



Crown-Indigenous Relations  
and Northern Affairs Canada

Relations Couronne-Autochtones  
et Affaires du Nord Canada

Water Resources Division  
Resource Management Directorate  
Nunavut Regional Office  
P.O. Box 100  
Iqaluit, NU, X0A 0H0

Your file - Votre référence  
3AM-ARV1016

October 16, 2020

Our file - Notre référence  
CIDM#129304

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

**Re: Crown-Indigenous Relations and Northern Affairs Canada's completeness check on the Government of Nunavut – Community and Government Services' renewal application for municipal undertakings – Hamlet of Arviat – 3AM-ARV1016**

Dear Mr. Dwyer,

Thank you for your September 17, 2020 invitation for the completeness check on the above referenced application. The Water Resources Division of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application and the results of our review are provided in the enclosed memorandum for the Nunavut Water Board's consideration.

Comments have been provided pursuant to CIRNAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. If there are any questions or concerns, please contact me at (867) 975-3876 or by e-mail at [sarah.forte@canada.ca](mailto:sarah.forte@canada.ca). or Godwin Okonkwo at (867) 975-4550 or [godwin.okonkwo@canada.ca](mailto:godwin.okonkwo@canada.ca).

Sincerely,

Sarah Forté  
Water Management Specialist

## **Technical Review Memorandum**

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

From: Sarah Forté, Water Management Specialist, Water Resources Division, Crown-Indigenous Relations and Northern Affairs Canada

Date: October 16, 2020

Re: Crown-Indigenous Relations and Northern Affairs Canada's completeness check on the Government of Nunavut – Community and Government Services' renewal application for municipal undertakings – Hamlet of Arviat – 3AM-ARV1016

Region: ☐ Kitikmeot ☒ Kivalliq ☐ Qikiqtani

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### **A. BACKGROUND**

On September 17, 2020, the Nunavut Water Board provided notification of the Government of Nunavut Community and Government Services' (GN-CGS) submission on behalf of the Hamlet of Arviat to renew their Type A water licence 3AM-ARV1016 for the use of water and deposit of waste for municipal undertakings.

The Hamlet's water source is Wolf Creek, from which water is drawn to fill three reservoirs in town with a total capacity of 235 393 m<sup>3</sup>. The water treatment plant and truckfill station next to the reservoirs was recently upgraded and commissioned in November 2019. The community's sewage is also trucked and treated in a single cell sewage lagoon located approximately 2 km south of the community. The capacity of the lagoon is approximately 37 960 m<sup>3</sup> and emergency spring decants have been necessary for the last four year. The domestic solid waste facility is co-located with the sewage lagoon. The Hamlet also operates a bulky metals facility and a hazardous waste facility.

The renewal application requests authorization to withdraw 235 393 m<sup>3</sup> of water from Wolf Creek and continued use of the current infrastructure. The Hamlet's previous water licence allowed for the construction of a landfarm and new landfill. It is not clear if these are still planned.

A ten year licence term is requested.

## B. INFORMATION REQUESTS

On behalf of CIRNAC Water Resources, the following comments and information requests are provided for the Nunavut Water Board's consideration:

### 1. Upgrades to sewage lagoon

#### Comment:

The water licence issued in 2010 included conditions to provide several updated plans including a Sewage Disposal Facility Report, with a Sludge Management Plan (Part D, Item 5) and a Sewage Treatment Facility Operation and Maintenance (O&M) Plan (Part F, Item 1).

The 2019 annual report states *"The GN has engaged Nunami Stantec Limited to complete two feasibility studies; one for an upgraded Wastewater Treatment Lagoon, and the second for an upgraded Solid Waste Management Site. The study is scheduled to be completed in September, 2020."* It is not clear if this study addresses the request for the Sewage Disposal Facility Report.

According to the most recent Sewage Treatment Facility O&M Plan CIRNAC found (May 2010), the storage capacity of the lagoon currently used is approximately 37 960 m<sup>3</sup>. This is only 16% of the capacity of the water reservoirs, and the requested water use volume of 235 393 m<sup>3</sup>. Since the quantity of sewage is estimated as the quantity of water used, it is not clear how the sewage will be managed. Emergency spring decants have been necessary for the past four years, suggesting current management practises no longer work for the quantity of sewage generated.

#### Information request:

CIRNAC recommends the proponent clarify:

- If the feasibility study for an upgraded Wastewater Treatment Lagoon has been completed, and if it can be made available for technical review.
- How they plan to manage sewage and when they can provide that in an updated Sewage Treatment Facility O&M Plan.

