

**GOVERNMENT OF THE NORTHWEST TERRITORIES
ENVIRONMENT AND CLIMATE CHANGE
INTERVENTION**

FOR

**ARCTIC CANADIAN DIAMOND CORPORATION
WATER LICENCE RENEWAL APPLICATION
W2022L2-0001**

Submitted to:

Wek'èezhii Land and Water Board
4922 – 48th Street
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May 11, 2023

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LIST OF ACRONYMS

Aquatic Effects Monitoring Program	AEMP
Aquatic Response Framework	ARF
Arctic Canadian Diamond Company	Arctic
Canadian Dam Association	CDA
Effluent Quality Criteria	EQC
Department of Environment and Climate Change	ECC
Government of the Northwest Territories	GNWT
Interim Closure and Reclamation Plan	ICRP
Information Request	IR
Long Lake Containment Facility	LLCF
Metal and Diamond Mine Effluent Regulations	MDMER
Seep of Potential Concern	SoPC
Terrestrial Quality Objectives	TQO
Underwater Remote Mining	URM
Waste Rock and Ore Storage Management Plan	WROMP
Waste Rock Storage Area	WRSA
Wek'èezhii Land and Water Board	WLWB/Board

SUMMARY OF RECOMMENDATIONS

- 1. GNWT-ECC recommends that the definitions for Average Concentration, Maximum Average Concentration, Construction, Minister, and Settling Ponds be revised to be in line with Standard Water Licence Definitions.**
- 2. GNWT-ECC recommends that the definition of “Collection and Settling Ponds” or “Settling Ponds” include sumps and that the definition be revised to ensure it clearly includes all aspects of runoff and seepage collection at the Ekati Mine**
- 3. GNWT-ECC recommends that the Standard Definition for “Engineer of Record” be used in the Water Licence.**
- 4. GNWT-ECC recommends that the Board ensure there is a time limit (e.g., m³/year) on the use of water outlined in proposed Part D, Condition 4 in the draft Water Licence.**
- 5. GNWT-ECC recommends that the Board ensure Arctic proposes water use limits for Part D, Condition 4 with appropriate rationale to show that instantaneous flow at outflow locations will not decrease by more than 10%.**
- 6. GNWT-ECC recommends that the Board ensure Arctic confirms that the volumes in the draft Water Licence and Application Form are accurate, and free of errors.**
- 7. GNWT-ECC recommends that the Board not approve the Back-flooding plans for Fox Pit and Pigeon Pit until the Water Licence renewal has been approved by the Minister.**
- 8. GNWT-ECC recommends that the Board require additional detail on the development and implementation of the Seepage Evaluation Framework from Arctic prior to potentially approving the addition of a new schedule in the Water Licence.**
- 9. GNWT-ECC recommends that if the Board approves the addition of a new schedule in the Water Licence for the Seepage Evaluation Framework, the following requirements (at minimum) be included:**
 - a. Demonstrate that a given seep does not or will not enter receiving waters (in the event of proposed scenario 1).**
 - b. Reporting on the implementation of the Seepage Evaluation Framework. This could be included as part of the annual seepage report.**
- 10. GNWT-ECC recommends that the waste discharged as seepage from WRSAs at the Ekati Diamond Mine be regulated with numeric EQC as a specific condition(s) within the body of the Water Licence.**
- 11. GNWT-ECC recommends that the pH for all surface runoff and seepage be revised in the Water Licence to be compliant with MDMER (pH between 6.0 and 9.0).**

12. GNWT-ECC recommends that the Board maintain the current wording of Part J, Conditions 4 and 5 requiring Arctic to submit an AEMP Design Plan and Aquatic Effects Re-Evaluation Report “Every three years, or as directed by the Board”.

1 Introduction

The following concerns and issues have resulted from the Government of the Northwest Territories (GNWT), Department Environment and Climate Change (ECC) review of submissions and responses related to Arctic Canadian Diamond Company (Arctic) Water Licence renewal application W2022L2-0001 for the Ekati Diamond Mine. This technical intervention details the GNWT-ECC's concerns and provides recommendations for the Wek'èezhii Land and Water Board's (the WLWB or the Board) consideration. This submission takes into consideration the documents provided throughout the renewal process including items from the 2022 Water Licence renewal application and subsequent Information Request (IR) responses, as well as any relevant submissions provided under the existing Water Licence.

The GNWT-ECC appreciates the opportunity to express its concerns and provide recommendations and suggestions to the WLWB. The GNWT-ECC and its retained experts of Hutchinson Environmental Sciences Ltd. and Brodie Consulting Ltd. intend to provide technical input at the Public Hearing on June 12-15, 2023, to assist the WLWB in making a decision related to the proposed Water Licence renewal.

