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Reasons for Decision

Issued pursuant to paragraph 40(2)(c) of the Mackenzie Valley Land Use Regulations (MVLUR) and Sections 72.25 and 121 of the *Mackenzie Valley Resource Management Act* (MVRMA) and section 54 of the *Waters Act*

Water Licence and Land Use Permit Applications	
Preliminary Screener	MVLWB
File Number	MV2007L8-0031 and MV2019X0007
Company	Department of Crown-Indigenous Relations and Northern Affairs Canada - Giant Mine Remediation Project (CIRNAC-GMRP)
Project	Miscellaneous (Remediation), Giant Mine Site, Yellowknife, NT
Date of Decision	July 28, 2020

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1.0 List of Abbreviations

These Reasons for Decision set out the Mackenzie Valley Land and Water Board's (the MVLWB/Board) regulatory process and decisions on Applications made by the Department of Crown-Indigenous Relations and Northern Affairs Canada Giant Mine Remediation Project (CIRNAC-GMRP) to the Board on October 18, 2007 and April 1, 2019 for Water Licence (Licence) MV2007L8-0031 and Land Use Permit (Permit) MV2019X0007, respectively.

A summary of the Post-EA Information Package and Land Use Permit Application is provided in Section 2.0 below, followed by the regulatory process in Section 3.0. Section 4.0 describes the legislative requirements applicable to this regulatory process, leading to the Board's decisions with supporting rationale in Sections 5.0 and 6.0.

Table 1: List of Abbreviations

AEMP	Aquatic Effects Monitoring Program
Applicant	Department of Crown-Indigenous Relations and Northern Affairs Canada - Giant Mine Remediation Project (CIRNAC-GMRP)
Applications	CIRNAC-GMRP's submissions, including the Post-EA Information Package, in support of Water Licence MV2007L8-0031 and Land Use Permit MV2019X0007
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CRP	Closure and Reclamation Plan
DFO	Department of Fisheries and Oceans Canada
DIAND	Department of Indigenous Affairs and Northern Development
DOC	Dissolved Organic Carbon
EA	Environmental Assessment
EA0809-001	Environmental Assessment for the Giant Mine Remediation Project
ECCC	Environment and Climate Change Canada
EQC	Effluent Quality Criteria
ETP	Existing Effluent Treatment Plant System
GMOB	Giant Mine Oversight Board
GMRP or Project	Giant Mine Remediation Project
GNWT	Government of the Northwest Territories
GNWT-ECE	Government of the Northwest Territories – Education, Culture and Employment
GNWT-ENR	Government of the Northwest Territories – Environment and Natural Resources
HEMP	Health Effects Monitoring Program
HHERA	Human Health and Ecological Risk Assessment
IR	Information Request
Inspector	Department of Northern Affairs - Resource Management Officer (Inspector)
Intervener	Any person or organization that submitted an Intervention for the Public Hearing
Licence	Water Licence MV2007L8-0031
MDMER	Metal and Diamond Mining Effluent Regulations
MVEIRB or Review Board	Mackenzie Valley Environmental Impact Review Board
MVFAWR	Mackenzie Valley Federal Areas Waters Regulations
MVLWB or Board	Mackenzie Valley Land and Water Board
MVLUR	Mackenzie Valley Land Use Regulations
MVRMA	*Mackenzie Valley Resource Management Act*
Minister	Minister of Northern Affairs
NAMRP	Northern Abandoned Mine Reclamation Program
NSMA	North Slave Métis Alliance
ORS	Online Review System

PARs	Performance Assessment Reports
Party	An Applicant, a person, or organization participating in a Board Proceeding
Permit	Land Use Permit MV2019X0007
PWNHC	Prince of Wales Northern Heritage Centre
QRA	Quantitative Risk Assessment
REA	Report of Environmental Assessment EA0809-001
SDE	Surface Design Engagement
SSWQOs	Site-Specific Water Quality Objectives
SNP	Surveillance Network Program
Standard Template	Board's *Standard Land Use Permit Conditions Template* or *Standard Water Licence Conditions Template*
WMMP	Water Management and Monitoring Plan
WWHMMP	Wildlife and Wildlife Habitat Management and Monitoring Plan
YKDFN	Yellowknives Dene First Nation
YKHS	Yellowknife Historical Society
WTP	New Water Treatment Plant

2.0 Summary of Applications

On October 18, 2007, CIRNAC-GMRP submitted Water Licence Application, MV2007L8-0031,[1] and on April 1, 2019, it submitted a new Land Use Permit Application, MV2019X0007[2] for the Giant Mine Remediation Project (GMRP or the Project). The Regulatory history of the Licence is provided in full in Section 3.0. These Applications are to conduct Remediation activities at the former Giant Mine Site in Yellowknife, NT. The Project Area, referred to as the GMRP Boundary or Project Boundary, is within the limits of the City of Yellowknife and encompasses the core workings of the Mine Site, the former Giant Mine Townsite and City of Yellowknife marina area, and extends northwest of the Northwest Tailings Containment Area (TCA) on the west side of the realignment of Highway #4. The Site is located on Commissioner's land and has been under the stewardship of the federal government since 1999 under Federal Reserve R662T. Activities included in the Remediation of the site include:

1. Removal of hazards and Waste from underground workings, underground stabilization, and closure of most mine openings to surface;
2. Recontouring and backfilling of existing open pits using a combination of hazardous and non-hazardous Waste, contaminated soils, and clean fill;
3. Freezing of underground arsenic trioxide dust storage areas and highly contaminated Waste materials using the 'Frozen Shell' method, including the installation and maintenance of all associated infrastructure;
4. The development of new borrow sources to support open pit filling and remedial covers for open pits, contaminated soils, and Tailings, including Foreshore Tailings;
5. The removal, disposal, and Remediation of contaminated surface soils in the main development area, sediments in Baker Creek, Baker Creek outfall, and historic Tailings spills;
6. The excavation, relocation, and footprint rehabilitation of the South Pond Tailings into the North and Central Ponds;
7. The fencing (restricted access) of large areas of highly contaminated soils in undisturbed areas;
8. Realignment of Baker Creek;
9. Upgrading of existing Water treatment facilities, including the relocation of the existing outfall from Baker Pond to Yellowknife Bay (near the mouth of Baker Creek);

[1] See Water Licence MV2007L8-0031 Application (hyperlink), submitted to the MVLWB on October 18, 2007.
[2] See Land Use Permit MV2019X0007 Application (hyperlink), submitted to the MVLWB on April 1, 2019.

10. The closure, decontamination, deconstruction, and Remediation of surface infrastructure not required for long term site maintenance;
11. The development and maintenance of a new Non-Hazardous Waste Landfill; and
12. Research into the development of a passive or semi-passive wetland in the vicinity of Baker Pond and historical JoJo Lake.

Prior to the Board's decision on MV2007L8-0031 and MV2019X0007, CIRNAC-GMRP held authorizations MV2012L8-0010, MV2016S0016, MV2017L8-0006, and MV2017X0020 so that ongoing site stabilization activities could occur. Ongoing activities authorized under these licences and permits have been included in the scope of MV2007L8-0031 and MV2019X0007. CIRNAC-GMRP will be able to apply to the Board to cancel existing authorizations upon issuance of MV2007L8-0031 and MV2019X0007.

2.1 Distribution List

This document uses the term "distribution list" for the list of parties to whom materials from the regulatory process for MV2007L8-0031 and MV2019X0007 were circulated. As the GMRP is in the Akaitcho Territory, the appropriate core organizational reviewers, governments, First Nations, and Aboriginal organizations were included in the list. The list was periodically updated, and (when requested) individuals and organizations with specific interests in the Project were also added to the distribution list.

3.0 Regulatory Process

3.1 Environmental Assessment: EA0809-001

Following a review of Water Licence Application MV2007L8-0031 in 2008, the Board decided to approve the preliminary screening[3] and proceed with Licencing of the GMRP with the understanding that any impacts of the development on the environment could be mitigated through the imposition of terms and conditions in a Water Licence and that there was no likelihood of significant adverse impacts on the environment or public concern. This decision was made on February 21, 2008. On March 31, 2008, the City of Yellowknife referred the Licence to the Mackenzie Valley Environmental Impact Review Board (MVEIRB or Review Board) for Environmental Assessment (EA).[4]

On June 20, 2013, the Review Board released its Report of Environmental Assessment (EA0809-001) for the Giant Mine Remediation Project[5] and on August 11, 2014, the Minister of DIAND (now CIRNAC) approved the Report of Environmental Assessment (REA),[6] including modified measures. In total, 26 measures, 16 suggestions (see Appendix 2), and approximately 118 commitments resulted from the EA process. Since 2014, CIRNAC-GMRP have carried out care and maintenance activities required at the site, as well as work to fulfill the 26 measures set out in the Report of EA so that it could reinitiate the licencing process for MV2007L8-0031.

3.2 Post-Environmental Assessment Information Package

On August 20, 2014, the regulatory process for the Water Licence Application resumed in accordance with the *Mackenzie Valley Resource Management Act* (MVRMA). The Board sent a letter to CIRNAC-GMRP outlining the timelines and requirements to recommence the licensing process, including

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[3] See Giant Mine Remediation Project Preliminary Screening, February 20, 2008.
[4] See City of Yellowknife Referral to Environmental Assessment, March 31, 2008.
[5] See MVEIRB Report of Environmental Assessment (EA0809-001), June 20, 2013.
[6] See Ministerial Decision and Modified Measures, August 11, 2014.

submission of a Post-EA Information Package.[7] CIRNAC-GMRP submitted their Post-EA Information Package to support the Application on April 1, 2019.[8]

3.3 Outline of the Regulatory Process

On April 1, 2019, CIRNAC-GMRP submitted its Post-EA Information Package for Licence MV2007L8-0031 and Application for Land Use Permit MV2019X0007. On April 8, 2019, Board staff distributed a draft work plan in which parties were requested to provide their comments and recommendations by April 18, 2019.[9] The Post-EA Information Package was deemed complete as was the Land Use Permit Application on April 10, 2019 as per subsection 22(1) of the *Mackenzie Valley Land Use Regulations* (MVLUR) and distributed for review using the Online Review System (ORS). No comments on the draft work plan were received.

Public notices for the recommencement of regulatory process and the public hearing were published in *News North* during the weeks of April 15 and December 16, 2019 and in the *Yellowknifer* on January 3 and 10, 2020 to fulfill subsections 72.16(1) and 72.16(2) of the MVRMA.[10]

On May 1, 2019, the Board invoked paragraph 22(2)(b) of the MVLUR for the Application for Land Use Permit MV2019X0007 to accommodate the time required for further studies or investigations to address the outstanding land use concerns, as well as to provide adequate time for reviewers to consider the Permit Application in line with the associated Water Licence Application.[11] Board staff circulated the final work plan (Version 1) to the distribution list on May 9, 2019.[12] This included the scheduling of a public hearing as per paragraph 72.15(2)(a) of the MVRMA, and a clear identification of deadlines for Water compensation notification(s) and claim(s) as provided under subsection 72.03(5) of the MVRMA.

By May 30, 2019, comments and recommendations regarding the Post-EA Information Package and the Permit Application were received by the Board from the following parties: Alternatives North, City of Yellowknife, Giant Mine Oversight Board (GMOB), MVLWB Staff, North Slave Métis Alliance (NSMA), Slater Environmental, Yellowknives Dene First Nation (YKDFN), Government of the Northwest Territories Department of Education, Culture and Employment (GNWT-ECE), CIRNAC Lands and Lands Inspector, Ecology North, Environment and Climate Change Canada (ECCC), Yellowknife Climbing Club, Yellowknife Historical Society, Great Slave Sailing Club, and members of the general public including Ian McCrea and Ryan Silke.[13] On June 25, 2019, CIRNAC-GMRP responded to comments and recommendations through the ORS.[14]

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[7] See MVLWB Letter – Request for Updated Project Description, dated August 20, 2014.
[8] See CIRNAC-GMRP Updated Project Description, submitted to the MVLWB on April 1, 2019.
[9] See MVLWB E-mail – Draft work plan, dated April 8, 2019.
[10] See Notice of Recommencement of Regulatory Process, April 15, 2019 and Notice of public hearings: December 16, 2019, January 3, 2020, and January 10, 2020.
[11] See MVLWB Letter – Invoke paragraph 22(2)(b) of MVLUR, dated May 1, 2019.
[12] See MVLWB E-mail – work plan, dated May 9, 2019.
[13] Review Comment Summary Tables – MV2007L8-0031 and MV2019X0007, Review 1 of 7 (Land Use Permit Application), Review 2 of 7 (Water Licence Post-EA Information Package), Review 3 of 7 (Management Plans Group 1 – Standard), Review 4 of 7, Preliminary Screening Information), Review 5 of 7 (Closure and Reclamation Plan), Review 6 of 7 (Management Plans – Water), and Review 7 of 7 (Management Plans – Other).
[14] Ibid.

Two technical sessions were held during the regulatory process for the GMRP. The first technical session took place from July 9-12, 2019 in Yellowknife, NT. CIRNAC-GMRP technical session presentations were submitted on July 8, 2019.[15] There were six technical session Information Requests (IRs) resulting from the July sessions. IRs were circulated to the distribution list on July 18, 2019.[16] IR #1, 3, 4, and 6 were directed at CIRNAC-GMRP, IR #2 was directed at ECCC, and IR #5 was directed at the GNWT-ENR. CIRNAC-GMRP submitted responses to IR #3, 4, and 6 on August 8, 2019.[17] ECCC and GNWT-ENR responded on August 8 and 9, 2019, respectively.[18, 19] On August 9, 2019, Board staff requested clarification on ECCC's IR #2 response. On September 3, 2019, CIRNAC-GMRP submitted its response to IR #1 and ECCC submitted additional information on IR #2.[20]

In response to concerns identified during the initial review on the ORS and discussions in the July technical sessions, a Closure Criteria workshop was organized and held from September 9-10, 2019 in Yellowknife, NT. CIRNAC-GMRP presentations for the Closure Criteria Workshop were submitted to the Board on September 6, 2019.[21]

The second technical sessions followed immediately thereafter from September 11-13, 2019 in Yellowknife, NT. CIRNAC-GMRP presentations for the second technical session were submitted between September 6, 2019 and September 11, 2019.[22] There were ten technical session IRs resulting from the September session. IRs were circulated to the distribution list on September 16, 2019.[23] All IRs were directed at CIRNAC-GMRP. IR responses were submitted on October 10, 2019.[24]

The Closure Criteria Workshop and the technical sessions were held to discuss and seek clarity on issues raised by parties and Board staff in preparation for the public hearing. The technical sessions were facilitated by Board staff and have been transcribed.[25] Closure Criteria Workshop notes were distributed for review and posted to the Public Registry.[26] Attendees for the July technical sessions, Closure Criteria Workshop, and September technical sessions included: CIRNAC-GMRP, Government of the Northwest Territories Department of Environment and Natural Resources (GNWT-ENR), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) Lands, MVLWB Staff, Northern Projects Management Office (NPMO), Giant Mine Oversight Board (GMOB), Environment and Climate Change Canada (ECCC), Yellowknives Dene First Nation (YKDFN), City of Yellowknife, Alternatives North, Yellowknife Historical Society, North Slave Métis Alliance (NSMA), Great Slave Sailing Club, Slater Environmental, Fisheries and Oceans Canada (DFO), Department of Justice (DOJ), Public Services and

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[15] See CIRNAC-GMRP – Technical session presentations, submitted to the MVLWB on July 8, 2019.
[16] See Technical Session – Information Requests, dated July 18, 2019.
[17] See CIRNAC-GMRP – Response to Information Request #3, 4, and 6, submitted to the MVLWB on August 8, 2019.
[18] See ECCC – Response to Information Request #2, submitted to the MVLWB on August 8, 2019.
[19] See ECCC – Response to Information Request #2, submitted to the MVLWB on August 9, 2019.
[20] See CIRNAC-GMRP Response to Information Request #1 and ECCC – Clarification on Response to Information Request #2, submitted to the MVLWB on September 3, 2019.
[21] See CIRNAC-GMRP – Closure Criteria Workshop Presentation, submitted to the Board on September 6, 2019.
[22] See CIRNAC-GMRP – Management and Monitoring Plans Presentation, submitted to the Board on September 6, 2019; Spill Contingency and Engagement Plan Presentation, submitted to the Board on September 6, 2019; Closure Criteria Workshop Results Presentation, submitted to the Board on September 11, 2019; Design and Construction Plans Presentation, submitted to the Board on September 11, 2019.
[23] See Technical Session – Information Requests, dated September 16, 2019.
[24] CIRNAC-GMRP – Response to Information Requests, submitted to the MVLWB on October 10, 2019.
[25] See Technical Session – Transcripts July 9, 2019, July 10, 2019, July 11, 2019, July 12, 2019, and September 11, 2019, September 12, 2019, September 13, 2019.
[26] See Closure Criteria Workshop Notes, dated September 9, 2019.

Procurement Canada (PSPC), CanNor, Mackenzie Valley Environmental Impact Review Board (MVEIRB), DXB Projects, GNWT - Health and Social Services (HSS), Carolyn Johns, Justice Canada, Camborne School of Mines, and Queens University.[27]

A pre-hearing conference was held on October 16, 2019 in Yellowknife, NT to discuss participation in the public hearing, written interventions and presentations, notices of intent to appear, and to briefly outline the Board's (2018) *Rules of Procedure, Including Public Hearings*.[28] The pre-hearing conference was attended in-person by representatives from CIRNAC-GMRP, ECCC, DFO, YKDFN, and Alternatives North; GMOB, the City of Yellowknife, and CIRNAC participated by teleconference. NSMA and Slater Environmental were not in attendance but expressed their intentions to participate in the Hearings separately. Summary notes were recorded and distributed later that day, along with instructions for preparing and submitting formal written interventions.[29]

On November 7, 2019, written interventions were received from Alternatives North, the City of Yellowknife, DFO, ECCC, GMOB, NSMA, Slater Environmental, YKDFN, and the Yellowknife Historical Society (YKHS).[30] CIRNAC-GMRP responded to written interventions on November 28, 2019.[31] On December 12, 2019, public hearing presentations were received from Alternatives North, the City of Yellowknife, DFO, ECCC, GMOB, NSMA, Slater Environmental, YKDFN, and YKHS.[32] CIRNAC-GMRP submitted its public hearing presentation on December 19, 2019.[33]

On January 13, 2020, Board staff circulated the draft public hearing agenda.[34] The public hearing was held from January 20-23, 2020, in Yellowknife, NT, at the Nova Hotel. Translation services were provided, and the proceeding was recorded and transcribed.[35] Attendees included: CIRNAC-GMRP, Alternatives North, the City of Yellowknife, DFO, ECCC, GMOB, NSMA, Slater Environmental, YKDFN, YKHS, and members of the public. Undertakings resulting from the hearing were recorded and circulated to the distribution list on January 29, 2020.[36] There were five undertakings directed at CIRNAC-GMRP and one undertaking directed at the GNWT. CIRNAC-GMRP and the GNWT responded to the undertakings on February 19, 2020.[37]

On March 5, 2020, Board staff circulated Draft Licence and Permit conditions to parties for review and comment. The following parties responded by March 23, 2020: CIRNAC-GMRP, Alternatives North, City of Yellowknife, ECCC, DFO, GMOB, GNWT Inspectors, CIRNAC-Lands, NSMA, Slater

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[27] See Technical Session Transcripts and Closure Criteria Workshop notes.
[28] See the Board's Rules of Procedure Including public hearings, dated December 2018.
[29] See Pre-Hearing Conference Notes, dated October 16, 2019.
[30] See Written Interventions: Alternatives North; City of Yellowknife; DFO; ECCC; GMOB; NSMA; Slater Environmental; YKDFN; and YKHS submitted to the MVLWB on November 7, 2019.
[31] See GMRP – Response to Interventions submitted to the MVLWB on December 2, 2019.
[32] See public hearing Presentations: Alternatives North; City of Yellowknife; DFO; ECCC; GMOB; NSMA; Slater Environmental; YKDFN; and YKHS submitted to the MVLWB on December 12, 2019.
[33] See GMRP – Public Hearing Presentation 1, Public Hearing Presentation 2, and Public Hearing Presentation 3, submitted to the MVLWB on December 19, 2020.
[34] See Draft public hearing Agenda, January 10, 2010.
[35] See public hearing Transcripts January 20, 2020, January 21, 2020, January 22, 2020, January 23, 2020, January 24, 2020.
[36] See public hearing – Undertakings to CIRNAC and Undertakings to GNWT, dated January 29, 2020.
[37] See CIRNAC Responses to Undertakings (#2, #3, #5, #6) and GNWT Response to Undertaking (#4), submitted to the MVLWB on February 19, 2020: Undertaking #2; Undertaking #3; Undertaking #4; Undertaking #5; Undertaking #6

Environmental, and YKDFN.[38] CIRNAC-GMRP responded to all the parties' comments and provided comments of their own on April 17, 2020.[39]

On March 23, 2020, interveners submitted written closing arguments to the Board.[40] CIRNAC-GMRP submitted written closing arguments to the Board on April 17, 2020.[41] Parties had an opportunity, in their closing arguments, to update their position based on issues raised during the regulatory process, and to summarize their final recommendations to the Board.

