



Government of Nunavut

October 17, 2024

The Municipality of Arctic Bay is applying to renew and amend Water Licence 3BM-ARC1924. The amendments the Municipality would like to apply as well as justification are as presented in Table 1. The proposed amendments are to ensure the municipal water use demands are sufficiently met through to 2047 based on the new water treatment plant design, to align the licence with newly issued municipal licences requirements that are based on evidence and best practices, and to remove previous requirements that are no longer relevant or practical.

Table 1. Proposed Amendments to Municipality of Arctic Bay Renewed Water Licence

ITEM	REQUEST	JUSTIFICATION												
All applicable items	Change term “Hamlet” to “Municipality”	Municipality is the preferred term by the Licensee.												
B-1-a	Remove Nanisivik Naval Facility	The Municipality no longer has an agreement with the Department of National Defense to provide potable water to the Nanisivik Naval Facility.												
B-1-e	Remove / Amend requirement	<p>The Municipality does not have the technical capacity to perform the geotechnical assessment and analysis. CGS does not have a geotechnical engineer that can provide support to the Municipality to meet this requirement.</p> <p>If amend: The geotechnical assessment and analysis of thermistor, standpipe, and settlement monitoring stations shall be performed by a geotechnical engineer during the geotechnical inspection as per F-8. An amendment to F-8 regarding the frequency of the inspection has been requested as shown below.</p>												
B-11	Remove municipal boundaries from the requirement and change requirement from “in the areas of the Water Supply or Waste Disposal Facilities” to spills related to Licenced Facilities.	Only spills related to the operation of Licenced Facilities should follow this requirement for this municipal water licence. There are spills within the municipal boundaries that are intended to be dealt with by agencies such as QEC and NHC, who are not authorized licensees under the municipal water licence.												
C-2 & Quantity of Water use not to Exceed – Annum	Increase from 59,900 cubic metres per annum to 75,000 cubic metres per annum	<p>It is expected that 75,000 m³ will be sufficient to supply the municipality until at least 2047.</p> <p>The population and consumption projections are presented in the table below:</p> <table><tr><th>Parameter</th><th>Value</th></tr><tr><td>2021 Population*</td><td>960</td></tr><tr><td>Annual Growth Rate from 2008 to 2021 (%)*</td><td>1.51</td></tr><tr><td>Projected 2047 Population</td><td>1,418</td></tr><tr><td>Consumption Rate (L/d/capita)**</td><td>120</td></tr><tr><td>Annual Water Consumption (m³)</td><td>62,108.4</td></tr></table>	Parameter	Value	2021 Population*	960	Annual Growth Rate from 2008 to 2021 (%)*	1.51	Projected 2047 Population	1,418	Consumption Rate (L/d/capita)**	120	Annual Water Consumption (m ³)	62,108.4
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		Process Waste (m ³)***	9,091.6
		2047 Annual Water Use including Process Waste (m ³)	71,200
		*Nunavut Bureau of Statistics **Government of Nunavut Standard Water Treatment Train ***Regulatory Submissions Supporting Documentation, Dillon Consulting	
D-3	Amendment the effluent compliance point from ARC-4 to ARC-6b	The Wastewater Treatment Facility is designed as a lagoon-wetland treatment system for which the wetland performs significant effluent treatment based on the lab results from the Water Licence monitoring program. The end of the wetland is where the effluent enters the receiving environment and should therefore be the compliance point, as it represents the fully treated effluent.	
	Amend the parameter BOD ₅ to cBOD with a 100 mg/L maximum concentration of any grab sample Amend the maximum concentration of any grab sample of 120 mg/L for total suspended solids	cBOD is replacing BOD5 as the standard test parameter as indicated in <i>Good Engineering Practice for Northern Water and Sewer Systems</i> , Government of Northwest Territories, 2017. These limits can be reliably met by lagoon-wetland systems while preserving the health of the receiving environment as demonstrated during multi-year Nunavut research conducted by the Centre for Water Resource Studies at Dalhousie University. The findings were recommended by EXP in the <i>Recommendations for the Development of Nunavut Municipal Wastewater Management Standards</i> , 2017.	
F-1	Amend to most recent manual	The operations and maintenance manual for the wastewater treatment facility was updated to the standard template entitled “Municipality of Arctic Bay Operation & Maintenance Plan for Municipal Water Licence: Sewage Disposal Facilities" dated November 2024. The manual will be submitted to the Board in November 2024.	
F-3	Amend to most recent manual	The operations and maintenance manual for the solid waste facility was updated to the standard template entitled “Municipality of Arctic Bay Operation & Maintenance Plan for Municipal Water Licence: Solid Waste Disposal Facilities" dated November 2024. The manual will be submitted to the Board in November 2024.	
F-4	Remove requirement	The solid waste O&M manual has been updated to include the procedures within “Hazardous Waste Segregation, Storage and Transportation Procedure, Municipality of Arctic Bay” as part of the standardized operations and maintenance manual template that was approved by the Board. The manual “Municipality of Arctic Bay Operation & Maintenance Plan for Municipal Water Licence: Solid	