2 Application Background

Arctic has applied to renew their current Water Licence W2020L2-0004 which expires in October 2023. Full-scale mining operations continue at the Ekati Diamond Mine including development of the new Point Lake Project that will extend well beyond October 2023. As per the current mine plan outlined in Arctic's application, mining operations are currently scheduled to 2029. Additionally, Arctic is investigating concepts that would further extend mining operations and will conduct, in future, the necessary engagement and permitting that those concepts may require. On December 22, 2022, GNWT-ECC and other parties submitted comments on the application. Arctic provided their response to the public review comments on January 19, 2023.

On March 27-29, 2023, the WLWB hosted a Technical Session to discuss and clarify issues raised by Parties in the review of the renewal application. Following the Technical Session, the WLWB requested additional information from GNWT-ECC and Arctic to provide further evidence on the record, including the request for GNWT-ECC and Arctic to work together to address Arctic's request for flexibility with annual water uses and associated fees, ensuring it aligns with legislation as well as a revised draft Water Licence from Arctic.

The GNWT-ECC has reviewed the IR responses and has incorporated this information into our recommendations and our remaining comments and concerns on the information presented to date are presented below.

3 Standard Conditions and Definitions

In their initial application, Arctic did not update the Water Licence to include a number of definitions and conditions in the draft Water Licence to match the Standard Water Licence Conditions (LWB, 2023). In comments on the application, GNWT-ECC recommended that Standard Water Licence Conditions and definitions be used wherever possible. Arctic responded that “Arctic Canadian does not agree that Standard Conditions ought to be inserted into the Water Licence unless there is a compelling reason to do so; rather, Arctic Canadian’s approach is that Standard Conditions can be inserted into the Water Licence only if there is a compelling reason to do so.”

Following additional comments and discussion from parties at the Technical Session, Arctic accepted an Information Request ([IR#9](#)) to provide a revised draft Water Licence that included, but was not limited to:

- Part a) vi) Any standard definitions and conditions that Arctic now wishes to include for consideration.
- Part b of IR #9 was “For any standard condition or definition where Arctic provided the response “standard condition adequately addressed” in the Summary of Changes document, please provide updated rationale, specifically identifying any implications for their inclusion.”

In the following sections, GNWT-ECC has provided comments and recommendations on Arctic’s responses to IR #9.

GNWT-ECC notes that additional comments and recommendations may be provided during review of the Draft Water Licence.

3.1 Standard Water Licence Definitions

In response to comments, Arctic has agreed to the inclusion of Standard Definitions such as “Effluent” and “Effluent Quality Criteria”, at the Board’s discretion.

In the revised draft Water Licence provided in response to IR #9, Arctic has replaced several definitions with Standard Definitions, including, but not limited to, Acid Rock Drainage, Maximum Grab Concentration, Processed Kimberlite, Unauthorized Discharge, and Waste Rock. The GNWT-ECC appreciates these updates.

Arctic also included a list of Standard Definitions that were not included in the revised draft Water Licence, with brief rationale. GNWT-ECC notes that it does not support the rationale provided by Arctic for the following excluded definitions:

- **Average Concentration and Maximum Average Concentration** – GNWT-ECC does not agree with Arctic that these definitions are inconsistent with each other. The Arctic definition does not include reference to “four consecutive samples”. This is a key part of the definition.
- **Construction** – GNWT-ECC disagrees with Arctic’s statement that the standard definition is overly restrictive. GNWT-ECC notes that Arctic’s existing definition does not include reference to “upgrade and replace” which is relevant for inclusion.
- **Minister** – this standard definition does need to be updated to correspond with the name of the newly merged Department of Environment and Climate Change (ECC), however GNWT-ECC does not see this as a reason to exclude the Standard Definition from the Water Licence.
- **Settling Ponds** – The Standard Definition wording for “Settling Ponds” is much clearer than the existing definition used by Arctic for “Collection and Settling Ponds”. It does not appear that any meaning would be lost by using the Standard Definition rather than the existing definition. The existing definition also includes the defined term itself, and the reference to “Sumps” doesn’t align with the existing definition for Sumps in the draft water licence.

Recommendation:

1. **GNWT-ECC recommends that the definitions for Average Concentration, Maximum Average Concentration, Construction, Minister, and Settling Ponds be revised to be in line with Standard Water Licence Definitions.**

3.2 Site-Specific Definitions

In their response to IR #9, Arctic states that replacing the current definition of “sumps” with the standard definition would result in a number of cascading effects that could cause apparent non-compliance. GNWT-ECC understands that the standard definition may not encompass the meaning of sumps at Ekati in its entirety. However, the definition for “Collection and Settling Ponds” does not include depressions that collect seepage or overflow. If Arctic intends for the definition of “sumps” to include “depressions that are adjacent to active mining areas or within an open pit such that all Seepage or overflow would flow into the pit”, this language should be explicitly specified in the definition of “Collection and Settling Ponds” or, preferably, “Settling Ponds”.

Recommendation:

2. **GNWT-ECC recommends that the definition of “Collection and Settling Ponds” or “Settling Ponds” include sumps and that the definition be revised to ensure it clearly includes all aspects of runoff and seepage collection at the Ekati Mine.**

3.3 Missing Definitions

In their response to [IR #9](#), Arctic maintains their rationale for not including the standard definition for “Engineer of Record”. GNWT-ECC notes that this term has not been defined in Arctic’s draft Water Licence, despite the term being used in a number of Conditions.

