



Water Resources Division  
Resource Management Directorate  
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Your file - Votre référence  
3BM-IGL1520 / 3AM-IGL----  
Our file - Notre référence  
CIDM#1284108

March 24, 2020

Richard Dwyer  
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Nunavut Water Board  
P.O. Box 119  
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E-mail: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

**Re: Crown-Indigenous Relations and Northern Affairs Canada Completeness and Preliminary Technical Review Comments on Municipality of Igloolik Application for dual Renewal and Amendment of Type B Water Licence No. 3BM-IGL1520 to Type A Water Licence 3AM-IGL----**

Dear Mr. Dwyer,

Thank you for your March 3, 2020 invitation to review the referenced application and supplemental information, submitted by the Government of Nunavut Community Government Services on behalf of the Municipality of Igloolik, for completeness and to conduct an initial technical assessment.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application package 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*. Comments have been provided in the attached Technical Memorandum.

If there are any questions or concerns, please contact me at (867) 975-4282 or [bridget.campbell@canada.ca](mailto:bridget.campbell@canada.ca).

Sincerely,

Bridget Campbell,  
Water Resources Coordinator



## **Technical Review Memorandum**

**Date:** March 24, 2020

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

**From:** Bridget Campbell – Water Management Coordinator, CIRNAC

**Subject: Crown-Indigenous Relations and Northern Affairs Canada  
Completeness and Preliminary Technical Review Comments on  
Municipality of Igloolik Application for dual Renewal and Amendment of  
Type B Water Licence No. 3BM-IGL1520 to Type A Water Licence 3AM-  
IGL----**

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### **A. BACKGROUND**

The Municipality of Igloolik, located in the Qikiqtani Region of Nunavut, currently holds a Type B Water Licence, No. 3BM-IGL1520, set to expire March 30, 2020. This licence allows for Municipal Undertakings and covers activities regarding potable water withdrawals from the primary water source of South Lake, for over-winter storage of potable water in the reservoir, for the operation of truck fill stations, for wastewater collection and treatment, and for the operation of waste management sites. On February 16, 2016 the Nunavut Water Board (NWB) approved Amendment No. 1 to licence No. 3BM-IGL1520 for the expansion and rehabilitation of the Sewage Lagoon Facility.

On September 1, 2017 the NWB approved Amendment No. 2 to licence No. 3BM-IGL1520 for the expansion of an existing potable water supply reservoir from 79,000m<sup>3</sup> to 102,800 m<sup>3</sup>. The actual volume of the reservoir upon completion, according to the 2019 Annual Report (Annual Report, 2019), is 126, 440m<sup>3</sup>. Amendment No. 2 also included the replacement of an intake line that transmits water from the hamlet's primary water source, South Lake, to the Hamlet's water supply reservoir, the construction of a new truck-fill station, and the inclusion of Fish Lake as an alternative water source to the scope of the Existing Licence. The Cover Letter attached to Amendment No. 2 to Water Licence 3BM-IGL1520 (Letter to Shawn Stuckey and Bhabesh Roy, 2016) explains on page 3 the reason for adding Fish Lake as an alternate water source and for increasing the storage capacity of the reservoir:

Details included in the Application to amend the Existing Licence indicate that in 2015 the Hamlet experienced a shortage in the reservoir's over-winter water storage due to anoxic conditions at the South Lake water source. To protect the public's safety, the Government of Nunavut – Department of Health (GN-DOH) advised that use of the South Lake water source should be temporarily discontinued. The Hamlet accepted the GN-DOH advise, and it decided to use Fish Lake as its water supply source until the integrity of the South Lake source was restored.



The Hamlet indicated in its Application that to minimize the possibility of similar shortages in the future, it is proposing, as stated above, to expand the reservoir's annual over-winter storage capacity from 79,000 m<sup>3</sup> to 102,800 m<sup>3</sup> as well as upgrade some of the other structures/equipment associated with the Water Supply Facilities.