### 2. Sewage lagoon effluent discharge criteria

#### Comment:

In the Plan for compliance, the proponent requests a change to the sewage lagoon effluent discharge criteria at ARV-4: *"Change CBOD limit to 100 mg/L and Total Suspended Solid [limit] to 120 mg/L; levels are based off of studies done by Dalhousie University"*.

No further justification was found on why and how the criteria from the Dalhousie University studies are applicable the system in Arviat. Since there were several studies, it is not clear which ones are being referenced.

Information request:

CIRNAC recommends the proponent provide a rationale for lowering discharge criteria limits by specifying which Dalhousie studies they are referring to, and explaining how these studies are applicable to the system in Arviat, including whether the proposed criteria consider the treatment occurring in the wetland adjacent to the lagoon.

### **3. Upgrades to solid waste facilities**

Comment:

An updated Solid Waste Management Facility O&M Plan was a condition (Part F, Item 2) in the water licence issued in 2010, as was a Solid Waste Management Report (Part D, Item 15).

A document submitted in 2015 entitled Hamlet of Arviat Solid Waste Audit Results details the nature of the waste accepted at the landfill and estimates the volume. While this is helpful, most of the information required in the Solid Waste Management Report is still outstanding. It is not clear if the feasibility study for an upgraded Solid Waste Management Site referred to in the 2019 annual report will address the requirements.

Since 2016, the annual reports document improving segregation and sorting at the solid waste facilities. The purchase of a shredder by the Hamlet in 2017 seems to have allowed significant consolidation of materials. The Inspector has shared that the Hamlet is now covering waste with shredded material and gravel to help prevent problems with bears. The most recent Solid Waste Facility O&M Plan we found (2010) does not reference changes to operations.

Information request:

CIRNAC recommends the proponent clarify:

- If the feasibility study for an upgraded Solid Waste Management Site has been completed, and if it can be made available for technical review.
- When they can provide an updated Solid Waste Facility O&M Plan that reflects current operations.
- If they foresee upgrading the existing facility or building a new facility within the 10 year renewal requested. If so, further information on tentative timelines would be helpful if available.

### **4. Hydrocarbon impacted soil**

Comment:

There are fuel spills each year, as reported in the annual reports, which contaminate soil. This is acknowledged in box 15 of the application, which refers to an unknown quantity of hydrocarbon contaminated soil to be treated in a landfarm.

The 2010 water licence included the possibility of building a landfarm, however the Plan for Compliance states no landfarm has been constructed.

Information request:

CIRNAC recommends the proponent describe:

- How they are currently managing hydrocarbon contaminated soil.
- If they foresee building a landfarm facility within the 10 year renewal requested. If so, further information on tentative timelines would be helpful if available.

## **5. Pumping rate from Wolf Creek**

Comment:

The proponent has provided the Wolf Creek 2019 Hydrologic Assessment which reports measured flows in 2019 in Wolf Creek at the water intake. It clearly documents instantaneous flows in the creek and the annual flow for 2019.

In order to fully understand the impacts of water abstraction, it is also necessary to know what the pumping rates and periods are. This is supposed to be reported as ARV-1, but the quantities in the annual report appear to be monthly abstraction rates from the reservoirs. Water use is reported for 12 months a year while pumping from the river only occurs during the summer months.

Information request:

CIRNAC recommends the proponent report:

- their pumping rate from Wolf Creek;
- the typical number of hours and days they pump in a month; and
- which months the pumping occurs in.

## **6. Water treatment plant manual**

Comment:

The proponent has provided O&M Manual for the Arviat Water Treatment Plant, as well as plans for the water treatment plant and new cell. The O&M manual has clear instructions and is well laid out.

Further information on a few points are requested:

- Plans for structures are sometimes modified during construction to account for site conditions, and the plans provided are 'Released for construction'.
- Section 1.3 specifies "*water is supplied from Wolf Creek during the summer season*". Where could information and procedures for the water pumping operations be found?
- Section 3.13.4 refers to heat trace for the overland discharge pipe, and this was the only time it is mentioned in the document. What is being discharged through this pipe?

Information request:

CIRNAC recommends the proponent provide:

- 'As-built' plans for the water treatment plant and new cell;

- Operation and maintenance procedures for water pumping operations to fill the reservoirs from Wolf Creek; and
- Information on what is discharged through the overland discharge pipe.

## **7. Environmental Emergency Contingency Plan**

### Comment:

The most recent version of the Environmental Emergency Contingency Plan CIRNAC has seen is from 2010, and it includes an Addendum which was also from 2010.