Recommendation:

3. GNWT-ECC recommends that the Standard Definition for “Engineer of Record” be used in the Water Licence.

3.4 Standard Conditions

In response to IR #9, Arctic summarized the Standard Conditions that they have now agreed to include in the Water Licence. Arctic also listed the conditions that they maintain should not be included. The following is a list of Standard Conditions that GNWT-ECC feels should be included in the Water Licence as Arctic has not provided appropriate alternatives, or sufficient rationale for excluding them:

- **B.10** – Arctic notes that “a blanket requirement of ‘90 days prior to implementation’ as stated in the Standard Condition is not appropriate as not all changes warrant a 90-day Board review period and this could be unreasonably restrictive on mine operations.” GNWT-ECC notes that Arctic does not seem to have proposed an alternative to 90 days for parties’ consideration and recommends the Standard Condition be included. Note the Board can set specific timelines for individual plans based on the applicant’s request when the Water Licence is issued but the 90 days is intended to provide sufficient time for review and a decision of the Board.

D.2 - Arctic notes for water sources that “The Standard Condition is adequately addressed through specification of individual water sources in existing condition D.7.” Their position is that the clause “with a minimum depth of three metres” is not appropriate for the Ekati Diamond Mine as it negates the opportunity for site-specific evaluation of potential source lakes. GNWT-ECC notes that the minimum depth is important to maintain, and recommends the Standard Condition be included.
- **F.20** Arctic states that the ordinary water mark setback is addressed in a “site-specific manner in Condition H.15.” GNWT-ECC disagrees as H.15 does not reference the setback distance of 100 m from the Ordinary High-Water Mark of any Watercourse. GNWT-ECC recommends the Standard Condition be included.
- **G.1** Arctic states that Aquatic Effects Monitoring Program (AEMP) requirements are addressed in a site-specific manner in existing Condition J.1 and the definition of AEMP, however GNWT-ECC believes that the entire AEMP guideline document should be referenced instead of individual objectives, and therefore the standard Condition should be used.
- **G.3 and G.4** As discussed in Section 7, GNWT-ECC does not support the revised submission frequency in these conditions. Additionally, GNWT-ECC recommends that this condition reference the AEMP guidelines, and therefore that the Standard Condition be included.
- **G.5** GNWT-ECC recommends this condition reference the AEMP guidelines as a whole, and therefore the Standard Condition be included.

- **H.1** GNWT-ECC notes that there is no apparent reason to not include this generic standard condition as it relates to unauthorized discharge. GNWT-ECC recommends that this Standard Condition be included in the Water Licence.

4 Water Volumes

In their application, Arctic proposed a new condition under Part D of the draft Water Licence (Arctic, 2023) for the withdrawal of Water from several sources for “reclamation or operational reasons.” GNWT-ECC notes that the specific wording of the proposed condition does not include a limit on the timing for the use of the proposed volumes. Without any information on the timeframe over which the withdrawals will occur, it is difficult to evaluate whether the proposed total withdrawal limits will be protective of the specified water sources. A limit on timing for use is also required for the determination and payment of Water Use Fees (further discussed in Section 11).

GNWT-ECC acknowledges that Part D, Condition 4 of the draft Water Licence (Arctic, 2023) indicates that withdrawal will be in accordance with an approved back-flooding plan, and that the proposed schedule for back-flooding plans contains a requirement to include the “Maximum volume of water to be pumped from each source over a specified period of time”. However, GNWT-ECC notes that it is important that the Water Licence include limits on quantity per unit time (i.e. m^3/day), not just total limits over the term of the Water Licence or mine life. Although GNWT-ECC Inspectors have indicated that plans required under a Water Licence are enforceable, including clear limits on water use per unit time in the Water Licence itself will allow for easy assessment of compliance. The Standard Water Licence Conditions (LWB, 2023) provide four options under Part D, Condition 1 for water use limits. For all four options, the limit is to be listed as a quantity of water per unit of time (e.g., m^3/day or $m^3/year$).

Additionally, back-flooding may not be the only use for some of the sources listed. For example, Upper Exeter Lake has been proposed as a contingency source for pumping to the Long Lake Containment Facility (LLCF) in situations where natural runoff into the LLCF is not sufficient to supply water to the process plant (Day 1 Transcript, pages 35-36). Including maximum quantities per unit time in the Water Licence will ensure that there is a clear limit encompassing all possible withdrawals from a given source.