On January 31, 2020, on behalf of the Hamlet of Igloolik, the Government of Nunavut (GN) Department of Community and Government Services (CGS) applied to the Nunavut Water Board (NWB) to renew the Type B licence for a 5 year term. CGS provided supplemental information on February 25, February 26, and March 2, 2020, to also amend the Type B licence to a Type A licence, 3AM-IGL----, and to extend the term to 10 years. As outlined in Schedule 2 of the *Nunavut Waters Regulations*, a Type "A" water licence is required for the storage of more than 60,000 cubic metres of water and/or the used of at least 300 cubic metres of water per day. According to the Cover Letter attached to Amendment No. 2 to Water Licence 3BM-IGL1520 (Letter to Shawn Stuckey and Bhabesh Roy, 2016):

It should be noted that the Board did not apply [the Type "A"] requirement at the time the Existing Licence was issued due to a number of factors including the nature of the storage facility involved (the Regulations are based on storage utilizing dams or dikes – Column 2, Item 3 of Schedule 2) and the fact that the Hamlet's direct water usage from the source or its reservoir did not exceed the threshold outlined in Schedule 2 of the Regulations. The Licensee is advised, however, that if there is any proposed increase in direct source water use related to the Existing Licence in future, the associated renewal or amendment application for this potential increase in use may potentially be treated as a Type "A" application and processed in accordance with the relevant thresholds established in the Regulations.

CIRNAC provides the following comments, information requests, and recommendations pertaining to both the renewal and the amendment to Water Licence 3BM-IGL1520. A summary of the subjects of recommendations can be found in Table 1. A summary of the subjects of information requests can be found in Table 2. Detailed technical review comments can be found in Section C.

**Table 1: Summary of Recommendations**

Recommendation Number	Subject
R-01	As-Built Drawings
R-02, R-03	Scope of Licence to Include Roads Management and Watercourse Crossings



**Table 2: Summary of Information Requests**

Information Request Number	Subject
<b>IR-01</b>	Inclusion of Items from Licence Amendments in Compliance Plan
<b>IR-02</b>	Operation and Maintenance Manual for the Water Supply System
<b>IR-03, IR-04</b>	As-Built Drawings
<b>IR-05</b>	Consolidation and Storage of Hazardous Waste
<b>IR-06</b>	Data from the Monitoring Program

**B. DOCUMENTS REVIEWED**

The following table (Table 3) provides a summary of the documents reviewed under the Application Package for Renewal of 3BM-IGL1520 and the Supplemental Information Package for Amendment of 3AM-IGL----.

**Table 3: Documents Reviewed**

Appendix	Document Title	Author, File No., Rev., Date
<b>Application Package for Renewal of 3BM-IGL1520, Submitted on 01/31/2020</b>		
Appendix A	NPC letter, RE: 149222	Nunavut Planning Commission, 2019-12-20
Appendix B	Certificate of Analysis – Municipality of Igloolik 2019	Community Government Services, 2020-01
Appendix C	Cover Letter	Bhabesh Roy, M.A.Sc., P.Eng for Community and Government Services, 2020-01-31
Appendix D	Cover Letter (Signed)	Bhabesh Roy, M.A.Sc., P.Eng for Community and Government Services, 2020-01-31
Appendix E	Hamlet of Igloolik 2019 Annual Report	Community Government Services, 2020-01
Appendix F	Igloolik Water Licence Plan of Compliance	Community Government Services, 2020-01-31
Appendix G	Type “B” Renewal Water Licence Application	Gregory Morash, Hamlet of Igloolik, 2020-01-31
<b>Supplemental Information for Amendment of 3AM-IGL----, Submitted on 25/02/2020</b>		
Appendix H	Type “A” Water Licence Application	Gregory Morash, Hamlet of Igloolik, 2020-02-25
Appendix I	NPC letter, RE: 149222	Nunavut Planning Commission, 2019-12-20
<b>Supplemental Information for Amendment of 3AM-IGL----, Submitted on 03/02/2020</b>		
Appendix J	Operation & Maintenance (O&M) Manual for the Sewage Lagoon (Volumes I & II)	Exp. Services for the Government of Nunavut, Revised 2020-02
Appendix K	Drawings and plans for sewage lagoon, water reservoir and intake pipe line	Exp. Services for the Government of Nunavut , Revision 6, 2015-11-12



