaking drums of waste oil depositing waste into the Hazardous Waste Facility. This oil is migrating out of the facility and into the receiving environment.

Unauthorized releases of deleterious substances are spills, and need to be reported. CIRNAC recommends the Licensee submit the dates when observed discharge flow began and ended at each of Monitoring Program Stations PAN-4, PAN-5 and PAN-6 in 2022 and 2023. CIRNAC recommends the Licensee provide reason for why only one analytical result was submitted for each station in 2022, and only PAN-4 in 2023. CIRNAC recommends the Licensee report all unauthorized releases of deleterious substances that occurred in 2023.

**CIRNAC considers recommendation R-07 unresolved for both 2022 and 2023 calendar years.**



## **D. ADDITIONAL RECOMMENDATIONS FROM THE 2023 ANNUAL REPORT REVIEW**

### **8. Installation of appropriate flow-metering equipment**

#### **Comment:**

Part D Item 3 of Water licence 3AM-PAN1828 states: the Licensee shall, within six (6) months of approval of this Licence, install the appropriate flow-metering equipment required to accurately record the quantity of water withdrawn from the Duval River. In both the 2022 and 2023 Annual reports, freshwater obtained from all sources is reported from the On Tap Water Delivery System and not as withdrawal from the Duval River at Monitoring Station No. PAN-1. It is unclear if the appropriate flow-metering equipment was installed at Monitoring Station No. PAN-1.

#### **Recommendation:**

(R-08) CIRNAC recommends the Licensee confirm the appropriate flow-metering equipment was installed to accurately record the quantity of water withdrawn from the Duval River in accordance with Part D Item 3 of Water licence 3AM-PAN1828.