		Waste Disposal Facilities" dated November 2024 will be submitted to the Board in November 2024.
F-7 and F-8	<p>Amend requirement for an engineer to inspect the water and waste infrastructure annually to:</p> <p>The Licensee may request changes to the type and frequency of the inspection and monitoring required under Part F, Item 7 and 8, and Part I, Item 2 and 12. Any submission requesting changes to the required inspection and monitoring shall include supporting evidence to justify the changes, and the Board shall circulate the request for comment to relevant parties before considering the Applicant's request. Following the Board's consideration of supporting evidence and comments, the Board shall issue their decision about the request in writing, including, if applicable, approval of any changes to the required inspection. Unless the Board directs otherwise, such changes to the inspection required</p>	<p>The Municipality does not have engineers available who are trained to conduct water or waste facility inspections. Engineers cannot misrepresent their area of expertise according to NAPEG's Code of Ethics Rules of Conduct: "Professional Engineers and Professional Geoscientists: shall undertake only such work as they are competent to perform by virtue of training and expertise and shall express opinions on engineering and geoscience matters only on the basis of adequate knowledge and honest conviction."</p> <p>CGS has contracted Dillon to study the recommended frequency of an engineer's inspection of the water and waste infrastructure. The findings of the study will be provided in the 2024 annual report to request a defensible inspection frequency.</p>

	under Part F, Item 7 and 8, and Part I, Item 2 and 12 will not be considered to constitute an “Amendment” to the Licence.	
	Amend requirement for the Engineer’s report to be submitted within sixty (60) days of the inspection	Final reports typically take longer than 60 days to be received from a consultant and reviewed by the technical team. The licensee requests that the submission timeline be adjusted to 60 days after the final report is submitted by the consultant.
G-1	Amend to most recent manual Remove the line: “The Licensee shall submit to the Board for approval in writing, within ninety (90) days from the date of issuance of this Licence, an updated Spill Contingency Plan to address the comments received during the review of Application.”	The operations and maintenance manual for spill contingency was updated to the standard template entitled “Municipality of Arctic Bay Environmental Emergency Contingency Plan for Municipal Water Licence” dated November 2024. The comments from the previous review of Application were implemented.
H-4	Remove the requirement	Not practical to achieve. Topsoil would need to be stored for decades until reinstated to the site, which by that point would be ineffective. Abandonment and restoration plans are to be approved by the Board as per H-1 of the Water Licence.
I-1	Amend to most recent manual. Remove the line: “The Licensee shall submit to the Board for review, within ninety (90) days from the date of issuance of this Licence, an updated QA/QC Plan to address the comments received	The operations and maintenance manual for spill contingency was updated to the standard template entitled “Municipality of Arctic Bay Environmental Monitoring Program and Quality Assurance/Quality Control Plan for Municipal Water Licence” dated November 2024. The comments from the previous review of Application were implemented.

	during the review of Application.”	
I-2	ARC-3 remove requirement to monitor water quality once prior to licence renewal	This requirement has low practical interest by parties involved as deemed upon the removal of a similar monitoring station (CLY-3A) from the municipal water licence 3BM-CLY1924. Moreover, the requirement is not present in other municipal water licences.
	ARC-7b remove requirement to monitor water quality of runoff from the abandoned quarry site	As the quarry is abandoned, there is minimal risk to the environment and therefore, this monitoring station has low practical interest.
	ARC-10 remove requirement to monitor temperature measured by thermistors	CGS has contracted Dillon to study the recommended frequency of an engineer’s inspection of the water and waste infrastructure including the Arctic Bay sewage lagoon. The findings of the study will be provided in the 2024 annual report to request a defensible inspection and monitoring method and frequency.
	ARC-11 remove requirement to measure seepage through the standpipes	CGS has contracted Dillon to study the recommended frequency of an engineer’s inspection of the water and waste infrastructure including the Arctic Bay sewage lagoon. The findings of the study will be provided in the 2024 annual report to request a defensible inspection and monitoring method and frequency.
	ARC-12 remove requirement to monitor berm settlements	<p>According to the <i>Operations and Maintenance Manual for the Wastewater Treatment Facility Hamlet of Arctic Bay</i>: “it is recommended that settlements of the berms should be monitored for 2 to 3 years subsequent to completion of construction” (EXP, 2012). The sewage lagoon was constructed in 2011. Monitoring settlement is no longer relevant.</p> <p>CGS has contracted Dillon to study the recommended frequency of an engineer’s inspection of the water and waste infrastructure including the Arctic Bay sewage lagoon. The findings of the study will be provided in the 2024 annual report to request a defensible inspection and monitoring method and frequency.</p>
I-6	Remove monitoring station ARC-3	ARC-3 to no longer be monitored.
I-7	Remove monitoring station ARC-7b	ARC-7b to no longer be monitored.

I-12	Remove requirement	<p>According to the <i>Operations and Maintenance Manual for the Wastewater Treatment Facility Hamlet of Arctic Bay</i>: “it is recommended that settlements of the berms should be monitored for 2 to 3 years subsequent to completion of construction” (EXP, 2012). The sewage lagoon was constructed in 2011. Monitoring settlement is no longer relevant.</p> <p>CGS has contracted Dillon to study the recommended frequency of an engineer’s inspection of the water and waste infrastructure including the Arctic Bay sewage lagoon. The findings of the study will be provided in the 2024 annual report to request a defensible inspection and monitoring method and frequency.</p>
I-13	Remove requirement	<p>As per the clause, the Instrumentation Monitoring and Surveillance Plans have been incorporated into the updated Manuals “Municipality of Arctic Bay Environmental Monitoring Program and Quality Assurance/Quality Control Plan for Municipal Water Licence” dated November 2024, and “Municipality of Arctic Bay Operation & Maintenance Plan for Municipal Water Licence: Sewage Disposal Facilities” dated November 2024.</p>
I-16	Remove “as well as an indication of Water quality upstream and downstream of the Vegetated Filter Strip Wetland Area”	<p>This requirement is not practical, as there is no baseline data upstream and downstream of the Wetland area for such analysis. Furthermore, multi-year research by the Centre for Water Resource Studies at Dalhousie University has been demonstrated that if the effluent is treated to a cBOD of 100 mg/L and a Total Suspended Solids of 120 mg/L, the receiving environment will be preserved.</p>