## **C. TECHNICAL REVIEW COMMENTS AND INFORMATION REQUESTS**

### **1. Inclusion of Items from Licence Amendments in Compliance Plan**

#### **Comment:**

The Compliance Plan (Plan for Compliance, 2019) includes the status of compliance and plans to achieve compliance over the long term for each Part and item of Type B Water Licence 3BM-IGL1520. The Compliance Plan does not include items which have been added via Amendment No. 1 and Amendment No. 2. CIRNAC considers it valuable to the application for the proponent to demonstrate that they have complied with both the long term and the temporary conditions of the licence.

#### **Information Request:**

(IR-01) CIRNAC recommends that the proponent provide status of compliance and plans for compliance for all current conditions outlined in the licence, as it was amended. If applicable add the following Items from amended licence to the compliance chart

- Part B Item 1k (This compliance report - in compliance),
- Part C Item 8,
- Part D Item 8, 9, 10, 11, 12, 13
- Part E Item 7, 8, 9, 10
- Part F Item 1(a)(i), 1(a)(ii), 1(a)(iii), 6, 7, 8
- Part H Item 1a (amended), 2(amended)

### **2. Operation and Maintenance Manual for the Water Supply System**

#### **Comment:**

Section ix of the Annual Report (Annual Report, 2019) refers to upgrades and modifications of "... the O&M manuals of the Sewage Lagoon and the Water supply system..." and says that the manuals are available and attached. There is one Operation & Maintenance Manual attached and that manual is for the Waste Water Facility. Separate For-Construction engineering documents were provided for the Truck Fill Station.

#### **Information Request:**

(IR-02) CIRNAC requests that the Operation & Maintenance Manual for the Water Supply System, including the Truck Fill Station, complete with as-built drawings, drawing notes, and sequence of operations, be provided for review.



### 3. As-Built Drawings

#### **Comment:**

Licence 3BM-IGL1520, Part E, Items 3 and 4, require the licensee to provide as-built plans and drawings, stamped and signed by an engineer, for all modifications made through the licence for review by the NWB. The Compliance Plan (Plan for Compliance, 2019) reports that the Hamlet of Igloolik is in compliance for licence conditions E-3 and E-4, and that as-built drawings for the wastewater Treatment Facility are provided in the O&M Manual (Operation & Maintenance Manual Volume I, 2020).

The drawings provided for the Improvement of the Water Supply Systems (Drawings M1-M5 and E1-E6) are issued for constructions drawings, not as-built drawings. Further, Appendix E of the O&M Manual (Operation & Maintenance Manual Volume I, 2020) contains engineering drawings, referred to as 'Record Drawings', showing the plans for construction of the sewage Wastewater Treatment Facility. These drawings do not portray a completed structure, label the facility as 'Proposed Wastewater Treatment Facility', and are not signed and stamped by an engineer. The required as-built drawings have not been provided.

Without updated as-built drawings, reviewers, contractors, operators, and other workers do not have current information to make informed decisions at the site. Any changes to the site, including modifications, should be documented for the benefit of workers and regulatory personnel. This is often achieved in other Type "A" projects by writing and submitting Construction Summary Reports which outline any changes made to the site over the year, and any changes that were made between the for-construction plans and the actual finished product. These reports also outline the reasons that these changes were made to best inform decision making and operational efficiency on-site.