On May 15, 2020, Board staff issued an Information Request to CIRNAC-GMRP[42] to clarify some confusion regarding its comments on the Draft Licence and Permit. CIRNAC-GMRP responded on May 25, 2020.[43] The CIRNAC-GMRP responses were distributed to all parties for comments on the ORS. Comments and recommendations were received from the City of Yellowknife, ECCC, DFO, GMOB, Board Staff, NSMA, and Slater Environmental on June 10, 2020. CIRNAC-GMRP responded on June 18, 2020.[44]

On July 28, 2020, the Board met to make decisions regarding the Applications. These decisions and related reasons are described more fully in Sections 5 and 6, below.

4.0 Legislative Requirements Related to Licence Issuance

In managing the review process for the GMRP Applications described in Section 3, the Board has ensured that all applicable legislative requirements of the MVRMA have been satisfied. These requirements are outlined below.

4.1 General

The use of land, Water, and the deposit of Waste proposed in the Applications are of a nature contemplated by the MVRMA. This Project is subject to the MVRMA and the *Mackenzie Valley Federal Areas Waters Regulations* (MVFAWR) with respect to licensing because it is a federal area under the Northwest Territories Devolution process, dated April 1, 2014. The Permit is also subject to the MVRMA and the MVLUR.

4.2 MVRMA: Consultation and Engagement

In exercising its authority under the MVRMA, generally, the Board must ensure that the importance of conservation to the well-being and way of life of Aboriginal peoples of Canada, as per paragraph 60.1(a) of the MVRMA. The Board works with applicants, affected parties (including Aboriginal organizations/governments), and other parties (such as other boards and regulators) to ensure that potential impacts of proposed projects are understood and carefully considered before decisions are made with respect to the issuance of Permits and Licences.

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[38] See Review Comment Summary Table – Draft Land Use Permit and Draft Water Licence Conditions (hyperlink).
[39] See Review Comment Summary Table – Draft Land Use Permit and Draft Water Licence Conditions (hyperlink).
[40] See Closing Arguments: ECCC; GMOB; NSMA; Slater; YKDFN; Alternatives North; City of Yellowknife, and DFO, submitted to the MVLWB on March 23, 2020.
[41] See CIRNAC-GMRP – Closing Arguments, submitted to the MVLWB on April 17, 2020.
[42] See Board-Issued Information Request, dated May 15, 2020.
[43] See CIRNAC-GMRP Response to Board-Issued Information Requests, dated May 25, 2020.
[44] See Review Comment Summary Table – Board-Issued IR Response (hyperlink).

Engagement activities associated with MV2007L8-0031 began in support of CIRNAC-GMRP's 2007 Water Licence Application. Engagement efforts continued through the environmental assessment process, in support of site stabilization activities, and in preparation for the current Post-EA Information Package and Land Use Permit Application. CIRNAC-GMRP's Engagement Plan and Engagement Log[45] provide thorough documentation of all engagement efforts taken on behalf of CIRNAC-GMRP. These meet the Board's *Engagement Policy* and the *MVLWB Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* (Engagement Guidelines).[46] The Policy was developed to ensure that the Board's obligations for achieving meaningful engagement (as set out by the land claims and applicable legislation) with all affected parties, including Aboriginal groups in the Mackenzie Valley, are met and results clearly articulated.

Following the initiation of engagement and the submission of an application, a proposed project goes through several stages in the Board's regulatory process, as described in Section 3.0, above. The GMRP was also subject to EA, which extensively involved the affected Aboriginal parties.

4.2.1 Notifications and Engagement

CIRNAC-GMRP provided affected parties with the complete Application in February 2019, prior to the initiation of the regulatory process on April 1, 2019. Section 3.0, above, outlines the regulatory process of MV2007L8-0031 and MV2019X0007, including notifications to the distribution list at each stage of the Board's process. The Project's distribution list was used throughout the process to inform parties of upcoming events, IR responses, the availability of transcripts, summary notes, and any other new information submitted to the Board during the proceeding. The YKDFN and the NSMA were the First Nation organizations to fully participate in the GMRP Regulatory process. Concerns not addressed through the course of Application review on the ORS or during technical sessions were discussed at the public hearing. Draft conditions for the Licence and Permit were also provided for review and comment by all parties prior to Board decision.

4.2.2 Subsequent Engagement and Board Process

The Licence, as drafted for Ministerial approval, requires the (re)submission of many plans and programs throughout the life of the GMRP. Updates to the Closure and Reclamation Plan will come in the form of component-specific Design Plans and Construction Plans and updates to Site-Wide Management and Monitoring Plans will be required annually, as applicable, while more significant updates will be required prior to the initiation of Active Remediation and Adaptive Management (Phase 2). CIRNAC-GMRP are expected to continue engagement efforts as outlined in the approved Engagement Plan and as required in the Permit and Licence.[47]

4.3 MVRMA: Land and Water Regulation and MVLWB

The Board has jurisdiction to issue this Licence and Permit as per subsection 59(1) and subsection 60(1) of the MVRMA.

4.3.1 General

As required by the MVRMA, the Board has considered the interests of the people and users of land and Water in the Mackenzie Valley. This includes the importance of conservation to Section

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[45] See Giant Mine Remediation Project's Engagement Plan, dated January 2019.
[46] See MVLWB Engagement and Consultation Policy (June 1, 2013).
[47] See Giant Mine Remediation Project's Engagement Plan, dated January 2019.

35 rights holders and any Traditional Knowledge as per section 60.1 of the MVRMA and any scientific information made available during this regulatory proceeding. The consideration of information provided to the Board is discussed in detail in Sections 5 and 6, below.

4.3.2 Water Use Fees

CIRNAC-GMRP is exempt from paying fees for the right to use Water and deposit Waste due to the exemption in section 7 of the MVRMA which states:

> *This Act is binding on Her Majesty in right of Canada or a province, except that Her Majesty in right of Canada is not required to pay any fee prescribed by regulations made under paragraph 90.3(1)(k) or subparagraph 90.3(2)(a)(i).*[48]

4.3.3 Existing Licences

With respect to paragraph 72.03(5)(a) of the MVRMA, the City of Yellowknife is an existing Licensee. The City of Yellowknife contacted the Board during the statutory period, which was extended by Board staff from May 30, 2019 to August 15, 2019, with two notifications of intent to claim for Water compensation[49] and two claims for Water compensation which were submitted on October 18, 2019.[50] The Water compensation process is discussed further in Section 4.3.4 and Section 5.10. More detail on the Board's decisions regarding Water compensation for the City of Yellowknife and other claimants can be found in the Board's Reasons for Decision on Water Compensation Claims in Appendix 3.

4.3.4 Compensation to Existing Water Uses

Paragraph 72.03(5)(b) of the MVRMA prohibits the issuance of the Licence unless the Board is satisfied that appropriate compensation has been or will be paid by the applicant to persons who would be adversely affected by the use of Waters, or deposit of Waste proposed by the applicant, at the time when the applicant filed its application with the Board. By the statutory period, which was extended by Board staff from May 30, 2019 to August 15, 2019, the Board received 22 notifications of intent to claim for Water compensation,[51] in addition to those received from the City of Yellowknife.

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[48] See *Mackenzie Valley Resource Management Act*, 2019.

[49] See City of Yellowknife Notification of Intent to Claim for Water Compensation – Dock and Notification of Intent to Claim for Water Compensation – Water Pipeline, August 15, 2019.

[50] See City of Yellowknife Claim for Water Compensation – Dock and Claim for Water Compensation – Water Pipeline, October 18, 2019.

[51] See Yellowknife Historical Society Notification of Intent to file a Claim for Water Compensation; Shewchuck Notification of Intent to file a Claim for Water Compensation; Gilbert Notification of Intent to file a Claim for Water Compensation; McDonald-Burles Notification of Intent to file a Claim for Water Compensation; Krisch Notification of Intent to file a Claim for Water Compensation; McCrea Notification of Intent to file a Claim for Water Compensation; McCullum Notification of Intent to file a Claim for Water Compensation; Morrison-Bowie Notification of Intent to file a Claim for Water Compensation; McLeod Notification of Intent to file a Claim for Water Compensation; Pamplin Notification of Intent to file a Claim for Water Compensation; Sinclair Notification of Intent to file a Claim for Water Compensation; Schlagintweit-Fancott Notification of Intent to file a Claim for Water Compensation; Archer Notification of Intent to file a Claim for Water Compensation; Andrews Notification of Intent to file a Claim for Water Compensation; Brookes Notification of Intent to file a Claim for Water Compensation; Drover Notification of Intent to file a Claim for Water Compensation; Kellett Notification of Intent to file a Claim for Water Compensation; Great Slave Sailing Club Notification of Intent to file a Claim for Water Compensation; Guy-Seale

The YKDFN responded to the Board's call for notifications of intent to claim for Water compensation with a letter acknowledging the Board's process and its decision not to seek compensation through the limited scope of the MVRMA.[52]

Following the August 15, 2019 deadline, five additional groups/individuals expressed their interest to file claims for Water compensation with the Board.[53]

The deadline for submission of claims for Water compensation was originally set for September 26, 2019. Following an extension request submitted jointly by the Great Slave Sailing Club and the Great Slave Yacht Club,[54] the claim submission deadline was extended to October 18, 2019. By October 18, 2019, the Board had received 24 claims for Water compensation in addition to the two City of Yellowknife claims described above.[55] On November 15, 2019, CIRNAC-GMRP responded to all 26 Claims for Water Compensation.[56] Claimants were directed to submit statements in reply to CIRNAC-GMRP. Replies were received between November 19 and December 13, 2019.[57]

A separate process was established by the Board for the hearing of claims for Water compensation under Licence MV2007L8-0031. This process and the Board's detailed Reasons for Decision on Water Compensation are discussed in Section 5.10, below and in Appendix 3. The Board is satisfied that the claims for Water compensation have bene addressed in accordance with the MVRMA.

4.3.5 Water Quality Standards

There are no Water quality standards prescribed in the Mackenzie Valley Federal Areas Waters Regulations (MVFAWR). With regards to subparagraph 72.03(5)(c)(i) of the MVRMA, the Board is satisfied that compliance with the Licence conditions will ensure that Waste will be collected and disposed of in a manner which will maintain Water quality consistent with applicable standards

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Notification of Intent to file a Claim for Water Compensation; Peer-Smith Notification of Intent to file a Claim for Water Compensation; and email on behalf of Freeman and Gignac.

[52] See YKDFN Comments on Compensation under the Waters Act (and MVRMA), August 15, 2019.

[53] See Cutler Notification of Intent to file a Claim for Water Compensation; Hodson E-mail Notification of Intent to file a Claim for Water Compensation; Dwyer and Great Slave Yacht Club Email Notification of Intent to Claim for Water Compensation; Dwyer and Evan Email Notification of Intent to Claim for Water Compensation; and Lang Email Notification of Intent to file a Claim for Water Compensation.

[54] See GSSC and GSYC Claims for Water Compensation Extension Request, September 23, 2019.

[55] See: Cutler Claim for Water Compensation, Andrews Claim for Water Compensation, Brookes Claim for Water Compensation, Kellett Claim for Water Compensation, Peer-Smith Claim for Water Compensation, Archer Claim for Water Compensation, McDonald-Burles Claim for Water Compensation, O'Beirne Claim for Water Compensation, Coad-Fullerton Claim for Water Compensation, Hutchinson-Andrejek Claim for Water Compensation, Guy-Seale Claim for Water Compensation, Hodson Claim for Water Compensation, McCullum Claim for Water Compensation, Walz-Saunders Claim for Water Compensation, Pamplin Claim for Water Compensation, Drover Claim for Water Compensation, Krisch Claim for Water Compensation, YKHS Claim for Water Compensation, Morrison-Bowie Claim for Water Compensation, Lang Claim for Water Compensation, Schlagintweit-Fancott Claim for Water Compensation, and McCrea Claim for Water Compensation, McLeod Claim for Water Compensation.

[56] See CIRNAC-GMRP Response to Claims for Water Compensation, dated November 15, 2019.

[57] See Claimants responses to CIRNAC-GMRP: Pamplin Reply dated November 19, 2019, Pamplin Reply dated November 26, 2019, McCrea Reply dated November 26, 2019, Waltz-Saunders Reply, Guy-Seale Reply, McLeod Reply, and City of Yellowknife Reply dated December 13, 2019.

and the Board's *Water and Effluent Quality Management Policy*.[58] The Board's Policy is designed to ensure that Water quality in the Receiving Environment is maintained at a level that allows for current and future Water uses and that the amount of Waste is minimized. These are further discussed in the Water Management and Monitoring Plan section under Section 5.7 of these Reasons for Decision (Part F of the Licence: Conditions Applying to Waste and Water Management).

4.3.6 Effluent Quality Standards

There are no Effluent quality standards prescribed in the MVFAWR. The Board is nonetheless satisfied that the Effluent quality standards set out in the Licence are consistent with the Board's *Water and Effluent Quality Management Policy* and will protect the receiving Waters and environment. These are further discussed in the Water Management and Monitoring Plan section under Section 5.7 of these Reasons for Decision (Part F of the Licence: Conditions Applying to Waste and Water Management).

4.3.7 Financial Responsibility

The Board must satisfy itself of the financial responsibility of CIRNAC-GMRP under paragraph 72.03(5)(d) of the MVRMA before it can issue the Licence. The Applicant is the governments of Canada and the Northwest Territories. Section 94 of the MVRMA[59] excludes Canada and the Territorial Government from the requirement to post security pursuant to section 71 of the MVRMA for land use permits. A similar exemption is typically applied to Water Licences for the Federal and Territorial governments.

Through interventions submitted for the public hearing, several parties identified remaining concerns regarding the perpetual funding for the perpetual nature of the Giant Mine Project. Some of the discussion regarding long-term funding is summarized in Section 5.1, below. Alternatives North recommended that the Board require CIRNAC-GMRP to address the concerns about long term funding[60] and the City of Yellowknife recommended that the Board direct CIRNAC-GMRP to undertake a special study on funding models for the Project. They further recommended that the study be undertaken with an arms-length steering committee and be submitted for Board approval.[61] In response to these recommendations, CIRNAC-GMRP suggested that that the long-term funding of the site is not within the mandate of the MVLWB but that the co-proponents will continue to meet their obligations for the site, in order to protect the environment and the health and safety of the public.[62] The Board agrees that this type of funding is not within its mandate and that it cannot be ordered under MVRMA 72.03(5)(d).

In Undertaking #3 from the public hearing, CIRNAC-GMRP specifically argued that water licences issued to other public governments in the past, such as for municipal Water intake and Waste facilities, do not require either a security deposit or explicit commitment to multi-year or long-term funding over the life of the licence.[63]

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[58] See Water and Effluent Quality Management Policy, dated March 31, 2011.
[59] See *Mackenzie Valley Resource Management Act*, current to August 28, 2019.
[60] See Alternatives North GMRP Intervention, dated November 7, 2019.
[61] See City of Yellowknife GMRP Intervention, dated November 7, 2019.
[62] See Giant Mine Remediation Project Response to Interventions, dated December 2, 2019.
[63] See Giant Mine Remediation Project Response to Undertaking #3, dated February 19, 2020.

Beyond the Board's responsibility under paragraph 72.03(5)(d) of the MVRMA to consider the financial responsibility of the applicant, taking into account the applicant's past performance, there has been no precedent established by the Board to make long-term project funding reports a requirement of a Licence. As set out, such a requirement in relation to GMRP funding is outside the scope of the Board's jurisdiction and beyond the scope of paragraph 72.03(5)(d).

The Board is satisfied that the financial capacity of CIRNAC-GMRP, in this case, is adequate for the term of Licence granted (see discussion in section 5.1, below), and satisfies the requirements of paragraph 72.03(5)(d) of the MVRMA for the term of Licence MV2007L8-0031.

Once the Project enters Phase 3 (Long-term Monitoring and Maintenance), the available evidence indicates that the annual costs and long-term funding requirements for the Project will be relatively small compared to the costs of Active Remediation.[64,65] Phase 3 will be authorized under a new Licence specific to activities required for the post-closure monitoring and maintenance of the site. Additional information for the funding needs associated with the perpetual maintenance of the site should be available prior to the Project moving into Phase 3.

4.3.8 Minimization of Adverse Effects

With regards to subsection 72.04(2) of the MVRMA, it is the opinion of the Board that compliance with the Licence will ensure that any potential adverse effects on other Water users, which might arise because of the issuance of the Licence, will be minimized. Claims for compensation submitted by existing users have been heard through a parallel process, described in Section 5.10, below and addressed in separate Reasons for Decision in Appendix 3.

4.3.9 Time Limit

When the licence application was received in 2007 the time limits were not legislated in the MVRMA. These did not come into force until 2014. At that point, the Project had just completed the EA process. Between 2014 and 2019, CIRNAC-GMRP were working to meet the measures of EA0809-001 while the Board awaited the Post-EA Information Package to re-initiate the Licencing process. Section 72.18(1) of the MVRMA now requires the Board to make a decision within a period of nine months of Board time after the day on which an application is made or a notice advertised as per subsections 72.16(1) and 72.16(2) of the MVRMA. On June 5, 2020 a two-month extension to the 9-month timeline was requested of the Minister. On June 30, 2020 the Minister extended the time limit for two months in accordance with subsection 72.24(1) of the MVRMA. The Board's decision on the Applications have been completed within 10 months of its active time.

