

Response to Comments and Recommendations
Water Licence 3BM-CLY1924
March 31, 2025

Supporting documentation referenced in Licensee Response accessible at: <https://app.ca.e-builder.net/public/publicLanding.aspx?QS=a3ec696db9f54abf8180ea49ce4f9de1>

Agency	Date	Page(s) No.	Comment / Recommendation ID	Comment / Recommendation	Licensee Response
CIRNAC	Feb-05-2025	5	R-01	CIRNAC recommends that the applicant double check if they meant to write Appendix A instead of B and provide appendix B if it is required.	Please see updated Environmental Emergency Spill Contingency Plan.
CIRNAC	Feb-05-2025	5	R-02	CIRNAC recommends that the applicant clarify the location of all spill kits and ensure that they remain unlocked.	Please see updated Environmental Emergency Spill Contingency Plan. There is no storage space for the spill response kit at the water supply facility (pumphouse too small), solid waste disposal facility (no enclosed structure), or sewage disposal facility (no enclosed structure). The maintenance garage is accessible to all municipal staff, who would respond to the spill, and is a short drive to all facilities. Once constructed, the new water treatment plant will contain a spill response kit and the Environmental Emergency Spill Contingency Plan will be updated.
CIRNAC	Feb-05-2025	5	R-03	CIRNAC recommends that the applicant provide the MSDS sheets for hazardous materials which personnel working are likely to encounter.	Please see updated Environmental Emergency Spill Contingency Plan.

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CIRNAC	Feb-05-2025	6	R-04	CIRNAC recommends that the applicant remove dilution as a form of treatment to cleaning up a sewage spill.	Please see updated Environmental Emergency Spill Contingency Plan.
CIRNAC	Feb-05-2025	6-7	R-05	CIRNAC recommends that the applicant provide the GPS coordinates for the sampling locations in Table 1 in the Environmental Monitoring and QA QC Plan.	Please see updated Environmental Monitoring and QA/QC Plan.
CIRNAC	Feb-05-2025	7	R-06	<p>CIRNAC recommends that the applicant clarify how their decanting process works with regards to timeline and release into the wetlands.</p> <p>The proponent is reminded that effective treatment requires holding times in a passive Lagoon treatment system to achieve treatment that includes time for flocculation and settling, biodegradation via organic decomposition and ultraviolet disinfection through sunshine and photosynthesis. It is incumbent on the proponent</p>	<p>The O&M Plan for the Sewage Disposal Facilities has been updated to reflect the decanting process as per CIRNAC's comment.</p> <p>A dispersion pipe is used to disperse sewage evenly throughout the wetland and reduce the velocity of the sewage to prevent divots in the ground. The average discharge flowrate of 1,400 cubic metres per day has been added to the O&M Plan for the Sewage Disposal Facilities.</p>

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				to provide an operations and maintenance manual that meets these minimum objectives.	
CIRNAC	Feb-05-2025	7	R-07	CIRNAC recommends that the applicant include Appendix B or remove it in the table of contents from the OM Plan Sewage Disposal Facility.	Please see updated O&M Plan for the Sewage Disposal Facilities.
CIRNAC	Feb-05-2025	8	R-08	CIRNAC recommends that the applicant include Appendix B and C, fix the temperature error and include a line in table 1 under section 7 including the requirement of the water licence Part B item d [unless it is no longer required by the water licence see comment 16.2, 14].	<p>Please see updated O&M Plan for the Solid Waste Disposal Facilities:</p> <ul style="list-style-type: none"> • Appendix A changed to site layout sketch. No as-builts are available as it is a non-engineered facility. Appendix A will be updated to include as-built drawings for the upgraded solid waste facility upon completion. • Appendix B and Appendix C have been removed from the Table of Contents. • Section 1.2.1 corrected temperature typo and removed the number of lagoon cells <p>The Licensee requests that Part B Item 1-d of the water licence be changed to “the monthly and annual quantities in cubic metres of wastewater discharged; and the annual hazardous and non-hazardous waste accepted at the Solid Waste Facilities” This request has been reflected in Table 1 of the O&M Plan for the Solid Waste Disposal Facilities.</p>