#### **Information Request:**

(IR-03) CIRNAC requests that the following as-built drawings be submitted to the NWB for review: the Wastewater Treatment Facility drawings IGL-1 – IGL-7 as part of the O&M Manual (Operation & Maintenance Manual Volume I, 2020); mechanical and electrical drawings M1 – M5 and E1 – E6 of the Truck Fill Station as part of the Improvement of Water Supply System series of drawings (Improvement of Water Supply System Engineering Drawings, 2016); and drawings of the Water Reservoir Expansion Overall Site Plan drawing OSP-1 (Igloolik Water Reservoir Expansion Overall Site Plan, 2016). These as-built drawings should be stamped and signed by an engineer, be provided for review CIRNAC requests that the details outlined in Table 4 be made available on the requested as-built drawings.



**Table 4: Requested Details for As-Built Engineering Drawings**

Detail Number	Comment	Drawing Number
1	Identify the connection of the system to the 15000 Lts tank in the basement (supply to the tank and outlet of tank)	M1
2	Clearly identify the location of the fill in station and any water quality/treatment control panels	M1
3	Identify the size of the pipe in the basement water tank	M1 and M5
4	Identify the mechanism in place to shut the supply to the truck fill in station, if chlorination level is not acceptable	M1 and M5
5	Identify fuel pipe sizes	M2
6	Identify where SAN pipe, leading outside the building, drains	M2
7	Identify fuel tank vent pipe, supply fuel pipe and any return fuel pipe	M2
8	provide size of the fuel tank	M2
9	Identify how equipment is being structurally supported	M1 – M5
10	Provide drawing notes and sequence of operations	M1 – M5
11	In reference to the Electrical Scope of Work, separate the demolition notes from the new work	E1
12	In reference to the Grounding Notes, the Consultant referenced an older version of the Canadian Electrical Code. This must be amended to reflect the latest edition of the Canadian Electrical Code	E2
13	In reference to Drawing Detail 2/E3 (Electrical Layout – Example Decommissioned Pump Station), separate the demolition notes from the new work	E3

(IR-04) CIRNAC requests clarification on the following detail deduced from the submitted Engineering Drawings: Provide detailed specifications for the design, equipment and materials and include commissioning sections and O&M documents and water sampling programs (drawings M1 to M5).





### **Recommendation:**

(R-01) CIRNAC recommends that Construction Summary Reports be provided for future construction works under the Type “A” licence.

## **4. Consolidation and Storage of Hazardous Waste**

### **Comment:**

A concern regarding consolidation and storage of hazardous waste was noted in Inspection Report (Water Licence Inspection Form for the Hamlet of Igloolik, 2019) by a CIRNAC Water Resource Officer (WRO). The WRO indicates that windblown garbage and the possible migration of hazardous waste may be impacting a small lake downgrade from the burn and cap and the non-engineered hazardous waste facility. This concern has been confirmed on page 2 of the Hamlet of Igloolik 2019 Annual Report (Annual Report, 2019), which reports that “The existing Waste Management Facility is the concern for segregation of hazardous materials, Storage, burning etc.”

Section vii of the Annual Report (Annual Report, 2019) refers to a Feasibility Study for the Waste Management Facility which is currently undergoing review by the Government of Nunavut. A feasibility study is useful to determine the viability of the plans by the Hamlet of Igloolik to address concerns regarding management of solid and hazardous waste at the Waste Management Facility. CIRNAC supports efforts by the Hamlet of Igloolik to manage waste, prevent the release of deleterious materials into surrounding water bodies, and to be in compliance with the NWB Water Licence. Providing the Feasibility Study for review would reassure the department that the Hamlet of Igloolik is on track to achieving suitable and appropriate site management practices.

### **Information Request:**

(IR-05) CIRNAC recommends that the proponent provide the Feasibility Study for the Waste Management Facility for review.