For the sources listed in Part D, Condition 4 of the draft Water Licence (Arctic, 2023), Arctic should propose water use limits to ensure that instantaneous flow at outflow locations will not decrease by more than 10%. The proposed limits should be accompanied by appropriate rationale to show how it was determined that outflow will not be decreased by more than 10%. This would be considered protective as it has been determined that “Cumulative flow alterations $<10\%$ in amplitude of the actual (instantaneous) flow in the river relative to a “natural flow regime” have a low probability of detectable impacts to ecosystems that support commercial, recreational or Aboriginal fisheries” (DFO, 2013). GNWT-ECC has been in contact with Fisheries and Oceans Canada (DFO) regarding concerns with proposed water use. Based on those conversations, limiting water use such that outflows are not decreased by more than 10% is in keeping with DFO’s position regarding the proposed water use limits.

Capacities for the sources listed were provided in the application (Arctic, 2022a). At the Technical Session, GNWT-ECC questioned Arctic on the proposed Maximum Quantity of Water Use (22,000,000 m³) for Upper Exeter Lake in the draft Water Licence in relation to the capacity of Upper Exeter Lake noted in the Water Licence Application Form (11,921,257 m³) and whether there may be an error in the capacity. GNWT-ECC noted that the proposed use seemed high compared to the capacity. Arctic responded that Upper Exeter Lake has a large catchment, so the proposed use is more strongly related to recharge and flow (Day 1 Transcript, page 101). While high recharge and flow rates could help support a large withdrawal relative to the capacity, GNWT-ECC remains concerned that a capacity of 11,921,257 m³ (Arctic, 2022a) and a surface area of 13.2 km² (Back-flooding Plans, Response to DFO #4) suggest an average depth of only 0.9 m. [IR #2](#) from the Technical Session requested that Arctic provide additional baseline information on source lakes proposed for pit back-flooding. GNWT-ECC reviewed the documents provided in response to IR #2 and was unable to locate any data on the capacity of Upper Exeter Lake.

Recommendation:

- 4. GNWT-ECC recommends that the Board ensure there is a time limit (e.g., m³/year) on the use of water outlined in proposed Part D, Condition 4 in the draft Water Licence.**
- 5. GNWT-ECC recommends that the Board ensure Arctic proposes water use limits for Part D, Condition 4 with appropriate rationale to show that instantaneous flow at outflow locations will not decrease by more than 10%.**
- 6. GNWT-ECC recommends that the Board ensure Arctic confirms that the volumes in the draft Water Licence and Application Form are accurate, and free of errors.**

5 Back-Flooding Plan Approval

On January 20, 2023, Arctic submitted Version 1.0 of its Back-flooding Plans for Fox Pit and Pigeon Pit. These plans are required by Water Licence W2020L2-0004, Part K, Condition 7. As part of this Type A Water Licence Renewal application, Arctic has requested a water use increase associated with the back-flooding of Pigeon Pit (see Section 4). Therefore, water withdrawal from Upper Exeter Lake to back-flood Pigeon Pit is contingent on the Board's decision on the renewal application. As such, the Board should not approve the Back-flooding Plans for Fox Pit and Pigeon Pit until the Water Licence renewal has been approved by the Minister.

Further, in response to IR #9, Arctic proposed a new schedule (Schedule 3, Part D, Condition 1) outlining requirements for the Back-flooding plans and the requirements for the plans will not have been finalized until the Water Licence is approved.

Recommendation:

- 7. GNWT-ECC recommends that the Board not approve the Back-flooding plans for Fox Pit and Pigeon Pit until the Water Licence renewal has been approved by the Minister.**

6 Regulation of Seepage

As part of this Renewal Application, Arctic has proposed to develop terrestrial quality objectives (TQO) to regulate seepage discharge to the receiving environment and include these TQO in the Waste Rock and Ore Storage Management Plan (WROMP). GNWT-ECC comment #16 on the initial application identified that the criteria being proposed by Arctic should apply at the base of the Waste Rock Storage Areas and be specified in the Water Licence. The GNWT-ECC maintains the position that as seepage discharge is “waste” as defined in the *Waters Act*, the discharge of seepage at Ekati should be regulated with effluent quality criteria (EQC) in the body of the Water Licence

The most recent seepage survey submitted by Arctic with the 2021 Annual Water Licence Report identifies a total of twelve (12) Seeps of Potential Concern (SoPC). A SoPC is defined as follows:

- For constituents with an EQC, greater than the stated maximum allowable concentration of any grab sample; or
- A constituent concentration greater than the upper 95th percentile value of the associated WRSAs historical dataset on more than one occasion during the two-year period comprising the reporting year plus preceding year.