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					An estimated volume of hazardous and non-hazardous waste disposed annually into the solid waste facility can be provided in the Annual Report based on the standard solid waste generation rates as the uploaded memorandum <i>Solid Waste Generation Rates in Nunavut</i> .
CIRNAC	Feb-05-2025	8	R-09	CIRNAC recommends that the applicant provide information about ensuring that the fence remain in workable conditions.	<p>The fence condition is in poor condition in some areas; however, it will be replaced with a new fence as part of the solid waste disposal facility upgrade project in 2026. The existing fence is expected to remain in workable condition until then.</p> <p>Procedures for fence maintenance have been added to the O&M Plan for the Solid Waste Disposal Facilities under Section 6.0.</p>
CIRNAC	Feb-05-2025	9	R-10	CIRNAC recommends that the applicant clarify how hazardous materials are being segregated and properly stored. If this can not be met then the compliance plan should be updated to read – Non-Compliant.	<p>The compliance plan Part D Item 7 has been updated and re-uploaded.</p> <p>Currently hazardous materials are segregated from the domestic solid waste by the operators of the facility. The hazardous wastes are brought to a dedicated location within the solid waste facility as shown in Appendix A. Within the hazardous waste area, there are sea cans for storage of batteries, paint and solvents cans, electronic waste, motor oil, and antifreeze. Furthermore, there is a bermed area for the storage of waste oil drums.</p> <p>The solid waste facility upgrades will take place in 2026 allowing for the solid waste facility to be</p>

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					operated in compliance with Part D Item 7 through improvements to surface water management and increases to the capacity for the storage of hazardous wastes. Appendix A will be updated for the upgraded solid waste facility, which will be proposed to the Nunavut Board Water in a future Modification request of the water licence.
CIRNAC	Feb-05-2025	9	R-11	CIRNAC recommends that the applicant not open burn.	<p>The best management practices as per the GN's <i>Environmental Guideline for the Burning and Incineration of Solid Waste</i> for record keeping of solid waste burning and open-burning practices have been added to the O&M Plan for the Solid Waste Disposal Facilities.</p> <p>The O&M Plan for the solid waste disposal facility previously approved included of segregating solid waste, capping and covering, and open-burning. The Licensee requests that the Plan including open-burning continue to be accepted while the previously licenced facility remains in use.</p> <p>The ongoing solid waste upgrade project planning project is currently reviewing the options to most effectively upgrade the site within the available projects funds. As previously reported to the NWB, the initial planning study was completed in 2020/21, and the cost estimates indicated that the current funding could not support the construction of a new state-of-the-art 20-year landfill so the focus of the project shifted</p>

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					to upgrading/improving the existing site. The O&M Plan for the Solid Waste Disposal Facilities will be updated when the upgrades are complete to reflect best practices.
CIRNAC	Feb-05-2025	10	R-12	CIRNAC recommends that the applicant fix the inconsistencies in the plan and then take operational steps to fix the deficiencies in the operations on site.	Please see updated O&M Plan for the Water Supply Facilities.
CIRNAC	Feb-05-2025	10	R-13	CIRNAC recommends that the applicant update the table to reflect the water licence requirements.	Please see updated O&M Plan for the Water Supply Facilities.
CIRNAC	Feb-05-2025	10	R-14	CIRNAC recommends that the applicant clarify how tires and electronic waste will be disposed of and clarify if Clyde River has a landfarm.	<p>Please see updated O&M Plan for the Solid Waste Disposal Facilities, for which the following clarifications were made:</p> <ul style="list-style-type: none"> • Electronics are segregated from the regular municipal waste and are brought to the hazardous waste area for storage within sea cans. • Tires are segregated from the regular municipal brought to a dedicated tire disposal area adjacent to the bulk metals waste area. <p>There is no municipal landfarm in Clyde River. All references to landfarms have been removed. The procedure for the handling of contaminated soils in the Environmental Emergency Contingency Plan has been updated.</p>