As stated in Section 8.0 of the 2010 plan, the plan should be updated annually to *“ensure all changes to regulations are incorporated into this plan, along with the use of any new technology or method advances, to prevent or stop and spill and to mitigate and/or remediate a spill. This ensures that the plan adapts as the Hamlet grows, to ensure the community is properly prepared in the event of an incident.”*

CIRNAC recommends that the plan:

- Has an updated title page with a recent date so plan users can have confidence it is still relevant;
- Incorporates the addendum;
- Updates the contact lists;
- Updates the description of infrastructure to reflect current conditions in Arviat including the third reservoir and hazardous waste storage area; and
- Includes a map that shows infrastructure, water bodies and sensitive areas, topography and spill kit storage locations, as recommended in the Guidelines for Spill Contingency Planning.

### Information request:

CIRNAC recommends the proponent provide an updated Environmental Emergency Contingency Plan.

## **8. Environmental Monitoring Program and Quality Assurance / Quality Control Plan**

### Comment:

The most recent version of the Environmental Monitoring Program and Quality Assurance / Quality Control Plan CIRNAC has found is from December 2010.

CIRNAC recommends that the plan:

- Has an updated title page with a recent date so plan users can have confidence it is still relevant;
- Has monitoring program stations that correspond to what is found in the water licence (Currently Table 1 has different station descriptions for stations ARV-3, ARV-4, ARV-5, ARV-6, ARV-10 and ARV-11);
- Updated figures reflecting correct monitoring station locations; and
- Updated letter of approval from accredited laboratory (Appendix E).

Information request:

CIRNAC recommends the proponent comment on when they could provide an updated Environmental Monitoring Program and Quality Assurance / Quality Control Plan. We acknowledge discussions during the licence renewal process may result in changes to the monitoring program, which would need to be reflected in the Plan.

## **9. Reclamation of old sewage lagoons**

Comment:

An abandonment and restoration plan for the old sewage lagoons was submitted in 2015. The 2015 and 2016 annual reports state the old sewage lagoon was to be reclaimed in 2017. No further mention of the restoration work was found in documents from 2017 onwards.

Information request:

CIRNAC recommends the proponent clarify if the old sewage lagoons have been restored.

## **C. COMPLETENESS OF APPLICATION**

CIRNAC notes that some of our information requests may be for items which already exist but have not been provided on a platform for CIRNAC to easily access.

CIRNAC recommends that an updated Environmental Emergency Contingency Plan be available for review during the technical review period.

## **D. TECHNICAL MEETING – PRE-HEARING CONFERENCE**

The Nunavut Water Board invited comments on the type of Technical meeting–pre-hearing conference to be held. CIRNAC is of the opinion that either an in-person meeting (depending on measures in place to prevent the spread of COVID-19) or a teleconference would be effective.

CIRNAC looks forward to participating in any form of meeting determined to be most appropriate by the Nunavut Water Board.

## **E. REFERENCES**

Addendum to Addendum to Environmental Contingency Plan – Hamlet of Arviat, File No. N-O15746, Nuna Burnside Engineering and Environmental Ltd., December 2010.

Annual Reports for the Hamlet of Arviat 2014-2019, Government of Nunavut – Community and Government Services, March 2015 - October 2020.

Application for Water Licence Amendment and Renewal, Government of Nunavut – Community and Government Services, September 16, 2020.

Environmental Emergency Contingency Plan, Nuna Burnside Engineering and Environmental Ltd., May 2010.

Environmental Monitoring Program and Quality Assurance / Quality Control Plan, Hamlet of Arviat, Nuna Burnside Engineering and Environmental Ltd., December 2010.

Guidelines for Spill Contingency Planning, Indian and Northern Affairs Canada, 2007.

Hamlet of Arviat Solid Waste Audit Results, EXP Services Inc., November 2013.

Old Sewage Lagoons Abandonment and Restoration Plan, Hamlet of Arviat, Nuna Burnside Engineering and Environmental Ltd., December 2010.

Operation & Maintenance Manual, Arviat Water Treatment Plant, BI Pure Water Inc., November 2019.

Plan for Compliance Licence No: 3AM-ARV1016 Type A, Government of Nunavut – Community and Government Services, September 16, 2020.

Sewage Treatment Facility Operation and Maintenance (O&M) Plan, Hamlet of Arviat, Nuna Burnside Engineering and Environmental Ltd., May 2010.

Solid Waste Management Facility Operation and Maintenance (O&M) Plan, Hamlet of Arviat, Nuna Burnside Engineering and Environmental Ltd., May 2010.

Water Licence No: 3AM-ARV1015, Hamlet of Arviat, Nunavut, Nunavut Water Board, August 23, 2010.

Wolf Creek 2019 Hydrologic Assessment, Arviat, Nunavut, Palmer™, March 4, 2020.