Only seeps that enter the receiving environment (as defined in Water Licence W2020L2-0004) were considered of potential concern (Arctic, 2022b). Seeps at Ekati typically enter the receiving environment once they exit from the base of the WRSA (i.e., direct or indirect to water). This is the last point of control for seeps not including those that flow towards a water management facility (ex: Long Lake Containment Facility, King Pond Settling Facility, Two Rock Sedimentation Pond). Seeps may enter receiving waters (defined in the *Waters Act* as “whether in a liquid or frozen state, on or below the surface of land”) directly by surficial flow, or indirectly through subsurface and/or active layer flow

The 2021 Seepage Report noted trends in water quality such as, but not limited to:

- Within the Fox east draining seeps, “SEEP-373A generally reported lower concentrations than SEEP-373. SEEP-377 reported a number of exceedances of the 95th percentile; all variables had exceeded the 95th percentile previously at the site. SEEP-520 reported a chloride concentration that exceeded the 95th percentile for the first time and was generally greater than that observed for the surrounding seeps.”
- “For the seeps within the Misery WRSA and Lynx Crusher Pad areas, sulphate and specific conductivity generally showed increasing trends, and water quality variables associated with host rock and kimberlite weathering remained high.”
- SEEP-531 at Pigeon “appeared to have reduced buffering capacity, with high acidity and low alkalinity reported relative to other seeps in the area.” “The field pH was slightly acidic at 5.55, which was notably below the 5th percentile for the historical Pigeon WRSA dataset, indicating this seep is potentially more acidic than others in the Pigeon WRSA.”
- “Several water quality variables exceeded the 95th percentile of the Sable reference dataset across all seeps sampled in this area, and in general, high TSS accompanied by high total metals concentrations was also reported relative to the reference dataset. However, it is important to note that the development of the 95th percentiles for the dataset is ongoing, and this will be used as the screening limits in future reports (not the Sable reference dataset).”

6.1 Conceptual Seepage Evaluation Framework

In their renewal application, Arctic states that “The current practice of screening WRSA (Waste Rock Storage Area) seepage quality sampled at the toe of the WRSA against the Effluent Quality Criteria listed in Part H of the Water Licence is not, in Arctic Canadian’s view, appropriate.” Arctic notes that the practice “does not acknowledge that protection of the terrestrial environment requires different seepage quality objectives than the EQC.” To address this, Arctic has proposed “the addition of a new requirement to Schedule 5 Condition 2 of the Water Licence to require that a WRSA Seepage Quality Evaluation Procedure be submitted for WLWB approval as part of the WROMP within 60 days of issuance of the 2023 Renewal.”

The approach proposed by Arctic is to develop TQO to protect the immediate terrestrial environment that comes in direct contact with seepage from the WRSAs.

In review of Arctic’s application, GNWT-ECC noted several significant concerns with the proposed conceptual framework:

- GNWT-ECC #12: Lack of detail on the development and implementation of the proposed framework. Recommended additional details be presented at the Technical Session.
- GNWT-ECC #15: Unspecified distance between loss of seep to ground and receiving waters that will warrant sampling. Recommended this be provided prior to or during the Technical Session.
- GNWT-ECC#15: Verification methods to validate that a seep lost to ground is not indirectly depositing into groundwater or a surface water body. Recommended a description of such methods be provided.
- GNWT-ECC #16 – Unclear how the proposed TQO differ from EQC as seepage is a waste, and why they are omitted from the body of the Water Licence. Recommended additional detail and rationale be provided.

In response to comments on the application, Arctic included a standard response to all comments related to the Seepage Evaluation Framework: “Arctic Canadian provided the conceptual WRSA seepage framework with the intent of prompting discussion during the Water Licence Renewal process that will facilitate subsequent preparation and approval of an effective framework. To that end, Arctic Canadian looks forward to discussing this and other comments on the concept framework at the Board’s Technical Session.”

During the Technical Session, reviewers reiterated their concerns, and repeated questions from their submitted review comments. When asked if Arctic viewed the TQO as being enforceable in the same way as EQC, they noted that they will act as EQC, and that they are a “different type of discharge criteria (Day 2 Transcript, page 198, line 25, page 199, line 26)”. It is GNWT-ECC’s opinion, similar to arguments made to the Board in the Diavik Diamond Mine Water Licence amendment proceeding (W2015L2-0001), that Arctic did not provide sufficient rationale for not considering TQO as EQC and including them in the Water Licence. GNWT-ECC’s position remains that runoff and seepage is or, in the absence of sufficient evidence, may be “Waste” and, as such, must or should be regulated by EQC in a Water Licence (also see Section 6.2 below).

Overall, discussions at the Technical Session resulted in some clarifications for parties, and these were noted by Arctic for future inclusion in the framework, however, no additional detail on the development of TQO or the framework were provided. As a result, IR #6 was issued to Arctic to provide an update to the Conceptual WRSA Seepage Response (formerly evaluation) Framework. In their response, Arctic did not provide the requested update, noting it was “somewhat redundant in nature”. GNWT-ECC acknowledges that Arctic did, however, summarize the clarifications and collaborative decisions made during the discussions at the Technical Session.

The second part of IR#6 required that Arctic provide schedule requirements for inclusion in the Water Licence. GNWT-ECC notes that the response did not include a requirement to demonstrate that a given seep does not, or will not, enter receiving waters (in the event of scenario 3). In addition, the proposed schedule does not include a reporting mechanism for the implementation of the framework, but rather only includes a reference to a reporting timeline for the exceedance of an action level. GNWT-ECC suggests that the schedule requires both items.