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CIRNAC	Feb-05-2025	11	R-15	CIRNAC recommends that the applicant clarify the length of the renewal application but recommends a license for no longer than 5 years to allow the applicant to come into compliance with the license.	<p>The Licensee agrees with a five year term renewal.</p> <p>There is an ongoing planning project for a new water treatment plant along with a hydrology study on Emirtavik Lake. Once the viability of the water source and the design of the new water plant is completed, a subsequent amendment application will be submitted requesting a longer licence term for the lifespan of the new water treatment facility.</p>
CIRNAC	Feb-05-2025	11-14	R-16.2, 14	CIRNAC recommends that the applicant ensures that they are capable of an accurate reading of the sewage and solid waste be made monthly and annually and differs to the Nunavut Water Board for substantive changes to monitoring requirements under the license.	<p>The Board has accepted in the past that sewage disposal volumes be assumed as equal to water withdrawal volumes.</p> <p>Please see the updated memorandum <i>Solid Waste Generation Rates in Nunavut</i> as the response to the comment regarding solid waste. An accurate reading can only be taken if Solid Waste Disposal Facilities have a full-time attendant and a weighing scale. Facilities for an attendant are not available and there are numerous barriers to weighing scales. They are challenging to install and maintain in arctic and permafrost conditions, and require electricity, which the site does not have.</p>
CIRNAC	Feb-05-2025	14	R-16.3	CIRNAC recommends that the applicant talk with QEC and NHC and discuss amongst themselves about how to fix this issue.	<p>The Licensee requests that the wording in the water licence be changed.</p> <p>The existing requirement Part B Item 7 is: “The Licensee shall immediately report to the 24-Hour Spill Report Line at (867) 920- 8130, any spills</p>

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					<p>of Waste, which are reported to, or observed by the Licensee, within the municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.”</p> <p>The Licensee requests that Part B Item 7 be changed to: “The Licensee shall immediately report to the 24-Hour Spill Report Line at (867) 920- 8130, any spills of Waste associated with municipal water and waste operations, which are reported to, or observed by the Licensee, within the municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.”</p>
CIRNAC	Feb-05-2025	15	R-16.4	<p>CIRNAC recommends that the applicant state if the lagoons are capable of holding the increased capacity during the full term of the licence, the wetlands will be able to handle the increased amount of waste for treatment in order to remain compliant with the sewage discharge criteria of the licence and upon provision of the Hydrologic study that verifies the increased usage is sustainable.</p>	<p>The Licensee is no longer requesting an increase to the annual withdrawal limit as municipality will not require additional water within 5-year term.</p> <p>The requested information will be provided in the subsequent amendment.</p>

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CIRNAC	Feb-05-2025	16	R-16.5	CIRNAC recommends that the applicant not deplete the water source and that the requirement to conduct a hydrological study to ensure sufficient volume stay a requirement within the water licence.	The Licensee agrees with the recommendation. The hydrological study and a summary of the study as it pertains to Part C Item 3 will be provided in the 2025 Annual Report.
CIRNAC	Feb-05-2025	16	R-16.6	CIRNAC recommends that the applicant clarify what is being asked for and the reasoning for the CBOD5 and total suspended solids maximum to be elevated compared the best practices.	<p>The 25 mg/L cBOD₅ and 25 mg/L TSS criteria as indicated in the <i>Good Engineering Practice for Northern Water and Sewer Systems</i>, Government of Northwest Territories (2017) were derived from the <i>Wastewater Systems Effluent Regulations (WSER)</i>, which do not apply in Nunavut and the far north.</p> <p>The <i>Canada-Wide Strategy for the Management of Municipal Wastewater Effluent (2009)</i> recommended Nunavut to complete research to develop performance standards for wastewater treatment facilities, as it was recognized that standardized effluent criteria would not be practical for systems in the Far North and a customized approach may be needed.</p> <p>The requested effluent quality limits and the compliance point location are based the findings from long-term research of lagoon-wetland systems across Nunavut. Please see Sections 1-7 and 1-8 in the uploaded report <i>Recommendations for the Development of Nunavut Municipal Wastewater Management Standards</i> dated</p>