4.4 MVRMA Part 5: Environmental Impact Assessment

4.4.1 Environmental Assessment

The GMRP was the subject of an Environmental Assessment conducted by the Mackenzie Valley Environmental Impact Review Board (Review Board): EA0809-001. Section 62 of the MVRMA requires that approved measures of EA0809-0001, which are within the jurisdiction of the Board, be reflected in conditions set out in any water licence or land use permit issued for the GMRP by the Board.

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[64] See Giant Mine Remediation Project Response to Interventions, dated December 2, 2019.
[65] See Giant Mine Remediation Project Report of Environmental Assessment, dated June 20, 2013.

The Board carefully reviewed each measure, suggestion, and commitment from the EA. The Board notes that EA measures are sometimes written in broad terms which are not appropriate for direct inclusion in a regulatory instrument. In addition, some measures are not within the Board's jurisdiction. Furthermore, although the reflection of suggestions and commitments in a Licence is not mandatory, the Board reviewed the suggestions and commitments to ensure the closest possible conformity with the EA decision made by the Minister. Overall, the Board is confident the Licence contains conditions that implement the relevant Review Board measures and that upon approval by the Minister the licence will ensure that the GMRP will be adaptively managed, and that project-related effects on the environment will remain within an acceptable range. Appendix 2 attached to these Reasons for Decision contains a table detailing how, where applicable, the Board incorporated the measures and suggestions from the EA into Licence or Permit conditions. Based on this analysis, the Board is satisfied that the requirements of section 62 of the MVRMA have been met.

4.4.2 Preliminary Screening

To fulfill subsection 124(1) of the MVRMA, the Board met on September 25, 2019 to consider the preliminary screening of activities associated with the Post-EA Information Package and the Land Use Permit Application that were not included in EA0809-001 completed by the Review Board. As per paragraph 125(1)(a) of the MVRMA, the Board determined that the new activities associated with the Post-EA Information Package and Land Use Permit Application would not have a significant adverse impact on the environment and would not be a cause of public concern. The Board's Preliminary Screening Report includes its reasons for that decision and is available on the Board's Public Registry.[66] The Board is satisfied that any changes to the development considered in EA0809-001 proposed by the Applicant have been screened pursuant to the MVRMA.

In its comments and recommendations on the ORS in response to the draft authorizations, however, CIRNAC-GMRP made the following observations:

> The GMRP would like to ensure that applicable activities related to engineering investigations and ongoing site maintenance are also encompassed in the scope of the Licence. Numerous investigations will continue with Licence and Permit issuance to inform detailed design, as well as activities related to ensuring the continued safe operations of site during remediation. This includes ice road construction, drilling on ice and in open water, and new openings to surface from underground. As well, currently decommissioning and demolition activities are not explicitly included in the proposed list of activities, but the GMRP considers these activities to be related to the handling of waste and therefore suggest they be included. Similarly, the GMRP notes that the activities to establish the arsenic trioxide frozen shell are not included however these activities are associated with storing waste and therefore the GMRP suggests these activities should be included. As part of the compensation process, the GMRP committed to constructing a new boat ramp and keeping the same draft at the dock and suggests this construction as well as potential excavation of sediment be included in the scope…
>
> The GMRP requests the scope be reviewed to ensure it implicitly or explicitly encompasses the following activities identified in our application and through the Water Licence proceeding: decommissioning and demolition of old buildings and infrastructure,

[66] See MVLWB Preliminary Screening and Reasons for Decision, dated September 25, 2019.

drilling on ice and in open water, excavation of sediment and other in-water construction activities, ice road construction, new openings to surface from underground, and "establishment and maintenance of the arsenic trioxide frozen shell".[67]

The Board confirms that the intent of Part A of both the Licence and Permit is to cover all existing authorized activities and all proposed activities in the current Applications in the scope of these authorizations. So long as activities have been applied for and screened, they should be covered by the scope of these authorizations. Activities that have not been identified in detail (such as open water drilling and winter roads) may require additional applications to the Board.

5.0 Decision – Water Licence MV2007L8-0031

In making its decision and preparing these Reasons for Decision, the Board has reviewed and considered the following:

1) The Report of Environmental Assessment EA0809-001 and the measures and suggestions therein, as approved by the Responsible Minister;
2) The comments and recommendations made during the regulatory processes;
3) The evidence and submissions from CIRNAC-GMRP received by the Board;
4) The written comments and submissions from other parties received by the Board; and
5) The Staff Report prepared for the Board.

Having due regard to the facts, circumstances, and the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA, the Board has determined that Licence MV2007L8-0031 should be issued subject to the scope, definitions, conditions, and term contained therein. The Board's determinations and reasons for this decision are set out below.

The scope, definitions, conditions, and term set forth in the Licence have been developed to address the Board's statutory responsibilities and the concerns that arose during the regulatory process that are within the Board's jurisdiction. The Reasons for Decision set out below focus on the major concerns and issues raised by parties, including those that were the subject of substantive argument submitted by one or more parties. Site/Project-specific conditions were developed where necessary.

5.1 Term of Licence

CIRNAC-GMRP applied for a 20-year term for the Licence MV2007L8-0031. A full description of the proposed timeline and the phases of the GMRP is provided in the Closure and Reclamation Plan (CRP)[68] and in the Updated Project Description (UPD).[69] It is anticipated that Active Remediation will commence in 2021, pending issuance of this Licence and approval of applicable Site-Wide Management and Monitoring Plans, and take approximately 10 years to complete. Once activity-specific Design Plans and Construction Plans are completed, implementation of each component-specific closure activity can begin.

Adaptive management will begin as each closure activity is completed and last until the end of Active Remediation and Adaptive Management (Phase 2), as needed. Adaptive management details for the post-Construction period will be clearly defined, as required, in the component-specific Design Plans

[67] See Review Comment Summary Table – Draft Land Use Permit and Draft Water Licence Conditions (hyperlink).
[68] See Giant Mine Remediation Project Closure and Reclamation Plan, dated January 2019.
[69] See Post-EA Information Package for Water Licence MV2007L8-0031, dated April 1, 2019.

which are discussed in more detail in Section 5.6, below. Results of post-Construction monitoring (the adaptive management stage) will inform ongoing monitoring and maintenance needs for the life of the Project, i.e., 100-years as defined by MVEIRB during the EA. The post-Construction monitoring results will inform information needs for Post-Closure (Phase 3), including the Post-Closure Monitoring and Maintenance Plan.

During the first technical session, the Giant Mine Oversight Board (GMOB) requested clarification on the purpose of the proposed 20-year term, and CIRNAC-GMRP confirmed that the timelines align with the anticipated duration of Active Remediation and Adaptive Management (Phase 2) with some flexibility for Project delays.[70]

The Yellowknives Dene First Nation (YKDFN) expressed its desire to see the Licence reflect opportunities to update Project plans in the event a solution to the management of arsenic trioxide dust is identified in the interim.[71] Measure 2 from EA0809-001 requires CIRNAC-GMRP to commission an independent review of the Project every 20 years to evaluate its effectiveness, and to decide if a better approach can be identified. The proposed 20-year term supports the need to meet measure 2. Under this scenario, CIRNAC-GMRP would have the opportunity to report results of the independent review in time to support a renewal application, as required.

One of the key roles of GMOB is to research alternative approaches to the management of arsenic trioxide dust. With regard to the ability to adjust Project plans to respond to emerging technology, the submission of component-specific Design Plans can be used to update the GMRP CRP and associated Closure Activities within the scope of the existing Project. Major Project changes can also be introduced during the life of the Licence through an application for an amendment, if necessary or desired.[72]

Through interventions, GMOB and Slater Environmental argued, respectively, that the licence term "should align with the active remediation of the site, and a new licence should be required when the site transitions to post-closure (Phase 3). This would mean a term of 12 to 15 years"[73] and "[t]he Board should grant authorizations that have terms limited to the duration of the proposed Phase 2 of the GMRP."[74]

The NSMA and YKDFN, during the public hearing, suggested that a more appropriate term for the licence would be five to seven years so as not to set a precedent for long-term Licences and to allow for more thorough review of the Project as it progresses through Remediation.[75] These recommendations were reiterated in the NSMA and YKDFN closing statements.[76] Alternatives North also recommended that a term of no more than 10 years be applied to maintain public confidence in the Project.[77] In response, CIRNAC-GMRP explained that the requested 20-year term provides the necessary Project flexibility to adapt to any unknown factors that may influence the Project schedule:

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[70] See Technical Session Transcript July 9, 2019, pp 56.
[71] See Technical Session Transcript July 9, 2019, pp 64.
[72] See Technical Session Transcript July 9, 2019, pp 64-67.
[73] See GMOB Intervention, dated November 7, 2019.
[74] See Slater Intervention, dated November 14, 2019.
[75] See Public Haring Transcript – January 22, 2020, pp. 110 and January 23, 2020, pp. 44.
[76] See YKDFN Closing Statement, dated March 23, 2020 and NSMA Closing Statement, dated March 23, 2020.
[77] See Alternatives North Closing Statements, dated March 23, 2020.

> *The GMRP submits that a 20-year term allows the MVLWB, the GMRP, and all Parties to avoid a potential burdensome renewal process prior to the completion of remediation activities. Given that Licence requirements Post-Closure would likely be less onerous compared to those required during active remediation, the GMRP does not see a risk to the requested Licence term. If Active Remediation is completed prior to a required renewal process, the GMRP will submit a Licence application for its Post-Closure Water Licence prior to expiry of the current Licence.*[78]

GMRP also argued, in its closing statement that conditions for Active Remediation are likely more restrictive, reducing risk, and suggested that the Draft Licence, in addition to responsibilities under the Environmental Agreement, include many opportunities to 'check-in' with Parties on the progress of the Project. CIRNAC-GMRP are concerned that a shorter term would divert focus and resources from Active Remediation before the work is complete.[79]

Another concern identified during the Post-EA Information Package review that the Board considered in its decision on the term of the Licence was the issue of long-term funding. During the EA and the regulatory review of MV2007L8-0031 and MVC2019X0007, parties expressed concerns about the availability of a long-term stable funding mechanism to support perpetual care and monitoring at the Giant Mine Site. CIRNAC-GMRP has stated that the GMRP has been a priority for federal government and long-term funding will be available for the Project: "We have always been very clear that as the Government of Canada there is a full commitment to this project over the term."[80]

Section 4.3.7, above, concludes that the reporting on and planning for the long-term funding of the site is not within the mandate of the MVLWB and that the Board is satisfied that the financial capacity of CIRNAC-GMRP meets the requirements of paragraph 72.03(5)(d) of the MVRMA. This means that the Board is unable to address requirements of EA0809-001, measure 6, through Licence conditions. Measure 6 requires CIRNAC-GMRP to:

- *investigate long-term funding options for the ongoing maintenance of this Project and for contingencies, including a trust fund with multi-year up front funding,*
- *involve stakeholders and the public in discussions on funding options; and,*
- *make public a detailed report within three years that describes its consideration of funding options, providing stakeholders with the opportunity to comment on the report.*

A long-term funding report was completed by Deloitte for CIRNAC-GMRP in July, 2019.[81] This Report is CIRNAC-GMRP's response to measure 6 of EA0809-001 and provides an analysis of options for the long-term funding of the Giant Mine Remediation Project without identifying a final plan for its long-term funding. The 2019 Long-term funding report written for the GMRP by Deloitte is available on the Board's Public Registry[82] and consultation on this report is taking place outside the Board's regulatory process. In general, Intervenors expressed their disappointment in the Deloitte report during the

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[78] See GMRP Response to Interventions, dated December 2, 2019.
[79] See GMRP Closing Statement, dated April 17, 2020.
[80] See Technical Session Transcript, July 11, 2019, pp. 217.
[81] See Development of Options for Consideration for Long Term Funding for Giant Mine, Deloitte, July 25, 2019.
[82] See Crown-Indigenous Relations and Northern Affairs Canada Development of Options for Consideration for Long-Term Funding for Giant Mine, dated July 2019.

public hearings and continued to make recommendations to CIRNAC-GMRP for more creative ways to secure funding for the future.[83]

In August, 2019, the federal government announced its Northern Abandoned Mine Reclamation Program (NAMRP) designed to invest $2.2 billion over the next 15 years to remediate high-risk abandoned mine sites in the Yukon and Northwest Territories, including Giant Mine.[84] In response to a question from the City of Yellowknife about the anticipated costs and funding for the Project, GMRP responded that "the Northern Abandoned Mine Reclamation Program, announced in Budget 2019, will cover the full implementation cost for the Giant Mine remediation project."[85] The NAMRP identifies funding to cover the next 15 years. CIRNAC-GMRP, however, have applied for a 20-year term for its Water Licence. Implementation of Closure Activities are anticipated to be complete within a 15-year timeframe with extra time in the Licence term to account for some flexibility in Project schedules, and to carry out monitoring and adaptive management, as required.

Subsection 72.03(2) of the MVRMA allows for a Licence term of not more than 25 years or the duration of the undertaking. During the public hearing, Board staff asked the Project if there were any concerns with limiting the scope of the Licence to Phases 1 and 2, as described in the Updated Project Description. None were identified.[86] Noting the commitments to Project funding through the NAMRP and the Board's confidence in the financial capacity of CIRNAC-GMRP, the Board believes a 20-year Licence term with a scope limiting the Project to the active closure phases addresses the concerns of most interveners while allowing the Project the flexibility it has requested in the event of schedule delays. After reviewing the submissions made during this regulatory process, the Board has determined an appropriate term for this licence is 20 years, as proposed by CIRNAC-GMRP, with a scope limited to Phases 1 and 2.

5.2 Part A: Scope and Definitions

Part A of the Licence contains the scope and definitions for terms used throughout.

Scope

The scope of the Licence reflects the triggers identified in Schedule VIII of the Mackenzie Valley Federal Areas Waters Regulations (MVFAWR) for miscellaneous activities that involve the use of Water and/or deposit of Waste on federal lands.[87] The scope of the Licence ensures the Licensee is entitled to conduct activities which have been applied for and screened by the Board for Phases 1 and 2 of the Project, as identified in the Updated Project Description, and as described in Section 5.1, above. In setting out the scope of the Licence, the Board endeavoured to provide enough detail to identify and describe the authorized activities, without being unduly restrictive or prescriptive, and to allow for Project flexibility throughout the life of the Licence. The scope of activities includes those under the Board's jurisdiction that have been subject to EA0809-001, described in the Post-EA Information Package, and assessed through the September 25, 2019 preliminary screening. The scope

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[83] See public hearing Transcripts – January 21, 2020, pp. 129-148.

[84] See Environmental Science & Engineering Magazine, "Federal Government Unveils $2.2B Northern Mines Remediation Program", August 26, 2019.

[85] City of Yellowknife Online Review System Review 2 of 7 (Water Licence Post-EA Information Package), Comment ID 1.

[86] See public hearing Transcript – January 21, 2020, pp.61.

[87] See Mackenzie Valley Federal Areas Waters Regulations, schedule VIII.

was also developed with the understanding that all existing activities licensed onsite would be covered under this Licence.

The *Scope – Post Environmental Assessment* condition is a new standard condition intended to further clarify that the scope of the authorization includes the Project that has been subject to Part 5 of the MVRMA. In this case, the Giant Mine Remediation Project has been subject to both and Environmental Assessment (EA0809-001) and a Post-EA Preliminary Screening which included additional activities and Project changes in response to EA measures. This condition also makes reference to existing authorizations and associated screenings to ensure the activities previously authorized for site stabilization and under emergency measures remain within the scope of the Project under this Licence. Upon issuance, CIRNAC-GMRP will be able to apply for a cancellation of all existing Board-issued authorizations applicable to the Giant Mine site.

As indicated above in section 4.4.2, CIRNAC-GMRP identified some concerns with the scope of the draft authorizations distributed in March 2020. CIRNAC-GMRP wanted to ensure that the scope of the authorizations "implicitly or explicitly encompasses… activities identified in our application and through the Water Licence proceeding."[88] As above, the Board confirms that the intent of Part A of the Licence is to cover all existing authorized activities and all proposed activities in the current Applications in the scope of these authorizations. So long as activities have been applied for and screened, they should be covered by the scope of these authorizations. Activities that have not been identified in detail (such as open water drilling and winter roads) may require additional applications to the Board.

During Project review, there were issues regarding the geographic scope of the Project compared to the measurable extent of legacy impacts on the environment from the Giant Mine. During the technical session, Bill Slater asked CIRNAC-GMRP about its basis for making decisions and adjustments to the geographic scope since the EA (for example, adjacent areas of contamination such as the Dam 3 spill materials have been added to the CRP). CIRNAC-GMRP responded that the scope of the Project was set through the EA and closure principles and objectives identified in the CRP. The GNWT representative on the Project, Erika Nyyssonen, explained that the GNWT (the landowners) are leading a Human Health and Ecological Risk Assessment (HHERA) beyond the GMRP boundaries so that legacy risk can continue to be communicated, including public health advisories, where appropriate.[89] The GNWT acknowledged that additional engagement regarding the appropriate communication methods is required.[90] Michael Nabert of Ecology North shared the sentiments presented by Mr. Slater about the government spending more money to remediate areas that people are not expected to use than in areas, beyond the Project boundary, that people do actively use.[91] Concerns regarding the geographic scope of the Project were also expressed by members of the public during the public hearing. For example, Margaret Erasmus specifically asked when the sediments along the shoreline of Ndilǫ will be remediated, to which CIRNAC-GMRP responded that addressing the sediments in Ndilǫ is outside the GMRP scope.[92]

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[88] See Review Comment Summary Table – Draft Land Use Permit and Draft Water Licence Conditions (hyperlink).
[89] See Technical Session Transcript July 9, 2019, pp 81-90.
[90] See public hearing transcript – January 23, 2020, pp 58-61, 213.
[91] See Technical Session Transcript July 9, 2019, pp 91.
[92] See public hearing transcript – January 23, 2020, pp 157-158.

The Board must work within the confines of the Project being proposed. The geographic scope of the GMRP reflects the previous legal site lease as proposed by CIRNAC-GMRP and the scope set during the EA:

> *The geographic scope is limited to the area potentially affected by activities associated with the proposed Project. This area includes the Giant Mine site, the adjacent town site, a section of shoreline where historic tailings have been released, and the Cruising Club boat launch site.*
> *The Review Board has assessed the potential impacts resulting from the Project proposed by the Developer and this Project, as proposed. This includes development activities that occur wholly within the Project areas identified in the Giant Mine remediation plan. While the Review Board has determined that the geographic scope is limited in this way, for the purpose of assessing potential impacts to valued components, such as impacts to water quality, it has considered a geographic scope that is appropriate to the valued component being assessed. For example, in the case of water quality, the Review Board considered potential downstream impacts in Great Slave Lake, not just impacts on waters within the Giant Mine site.*[93]

The Board acknowledges that concerns about legacy issues beyond the Project boundaries are the responsibility of the GNWT and outside the scope of this process. Similar Projects, including other Remediation projects at the Con Mine and smaller Remediation projects completed by the Contaminants and Remediation Division (CARD) have not been required to address legacy issues beyond the project's scope under the authorizations issued by the Board.