GNWT-ECC notes that additional comments on schedule requirements may be provided when the draft Water Licence is circulated for review.

Recommendation:

- 8. GNWT-ECC recommends that the Board require additional detail on the development and implementation of the Seepage Evaluation Framework from Arctic prior to potentially approving the addition of a new schedule in the Water Licence.**
- 9. GNWT-ECC recommends that if the Board approves the addition of a new schedule in the Water Licence for the Seepage Evaluation Framework, the following requirements (at minimum) be included:**
 - **Demonstrate that a given seep does not or will not enter receiving waters (in the event of proposed scenario 1).**
 - **Reporting on the implementation of the Seepage Evaluation Framework. This could be included as part of the annual seepage report.**

6.2 Enforcement of Terrestrial Quality Objectives

The regulation of waste must be enforceable for compliance purposes. While GNWT-ECC Inspectors consider any condition of a Water Licence, and therefore any plan required by a Water Licence enforceable, the GNWT-ECC maintains that the WLWB should not approve the proposed alternate mechanism to regulate the discharge of waste (i.e., TQO). The GNWT-ECC notes that the Seepage Evaluation Framework, and the proposed use of TQO, is still in a conceptual stage of development. Arctic has not provided any additional details to further the development of the framework or the TQO throughout this process. Because of this, Arctic is delaying any review and approval of the framework and criteria until after the Water Licence is issued. This is not consistent with legislation and how waste is to be regulated. To be clear, runoff and seepage is or, in the absence of sufficient evidence, may be “Waste” as defined under the *Waters Act*.

Further, based on the information provided to date, it remains unclear to GNWT-ECC how the enforcement of TQO would occur to ensure compliance. TQO may be developed to be seepage specific, which would result in a long list of TQO that could change during each subsequent seepage survey. This could become a cumbersome process for Inspectors and result in non-compliance events being overlooked.

The inclusion of Effluent Quality Criteria for seepage in the Water Licence ensures that all parties, including the Inspector, have a clear and unambiguous understanding of how the discharge of “Waste” is to be regulated and enforced. This allows the Inspector to assess compliance simply, determine their own course of action should the EQC be exceeded, and ensures appropriate action is taken based on the situation. This results in less risk to the environment and enables the Inspector to carry out their role appropriately without discretion or influence.

If the Board is required to or otherwise opts to regulate waste in seeps through EQC or other numerical limits and the seeps may enter receiving waters, the EQC or other numerical limits must be in the body of the Water Licence due to s. 37(a) and 41(2)(b) of the *Waters Act*. The GNWT-ECC’s position that EQCs in the body of the Water Licence must or should be used to regulate the discharge of waste aligns with the Land and Water Board (LWB) Waste and Wastewater Management Policy (the Policy) (2023) as outlined below:

- Section 4.3.2 of the Policy states: “Seepage or runoff that originates from, or may be affected by, project components and/or activities is typically considered a potential effluent unless the applicant provides adequate evidence to demonstrate that it is not wastewater and/or will not directly or indirectly enter any waters.” Parties participating in this proceeding, as well as Arctic, agree that seepage is considered wastewater and therefore is considered a potential effluent.
- Section 4.3.2 of the Policy also states: “For proposed point-source effluents, the LWBs will typically include conditions that set out EQC for the final discharge point(s) to define the maximum allowable concentrations (e.g., mg/L), quantities (e.g., kg/year), or limits (e.g., pH range) of any contaminant or parameter of the effluent if the evidence before a Board indicates that it has the potential to adversely affect water quality in the receiving waters.” The GNWT-ECC’s understanding from this statement is that the Policy applies a precautionary approach according to the potential for a substance to be waste and in most cases sets EQC for parameters that have the potential to adversely affect water quality in the receiving waters.

It is also understood that the Policy states: “since there is typically no distinct final discharge point where a non-point source effluent can be controlled before it enters the receiving environment, and the discharge pathway can also be variable over time, establishing discharge criteria and a response framework in a management or monitoring plan submitted for Board approval may be more practical than setting EQC in some cases.” and that “the Board may also consider this approach for closure, particularly when passive, long-term discharge is an approved closure method and EQC are not determined to be necessary”. For the seeps at Ekati, GNWT-ECC’s position is there are distinct final discharge points (where a seep is lost to ground or enters a surface water body). There are several sources of seepage discharge from the base of the WRSAs. The GNWT-ECC understands that Arctic is not proposing any other control structures to immediately stop the discharge of seepage.

However, Arctic has mentioned the possibility of collecting seepage in the event of, and to address non-compliance events (Day 2 Technical Session, page 200, lines 9-15). Thus, what is compliant and what is not should be set out clearly by numeric EQC in the body of the Water Licence.