					<p>October 2017 prepared by exp Services Inc., which provided the following conclusions and recommendations:</p> <ul style="list-style-type: none">• Natural wetlands are capable of achieving wastewater treatment• Site specific effluent discharge limitations should be considered• Technology-based limitations establish a minimum level of effluent quality that is attainable using demonstrated technologies that are economically available• Achievable limits for lagoon wetland systems:<ul style="list-style-type: none">○ Limits: 100 mg/L cBOD₅; 120 mg/L TSS;<ul style="list-style-type: none">▪ Systems application: Flows <2,500 m³/day to well flushed marine receiving environments• The effluent discharge point considers only the location where the effluent enters the receiving waters (marine or fresh)• Wetland system final discharge points should be monitored and amended as required if flow patterns throughout the wetland are dynamic• Negligible environmental impacts from wastewater effluent have been observed
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					<p>The requested effluent criteria 120 mg/L TSS and 100 mg/L cBOD₅ is based on treatment from <i>both</i> the lagoon and the wetland.</p> <p>Multiple meetings were held with stakeholders including the NWB, CIRNAC, ECCC and GN Departments of CGS, Health and Environment to inform discussion on the applicability of the WSER to Nunavut and review the subsequent research conducted on the lagoon-wetland systems. The most recent meeting took place on June 20, 2019 where this research was once again summarized and presented in the form of technology based effluent criteria. Since then, ECCC has not initiated any further discussion on the development of the WESR for Nunavut and the far north.</p> <p>Furthermore, in 2022, during the technical review for 3AM-ARV2232, it was determined that moving the compliance point to the end of the wetland along with the aforementioned effluent criteria would be appropriate application of this research.</p> <p>These records are available on the NWB site and were uploaded to the folder for easy access as <i>Prior Discussion on Effluent Compliance Point</i>.</p> <p>As per the water licence: “Grab Sample” means an undiluted quantity of material collected at a particular time and place that may be</p>
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					representative of the total substance being sampled at the time and place it was collected.
CIRNAC	Feb-05-2025	17	R-16.7,8,10,12,16	CIRNAC recommends that the applicant submit the updated plans with the document control section filled to reflect which sections were removed or edited.	Please see updated Plans.
CIRNAC	Feb-05-2025	18	R-16.9	CIRNAC recommends that the applicant submit the Clyde River Truck-fill Operations and Maintenance Manual for review before removing.	Upon reviewing the records, the <i>Clyde River Truck-fill Operations and Maintenance Manual</i> was not completed and was never submitted along with the 2019 Annual Report. The Licensee requests that the Plan <i>Municipality of Clyde River Operation & Maintenance Plan for Municipal Water Licence: Water Supply Facilities</i> be accepted as the current plan, which is based on the most recent information.
CIRNAC	Feb-05-2025	19	R-16.13,17,18,19,20	CIRNAC recommends that the applicant submit an application to remove sampling point CLY-9, CLY-10, CLY-11, and CLY-12 after it has provided the study stating that those points are no longer required.	Following the dam safety inspection study, the Licensee will provide a response to this comment in the subsequent water licence amendment application.
ECCC	Feb-07-2025	1-2	Topic 1	ECCC recommends retaining the compliance points at CLY-4 and CLY-5 where control of flow of	As responded to CIRNAC recommendation R-16.6: <i>The Canada-Wide Strategy for the Management of Municipal Wastewater Effluent (2009)</i>