## **5. Scope of Licence to Include Roads Management and Watercourse Crossings**

### **Comment:**

The scope of Licence No. 3BM-IGL1520 includes the water distribution systems for potable water and wastewater, but does not explicitly state the inclusion of water course crossings (such as pipelines, jetties, bridges; roads associated with channels; and bank alterations, culverts, spurs, erosion control, and artificial accretion). CIRNAC is of the opinion that the scope of the new Type “A” licence should include all activities that are required, or will be required, to satisfy the Prohibition section of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, Section 11 (1). Specifically, CIRNAC considers the inclusion of conditions pertaining to roads management and watercourse crossings in the



scope of the licence would support all parties in meeting the legal requirements under Nunavut legislation.

**Recommendation:**

(R-02) CIRNAC recommends that the scope of the amended Type “A” water licence explicitly include roads management and watercourse crossings, including:

- pipelines;
- jetties;
- bridges;
- roads associated with channels;
- bank alterations;
- culverts;
- spurs;
- erosion control; and
- artificial accretion.

(R-03) CIRNAC recommends that a condition be included in the amended Type “A” water licence requiring that culverts be:

- appropriately sized for the location and flow at water crossings;
- kept clear of debris and ice (monitor for blockage) to prevent erosion and allow fish passage;
- inflict minimize disturbance on stream beds; and
- buried into the stream bed to a minimum of 20% of the culvert diameter for fish migration.

## **6. Data from the Monitoring Program**

**Comment:**

A summary of the data from the Monitoring Program outlined in Part H of Licence No. 3BM-IGL1520, and subsequent amendments, is required under part B Item 1 to be provided in an Annual Report for review by the NWB. Further details pertaining to water quality criteria and sample frequency can be found in Part H of the licence. These data were not made available in the 2019 Annual Report (Annual Report, 2019). One barrier to collecting this information is the lack of instrumentation at the end of the discharge pipe, as noted in the Annual Report. One Certificate of Analysis (Report No. B19-26849) was attached to the application. This Chemical Analysis Report was for the wastewater lagoons, for the month of August, and is the only month of data that was made available. This data is relevant for ensuring the effective treatment of effluent released to the environment, for recognizing issues with equipment for troubleshooting, and for preventing unauthorized spills and pollution into water bodies surrounding the Hamlet of Igloodik.



**Information Request:**

CIRNAC requests that the licensee provide tabular summaries of the water quality data generated under Stations IGL-2, IGL-4, and IGL-5 of the Monitoring Program, and required under Part B Item 1b) and outlined under Part H, Items 3 and 4 of Licence No. 3BM-IGL1520, for the following parameters below:

Total Suspended Solids  
Conductivity  
Oil and Grease (visual)  
Magnesium  
Sodium  
Chloride  
Total Hardness  
Ammonia Nitrogen  
Total Cadmium  
Total Cobalt  
Total Chromium  
Total Copper  
Total Aluminum  
Total Mercury  
Carbonaceous Biochemical Oxygen Demand (cBOD5)  
pH  
Nitrate-Nitrite  
Total Phenols  
Calcium  
Potassium  
Sulphate  
Total Alkalinity  
Total Zinc  
Total Iron  
Total Manganese  
Total Nickel  
Total Lead  
Total Arsenic  
Total Organic Carbon (TOC).



## D. REFERENCES

### Works Cited

- Arktis piusitippaa. (2016). Improvement of Water Supply System Engineering Drawings. Hamlet of Igloolik: Community Government Services.
- CIRNAC Water Resources Officer. (2019, September 16). Water Licence Inspection Form for the Hamlet of Igloolik. Hamlet of Igloolik: 3BM-IGL1520.
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- Exp. Services Inc. for Government of Nunavut. (2016). Igloolik Water Reservoir Expansion Overall Site Plan. *Drawing OSP-1*. Hamlet of Igloolik: Community Governemnt Services.
- Kabloona, T. (2016, September 1). Letter to Shawn Stuckey and Bhabesh Roy. *RE: Licence No. 3BM-IGL1520, Type "B" – Amendment No. 2*. Nunavut Water Board.
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