Further, the GNWT-ECC notes that the use of EQC to regulate the discharge of waste from a final discharge point that does not include the ability to immediately stop the discharge has been approved by the Board in prior Water Licence decisions. Water Licence W2021L2-0004 (issued by the WLWB on November 30, 2022) for the Nighthawk Gold Project is similar to seepage entering the receiving environment at Ekati in that it is a passive, point source discharge. That Water Licence includes EQC for the passive discharge of effluent to the receiving environment at the Damoti Site. As noted in Part F, Condition 12 of that Water Licence, an exceedance of EQC triggers notification to the Board and Inspector immediately, reporting of the spill, complying with a response plan, and submitting a detailed report to the Board and the Inspector.

Recommendation:

10. GNWT-ECC recommends that the waste discharged as seepage from WRSAs at the Ekati Diamond Mine be regulated with numeric EQC as a specific condition(s) within the body of the Water Licence.

7 Metal and Diamond Mining Effluent Regulations (MDMER)

On day 3 of the Technical Session, GNWT-ECC questioned Arctic on whether they were proposing to revise the pH limits in the Water Licence as the current EQC for pH does not meet MDMER (Day 3 Transcript, page 14, lines 4-18), which Arctic acknowledged on the second day of the Technical Session (Day 2 Transcript page 165). While Arctic responded that they were not proposing to revise pH limits (Day 3 Transcript, page 14 lines 18- 25 and page 15 lines 1-9), the WLWB clearly stated that they “can’t issue licences with EQC that are less stringent than MDMER” (Day 3 Transcript, page 15, lines 16 and 17).

In response to IR #9 which required the submission of a revised draft Water Licence, Arctic proposed revised wording for Part H Condition 15(e):

“Proposed condition: e) Any Wastewater or Waste from the Project that enters the Receiving Environment shall have a pH between 6.0 and 9.0, or between 5.0 and 9.0 where demonstrated to the satisfaction of the Inspector that pH below 6.0 is caused by the natural environment;”

GNWT-ECC notes Arctic’s proposed wording does not comply with MDMER pH limits (between 6.0 and 9.0)

GNWT-ECC understands that tundra influenced water can have a slightly acidic pH (Macgregor and Day, 2007), however, as discussed during the Technical Session and as per Section 27(5) of the *Waters Act*, the WLWB cannot include conditions (including EQC) in the

Water Licence that are less stringent than MDMER. There is no discretion afforded by MDMER and compliance with these regulations is required.

Recommendation:

- 11. GNWT-ECC recommends that the pH for all surface runoff and seepage be revised in the Water Licence to be compliant with MDMER (pH between 6.0 and 9.0).**

8 Aquatic Effects Re-Evaluation Report Frequency

In their renewal application, Arctic proposes to reduce the frequency of submissions in Part J, Conditions 4 (AEMP Design Plan) and 5 (Aquatic Effects Re-Evaluation Report) from “every three years, or as directed by the Board...” to “every six years, or as directed by the Board...”

Arctic referred to the program’s “advanced maturity” as part of their rationale for the change. GNWT-ECC noted in their comments on the application, as well as at the Technical Session, that the mine plan has recently been updated to include the Point Lake project and may go through additional changes depending on the results of the Lynx Underwater Remote Mining (URM) trial planned for 2024. As such, GNWT-ECC does not support the “advanced maturity” of the Ekati AEMP as appropriate rationale for the reduction in frequency of revisions and updates to the program.

Arctic also highlighted the existence of the Aquatic Response Framework (ARF) as additional rationale for the reduction in frequency for the AEMP Re-Evaluation Report and AEMP Design Plan. GNWT-ECC acknowledges and appreciates the role of the ARF to examine changes in the receiving environment. This includes confirming the exceedance, determining the cause, addressing the ecological significance of the change and describing any actions and mitigations required. GNWT-ECC does not feel and does not see where the current wording of Part J, Conditions 4 and 5 “hampers effective implementation” as stated by Arctic in their Summary of Proposed Changes (Arctic, 2022), and the frequency should remain as every 3 years.

In the existing Water Licence, the noted conditions currently read: “Every three years, or as directed by the Board...” GNWT-ECC notes that the inclusion of “or as directed by the Board” in the current wording provides flexibility in the frequency of Re-Evaluation Report submissions to the Board, depending on the findings of the Re-Evaluation, and as per Board direction. GNWT-ECC suggests that depending on the results and findings of the next Aquatic Effects Re-Evaluation Report, planned for submission in 2025 (Day 1 Transcript, p. 159, lines 1-20), Arctic could request Board approval of a revised submission frequency for future Re-Evaluation reports, at that time.

Recommendation:

- 12. GNWT-ECC recommends that the Board maintain the current wording of Part J, Conditions 4 and 5 requiring Arctic to submit an AEMP Design Plan and Aquatic Effects Re-Evaluation Report “Every three years, or as directed by the Board”.**

9 Copper Concentrations

In initial comments on the renewal application, GNWT-ECC noted concerns around copper concentrations in the downstream receiving environment, and this potentially being the result of mine activity. Following further discussion on this topic at the Technical Session, Arctic was given IR #10 to provide results from the most recent AEMP to demonstrate the degree to which copper has changed in the receiving environment as a result of mining activity.