Part A, conditions 3 and 4 are consistent with previous Licences issued by the Board. These conditions ensure that the scope of the authorization includes all Water uses and deposits of Waste associated with the Project and reflect and comply with all applicable legislation for the life of the authorization.

Definitions

The Board defines items in a Licence to ensure a common understanding of conditions, to avoid future differences in interpretation, and to use wording like that found in previously issued Licences. Many defined terms can be found, along with associated rationale in the Board's Standard Water Licence Conditions document.[94] Where appropriate, the Board created new definitions, changed standard wording, or used specific definitions to describe facilities related to the GMRP.

On May 15, 2020, Board staff issued an IR to CIRNAC-GMRP to help clarify the use and definitions of some terms used in the Draft Licence. Specifically, the definitions for Contact Water, Surface Runoff Criteria, and the use of the terms Engineered Structure and Engineered/Project Component were discussed. In the Draft Licence, Board staff understood Contact Water to include all Waters running off or seeping through Engineered Structures, from which it could encounter Waste or Wastewater, throughout the Project site. CIRNAC-GMRP, however, understood Contact Water to refer to all Waters being captured and managed within the 'Developed Area.' [95] The Developed Area was not defined in the Draft Licence but is clearly defined in the CRP and Water Management and Monitoring Plan submitted with the Post-EA Information Package.[96] Likewise, CIRNAC-GMRP use the term Surface

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[93] See Giant Mine Remediation Project Report of Environmental Assessment EA0809-001, pp 21.
[94] See Standard Water Licence Conditions.
[95] See Review Comment Summary Table – Draft Land Use Permit and Draft Water Licence Conditions (hyperlink).
[96] See Water Management and Monitoring Plan, dated January 2019.

Runoff Criteria in its Water Management and Monitoring Plan to refer to the goal criteria for the Discharge of Runoff Waters that were formerly captured and managed as Contact Water. The definition of Surface Runoff Criteria added to the Licence reflects the intent of the term 'Contact Water Criteria' Board staff used in the Draft Licence. The use of Surface Water Criteria more accurately defines the intent of this criteria. Although these criteria will be applied to Water that was previously captured and managed as Contact Water, it is the Project's intent that through remediation activities (such as engineered covers), the Water will no longer be in contact with Waste and will therefore become surface Runoff.

Fundamentally, the purpose of the terms and the management of Waters being referred to does not substantially change from that presented in the Draft Licence. The majority of Engineered Structures being used or Constructed for the Project are found within the Developed Area. The few exceptions (Water crossings), remain subject to monitoring under the Site Wide Management and Monitoring Plans. In order to ensure the updated Contact Water definition is clear, a definition for Developed Areas was added to the Licence. Once the Contact Water is demonstrated to meet Surface Runoff Criteria, it can be Discharged directly to the Receiving Environment. CIRNAC-GMRP explained the term 'Contact Water Criteria' used in the Draft Licence was not appropriate because once met, the Waters would no longer be considered 'Contact Water,' but rather, surface Runoff.

The use of the terms and the management of the Waters identified through these definitions align with the requirements to manage 'Effluent' in areas used or adjacent to disturbed lands under MDMER, as was clarified by ECCC in its response to IRs during the first technical session.[97] The details of Contact Water management are to be provided for approval through the Water Management and Monitoring Plan and SNP sites associated with its management will be identified for approval in Design Plans for each Project Component.

Unique definitions found in the Licence are described below:

- **Active Remediation and Adaptive Management (Phase 2)** - included in the Scope of the Licence and to clarify the scope, and to identify a trigger used in Licence conditions for the updating and resubmission of Site-Wide Management and Monitoring Plans.
- **Arsenic Trioxide Frozen Shell** - included to reflect the specific remedial effort related to this Project.
- **Closure and Reclamation Completion Report** - included to provide a description of the Plan's purpose as required by Licence conditions.
- **Contact Water** - defined to differentiate between Runoff Waters from undisturbed areas on the GMRP property (Runoff) from Runoff Waters that have been in contact with disturbed and actively managed areas of the GMRP (Contact Water). The need to differentiate between Contact Water and site wide surface Runoff was identified as a concern by both reviewers and CIRNAC-GMRP since the Project proposes to manage both kinds of Water differently.[98]
- **Developed Area** - included to clarify the parts of the Project site where runoff Waters (Contact Water) are actively managed to meet, at a minimum, MDMER Effluent quality objectives, as identified in the Water Management and Monitoring Plan.
- **Engineered Structure** - this is a standard definition, however, the structures identified are particular to the Project and are meant to identify the parts of the Project for which reviewers can expect to see Construction Plans. Engineered Structures associated with the Project were

[97] See ECCC Follow-up Response to IR #2, dated September 3, 2019.
[98] See Technical Session Transcript July 10, 2019, pp 171, 202

identified by the GMRP in response to the Board-issued IR following the review of the Draft Licence.[99] The term distributed in the Draft Licence was 'Engineered Component'. CIRNAC-GMRP have suggested that Borrow sources not be included in the definition of an Engineered Structure since they are already subject to several levels of regulatory review and oversight between the Board and GNWT and, in their view, should not be subject to additional inspections and plans required of Engineered Structures under Part E and F, condition 17 of the Draft Licence. The Board notes that the term "Engineered Structure" is used to trigger the submission of Construction Plans, and it the Board's understanding that Construction Plans will be submitted for Borrow Pits. Regarding requirements of Engineered Structures under Part F, condition 17: the Board has added "at a frequency outlined in approved applicable Design Plans and/or Site Wide Management and Monitoring Plans". Consequently, if GMRP does not believe inspections outlined in this condition are relevant to Borrow Pits, that can be explained in the Design Plan or Borrow and Explosives Management and Monitoring Plan.

- **Environmental Assessment** - defined to provide a direct reference to the EA specific to the GMRP.
- **Existing Condition (Phase 1)** - included in the Scope of the Licence.
- **Existing Effluent Treatment Plant System (Effluent Treatment Plant)** - included to accurately reflect and identify components specific to the GMRP.
- **Foreshore Tailings** - included to accurately reflect and identify components specific to the GMRP.
- **New Water Treatment Plant (WTP)** - included to accurately reflect and identify components specific to the GMRP.
- **Non-Hazardous Waste Landfill** - similar to the definition for Solid Waste Disposal Facility, as defined in the Board's Standard Water Licence Conditions but adjusted to reflect and identify site-specific Project components.
- **Perpetual Care Plan** - included to provide a description of the Plan's purpose as required by Licence conditions.
- **Project Component** - included to clarify the parts of the Project, as identified in the Giant Mine Remediation Project Closure and Reclamation Plan, that require detailed design and the submission of associated Design Plan(s). The definition of Project Components explicitly identifies the project components that were discussed thoroughly during technical sessions and the Closure Criteria Workshop. This term is meant to provide clarification on what mine components reviewers can expect to review detailed Design Plans for, moving forward though the life of the Licence.[100]
- **Site-Wide Management and Monitoring Plans** - included to differentiate the Plans through which general, site-wide monitoring and management requirements are identified from the Design Plans which may be used to introduce Project Component-specific monitoring and management details that are less broadly applicable.
- **Surface Runoff Criteria** - included to reflect terminology used by CIRNAC-GMRP in its Water Management and Monitoring Plan for the management of Contact Water Contact Water and the transition of Contact Water to Surface Runoff from the Project site.
- **Tailings Containment Areas** - included to accurately reflect and identify components specific to the GMRP.

In addition to the changes identified above, more minor edits to definitions resulting from the review of the Draft Licence include the following:

- Minor edits to the definitions for Freeboard, Fresh Water Intake, and Perpetual Care Plan.

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[99] See CIRNAC-GMRP Response to Board-Issued IR, dated May 25, 2020.
[100] See Technical Session Transcript July 9, 2019, pp 71-73, 152.

- Minor edits to the definitions for Maximum Average Concentration, Maximum Grab Concentration to align with the Board's standard definitions.
- Explicit definitions for Closure and Reclamation, Closure Criteria, Closure Objectives, and Reclamation Research were added to better reflect the Board's *Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories* (Closure Guidelines).[101]
- Minor edits for Dam definition that directly aligns with text taken from the *Canadian Dam Safety Guidelines*, the Board's standard definition, and the reality of these structures at the Giant Mine site. The Board included both "an Engineered Structure or barrier" in this definition as the Project may include Dams that do not fit the definition of an Engineered Structure.

5.3 Part B: General Conditions and Schedule 1

Part B of the Licence contains general administrative conditions regarding compliance and conformity with the MVRMA, with the Licence, and with submissions made to the Board. It is largely consistent with standard conditions found in previous Licences issued by the Board.

The *Identify Traditional Knowledge* condition is a new standard condition. This condition requires the Licensee to demonstrate how the Traditional Knowledge (TK) component of the *Incorporate Scientific Information and Traditional Knowledge* condition is being met. It is acknowledged that some submissions (e.g., Surveillance Network Program (SNP) reports) may not typically involve incorporating TK; however, this condition does not include limitations on the types of submissions it would apply to. The type and application of any TK provided cannot be anticipated for all scenarios. If no TK has been incorporated, the licensee can include a simple statement to that effect with a submission. If confidential TK is provided to the licensee, the licensee can still describe how TK was considered without providing the confidential information.

For clarification, the *Use Up-to-Date References* condition explains that all references to policies, guidelines, codes of practice, statutes, regulations or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted. This standard practice allows for flexibility in Licence conditions when external documents are updated during the life of the Licence.

The *Annual Review* condition requires the annual review of all management and monitoring plans and programs required by the Licence. This condition is not meant to be onerous, and resubmission of plans would only be necessary at this time if there are major updates or changes that have not triggered updates in some other way. This condition can ensure that all applicable plans are regularly reviewed and updated so they reflect changes in technology and/or changes and phases of the project throughout the life of the authorization. All revisions to management plans that require Board approval must be approved by the Board prior to implementation. The *Revisions* condition serves a similar purpose but makes it clear that changes to Plans or Reports can be submitted to the Board for consideration at any time - so long as there is enough time to review the requests for approval prior to implementation. Though not intended by the Project, activity-specific monitoring could potentially be proposed through submissions, such as Construction Plans or Closure and Reclamation Completion Reports, which are not for Board approval. If changes to Site-Wide Management and Monitoring Plans or monitoring approved through Design Plans are required, they

[101] See *MVLWB/AANDC Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories*, November 2013.

could be submitted to the Board under this condition. Conditions in Part F of the Licence should capture any anticipated major plan updates for the duration of the Licence.

The *Comply with Schedules* condition introduces the Schedules which are annexed to and form part of the Licence. Changes to these Licence components are largely administrative matters and are within the Board's authority and reinforced by the *Updates to Compliance Dates* condition. The *Comply with Surveillance Network Program* condition introduces the SNP which is annexed to and forms part of the Licence. Changes to these Licence components – Schedules and SNPs – will be distributed for review and comment but do not require an amendment unless changes are tied to larger Project changes. Section 5.11, below, provides more detail on the SNP for the GMRP. The *Comply with Directives* condition introduces and informs the Licensee of the requirement to comply with Board directives regarding the Licence conditions. Board direction can come at anytime during the life of the authorization, most frequently in response to the review of a Project submission, in the form of requests for additional information. This condition makes it clear that Board direction provided through letters to the Licensee are required to be complied with under this authorization.

The *Measure Water Use and Waste Discharge* is a standard condition requiring the Licensee to maintain all water monitoring equipment in working order, to the satisfaction of the Inspector. For clarity, this includes the need to replace, repair or decommission equipment as necessary. The *Inoperable Well* condition is not a standard condition but was included in the CIRNAC-GMRP Draft Licence submitted with the Post-EA Information Package and has recently been used in the Con Mine Remediation Type A Water Licence, MV2017L8-0008. It has been included here to further clarify the requirement to replace or repair monitoring wells that become inoperable and to provide certainty that a "dry well" is not necessarily an inoperable well.[102] The ability to decommission wells, if deemed appropriate by an Inspector, was added to the condition following review of the Draft Licence. Details on works or replacements under this condition are required to be reported on in the Annual Water Licence Report in Schedule 1, condition 1.

There are three *Notification* conditions required under Part B. These conditions ensure the Board and the Inspectors are aware of the Project progress and any incidence of non-compliance. All notifications will be posted to the Public Registry. The City of Yellowknife requested that the YKDFN, NSMA, and the City be given the same notifications as that required to for Board and Inspectors in the Licence.[103] Instead of dictating all potential interested Parties in the Licence conditions, the Board will do its part to ensure all notifications are posted to the Public registry in a timely manner. Likewise, these agreements can be arranged under the Proponent's Engagement Plan.

All requirements for the Annual Water Licence Report are outlined in the *Annual Water Licence Report* condition and Schedule 1, condition 1. The purpose of the Annual Water Licence Report is to provide the Board and all interested parties the opportunity to be annually updated on Project components, monitoring results and activities, and to provide a platform for stakeholders to submit comments, observations, feedback and questions as necessary. This will include comprehensive monitoring reports and the analysis of annual monitoring results identified in Design Plans, the Giant Mine Remediation Project Closure and Reclamation Plan, Site-Wide Management and Monitoring Plans, the SNP, and updates on the Community Based Monitoring Program may also be included. Aquatic Effects Monitoring Program (AEMP) updates and monitoring results will also be provided through Annual Reporting requirements for the GMRP, as identified in Section 5.9, below.

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[102] Miramar Northern Mining Ltd, Con Mine Type A Water Licence MV2017L8-0008, issued January 22, 2019.
[103] See City of Yellowknife Online Review System Draft Water Licence and Land Use Permit, Comment ID 7, 8, 9.

Recommendations for the requirements outlined in Schedule 1, condition 1 received during the Post-EA Information Package review have been included, where possible. Because this is a Remediation Project, the majority of requirements for the Water Licence Annual Report are to provide updates on the progress of all activities approved by the Board through the CRP and/or Design Plans in relation to Closure Objectives and Criteria associated with their successful management as well as any updates with regard to ongoing research that might impact Project plans or schedules. In addition to general Project updates, the GMRP are also required to provide updates, summaries, and analysis of activities and results documented through all monitoring programs identified in the Site-Wide Management and Monitoring Plans (Waste Management and Monitoring Plan, Water Management and Monitoring Plan, Erosion and Sediment Management and Monitoring Plan, Dust Management and Monitoring Plan, Tailings Management and Monitoring Plan, Borrow Materials and Explosives Management and Monitoring Plan, Wildlife and Wildlife Habitat Management and Monitoring Plan, and Arsenic Trioxide Frozen Shell Management and Monitoring Plan). The GMRP must also identify incidence relating to the Spill Contingency Plan, provide a summary of all annual engagement activities, summarize SNP results, summarize inspection reports and recommendations including responses, and provide updates to the Project schedule, site-wide modelling, residual risks, and activities carried out to implement measures and suggestions from EA0809-001.

In its intervention, closing statements and comments on the Draft Water Licence conditions, the City of Yellowknife recommended that the Water Licence Annual Report be submitted for Board approval. In the City's opinion, there is too much time between the public review and Board approval of Design Plans and reporting on the performance of Closure Activities through Performance Assessment Reports for public review and Board approval five or more years later. The City argues that a public review and Board approval process for the Water Licence Annual Report would be the best means for providing parties a voice into the implementation and evaluation of the Project for the duration of the Licence.[104] In addition to this recommendation, the City also expressed concerns with the possible content of the Water Licence Annual Report: " these annual water licence reports are reams and reams of paper generally focusing on data rather than information."[105] Kathy Racher of GMOB suggested that the Annual Report could have a plain language paragraph at the beginning of each section or be structured in a way that allows a narrative discussion of monitoring results compared to predictions and closure goals referring to heavy loads of data neatly compiled in an associated appendix.[106]

Responding to the City of Yellowknife, CIRNAC-GMRP argued in their intervention response that the Annual Water Licence Report would be a communication tool to update parties on activities conducted in the previous year, but would not be a document in which the success of Remediation would be demonstrated, as this would come through Performance Assessment Reports and the Final Closure and Reclamation Report.[107] They further stated in their intervention response that it is unclear what standards the Board would use to determine whether the reporting should be approved. GMRP also suggested during the proceeding that there are other means of communicating on the Project's progress including the Environmental Agreement annual report and other public forums, and that they would keep looking for those opportunities.[108] In response to the Draft Water Licence conditions

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[104] See City of Yellowknife's Closing Statement, dated March 23, 2020.
[105] See Technical Session Transcript, September 13, 2019, pp 163.
[106] See Technical Session Transcript, September 13, 2019, pp 169.
[107] See GMRP Response to Interventions, dated December 2, 2019.
[108] See Technical Session Transcript, September 13, 2019, pp 170.

and in its closing statements, GMRP reiterated their request for the annual Water Licence report, consistent with other Water Licences issued by the Board, not be required for approval.

Water Licence Annual Reports are not typically subject to Board approval. The Annual Report is a submission of monitoring results and activities undertaken during the previous year. There is nothing in the Annual Report that should require Board Approval for moving the Project forward. If Parties review and have concerns regarding the results reported or activities undertaken as reported in the Annual Report, they can be discussed directly with the Proponent or addressed through the Board. Annual Reports, especially for larger Projects such as this, are posted to the Board's registry, are distributed for review and comment, and presented to the Board, even if it is not for approval. Any issues identified can be addressed through a similar process as that with other plans.

Engagement

The Board assesses engagement adequacy of applications through the Board's *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* (Engagement Guidelines),[109] and the Board's *Engagement and Consultation Policy* (Engagement Policy).[110] CIRNAC-GMRP included an Engagement Plan and Engagement Log[111] as part of its Post-EA Information Package and Land Use Permit Application. The Board notes that CIRNAC-GMRP's pre-engagement for the Post-EA Information Package and Land Use Permit Application was determined to be in accordance with the Engagement Guidelines and the Engagement Policy.

During the review for the GMRP Post-EA Information Package and Land Use Permit Application, concerns with the level of community engagement as the Project progresses were identified as a lingering concern. Particularly, concerns with engagement associated with Fisheries Authorizations and perpetual care communications were discussed at length during the public hearing. In response, the Board requires CIRNAC-GMRP to submit for approval, an updated Engagement Plan that responds to some of the concerns identified during the review. Schedule 1, condition 2, referred to in the *Engagement Plan – Revised* condition, is a collection of Board directives that respond to concerns and gaps identified by reviewers. Between commitments made in the Engagement Plan, annual reporting requirements in the Water Licence Annual Report, and requirements to discuss how engagement and Traditional Knowledge have helped to inform Board submissions under the Licence, the Board is confident that the engagement requirements and expectations of affected communities for the life of the authorization are clear.

Opportunities to provide input on the design and implementation of the Project through the Land and Water Board process was supported by Slater Environmental.[112] This process is described in the Engagement Plan and reinforced by conditions throughout this Licence. It was identified, however, that improved linkages between the Engagement Plan and other Project commitments and initiatives (i.e. Perpetual Care Plan, Stress Study, Health Effects Monitoring Program, Socio-Economic Strategy, and Quantitative Risk Assessment) should be made so that there is a clear communication plan for the long-term impacts and risks that will persist during, and remain after, the completion of Active

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[109] See the Board's *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, September 2014.
[110] See the Board's *Engagement and Consultation Policy*, June 1, 2013.
[111] See Giant Mine Remediation Project Engagement Plan, Version 1, January 2019.
[112] Slater Environmental Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 1 and 2.