				<p>effluent from the lagoon can be maintained.</p>	<p>recommended Nunavut to complete research to develop performance standards for wastewater treatment facilities, as it was recognized that standardized effluent criteria would not be practical for systems in the Far North and a customized approach may be needed.</p> <p>The Government of Nunavut partnered with academic institutions to complete the suggested researched, which involved long-term research of lagoon-wetland systems across Nunavut. Please see Sections 1-7 and 1-8 in the uploaded report <i>Recommendations for the Development of Nunavut Municipal Wastewater Management Standards</i> dated October 2017 prepared by exp Services Inc., which provided the following conclusions and recommendations:</p> <ul style="list-style-type: none">• Natural wetlands are capable of achieving wastewater treatment• Site specific effluent discharge limitations should be considered• Technology-based limitations establish a minimum level of effluent quality that is attainable using demonstrated technologies that are economically available• Achievable limits for lagoon wetland systems:<ul style="list-style-type: none">○ Limits: 100 mg/L cBOD₅; 120 mg/L TSS;
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					<ul style="list-style-type: none"> ▪ Systems application: Flows <2,500 m³/day to well flushed marine receiving environments • The effluent discharge point considers only the location where the effluent enters the receiving waters (marine or fresh) • Wetland system final discharge points should be monitored and amended as required if flow patterns throughout the wetland are dynamic • Negligible environmental impacts from wastewater effluent have been observed <p>The requested effluent criteria 120 mg/L TSS and 100 mg/L cBOD₅ is based on treatment from <i>both</i> the lagoon and the wetland.</p> <p>Furthermore, in 2022, during the technical review for 3AM-ARV2232, it was determined that moving the compliance point to the end of the wetland along with the aforementioned effluent criteria would be appropriate application of this research.</p> <p>These records are available on the NWB site and were uploaded to the folder for easy access as <i>Prior Discussion on Effluent Compliance Point</i>.</p>
ECCC	Feb-07-2025	2	Topic 2	ECCC recommends the Proponent:	A sampling well does not exist at CLY-6b, as it is a surface water sample. For a map of the monitoring stations CLY-6a and CLY-6b and a

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				<ol style="list-style-type: none"> 1. Clarify whether a sampling well exists at CLY-6b 2. Provide recent monitoring data (2019 – present) collected at CLY-6a and CLY-6b and additional supporting justification that these two stations are redundant. 	<p>drawing of the sampling well, see Appendix A of the O&M Plan for Sewage Disposal Facilities.</p> <p>All available monitoring data has been uploaded to the folder as <i>3BM-CLY1924 Monitoring Data</i>.</p> <p>Monitoring data from July 2022 suggests that CLY-6a is redundant.</p> <p>Clyde River lies within the continuous permafrost zone and research studies on lagoon-wetland systems in Nunavut have not included or recommended that groundwater be monitored. Please see the uploaded report <i>Recommendations for the Development of Nunavut Municipal Wastewater Management Standards</i>, which provides recommendations for the best practices for the design, operations, and maintenance of lagoon-wetland wastewater treatment systems.</p>
ECCC	Feb-07-2025	3	Topic 3	<p>ECCC recommends:</p> <ol style="list-style-type: none"> 1. The Proponent clarify whether an engineer must be present to sample CLY-11 2. The Proponent clarify what information related to seepage monitoring at standpipes is expected to be 	<p>As responded to CIRNAC recommendation R-16.13,17,18,19,20:</p> <p>The Licensee will provide a response to this comment in the subsequent water licence amendment application.</p>