In their [response](#), GNWT-ECC believes that Arctic provided evidence that during the open water season when there is a potential hydraulic connection between Kodiak Lake (where there is some evidence of elevated under-ice copper concentrations relative to the reference sites) and the downstream waterbodies, copper concentrations are not significantly different. Based on this information, Ekati does not appear to be a significant source of copper in the downstream environment.

GNWT-ECC is satisfied with the response provided by Arctic at this time but will be evaluating the AEMP and water quality in SNP stations specifically for copper going forward to assess any mine related influences.

10 Classification of Dams

At the Technical Session, Arctic was given IR #4 “to provide detailed technical rationale for the consequence classification (including upstream and downstream consequences or potential failures) and the classification of the structure as a containment structure or a dam/dyke” for a given list of structures. Arctic responded that, as the consequence classifications will not have a bearing on the wording of Water Licence Conditions and completing the evaluation of consequence classifications will be an intensive process, the requested information will be provided as part of the 2023 Annual Geotechnical Inspection.

To GNWT-ECC’s knowledge, all of the dams at Ekati have been in place and performing well for an extended period (10+ years) and many will be decommissioned at closure. It is acknowledged that it would take a significant amount of work to extract the requested information from previous reports. Considering the apparent lack of issues with the dams to date, GNWT-ECC does not see any issue with waiting for a detailed response as part of the 2023 Annual Geotechnical Inspection and reviewing at that time, as per Board’s decision and direction on this item.

To assist with any future review, GNWT-ECC suggests that Arctic include responses to the following in the 2023 inspection report:

- Does the structure meet Canadian Dam Association (CDA) minimum criteria for being classified as a dam (> 2.5 m height and > 30,000 m³ impounded volume);
- Will the structure remain after completion of closure works;
- Will the structure be re-classified as a “landform” during or following closure works; and,
- Ideally, the results for all dams will be presented in tabular form with supplemental notes as appropriate.

11 Water Use Fees

In our April 13, 2023, [IR response](#), GNWT-ECC provided its position on how water use fees for back flooding the mined-out pits could be incorporated into the Water Licence. This response noted that GNWT-ECC had reviewed the proposed conditions submitted by Arctic on this matter and that GNWT-ECC supports the draft condition. As such, GNWT-ECC has no further comment on this matter. However, GNWT-ECC will comment on the draft Water Licence when circulated as part of this proceeding to confirm to the Board the acceptability of the proposed Water Licence conditions.

12 Securities

On April 20, 2023, Arctic [submitted a request](#) to amend Land Use Permits W2021X0004, W2021D0005, and W2017D0004 and update Schedule 2 of Water Licence W2020L2-0004, to reflect the Board's [March 21, 2023 Reasons for Decision on security](#) at the Ekati Diamond Mine. This request resulted from discussions with GNWT-ECC on updating the overall site security for the site to reflect all current liabilities and Board decisions to date. GNWT-ECC understands that the Board is currently reviewing the final estimate submitted by Arctic and will issue a decision shortly to update the Land Use Permits and Schedule 2 of the current Water Licence. GNWT-ECC does not expect any changes to the existing liability for the site based on the scope of the Water Licence renewal, which includes the underwater mining pilot project. Additionally, the Board is currently proceeding with an updated Interim Closure and Reclamation Plan (ICRP) public review, which will inform any required changes to the security to cover future liabilities. As such, GNWT-ECC has not provided an updated security estimate as part of the Water Licence renewal proceeding and will continue to participate in any concurrent or future Board processes related to securities and site liabilities.

13 Closing

The GNWT-ECC would like to thank the WLWB for providing the opportunity to submit this intervention for the Water Licence renewal process for the Ekati Diamond Mine. As noted previously, the GNWT-ECC and its retained experts intend to provide technical input at the Public Hearing June 12-16, to assist the WLWB in making a decision related to the proposed Water Licence amendment.

14 References

Arctic Canadian Diamond Company (Arctic). 2022a. See WLWB Public Registry for “Ekati - Renewal - Application Form - Nov 7_22”.

Arctic Canadian Diamond Company (Arctic). 2022b. 2021 Annual Report – Appendix B- 2021 Seepage and Waste Rock Report. April 30, 2022.

Arctic. 2023. See WLWB Public Registry for “Ekati - Renewal - Technical Session - IR 9 Response - DRAFT Water Licence - Apr 13_23”.

Back-flooding Plans for Fox Pit and Pigeon Pit, Arctic response to DFO #4. See Online Review System: <https://new.onlinereviewsystem.ca/review/C5D1955F-81C2-ED11-9F71-6045BD5BD3FA>. Accessed May 4, 2023.

Fisheries and Oceans Canada (DFO). 2013. Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2013/017.

Land and Water Boards of the Mackenzie Valley. (2023). Waste and Wastewater Management Policy.

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MacGregor, D., Day, S., 2007. Investigation of Seep 19 acidity. Technical memorandum to BHP Billiton. September 24, 2007.