Remediation and Adaptive Management (Phase 2).[113,114] The Perpetual Care Plan, for example, is a requirement under the *Environmental Agreement*[115] but the Plan itself could be provided to the public through the Board's Public Registry. Once the Perpetual Care Plan is complete, CIRNAC-GMRP will be required to update the Engagement Plan as necessary, as stipulated by the *Annual Review* and/or the *Revisions* conditions. Updates to the Engagement Plan will be provided for review prior to Board consideration and annual updates on engagement efforts will be provided for review annually through the Water Licence Annual Report. The Water Licence Annual Report requires a summary of all engagement activities completed in accordance with the Engagement Plan. Long-term risk communication and perpetual care communications are included in the Engagement Plan and should therefore be reported on through the Water Licence Annual Report.

Similarly, the YKDFN have requested that the Board ensure CIRNAC-GMRP commit to communicating the results of the Health Effects Monitoring Program (HEMP) under the CRP.[116] The development and communication of results under the HEMP is required by measure 9 of EA0809-001 (see Appendix 2). The HEMP was established in 2017 and the reporting of baseline results measured in 2017–2018 began in 2019. The program will continue to monitor exposure during Remediation (children in 5 years, adults in 10 years). In response to YKDFN concerns, CIRNAC-GMRP indicated that an engagement and communications plan is in place for the HEMP, including a community coordinator to ensure participants and future participants and community members are well informed of all aspects of the program.[117] The Board notes that communications on the HEMP results are identified in the GMRP Engagement Plan. The Board agrees with CIRNAC-GMRP and understands measure 9 to require the HEMP be completed and reported independently of the CRP and regulatory processes under its jurisdiction. As a result, reporting of the HEMP has not been included under CRP requirements. The Board notes, however, that results of HEMP monitoring should be reported in the Annual Water Licence Reports. The Water Licence Annual Report requires a summary of all engagement activities completed in accordance with the Engagement Plan. HEMP communications are included in the Engagement Plan and should therefore be reported on through the Water Licence Annual Report.

Through interventions and during the public hearing, the YKDFN expressed its concern over the progress of the Stress Study being undertaken in response to measure 10 of EA0809-001. Measure 10 requires the Project to commission a human health risk assessment, which would include "indirect effects of potential exposures to arsenic on wellness, including stress effects" and "identify, design and implement appropriate design improvements and identify appropriate management responses to avoid or reduce the severity of any predicted unacceptable health risks."[118] The YKDFN requested the Board require the Project to complete the Stress Study in a timely manner so that it can better inform future decisions to avoid or reduce the severity of any predicted unacceptable risk.[119] In response, the GMRP provided the status of the Stress Study including the efforts it is making to ensure the Stress Study is designed with the YKDFN so that "holistic, community and cultural perspectives are appropriately considered." The Stress Study is planned to begin in 2020 and the GMRP have committed that any improvements for communication efforts identified as a result of the study will

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[113] Slater Environmental Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 4 and 6.
[114] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 5.
[115] See the Giant Mine Remediation Project Environmental Agreement, 2015
[116] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 2
[117] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 2.
[118] See MVEIRB Report of Environmental Assessment (EA0809-001), June 20, 2013.
[119] See YKDFN Intervention, dated November 7, 2019.

be incorporated into the Engagement Plan and/or Site-Wide Management and Monitoring Plans if applicable.[120] The Board has included requirements for the GMRP to report the progress and results of the Stress Study in the Water Licence Annual Report.

Slater Environmental suggested that pre-engagement efforts may be required for the development of Site-Wide Management and Monitoring Plan updates, Design Plans, and Construction Plans and suggested that engagement triggers for these plans be identified in the Engagement Plan. The YKDFN also expressed its desire for assured pre-engagement efforts whenever Project updates or changes are anticipated.[121] CIRNAC-GMRP responded to say that the Project continually assesses where engagement is required, as identified in its Engagement Plan.[122] The Board agrees with the reviewers and believes that engagement specific to Project updates should be done and explicitly identified. The Board has included Schedules for the Annual Water Licence Report, Site-Wide Management and Monitoring Plans, Design Plans, Construction Plans, and Performance Assessment Reports (PARs) that require the GMRP to provide summaries of how engagement efforts have informed Plan development and/or updates.

The Site-Wide Management and Monitoring Plans submitted with the Applications, in general, are being interim approved, with the understanding that all Plans will be resubmitted, for approval, prior to the initiation of Active Remediation and Adaptive Management (Phase 2). Upon resubmission, CIRNAC-GMRP will be required to meet the schedules for each Plan identified in the Licence, as applicable. The new *Identify Traditional Knowledge* condition has also been included in the GMRP Licence to reflect the significance of ongoing engagement for communities regarding the Project's progress.

During technical sessions, the YKDFN expressed its desire for CIRNAC-GMRP to re-evaluate its methods of communications under the Engagement Plan to ensure members of the community are informed about the risks at and around the Giant Mine site. CIRNAC-GMRP committed to working with the YKDFN through the Community-Based Monitoring Program and through other avenues to improve its communications with the community.[123] Any updates to communication and engagement efforts for the GMRP should be included in updates to the Engagement Plan. In accordance with the *Engagement Plan - Revised* condition, the first update is required within 90 days of Licence issuance. If the YKDFN have continued concerns about the modes of engagement proposed in that Plan, it would be best addressed at the time of review. Annual reviews are required thereafter, as described above for the *Annual Review* condition and any proposed changes will be distributed for review and approval. During the public review of the Draft Permit and Licence conditions, CIRNAC-GMRP identified potential conflicts in the submission dates for the revised Engagement Plan, which is required under both authorizations. The Licence requires resubmission within 90 days of issuance. The Permit requires resubmission within 6 months of Issuance. GMRP is correct, the Permit will come into effect before the Licence - which will require Ministerial approval. The timelines proposed, however, should work. The Minister has up to 90 days to make a decision on the Licence. This will leave GMRP with at least 90 days, as required by the Licence, to resubmit the Engagement Plan. The 90-day submission timeline was increased from 60 days in response to CIRNAC-GMRP recommendations.

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[120] See GMRP Response to Interventions, dated December 2, 2019.
[121] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 6.
[122] Slater Environmental Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 11.
[123] See Technical Session Transcripts July 10, 2019, pp 30-43.

During the online review of the Post-EA Information Package and Land Use Permit Application, the YKDFN identified its desire for the Board to withhold issuance of the Licence and Permit until certain socio-economic agreements, such as a Community Benefits Plan, are completed.[124] The NSMA also requested that the scope of the Engagement Plan be expanded to include a comprehensive monitoring program for socio-economic conditions and outcomes.[125] It is not within the Board's jurisdiction to require such agreements be in place and the Board's Engagement Guidelines do not require Proponents to report extensively on socio-economic engagement efforts. The Board notes that CIRNAC-GMRP has committed to developing and implementing a socio-economic strategy to ensure Northerners and Indigenous people are positioned to benefit from opportunities that result from the Remediation of the Giant Mine site, and acknowledge the establishment of both a Socio-Economic Working Group and Socio-Economic Advisory Body that are set to start developing an Action Plan to implement the socio-economic strategy and coordinate regional socio-economic programs to maximize opportunities on the Giant Mine site.[126] The Board also notes the ongoing funding agreements, including annual contribution agreements, that support community involvement in the Project on several different levels. CIRNAC-GMRP have provided the YKDFN with years of funding to support training and communications and have committed to the development of a Community Based Monitoring Program. As requested by the YKDFN, updates on the development and implementation of the Community Based Monitoring Program, a Project commitment identified in the Engagement Plan, will be required as part of the Water Licence Annual Report.[127]

As implied above, the Board has interim approved the GMRP Engagement Plan since it meets the Board's Engagement and Consultation Policy and Engagement Guidelines and sufficiently reflects the scope of the proposed activities. An updated Engagement Plan is expected to be submitted within 90 days of issuance. The Board expects CIRNAC-GMRP to work with interested parties when updating the Engagement Plan, to ensure their concerns and recommendations are addressed.

The remaining conditions in Part B refer to requirements to provide information and updates to the Board and/or the Inspector. This includes: Project schedule updates; notifications for the commencement of activities, which should include the initiation of all Remediation activities for the GMRP in general, and by Project Component following approval of the associated Design Plan; notification of any instances of non-compliance with Licence conditions and/or Board directives; and notification of any Inspector-authorized changes allowed by Licence conditions. These standard conditions ensure the Board and reviewers are kept informed of the status of ongoing Project activities. All notifications will be posted to the Public Registry.

5.4 Part C: Conditions Applying to Water Use

Part C of the Licence contains conditions related to Water Use for the GMRP. These are consistent with standard conditions found in previous Licences issued by the Board. Fresh Water has not been pumped to the Giant Mine site since production ceased in 2004 and Water Use is not a major component of Remediation activities at the Giant Mine site; however, it has been acknowledged that fresh Water will be required from Yellowknife Bay (Great Slave Lake) to support some Closure Activities including work force needs, dust suppression, paste backfill mix, crushing, quarrying, and

[124] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 3.
[125] NSMA Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 2.
[126] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 3.
[127] YKDFN Online Review System Review 3 of 7 (Standard Management Plans), Comment ID 3 and 4.

contaminated soil Remediation (soil washing). Potable Water will continue to be trucked to site.[128] The *Wastewater Use* condition allows for the use of Wastewater through Board approvals of the Water Management and Monitoring Plan or the Dust Management and Monitoring Plan. The potential uses of Wastewater that have been identified include the making of paste backfill and for dust suppression. As identified by CIRNAC-GMRP in its review of the Draft Licence conditions, untreated Wastewater may be used for dust suppression within the TCAs since Contact Water from these structures will be contained and collected for treatment prior to Discharge. Since general site Runoff may not be captured, the quality of the Water used for dust suppression beyond the TCAs must meet that outlined in Part F of the Licence and must be confirmed and approved by the Inspector prior to use.

Fresh Water to be obtained from Yellowknife Bay during Remediation activities is conservatively estimated by CIRNAC-GMRP as up to 1,200 cubic metres per day (m^3/day) for a total of 438,000 m^3/year. This daily use volume is a current estimate of daily maximums required during peak Remediation activities during the open Water season and should not actually be required in such quantity for the majority of the Project duration. Due to CIRNAC-GMRP's comments on the Draft Licence, and similar to other licences issued recently by the Board, only the annual maximum withdrawal limit was included in the *Water Source and Maximum Withdrawal Condition.* This proposed maximum annual withdrawal volume constitutes less than 1% of the total open Water volume of Yellowknife Bay.[129]

Water Use was not identified as a subject of concern by reviewers during the course of the GMRP review and the Board, has therefore, allowed for up to the maximum Water Use needs in the *Water Source Maximum Volume* condition. The Project has committed to place and design the intake to follow the DFO *Freshwater Intake End of Pipe Fish Screen Guideline* (1995) and be installed upon approval from DFO.

5.5 Part D: Conditions Applying to Closure and Reclamation and Schedule 2

Part D and Schedule 2 of the Licence contain conditions applying to Closure and Reclamation specific to the Giant Mine site. The GMRP is, as its name implies, a Remediation project. The Board notes that CIRNAC-GMRP committed to completing its Closure and Reclamation Plan (CRP) in accordance with the Board's *Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories* (Closure Guidelines).[130] CIRNAC-GMRP included the GMRP CRP in the Post-EA Information Package and Land Use Permit Application and requested that the Plan, including all Closure Objectives, and the majority of Closure Criteria be approved at Licence issuance.[131] Approval of a Final CRP at Licence issuance is not the standard approach for the Board and is not the process described in the Board's Closure Guidelines. Nevertheless, since the GMRP is a Remediation Project, it is not implausible. The CRP defines the scope of the Project but, as reviewers point out, specific details on some Closure Activities, design, Objectives, Criteria, and associated adaptive management actions are incomplete.[132]

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[128] See GMRP Water Management and Monitoring Plan, dated January 2019
[129] See CIRNAC-GMRP Type A Water Licence Application Form Supplementary Information, dated March 2019.
[130] See *MVLWB/AANDC Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories*, November 2013.
[131] See Technical Session Transcripts July 9, 2019, pp 74.
[132] See Technical Session Transcripts July 9, 2019, pp 76.

It became evident during the technical sessions held in July 2019 that parties were not comfortable with Closure Criteria, as presented, and were not prepared to support approval of the CRP. In response, Board staff organized a two-day Closure Criteria Workshop that was held immediately before the second technical sessions in September 2019.[133] The workshop provided CIRNAC-GMRP the opportunity to present each proposed Closure Criteria to all parties for detailed discussion. Outcomes of the Workshop included an updated CRP Appendix 5.0A[134] that better identified what criteria CIRNAC-GMRP are requesting for immediate approval and which criteria will be further developed through engineering design details, *Fisheries Act* authorization consultations, or further Reclamation Research. The updated Appendix 5.0A also identified where changes to Closure Objectives, Criteria and Activities have been made to reflect comments and concerns addressed though the review process to that point. The Closure Criteria Workshop also provided an opportunity for all parties to discuss the proposed process for approving, reviewing and updating the CRP through the submission of Design Plans and Construction Plans specific to each 'Project Component'. Confusion regarding the process for review of CRP refinements and subsequent updates to Site-Wide Management and Monitoring Plans was first identified on the ORS and expressed again during the technical sessions. Concerns with the process included assurance for ongoing public review and the integration of individual components into a unified vision for closure.[135,136,137]

Due to the nature of the Project, the CRP is essentially the updated Project description. CIRNAC-GMRP expressed its views that the CRP needed to be approved at issuance in order to initiate Project activities. As requested, the Board considered, in detail, all aspects of the CRP for immediate approval. The Board notes concerns identified and discussed during technical sessions, the Closure Criteria Workshop and the public hearings and note that some criteria, identified as 'in development,' and engineering details will be further developed and provided for review and approval through the proposed Design Plan process. The Board has decided that the CRP can be considered interim approved for the Existing Condition (Phase 1) period but require its re-submission within six months of Licence issuance. The Board requires the CRP to be re-submitted for confirmation of conformity from Board staff prior to GMRP entering Active Remediation and Adaptive Management (Phase 2).

The CRP should be revised to reflect updates and edits identified during the public review. The changes required are provided in detail in Schedule 2, condition 1 of the Licence. These requirements reflect commitments made by the GMRP during the process. The *Closure and Reclamation Plan – Revised* condition reflects the requirement to resubmit the CRP. The Board notes that additional information required from CIRNAC-GMRP to better articulate the Project's vision for closure will come through the submission of Design Plans which will be subject to public review and Board approval.

In order to ensure the main CRP document is updated on a regular basis to reflect Project changes introduced, reviewed, and approved through the Design Plan and Construction Plan phases, the Board has also included the *Closure and Reclamation Plan – Annual Update* condition. During review of the Draft Licence conditions, CIRNAC-GMRP recommended that the Board require only "an updated version of the Closure Objectives and Closure Criteria each year to reflect revised and new criteria approved through the Design Plans."[138] The Board's goal is to have one living CRP document that

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[133] See Closure Criteria Workshop Notes.
[134] See CIRNAC-GMRP Response to IRs, dated October 10, 2019
[135] See City of Yellowknife Intervention, dated November 7, 2019.
[136] See GMOB Intervention, dated November 7, 2019.
[137] See YKDFN Intervention, dated November 7, 2019.
[138] See GMRP Comments on Draft Water Licence Conditions, Comment ID#78.

evolves with the Project without adding additional review burden. The format of the CRP update and resubmission is at the discretion of CIRNAC-GMRP, but the Board believes it is important that the CRP, as the Plan for the successful closure of the Giant Mine site, accurately reflect up-to-date Project implementation plans in one document. Updated Closure and Reclamation information that had been subject to review and approval through the Design Plans will not require additional review and approval when merged with the CRP.

During technical sessions, Bill Slater questioned CIRNAC-GMRP about the lack of end land use objectives in the CRP. The YKDFN expressed similar concerns regarding end land use plans for the Townsite. These concerns were echoed through the parties' interventions (City of Yellowknife,[139] Slater Environmental[140]). In response, CIRNAC-GMRP pointed to the physical and chemical stability objectives and soil quality guideline criteria presented as the drivers for end land use for the Project. Final land use following the completion of Closure and Reclamation will not be for CIRNAC-GMRP to decide.[141,142]

> *Land-use planning is outside of the applicant's authority. Regardless of authority, the remediation decisions made by the GMRP inherently result in land-use constraints being established for the site. Constraints on the future land-use must be expected for such a large and extensive contaminated site. The Project can assist stakeholders, as well as GNWT-Lands in future land-use planning exercises.*[143]

The responsibility of defining future land use opportunities or constraints rests with the landowner(s), not CIRNAC-GMRP or the Board. Final site conditions for the closure of Giant Mine site components are set through the approval of the CRP and Design Plans and will be considered by the Board through the submission of PARs. PARs will be required to demonstrate that monitoring data meet Closure Criteria approved through the CRP and/or relevant Design Plans, and that conditions identified have been, and should continue to be, met.

It is likely that near the end of the Active Remediation and Adaptive Management (Phase 2), CIRNAC-GMRP will begin to better understand what Post-Closure Monitoring will be required on-site. The *Post-Closure Monitoring and Maintenance Plan – Table of Contents* condition has been included in this Licence in anticipation of the move from Active Remediation and Adaptive Management (Phase 2) to Post-Closure Monitoring and Maintenance (Phase 3). At this time, it is unclear what scale of post-closure monitoring will be appropriate for all components of the GMRP. During the technical sessions, CIRNAC-GMRP and parties acknowledged that there was a gap in understanding for monitoring required at the Giant Mine site for the Post-Closure period. During the technical sessions, Board staff asked about the usefulness of including an Adaptive Management Plan as a requirement of the Licence. CIRNAC-GMRP responded with the suggestion that the component-specific Design Plans and Post-Closure Monitoring and Maintenance Plan would address those gaps as the Project advances its design.[144] In response, Kathy Racher of GMOB suggested that CIRNAC-GMRP could, at a later date, provide a proposed table of contents for the Post-Closure Monitoring and Maintenance Plan.[145] In response to the lack of clarity regarding the Post-Closure Monitoring and Maintenance Phase (Phase

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[139] See City of Yellowknife Intervention, dated November 7, 2019.
[140] See Slater Environmental Intervention, dated November 14, 2019.
[141] See Technical Session Transcripts July 9, 2019, pp 183-185.
[142] See Technical Session Transcripts July 9, 2019, pp 212.
[143] See GMRP Response to Interventions, dated December 2, 2019.
[144] See Technical Session Transcripts July 9, 2019, pp 116-118.
[145] See Technical Session Transcripts July 9, 2019, pp 118-119.

3), the Board has decided to limit the scope of this Licence to Phases 1 and 2 (as discussed in Section 5.2). Nevertheless, the goal is to move the Project, under new authorizations, into a Post-Closure scenario. Information from the Quantitative Risk Assessment (QRA)[146] and data gathered throughout Phases 1 and 2 can be used to inform the Post-Closure Monitoring and Maintenance Plan, which will be a major component of a Post-Closure Licence and/or Permit Application. The submission of a table of contents prior to the end of this authorization will provide the Board and reviewers plenty of time to review and revise the content expected to be presented by CIRNAC-GMRP to support its transition into Post-Closure.