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				<p>included in the Dillon study.</p> <p>3. CLY-11 is retained in the monitoring program to monitor for potential seepage from the lagoon.</p>	
ECCC	Feb-07-2025	3-4	Topic 4	ECCC recommends the Proponent provide a summary of all available monitoring data for the last five years (2019 – 2024).	<p>The 2024 Annual Report will be submitted by the deadline March 31, 2025.</p> <p>All available monitoring data from 2019 to 2024 has been uploaded to the folder as <i>3BM-CLY1924 Monitoring Data</i>.</p>
ECCC	Feb-07-2025	4-5	Topic 5	<p>ECCC recommends the Proponent discuss:</p> <ol style="list-style-type: none"> Whether the erosion noted in the plan for compliance is the same ongoing issue noted in the 2021 inspectors report, or a separate occurrence. If ongoing, additional discussion should be provided on how erosion and slumping will be prevented for continuing further Any planned monitoring of 	<p>The erosion noted in the 2024 Plan for Compliance is the same ongoing issue as noted in the 2021 CIRNAC Inspection Report. The issue has been addressed as the berm was repaired during summer 2024. To prevent re-occurrence, a dam safety inspection will be conducted by an engineering consultant during 2025. The dam safety inspection will include:</p> <ul style="list-style-type: none"> visual inspections of the lagoon berms, liner, and decanting equipment assessment of the risk of structural failure or seepage recommended remedial measures of immediate and future concerns with a cost estimate of works <p>Erosion control armouring such as rip rap will be maintained, and aggregate will be added and compacted to reinforce any eroded berms. No</p>

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				<p>sludge to confirm design life, lagoon capacity, and treatment efficacy.</p>	<p>equipment is allowed on the berm slopes and wastewater will be discharged using the wetland dispersion pipe directed away from the lagoon berms.</p> <p>Sludge is indirectly being monitored through the wastewater effluent quality. It is not expected that the lagoon will need to be desludged; however, if sludge is removed, it would be tested for volume and quality as per the water licence clauses:</p> <ul style="list-style-type: none"> • Part H Item 8: The Licensee shall sample and analyze sludge in accordance with the approved Operations and Maintenance Plan entitled “Operation & Maintenance Plan for Municipal Water Licence: Sewage Disposal Facilities” dated March 2025. • Part H Item 13: All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of <i>Standard Methods for the Examination of Water and Wastewater</i>, or by such other methods approved by the Board in writing.
ECCC	Feb-07-2025	5	Topic 6	ECCC recommends that the Environmental Monitoring Program is updated to provide details on which guidelines will be used for	The monitoring data will be interpreted based on the water licence effluent criteria as per Part D Item 2 (amendment to the compliance point and effluent quality standards requested in application). Site specific criteria for the interpretation of monitoring data have been

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				interpretation of monitoring data.	removed from the Environmental Monitoring and QA/QC Plan.
ECCC	Feb-07-2025	5-6	Topic 7	<p>ECCC recommends that the Proponent:</p> <ol style="list-style-type: none"> 1. Prioritize proper management of hazardous waste such that hazardous waste does not interact with other wastes or the receiving environment 2. Discuss interim measures to prevent runoff from hazardous waste to the sewage treatment wetland. 	<p>Please see updated O&M Plan for the Solid Waste Disposal Facilities for which the following clarifications and corrections were made:</p> <ul style="list-style-type: none"> • Operators segregate hazardous waste from the municipal solid wastes and bulky metal waste streams • The hazardous waste area is a separate area that is adjacent to the bulky metals area as per Appendix A of the O&M Plan for the Solid Waste Disposal Facilities • The hazardous waste area contains seacans for secondary containment of hazardous materials <p>The solid waste upgrade project will be submitted in the future as a Modification project to the Nunavut Water Board. The upgrade project is expected to include backhauling of existing hazardous wastes and to increase hazardous waste storage capacity within secondary containment at the solid waste facility.</p>
DFO	Feb-14-2025	2	No ID.	<p>“In addition, the proponent should follow the DFO Protocol for Winter Water Withdrawal in the NWT (2010) and not withdrawal more than 10% of under-ice water volumes (Microsoft Word - Water Withdrawal Protocol - Jan 05.doc)”</p>	<p>The Licensee will continue to work with DFO to ensure compliance with the Fisheries Act.</p>

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DFO	Feb-14-2025	1-2	All other recommendations.	All other recommendations.	The Licensee accepts and will implement the recommendations.
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