In its comments on the Draft Licence conditions, CIRNAC-GMRP suggested that it could submit the entire Post-Closure Monitoring and Maintenance Plan with the first Closure and Reclamation Completion Report to document approved post-Construction monitoring and maintenance. This may be a reflection of CIRNAC-GMRP's desire to avoid updating the CRP with this information on an annual basis. The Board understands the reasoning behind the recommendation, however, the Board has also decided that the scope of the Licence covers only the Existing Condition (Phase 1) and Active Remediation and Adaptive Management (Phase 2) of the GMRP, as described in the CRP and Updated Project Description provided with the Post-EA Information Package. It would not be appropriate for the Board to consider approval of a Post-Closure Monitoring and Maintenance (Phase 3) Plan during the life of this authorization. The Board notes that post-Construction monitoring carried out during the adaptive management phase is not the same as Post-Closure monitoring, identified as Phase 3 by CIRNAC-GMRP. All monitoring for Active Remediation and Adaptive Management (Phase 2) is to be documented in the CRP and Design Plans, based on the requirements for the *Closure and Reclamation Plan – Annual Update* condition, described above.

In its intervention, GMOB recommended that the Post-Closure Monitoring and Maintenance Plan Table of Contents be prepared for review by 2025, following the anticipated completion of the Perpetual Care Plan, which, in GMOB's opinion, would greatly inform the Post-Closure Monitoring and Maintenance Plan.[147] CIRNAC-GMRP responded in support of the GMOB recommendation.[148] During the public hearing, Board staff asked the Project team about an appropriate development-related trigger for the submission of the Post-Closure Monitoring and Maintenance Plan Table of Contents. CIRNAC-GMRP suggested that the contents of this document could be best informed following the submission of all Project Component Design Plans.[149] The *Post-Closure Monitoring and Maintenance Plan – Table of Contents* condition requires CIRNAC-GMRP to submit its proposed table of contents and a draft schedule for the Post-Closure Monitoring and Maintenance Plan within one year of submitting its final Design Plan. Development-related triggers are preferred to specific dates in the event of unexpected Project delays. This timeline should provide the Project ample development time to complete the Perpetual Care Plan and ensure a public review process is established long before application of authorizations for the implementation of Post-Closure Monitoring and Maintenance (Phase 3).

During technical sessions, the City of Yellowknife expressed concerns that the Perpetual Care Plan, a requirement under the *Environmental Agreement*, was not being submitted for review and approval under the Board's process. As Tony Brown of GMOB added, the Giant Mine Remediation Project is "not just a closure project. It's a perpetual care project that goes on at least for a hundred years and

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[146] See Technical Session Transcripts July 9, 2019, pp 129.
[147] See GMOB Intervention, dated November 7, 2019
[148] See GMRP Response to Interventions, dated December 2, 2019.
[149] See public hearing transcript – January 21, 2020, pp 62.

potentially much longer… [and] there would need to be some form of teeth built into that stage of the process… [so that] you ensure that performance continues."[150] In response, CIRNAC-GMRP suggested that the Post-Closure Monitoring and Maintenance Plan would provide the details of planned monitoring that would be enforceable from the Perpetual Care Plan. The results of that monitoring, demonstrating the relative success of closure efforts to meet Closure Objectives and Criteria, would be provided again for review and approval through the PARs. CIRNAC-GMRP, nevertheless, committed to providing the Perpetual Care Plan as an appendix to the Post-Closure Monitoring and Maintenance Plan. This commitment is reflected in the *Post-Closure Monitoring and Maintenance Plan – Table of Contents* condition.

The *Closure and Reclamation Completion Report*, *Final Closure and Reclamation Report*, and *Performance Assessment Report* conditions outline reporting requirements for CIRNAC-GMRP following Active Remediation. CIRNAC-GMRP have proposed to submit Closure and Reclamation Completion Reports for each Project Component identified in the CRP. The requirements for Closure and Reclamation Completion Reports are outlined in the Board's Closure Guidelines and elaborated upon in Schedule 2, condition 2. The general purpose of these reports are to provide details, figures and photos of the final reclamation work; an explanation of any work that deviated from the approved Design and/or Construction Plan(s); an inventory of infrastructure removed and remaining; and a description of any ongoing monitoring requirements. The report should also provide a preliminary assessment on the achievement, or lack thereof, of appropriate Closure Objectives and Criteria.[151] The Closure and Reclamation Completion Reports are not for Board approval since they merely provide an updated description of existing conditions at the site. The Final Closure and Reclamation Report will bring all the Closure and Reclamation Completion Reports together in one final report that should demonstrate how the whole site has been successfully remediated (under Phase 2).[152] This report will signal the end of 'Active Remediation'.

The requirements for the PARs are also outlined in the Board's Closure Guidelines and elaborated upon in Schedule 2, condition 3. The general purpose of the PAR is to provide a detailed comparison of conditions at the site against all Closure Objectives and Closure Criteria identified and approved through the CRP and Design Plans. They should provide updated photographs of site components, updated human and wildlife health and safety conditions, descriptions of engagement and community participation in site monitoring, and maintenance and management activities. CIRNAC-GMRP have proposed to submit one PAR to address all Project Components and expect that it will be required to be resubmitted until all Project Components consistently achieve Closure Criteria approved through the CRP and Design Plans. PARs will be submitted for Board approval since they will be the mechanism for CIRNAC-GMRP to present to the Board argument and evidence to support the reduction or elimination of certain adaptive management and post-closure monitoring activities when it is demonstrated that Closure Objectives and Criteria are being met. The first PAR should be completed upon submission of the Final Closure and Reclamation Report. When environmental conditions demonstrate that some Closure Objectives have been achieved, such as Closure Objectives requiring short term monitoring (e.g., five years) and those related to general site stability and Construction-related issues, updated PARs should be submitted to the Board.[153] Additional PARs should be

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[150] See technical session transcripts July 9, 2019, pp 143-144.
[151] See *MVLWB/AANDC Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories*, November 2013.
[152] See Technical Session Transcripts September 13, 2019, pp 149-151.
[153] See *MVLWB/AANDC Guidelines for the Closure and Reclamation of Advances Mineral Exploration and Mine Sites in the Northwest Territories*, November 2013.

submitted at least every five years thereafter. It is likely that the submissions of most PARs may not occur until the Post-Closure Monitoring and Maintenance Phase (Phase 3).

As identified by CIRNAC-GMRP in its comments on the Draft Licence conditions, any changes to monitoring proposed in Performance Assessment Reports, following Active Remediation and Adaptive Management (Phase 2) will be more appropriately reflected in the Post-Closure Monitoring and Maintenance Plan than in the CRP. Changes to monitoring or adaptive management approaches approved by the Board through PARs will likely also prompt updates to the Site-Wide Management and Monitoring Plans.[154] The Draft Licence had an *Update Plans* condition requiring these updates, however, it has since been removed. As mentioned above, the submission and review of most PARs will extend from Active Remediation and Adaptive Management (Phase 2) into Post-Closure Monitoring and Maintenance (Phase 3). Any monitoring requirements identified in the PARs will need to be used to inform the Post-Closure Monitoring and Maintenance Plan.

Schedule 2, conditions 1, 2 and 3 are attached to the Licence to identify and build upon the submission requirements outlined in the Board's Closure Guidelines for the CRP, Closure and Reclamation Completion Reports, and the PARs. There is no schedule associated specifically with the Final Closure and Reclamation Plan since it is understood to be a collection of Reclamation Completion Reports for all closure components previously submitted.

The Board is of the opinion that the submission requirements laid out in Part D of the Licence will provide an accurate and advancing picture of the closure plans and progress of Remediation at the Giant Mine site as the Project moves through Active Remediation to adaptive management. It provides a method for CIRNAC-GMRP to propose changes in monitoring that respond to site-specific conditions and provides a mechanism for reviewers to provide comments and recommendations to CIRNAC-GMRP as the Project progresses.

5.6 Part E: Conditions Applying to Construction and Schedule 3

Part E of the Licence contains conditions applying to Construction activities for the GMRP and is largely consistent with standard conditions found in previous Licences issued by the Board. Part E, condition 1 sets out the objectives for Construction at the GMRP. This condition is consistent with the principles of objective-based regulation: it essentially defines the objectives of any Waste-controlling structure. This condition is standard for Licences issued by the Board and reminds the Licensee of the need to manage Water and Waste with the goal of minimizing impacts on the receiving environment.

The *Dams – General* and *Engineered Structures – General* conditions ensure that Engineered Structures are built and maintained to appropriate standards. Conditions in Part F of the Licence, discussed in Section 5.7, below, provide additional guidance on requirements to complete Dam Safety Reviews, geotechnical inspections and associated reporting. The *Dams – Engineer of Record*, *Dam Classification* and *Quantifiable Performance Objectives* conditions are new conditions meant to reflect recent improvements in regulatory practices and to ensure the appropriate level of regulatory oversight for Tailings Dams and is consistent with CDA Guideline requirements in other jurisdictions. The correct Dam Classification is critical for ensuring the appropriate level of Dam safety oversight. Reporting changes to the classification is important to alert the Board to the potential need for revisions to Licence submissions or an amendment to Licence conditions. Any changes to the Dam Class must be reported in the Geotechnical Inspection Report required by the *Annual Geotechnical*

[154] See CIRNAC-GMRP Closure Criteria Workshop Presentation, September 9 and 10, 2019.

Inspections condition in Part F. Quantifiable performance objectives are required to be identified in the Tailings Design Plan and Tailings Management and Monitoring Plan. The annual review reporting required by the *Quantifiable Performance Objectives* condition is required in the Water Licence Annual Report. Knowing the quantifiable performance objectives will be a useful tool for the Inspector and will help with the review of the Tailings Management and Monitoring Plan.

The definition of Project Component in the Licence reflects discussions with CIRNAC-GMRP during the technical sessions and the Closure Criteria Workshop identifying components of the Project in the context of Design Plans and Completion Reports. The term refers to all major parts of the GMRP Closure Activities described in the Updated Project Description and the CRP. It includes all works associated with: 1) underground mine workings; 2) freeze/Arsenic Trioxide Frozen Shell; 3) open pit mine workings; 4) contaminated soils and sediments, 5) Baker Creek and surface Water drainage, 6) Tailings Containment Areas; 7) borrow/quarry material; 8) Water Treatment Plant and outfall systems; 9) buildings and site infrastructure; 10) Non-Hazardous Waste Landfill; 11) contamination downgradient from Dam 3; and 12) passive/semi-passive wetland treatment.

Remedial activities proposed for the GMRP require a substantial amount of clean rockfill that will be sourced either onsite or offsite. During the online review and at the technical sessions, reviewers expressed concerns about the availability of clean source rock material to satisfy the needs of the Project. The *Construction Material – Geochemical Criteria*, *Construction Records*, and *Geochemical Records* conditions are standard conditions that address the need to use appropriate Construction material in the Remediation and Construction of closure components. This includes the need to test, report, and confirm the geochemical characteristics of rock used for Construction. All rock used for onsite Construction will be required to meet geochemical criteria approved in the Borrow Materials and Explosives Management Plan, which is explained further in Section 5.7, below. The Board notes that some Construction materials, such as contaminated soils, may not meet the standard geochemical criteria. In response to Draft Licence conditions, CIRNAC-GMRP wanted to make sure that they would be authorized to use some lower quality material for Construction if and when it will be covered by higher quality material.[155] The proposed use of materials that diverge from the standard geochemical criteria can be included in Design Plans that will be reviewed and considered for approval. A reference to the relevant Design Plans has been added to the standard condition to address this concern. To be clear, the *Construction Material – Geochemical Criteria* condition does apply to the management and deposit of Waste into these structures. The *Construction Records* and *Geochemical Records* conditions also require CIRNAC-GMRP to keep records of all materials used for Construction on site so they can be referenced and reviewed by the Board, an Inspector, or reviewers available whenever necessary. This should not be onerous since annual reporting of all Construction materials and geochemical testing results are also required for the Water Licence Annual Report.

Trending away from the standard conditions, this Licence requires separate submissions for *Design Plans* and *Construction Plans*. This arrangement reflects the need for CIRNAC-GMRP to first clarify specific Design Plans for each Project Component before proceeding with the tendering process to complete the work described and approved by the Board. The contractors hired to complete the work will then work with CIRNAC-GMRP to complete the Construction Plan(s) based on the approved Design Plan(s).[156] Since there are no direct mechanisms in the Licence conditions for reporting the results or conclusions from Reclamation Research Plans (RRPs), Schedule 3, condition 1 requires any

[155] See CIRNAC-GIANT Online Review System Draft Water Licence and Land Use Permit, Comment ID 86.
[156] See Technical Session Transcript, September 11, 2019, pp. 81.

design-related conclusions from RRPs or other investigations that CIRNAC-GMRP want to apply to Project implementation can be presented in the appropriate Design Plan(s).

One Design Plan should be developed for each Project Component. The Design Plans will provide reviewers additional Closure Activity details that have been finalized through research, engineering, or through consultations with DFO. Design Plans will be distributed for review and, if appropriate, approved by the Board and are intended to act as component-specific updates to the CRP. One or more Construction Plans will be developed under each Design Plan to demonstrate how Construction will achieve the approved design and meet requirements laid out in the Site-Wide Monitoring and Management Plans and include updated details on specific Construction designs and sequencing, if applicable. Construction Plans are not intended to provide new information requiring Board approval, but to demonstrate how activities for completing component-specific Construction will meet previously approved management and monitoring commitments. Together, the submission of the Design Plans and Construction Plans will give the Board and Reviewers the opportunity to ensure that appropriate monitoring activities are in place prior to, during, and following Construction. Changes to monitoring approved by the Board through Design Plans may prompt updates to the Site-Wide Monitoring and Management Plans and will inform the Post-Closure Monitoring and Maintenance Plan.[157] The requirement to update existing Plans to reflect Project changes is made explicit in the *Update Plans* condition.

In line with requirements of the associated Permit, MV2019X0007, the *Notification – Construction* condition requires CIRNAC-GMRP to notify the Board and the Inspectors that Construction activities will soon occur. This provides an opportunity to the Inspector to plan site visits. If this notification is provided while awaiting the Board's decision regarding the Design Plan(s) and/or Construction Plan(s) for a Project Component, Board approval must still be acquired prior to commencing Construction. The *Construct as Designed* condition reinforces this requirement. This initial contact is important to establish lines of regular communication between the Licensee, Inspector, and Board, and to facilitate site inspections.

Schedule 3, conditions 1 and 2 outline the requirements for completing Design Plans including the refinement of Closure Criteria and post-construction monitoring details for each Project Component. In some cases, detailed descriptions of the Project Component may already be provided in the CRP. When this is the case, CIRNAC-GMRP may provide brief summaries to provide context and include clear references, where appropriate, to reduce overlap. Schedule 3, condition 2 lays out component-specific requirements CIRNAC-GMRP must consider, largely identified through the Board's review process. Schedule 3, condition 3 outlines the requirements for completing Construction Plans. The schedules reflect plan requirements originally proposed by CIRNAC-GMRP in its Post-EA Information Package and comments received by the Board through the review process.

Quantitative Risk Assessment (QRA)

One of the additional Design Plan requirements includes the need to discuss how the proposed design addresses risk identified through the QRA. During technical sessions, Jason Snaggs for the YKDFN identified the need for risk management plans associated with design and Construction activities to be communicated. CIRNAC-GMRP responded that, under the requirements of EA0809-001 measure 5, the QRA is underway and will be used to inform Design Plans, Construction Plans, and Site-Wide

[157] See CIRNAC-GMRP Closure Criteria Workshop Presentation, September 9 and 10, 2019.

Management and Monitoring Plans, post closure.[158] On June 4, 2020, CIRNAC-GMRP submitted the QRA to the Board.[159] This need to communicate risk and the corresponding monitoring plan to assess those risks as identified in the QRA was identified again by GMOB in their interventions:

> *The water licence should require the Design Plans and the site-wide Management and Monitoring Plans to contain a section describing how relevant QRA results have been incorporated/addressed.*
>
> *The water licence should require the CRP to include a section summarizing the results of the QRA as a whole and describing how relevant results have or will be incorporated into the Design Plans and Management and Monitoring Plans. Alternatively, the water licence could require a standalone report summarizing the QRA results; in this latter case, the report would not need to be for Board approval.* [160]

In response to concerns related to risk and the communication of risk by CIRNAC-GMRP, requirements for reference and discussion of QRA results were included in the schedules of Draft Licence conditions that required the submission of the revised CRP, Design Plans, some Site-Wide Management and Monitoring Plans, and the Water Licence Annual Report. GMOB supported these requirements; however, CIRNAC-GMRP noted that not all references to the QRA in the Draft Licence conditions and Schedules were appropriate. CIRNAC-GMRP agreed that Design Plans should "reflect relevant results of the QRA, as applicable". However, with respect to the respective Draft Licence requirements of each Site Wide Management and Monitoring Plan to include "an explanation of how proposed monitoring will assess the risks and the Quantitative Risk Assessment", CIRNAC-GMRP noted that the monitoring "will be operational to mitigate any operational risks. Monitoring to evaluate residual risk will be proposed in the Design Plans and will be described in the Post-Closure Monitoring and Maintenance Plan. The Quantitative Risk Assessment only assessed risk post-closure." For this reason, requirements to explain how proposed monitoring will assess risks identified in the QRA in some Site-Wide Management and Plans were not included in the Licence. With respect to the requirement for CIRNAC-GMRP to annually report on engagement activities related to external initiatives (Schedule 1, condition 1), CIRNAC-GMRP recommended removal of the QRA from this obligation as post-issuance, no specific engagement on the QRA will take place. However, CIRNAC-GMRP previously indicated to Board staff that after the QRA was submitted to the Board in May 2020, further engagement on the QRA would be conducted.[161] The Board chose to require CIRNAC-GMRP to report engagement activities on the QRA in the Annual Report but notes that if no specific engagement on the QRA is conducted in any given year, there is no reporting obligation. Engagement Plan updates with respect to the QRA are also included in the Licence.

Possible Constructed Wetlands

If results of the RRP for the Construction of wetlands upstream of Baker Creek recommend that inclusion of constructed wetlands are beneficial for the Project, Design Plan(s) for constructed wetlands will be required. CIRNAC-GMRP included an RRP for Passive and Semi-passive Treatment Systems as an appendix to the CRP with its Post-EA Information Package and Land Use Permit Application, however this did not include plans for design, management and monitoring of possible

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[158] See Technical Session Transcript, July 9, 2019, pp. 127-130.
[159] See Quantitative Risk Assessment, Version 1.0, dated May 28, 2020.
[160] See GMOB Intervention, dated November 7, 2019.
[161] See Emails Re QRA Submission, dated May 6, 2020.

constructed wetlands.[162] CIRNAC-GMRP did not explicitly propose requirements for constructed wetlands in the Draft Water Licence submitted as part of the Post-EA Information Package and Type A Land Use Permit Application.

As mentioned, constructed wetland development is subject to ongoing Reclamation Research, and is therefore not a guaranteed part of the Project. As such, no Closure Objectives or Closure Criteria presented in the CRP are explicitly linked to future wetland development and/or performance. Annual updates on the progress and findings from RRPs are required to be reported in the Water Licence Annual Report. If research concludes that constructed wetlands are not required or recommended, a Design Plan for constructed wetlands will not be required under MV2007L8-0031. Closure Objectives and Closure Criteria may be presented for review and approval through the Design Plan(s) associated with the development of the constructed wetlands, and should meet the requirements of Schedule 3, condition 1, and Schedule 3, condition 2, 9. The Design Plan(s) will be distributed for review and comment and any associated updates to the Water Management and Monitoring Plan must be submitted to the Board, for approval, prior to commencement of Construction of the constructed wetlands. If concerns remain following the review of the Design Plan(s), and/or the updated Water Management and Monitoring Plan with regards to the constructed wetlands, they can be addressed through the Board's process.

During technical sessions, Todd Slack, representing the City of Yellowknife, expressed concern with the minimum 90-day review period proposed by CIRNAC-GMRP for the review of Design Plans. He was concerned that if several Design Plans were submitted at or around the same time, it would impose an unfair burden on reviewers, impacting their ability to adequately review the submissions. CIRNAC-GMRP argued that the proposed 90-day period was standard for Board processes and that anything longer could impact the Project's ability to proceed efficiently and on schedule considering the short field seasons in the North.[163] In response CIRNAC-GMRP have committed to carrying out pre-engagement with interested parties, particularly with resect to any changed or updated Closure Criteria, through working groups.[164] All pre-engagement commitments should be captured in the updated Engagement Plan.

The Board has decided that the 90-day minimum submission prior to commencement of Construction of the Project Component in question is appropriate, and as outlined, a minimum. If issues are identified during Design Plan review, there would be time to address those concerns while GMRP developed the associated Construction Plans internally. If major issues are apparent, extension requests to review timelines would be considered by the Board. Regardless of the 90-day minimum, Design Plans must be approved by the Board before Active Remediation can begin on each closure component of the Project.

5.7 Part F: Conditions Applying to Waste and Water Management and Schedule 4

Part F and Schedule 4 of the Licence contains conditions applying to Waste and Water management activities for the GMRP and is consistent with standard conditions included in previous Licences issued by the Board. Site-specific conditions were developed where necessary.

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[162] See Appendix 5.5B Passive and Semi-passive Treatment Systems Reclamation Research Plan, dated January 2019.
[163] See Technical Session Transcript, July 9, 2019, pp. 120-124.
[164] See Technical Session Transcript, September 11, 2019, pp. 84.

Part F, condition 1 sets out the objectives for the management of Water and Waste for the GMRP. This condition is consistent with the principles of objective-based regulation: it essentially defines the objectives of any required management actions, plans or reports. This condition is standard for Licences issued by the Board and reminds the Licensee of the need to manage Water and Waste with the goal of minimizing impacts on the receiving environment.

Site-Wide Management and Monitoring Plans

Site-Wide Management and Monitoring Plans include: the Waste Management and Monitoring Plan, the Water Management and Monitoring Plan, the Erosion and Sediment Management and Monitoring Plan, the Dust Management and Monitoring Plan, the Tailings Management and Monitoring Plan, the Borrow Materials and Explosives Management and Monitoring Plan, and the Arsenic Trioxide Frozen Shell Management and Monitoring Plan. Comments on the submission timeline for Site-Wide Management and Monitoring Plans were identified as a concern by parties during the review of the GMRP. In its intervention, the City of Yellowknife recommended that the Board require all Site-Wide Management and Monitoring Plans to be "submitted for approval a minimum of six months prior to Construction. Ideally these will be submitted as soon as possible in a phased approach to allow for thorough reviews."[165] In response, CIRNAC-GMRP argued that "the proposed timelines are consistent with other Water Licences issued by the MVLWB and Draft Standard Water Licence Conditions circulated for public review in July 2019" and that pre-submission engagement efforts should help alleviate some of the concerns.[166]

The Board notes that there are a substantial number of plans that will be distributed for review prior to the Project entering Active Remediation and Adaptive Management (Phase 2). To ensure there is sufficient time for all reviewers to comment on the new and revised plans, the Board has required CIRNAC-GMRP to submit all the plans provided with the Post-EA Information Package and Land Use Permit Application for the Board's approval a minimum of 90 days prior to initiating the planned Active Remediation and Adaptive Management (Phase 2) activities. Plans included in this category include: The Waste Management and Monitoring Plan, the Water Management and Monitoring Plan, the Erosion and Sediment Management and Monitoring Plan, the Dust Management and Monitoring Plan, and the Tailings Management and Monitoring Plan. The Board notes CIRNAC-GMRP's commitments to carry out pre-engagement on all Site-Wide Management and Monitoring Plans (which should be reflected in updates to the Engagement Plan). Where possible, CIRNAC-GMRP is encouraged to submit updated plans sooner, and the onus is on CIRNAC-GMRP to submit revised Plans that adequately address all requirements and reviewer comments collected during the Post-EA Information Package review. Though the conditions read with the same minimum submission dates, the Board encourages the staggering of report submissions wherever possible so that there is time for reviewers, Board staff, and the Board to properly consider each plan. If the plans are not submitted in this way, CIRNAC-GMRP will risk delay in the Project schedule before Active Remediation and Adaptive Management (Phase 2) can begin. If the Board is of the opinion that additional review time is warranted, extensions may be provided.

For new Site-Wide Management and Monitoring Plans (those that were not submitted in support of the Post-EA Information Package and Land Use Permit Application, including the Borrow Materials and Explosives Management and Monitoring Plan and the Arsenic Trioxide Frozen Shell Management and Monitoring Plan) the Board has decided that additional time for review should be built into

[165] See City of Yellowknife Intervention, dated November 7, 2019.
[166] See GMRP Response to Interventions, dated December 2, 2019.

Licence conditions. The additional time provided is designed to alleviate some of the concerns identified by the City of Yellowknife regarding the potential burden of reviewing multiple large plans in concert, as well as to acknowledge the significance of the information expected to be presented in these documents that have yet to be reviewed in detail. As identified earlier, there has been significant concern raised regarding the location and source volume requirements of on-site borrow sources. The Board is of the opinion that an extended minimum review period for these management and monitoring plans may reduce the risk of Project delays leading up to the initiation of Active Remediation and Adaptive Management (Phase 2).

Part F, condition 2 and 3 and Schedule 4, condition 1: Waste Management and Monitoring Plan

The Boards' authority to regulate the management of Waste is described in subsection 26(1) of the MVLUR and sections 11 and 27 of the *Waters Act*. As such, the Board developed, and approved, *Guidelines for Developing a Waste Management Plan*.[167] These guidelines can be applied to a wide range of projects and are intended to ensure that all Waste management activities specific to each project are carried out in a way that is consistent with best practices and applicable guidelines to minimize Waste released from the Project. Waste Management and Monitoring Plan is a defined term in the Licence, ensuring that the required Plan adheres to the Board's Guidelines.

Submittal and compliance with a Waste management plan is standard for Licences issued by the Board. CIRNAC-GMRP included a Waste Management and Monitoring Plan to support its Post-EA Information Package and Type A Land Use Permit Application. Through the regulatory review process, comments and recommendations were received from reviewers regarding the Waste Management and Monitoring Plan including suggestions for further information that should be included. CIRNAC-GMRP have requested that all Site-Wide Management and Monitoring Plans submitted with the Post-EA Information Package and the Land Use Permit Application be approved as-is for the Existing Condition (Phase 1) so that efforts can be focused on updating those plans in response to reviewer feedback prior to the initiation of Active Remediation and Adaptive Management (Phase 2).

As requested, the Board considered, in detail, all aspects of the Waste Management and Monitoring Plan for immediate approval. Noting the concerns and commitments identified during the regulatory review, the Board has decided that the Waste Management and Monitoring Plan can be considered interim approved for the Existing Condition (Phase 1) of the Project. The Waste Management and Monitoring Plan cannot be outright approved at this time, though, and should be revised to reflect updates and edits identified during the public review. The changes required are identified in detail in Schedule 4, condition 1 of the Licence, referenced in the *Waste Management and Monitoring Plan – Revised* condition. Reporting of all Waste management activities under the Waste Management and Monitoring Program is required in the Water Licence Annual Report.

Since the intention is to cancel all existing authorization following issuance of MV2007L8-0031 and MV2019X0007, CIRNAC-GMRP should make sure all Waste management practices specific to existing activities are fully considered in the revised plan. Agreements with the City of Yellowknife, KBL Environmental Ltd., or any other Waste management provider must also be provided with the revised plan so that approval to use those facilities for certain Waste streams can be verified for Active Remediation and Adaptive Management (Phase 2). In response to specific requests from GMOB during the public hearing, the Waste Management and Monitoring Plan is also required to present

[167] See *MVLWB Guidelines for Developing a Waste Management Plan* (March 31, 2011).

details for the strategic placement of arsenic-contaminated materials into Chamber 15 and the B1 pit. As explained in the GMOB intervention:

> *A key element of GMOB's role and mandate is to facilitate a research program toward a permanent solution for the arsenic trioxide. Actions taken by the Project today should not adversely impact implementation of a permanent solution in the future, and GMOB wants to ensure that the concept of reversibility is considered in all aspects of the remediation... Reversibility is also an important consideration for the contaminated materials intended for disposal in Chamber 15 and B1 pit. The demolition debris, in particular, will need to be placed in a manner that will not unnecessarily complicate removal. Detailed records of the additional materials placed including descriptions of how the materials could be removed should also be provided for use by future generations. The closure objectives and criteria table has been updated to reflect the requirement to document material placement which GMOB considers to be an important Project improvement. GMOB also would like to see the commitment to placing contaminated debris in an orderly fashion reflected in the appropriate management plans, along with a conceptual extraction strategy.* [168]

GMOB indicated in their closing arguments that they continue to recommend a conceptual extraction strategy be included as part of the Reclamation Completion Report.[169] Through a review comment on the Draft Water Licence, GMOB specifically recommended the Waste Management and Monitoring Plan include an analysis regarding how removal of placed materials will be achieved, with the actual analysis being included within the Reclamation Completion Report[170]. The Board do not believe that the extraction of materials is part of the scope of this Project and do not agree that CIRNAC-GMRP should be required to develop a scenario for its removal. That said, detailed documentation of waste placement should be maintained and available for future reference. These requirements are outlined in Schedule 4, condition 1 of the Licence. The actual documentation that outlines the type, quantity, location, and placement of arsenic-impacted materials in Chamber 15 or B1 pit should be submitted in the Reclamation Completion Report for the freeze/Arsenic Trioxide Frozen Shell.

In the City of Yellowknife's intervention, a desire for Waste stream auditing was expressed; specifically, the City of Yellowknife recommended an auditing effort of Waste stream for the GMRP, given their position that Waste stream monitoring and auditing acts as an indicator of effective site management and ensures that material sent to the City of Yellowknife Waste facility is segregated appropriately.[171] In response, GMRP indicated that an auditing procedure will be in place that will verify that Waste being sent to the City of Yellowknife Waste facility has been appropriately segregated and free of hazardous substances.[172] GMRP is required to update the Waste Management and Monitoring Plan to include the details described in response to the City of Yellowknife's recommendation.

<u>Part F, condition 4 and 5 and Schedule 4, conditions 2 and 3: Water Management and Monitoring Plan</u>

CIRNAC-GMRP submitted a Water Management and Monitoring Plan (WMMP) with their Post-EA Information Package and Type A Land Use Permit Application. Like other Site-Wide Management and

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[168] See GMOB Intervention, dated November 7, 2019, pp. 9-10.
[169] See GMOB Closing Argument, dated March 23, 2020.
[170] Giant Mine Oversight Board Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 15.
[171] See City of Yellowknife Intervention, dated November 7, 2019.
[172] See GMRP Response to Interventions, dated December 2, 2019.

Monitoring Plans for the Project, this serves as an umbrella Plan for CIRNAC-GMRP; the Plan describes the Water management systems at the Giant Mine site, as well as applicable monitoring programs, contingency planning, and reporting requirements. The Plan describes Water management throughout all phases of the Project and includes descriptions of the existing Effluent Treatment Plant (ETP), the new Water Treatment Plant (WTP), as well as how Minewater, surface Water and Groundwater will be managed on site. The Plan also describes the various Water monitoring programs conducted for the Project.

Effluent Treatment Plant and Water Treatment Plant

The WMMP describes the management of Wastewater and treatment via the ETP and WTP. The Existing Effluent Treatment Plant System (ETP) is required to reduce concentrations of Waste to meet Environment and Climate Change Canada's Metal and Diamond Mining Effluent Regulations[173] (MDMER) Discharge limits. The ETP is effective at reducing nutrient and most metal concentrations; however, the treatment process does not reduce ion concentrations. CIRNAC-GMRP have stated that the existing ETP and its associated infrastructure cannot undergo major upgrades since the design is limited and the infrastructure supporting the ETP is nearing the end of its design life. Instead, investment is being made into design and operation of the New Water Treatment Plant (WTP). Operation of the existing ETP is required to allow closure work to begin until the WTP is built and operational. The WTP is expected to be operational by 2026. The time between issuance of the Licence and the commissioning of the WTP will occur because CIRNAC-GMRP cannot commence Construction of the WTP until the other earthworks in the vicinity of the WTP are complete.

Monitoring data from the site have demonstrated that current Effluent from the ETP is non-acutely toxic and fish and benthos are present, reproducing and growing in Baker Creek. Combined arsenic loadings from Baker Creek and Runoff into Yellowknife Bay have been estimated at between 887 and 2,715 kg/yr during existing conditions (2011 to 2018), depending on the year and the hydrological conditions. Future Remediation activities are designed to improve these conditions.

Once the WTP is operational, Water will be Discharged year-round directly to Yellowknife Bay, and no longer into Baker Creek. The WTP will be designed to remove more arsenic from the Water than the ETP and meet drinking Water guidelines for arsenic (10 µg/L).

Approved measures from EA0809-001 that helped guide the development of the WTP and outfall include:

- Measure 14 - *The Developer will add an ion exchange [referred to as adsorption with media in this document] process to its proposed Water treatment process to produce Water treatment plant Effluent that at least meets Health Canada drinking Water standards (containing no more than 10 µg/L of arsenic), to be released using a nearshore outfall immediately offshore of the Giant Mine site instead of through the proposed diffuser.*
- Measure 15 - *The Developer and regulators will design and manage the Project so that, with respect to arsenic and any other contaminants of potential concern [POPCs]:*

  1) Water quality at the outfall will meet the Health Canada Guidelines for Canadian Drinking Water Quality.

  2) The following Water quality objectives in the Receiving Environment are met:

[173] See the Metal and Diamond Mining Effluent Regulations, Government of Canada, 2002.

a) *Water quality changes due to Effluent Discharge will not reduce benthic invertebrate and plankton abundance or diversity at 200 m from the outfall.*
b) *Water quality changes due to Effluent Discharge will not harm fish health, abundance or diversity.*
c) *Water quality changes due to Effluent Discharge will not adversely affect areas used as drinking Water sources.*
d) *There is no increase in arsenic levels in Yellowknife Bay Water at 200 m from the outfall.*
e) *There is no increase in arsenic levels in Yellowknife Bay sediments at 500 m from the outfall.*

The evidence and discussions regarding EQC as well as the Board's decision regarding the EQC for the ETP and WTP are included in Appendix 1 of this document.

Chloride and sulphate management and monitoring

As described further in Appendix A, discussion regarding chloride and sulphate criteria for the ETP and WTP occurred throughout the CIRNAC-GMRP regulatory proceeding. The Board has decided to require CIRNAC-GMRP to include information on the chloride and sulphate management and monitoring for the Water Treatment Plant, including frequency of monitoring and Action Levels, in the Water Management and Monitoring Plan. This should also include the frequency of sampling measurements.[174]

Management of Contact Water

The management of Runoff and Contact Water was discussed extensively during the proceeding. The Draft Water Licence that CIRNAC-GMRP submitted with their Post-EA Information Package and Land Use Permit Application did not contain any conditions with respect to Runoff or Contact Water, or specific Discharge Criteria for Runoff or Contact Water. CIRNAC-GMRP's Water Management and Monitoring Plan (WMMP) does articulate that Runoff from Engineered Structures will be collected and managed until Water quality criteria are met.

In the WMMP, CIRNAC-GMRP proposed that the Metal and Diamond Mining Effluent Regulations (MDMER) be used as Water quality criteria that must be met before Runoff is allowed to directly flow from Engineered Structures. CIRNAC-GMRP also described that surface Runoff from undeveloped areas of the mine site will be diverted away from Engineered Structures, such as the pits, where possible and allowed to flow directly into Baker Creek or Yellowknife Bay. Surface Water quality from these parts of the site are highly variable. On day two of the July technical sessions Tony Brown and Kathy Racher of GMOB asked both CIRNAC-GMRP and ECCC if these areas of the mine site were subject to MDMER limits.[175] IR #2 was issued to ECCC:

> *There are areas within the Giant Mine Remediation Project boundary that were not used directly for mining operations but have been historically affected by aerial deposition from mining operations. Is the seepage and surface water runoff from these undeveloped areas considered 'effluent' under the Metal and Diamond Mining Effluent Regulations? If so, can ECCC confirm what seepage water runoff would be subject to MDMER?*

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[174] Giant Mine Remediation Project Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 170.
[175] See Technical Session Transcript July 10, 2019, pp. 156-163.

ECCC submitted two responses to IR #1. The first, provided to the Board on August 9, 2019[176] required clarification which came in the form of a follow-up response on September 3, 2019.[177] In its response, ECCC provided definitions of *metal mine* and *Effluent* to support its interpretation. The definition of metal mine includes "any cleared or disturbed area that is adjacent to" any work or undertaking associated with a mining, milling or hydrometallurgical activity to produce a metal or a metal concentrate or an ore.[178] There is no argument that the Giant Mine site is subject to MDMER; however, it was unclear if 'undeveloped' areas in the vicinity of the mine and affected by aerial deposition would be considered 'disturbed.' ECCC concluded, based on the definition of the metal mine, that:

> *an undeveloped area that has historically been affected by aerial deposition from mining operations would not be considered "disturbed". A "disturbed area" includes any area where there has been physical work on the land. Under the MDMER, "metal mine" includes any cleared or disturbed area that is adjacent to any work or undertaking (as defined in the Regulations). Adjacent is understood to mean contiguous, being in actual contact, or touching along a boundary. To be considered part of the "metal mine", an area adjacent to a work or undertaking would: 1) be cleared or disturbed; and 2) be contiguous to the work or undertaking.*[179]

ECCC stated that "in the present case, if the undeveloped area has not been disturbed or cleared, it would therefore not be considered to be part of the mine. It should be noted that any Seepage or Runoff that is not subject to the MDMER would nonetheless be subject to the general prohibition under the *Fisheries Act*."[180] This general prohibition requires that: "no person shall deposit or permit the deposit of a deleterious substance of any type in Water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such Water."[181] Monitoring of Runoff Waters completed by CIRNAC-GMRP under its SNP and AEMP programs should demonstrate that Runoff from the mine site are not deleterious to fish or fish habitat.

Based on how CIRNAC-GMRP describes the management of Runoff from Engineered Structures in the WMMP, and how ECCC responded to the above IR, Board staff included definitions for both Contact Water and Runoff in the Water Licence. 'Contact Water' referred specifically to Runoff from Engineered Components that would be managed under the WMMP while 'Runoff' referred to Water from undeveloped parts of the Giant Mine site. In GMRP's closing arguments, however, GMRP proposed using the terms 'Engineered Structure' and 'Project Component' instead of 'Engineered Component'.[182] Further, GMRP indicated in a review comment on the Draft Licence that the definition for Contact Water should include the phrase "within the Developed Areas as defined in the Closure and Reclamation Plan".[183] Information Request #2 issued to CIRNAC-GMRP on May 15, 2020 regarding

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[176] See ECCC Response to Technical Session IR #2, dated August 9, 2019.
[177] See ECCC Follow-up Response to Technical Session IR #2, dated Sept 3, 2019.
[178] See Metal and Diamond Mining Effluent Regulations.
[179] See ECCC Follow-up Response to Technical Session IR #2, dated Sept 3, 2019.
[180] See ECCC Follow-up Response to Technical Session IR #2, dated Sept 3, 2019.
[181] See *Fisheries Act* subsection 36(3), current to Aug 15, 2019.
[182] See GMRP Closing Arguments, dated April 17, 2020.
[183] Giant Mine Remediation Project Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 56.

the definition of Contact Water used in the Draft Licence.[184] GMRP's response to IR #2,[185] and the subsequent public review on GMRP's response to the Information Requests,[186] clarified the Contact Water and Surface Runoff Criteria definitions, and use of these terms throughout the Licence. The Board discusses this further in Section 5.2.

Contact Water management applies to the Developed Areas of the Giant Mine site, and once Contact Water meets Surface Runoff Criteria, as approved through the Water Management and Monitoring Plan, the Water will no longer be in contact with Waste and will therefore become surface Runoff. As clarified by CIRNAC-GMRP in their IR response on May 25, 2020, Surface Runoff Criteria will only be applied to Runoff from a sub-set of Engineered Structures (including but not limiting to the TCAs, remediated pits, and landfill) post remediation. Surface Runoff Criteria cannot be applied in existing conditions to determine whether Water from disturbed areas requires treatment, as was highlighted in a comment from Bill Slater during the review of CIRNAC-GMRP's IR response.[187] Bill Slater also commented that the proposed revision to the definition of Contact Water from GMRP included Seepage as well as Runoff, and argued that "seepage from disturbed areas could have very different characteristics than surface runoff" and that "Seepage water from disturbed areas should continue to be subject to effluent discharge criteria even after remediation is complete".[188] The Board agrees with Bill Slater and believes that by including Seepage in the proposed definition of Contact Water, GMRP's intent is to manage and treat both Runoff and Seepage pre- and post- remediation in the Developed Areas, until Runoff and Seepage from certain Engineered Structures meets Surface Runoff Criteria. For this reason, the definition Seepage was added to various conditions and schedule items throughout the Licence to clarify that Surface Runoff Criteria applies to both Runoff and Seepage.

In CIRNAC-GMRP's IR response, GMRP proposed naming the section in the WMMP about Contact Water a "Contact Water Transition Plan".[189] During the public review of the CIRNAC-GMRP's response to the IR issued by the Board on May 15, 2020, GMOB commented that referring to the document as a Transition Plan may not be appropriate; GMOB noted that the potential timing when Runoff Water quality would meet Surface Runoff Criteria would be post remediation or at the final step of the surface Water management process.[190] The Board notes that the name of this section in the WMMP will not impact the information requirements of CIRNAC-GMRP and have referred to the plan as a "Contact Water Transition Plan" in the Licence.

Surface Runoff Criteria

GMOB, in their comments on the Post-EA Information Package and WMMP,[191] asked CIRNAC-GMRP: for more evidence to support the recommendation to use MDMER as Surface Runoff Criteria; if other parameters should be considered; and if lower criteria could be achieved. On day one of the September 2019 technical sessions, Don Hart of EcoMetrix, the Board's technical consultant, asked CIRNAC-GMRP to provide rationale supporting the use of MDMER limits for Surface Runoff Criteria.[192] Don noted that the Surface Runoff Criteria are higher than the proposed EQC for the WTP and

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[184] See Information Requests to GMRP, dated May 15, 2020.
[185] See GMRP Response to Information Requests, dated May 25, 2020.
[186] See Public Review of the GMRP Information Request (hyperlink).
[187] Slater Environmental Consulting Online Review System IR Response, Comment ID 4.
[188] Slater Environmental Consulting Online Review System IR Response, Comment ID 5.
[189] See CIRNAC-GMRP Response to Board-Issued Information Requests, dated May 25, 2020.
[190] Giant Mine Oversight Board Online Review System Board-Issued IR Response, Comment ID 8.
[191] See Review 6 of 7, GMOB Comment 40.
[192] See Technical Session Transcript September 11, 2019, pp. 111.

enquired if the volumes of Water that meets Surface Runoff Criteria and are released to the Receiving Environment are a factor in considering MDMER as criteria for Discharge; IR #2 was issued to CIRNAC:

> *GMRP to provide the predicted proportion of Baker Creek flow from engineered covers of the Tailings Containment Areas, Mill Pond and Calcine Pond, along with context as to why the Metal and Diamond Mining Effluent Regulation (MDMER) criteria are an appropriate basis for decisions about whether to continue collection and treatment*. [193]

CIRNAC committed to continue to monitor Runoff Water quality and provide a re-evaluation of the proposed Surface Runoff Criteria in the Active Remediation and Adaptive Management (Phase 2) update to the WMMP.[194] In addition, on October 10, 2019, CIRNAC-GMRP submitted its response to IR #2, which stated that MDMER limits were proposed to be compliant with federal requirements and that reducing the criteria at this time, prior to the completion of analytical testing of cover materials and modelling of potential Water quality could result in unachievable results. CIRNAC-GMRP did, however, commit to reducing the proposed criteria if modelling demonstrated lower levels can be achieved or if monitoring suggests lower criteria are required.[195] The Annual Water Licence Report includes a requirement for CIRNAC-GMRP to provide a summary and interpretation of monitoring results within the Developed Areas, including cover performance, monitoring for Runoff and Seepage quality, comparisons to Surface Runoff Criteria, and volume of Seepage and Runoff that has met Surface Runoff Criteria and been released to the environment. If this data provides evidence that lower Surface Runoff Criteria is achievable, the Water Management and Monitoring Plan should be updated according to Part B, condition 10.

Determination when Contact Water meets Surface Runoff Criteria

During both technical sessions, Bill Slater[196] and Don Hart[197] questioned CIRNAC-GMRP regarding the sampling and averaging required to determine if and when Contact Water meets Surface Runoff Criteria; CIRNAC-GMRP committed to update the sampling methodology to determine how Contact Water is met in the WMMP. Requirements of the Water Management Plan, including the necessary information on the Contact Water transition plan, are included in Schedule 4, Condition 2 of the Licence.

In their initial review of the Draft Water Licence submitted by CIRNAC-GMRP, GMOB[198] recommended that "Runoff Water quality criteria" should be included as a Water Licence condition, but after much discussion during the technical sessions, GMOB's intervention[199] included the following regarding Contact Water:

> *GMOB notes that the GMRP has not provided a strong rationale for using the MDMER limits to assess surface run-off water quality from engineered structures. The MDMER concentrations are generic standards and are less conservative than the effluent quality criteria proposed for the either the existing or the new effluent treatment plants. GMOB is concerned that simply applying a generic standard may not adequately represent the runoff water quality that is achievable at the site or that might be required to achieve remediation*

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[193] See Technical Session Transcript September 12, 2019, pp. 120-125.
[194] See Technical Session Transcript for September 11, 2019, pp. 111-124.
[195] See CIRNAC-GMRP Response to Technical Session 2 Information Requests, dated October 10, 2019.
[196] See Technical Session Transcript for July 10, 2019, pp.190-195.
[197] See Technical Session Transcript for September 11, 2019, pp. 117-120.
[198] See Review 6 of 7, GMOB Comment 40
[199] See GMRP Public Hearing Intervention – GMOB – Nov 7-19, pp. 22-24.

goals. Additional work should be carried out to identify appropriate runoff water quality criteria.

Once the existing Effluent Treatment Plant stops discharging effluent to Baker Creek, run-off will become the primary mechanism for Project related impacts to the creek. While GMOB acknowledges that much of the on-going contaminant loading to Baker Creek will originate upstream of the Project, site runoff will still provide a contribution. GMOB expects that best management practices for setting site run-off criteria would be to select levels such that overall contaminant loadings to Baker Creek will achieve the closure objective for Baker Creek such as BC-4 and BC-5. This should be demonstrated by providing the following additional information:

1. Consideration of the need for site-specific criteria that are protective and representative of potential water quality issues at the site;
2. A rationale for the selected criteria;
3. The SNP locations where the criteria are met; and
4. A discussion regarding the achievability of the criteria (i.e., number of samples over time/seasons etc.) and a process for determining when the criteria have been achieved and monitoring can be discontinued.

At this stage in the process, it will not be possible to include site specific criteria within the body of the licence. However, including them in an update to the Water Management and Monitoring Plan, for Board approval, would ensure that any proposed criteria would be reviewed. In addition, a licence clause should be included requiring Inspector or Board approval prior to allowing the run-off to enter the receiving environment directly. This clause would be consistent with the requirements of other similar water licences.

GMOB therefore recommended that the Water Licence require Contact Water to be collected and treated until criteria in the approved WMMP are met, and that approval of the Inspector be required prior to allowing direct Discharge of Contact Water.[200] CIRNAC-GMRP was in general agreement.[201]

Toxicity Testing of Contact Water/Surface Runoff

The toxicity of Contact Water/Surface Runoff was also discussed. At the second technical session[202] and the public hearing[203] several lines of questioning regarding toxicity testing of Contact Water that has transitioned to Surface Runoff were conducted. In response to questioning from ECCC regarding toxicity testing on Waters from Engineered Structures, CIRNAC-GMRP agreed that a one-time acute toxicity test could be done, if sufficient Water volumes were present, in addition to the proposed suite of criteria being proposed under MDMER which includes metals, suspended solids, nutrients, and pH.[204] CIRNAC-GMRP also agreed that geochemical parameters could also be added based on the results of geochemical testing of source rock locations.

Based on the above discussions, CIRNAC-GMRP committed to articulate in the WMMP how Discharge of Water that meets Surface Runoff Criteria will be determined as non-toxic, and in addition, once

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[200] See GMRP Public Hearing – GMOB Intervention – Nov 7-19, pp. 22-24.
[201] See GMRP Public Hearing – Response to Interventions – Dec2-19, pp. 37-38.
[202] See Technical Session Transcript for September 11, 2019, pp. 117-120.
[203] See Public Hearing Transcript January 21, 2020, pp. 93-94.
[204] See Technical Session Transcript September 12, 2019, pp. 120-125.

toxicity testing is deemed complete, how continued Water quality monitoring at these locations will ensure continued compliance with non-toxic requirements. If Water chemistry monitoring indicates that additional toxicity tests are necessary, the WMMP should be updated accordingly as per the *Revisions* condition. Information on toxicity testing of Surface Runoff will need to be submitted in the WMMP update prior to Active Remediation and Adaptive Management (Phase 2).

Conclusion on the Management of Contact Water

Based on the evidence above, the Board has interim approved the Surface Runoff Criteria included in the WMMP and chose not to include Surface Runoff Criteria as a standalone Licence condition, allowing the flexibility to re-visit the criteria as more information becomes available. The Board, noting the commitments CIRNAC-GMRP has made for further monitoring and re-evaluation as well as updates to Contact Water sampling and analysis methodology, has included several requirements to Schedule 4, condition 2 for future updates of the WMMP. Conditions requiring adherence to the Surface Runoff Criteria in the WMMP are discussed below.

Action Levels

Prior to, and during the July technical sessions, GMOB[205] and Board staff asked CIRNAC-GMRP about establishing Action Levels and a Response Framework for various Water monitoring programs on site. CIRNAC-GMRP committed to including this in the WMMP update submitted prior to Active Remediation and Adaptive Management (Phase 2).[206] Schedule 4, condition 2 includes the requirement for Action Levels to be included in the WMMP for Phase 2.

Groundwater

The WMMP notes that Water is managed on site such that the underground is maintained as a Groundwater sink and that the Project intends to prevent contamination of Groundwater that moves laterally across site. Pumping of the underground will continue to control the mine pool level to allow the underground to continue to act as a Groundwater sink. Controlling the mine pool elevation will also keep arsenic trioxide storage areas dry during and immediately after the freeze program in the mine. The completion of the freeze is expected to reduce the Groundwater infiltration in the arsenic trioxide storage areas. Further, it is expected that the quality of the surface Water Runoff from the site, which is currently treated, will improve and be suitable for direct Discharge.

Groundwater monitoring is included in the Operational Monitoring Program and SNP. During the July technical sessions, CIRNAC-GMRP noted that while it will continue to collect and analyze Groundwater results, they do not commit to establishing Action Levels and response plans to accompany that monitoring. In the September technical sessions, Bjorn Weeks, consultant to CIRNAC-GMRP, described the difficulty in establishing an adaptive framework around Groundwater monitoring for a contaminated site; however, questions from Board staff and GMOB stressed the importance of Groundwater monitoring surrounding certain Engineered Structures, particularly the Non-Hazardous Waste Landfill.[207] The Board notes the Groundwater locations that CIRNAC-GMRP has proposed in the SNP, but due to the discussions above, has included a requirement for CIRNAC-GMRP to include updates to Groundwater monitoring in the Design Plans for specific Project Components and in updates to the WMMP.

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[205] See Review 6 of 7, GMOB Comment 40
[206] See Technical Session Transcript for July 10, 2019, pp. 208-211.
[207] See Technical Session Transcripts for September 12, 2019, p. 94.

Water Quality Model Updates

Updates to water quality models were raised during the public review of the Water Management and Monitoring Plan and Effluent Quality Criteria Reports and discussed during the first Technical Sessions in July 2019. In response to review comments, CIRNAC-GMRP indicated that updates to models would be completed if design details notably differ from the assumptions listed in the Effluent Quality Criteria Report near the complete of substantive design (approximately 2021) and at least one year before the WTP is constructed (approximately 2025). Once WTP discharge to Yellowknife Bay commences, monitoring data will be compared to Yellowknife Bay model predictions on an annual basis, and the need for a model update will be assessed if there is a major change in the remediation plan.[208] At the Technical Session on July 11, CIRNAC-GMRP again indicated that future model updates would be executed should the need arise based on monitoring results showing "under predictions" or "divergence".[209] In discussion with the City of Yellowknife and GMOB, CIRNAC-GMRP further clarified that "The commitment was not to update the models. The commitment was to include in our next version of the Water Management and Monitoring Plan the very same process that is included in the reviewer 2 comment responses regarding what timelines, at what 3 times we would evaluate the necessity to update the 4 models."[210] CIRNAC-GMRP provided further clarification on water model updates in their response to the Draft Licence posted by Board staff.[211] As noted above in the *Action Levels* section of this document, when considering triggers for water model updates, the Board acknowledges CIRNAC-GMRP's commitment to establishing Action Levels and proposed Response Framework when updating the Water Management and Monitoring Plan. The Board has therefore included requirements in the Water Management and Monitoring Program (Schedule 4, condition 2) requiring CIRNAC-GMRP to indicate the triggers for updates to the water balance model and to also include action levels and contingencies for specific water quality monitoring. The Annual Report requirements include discussion of any updates to the water balance model as well as action levels exceedances and actions taken (Schedule 1, condition 1).

Minewater Raise

In CIRNAC-GMRP's Post-EA Information Package and Type A Land Use Permit Application, the Project proposed a Reclamation Research Plan (RRP) for a possible Minewater level raise. After discussion during the July technical session and much concern heard by the YKDFN in particular, CIRNAC-GMRP formally withdrew the proposed plan to test and research a future Minewater level raise from the scope of this authorization.[212,213] The Board has included a directive in Schedule 4, condition 3 for CIRNAC-GMRP to remove this RRP from the WMMP.

Linkages to Closure Objectives and Criteria

In the Draft Licence, a requirement for CIRNAC-GMRP to identify linkages to any Closure Objectives and Closure Criteria from the approved CRP or Design Plan(s) that are satisfied in whole or in part by the management systems was included in the WMMP, as well as in other Site-Wide Management and Monitoring Plans (Erosion and Sediment Management and Monitoring Plan, Dust Management and

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[208] See Review 6 of 7, MVLWB Comment 6.
[209] See Technical Session Transcript for July 11, 2019, pp. 40.
[210] See Technical Session Transcript for July 11, 2019, pp. 49-50.
[211] Giant Mine Remediation Project Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 106, 160.
[212] See Technical Session Transcript for July 12, 2019, pp. 259-260.
[213] See the letter from GMRP regarding the removal of the Partial Minewater Raise Reclamation Research Plan, dated August 14, 2019.

Monitoring Plan, Tailings Management and Monitoring Plan, Borrow Materials and Explosives Management and Monitoring Plan, and Arsenic Trioxide Frozen Shell Management and Monitoring Plan). Further, a description of maintenance or contingency activities that will be undertaken if monitoring results show that management systems are not meeting the Closure Criteria or trending towards meeting Closure Criteria was listed as a requirement in the WMMP and other Site-Wide Management and Monitoring Plans listed above. As communicated through review comments on the Draft Licence, CIRNAC-GMRP did not support the inclusion of these schedule requirement for Site-Wide Management and Monitoring Plans, indicating that:

> *Management and Monitoring Plans are not the vehicle by which the closure objectives and criteria are met, nor are Management and Monitoring Plans the vehicle by which the GMRP's progress towards achieving the closure objectives and criteria are met. The Site-Wide Management and Monitoring Plans are in place to protect the environment while closure activities are underway.*

The Board notes, however, that the requirement to identify linkages to Closure Objectives and Criteria in the WMMP, and had been included by GMRP in the schedule for the WMMP in the Draft Water Licence submitted with the Post-EA Information Package.[214] The Board believes this requirement will be helpful for reviewers to understand Closure Objectives and Criteria related to the Site-Wide Management and Monitoring Plans, including Closure Objectives or Criteria that may be developed or changed through the Design Plans. The Board has updated the wording in Schedule 3, Condition 1 f) to clarify that the maintenance or contingency actions described can be specifically for if Water management systems are not trending towards meeting Closure Criteria. This update has also been made for other relevant Site Wide Management and Monitoring Plans as applicable.

In the public review on GMRP's IR response, Board staff asked GMRP if it could be appropriate for updates or changes to monitoring from that approved in the Design Plans to also be updated in the Site Wide Management and Monitoring Plans and presented to reviewers and the Board for approval.[215] GMRP did agree to use the Site-Wide Management and Monitoring Plans as a mechanism to update the monitoring in relation to completion of a Closure Activity. This commitment from GMRP provides further evidence to the Board that Closure Objectives and Criteria should be identified in the WMMP and other Site Wide Management and Monitoring Plans so that the link between Closure Objectives and Criteria in Design Plans and Site Wide Management and Monitoring Plans is clear to reviewers.

As requested, the Board considered, in detail, all aspects of the Water Management and Monitoring Plan for immediate approval. Noting the concerns and commitments identified during the regulatory review, the Board has decided that the WMMP can be considered interim approved for the Existing Condition (Phase 1) of the Project. The WMMP cannot be outright approved at this time and should be revised to reflect updates and edits identified during the public review. The changes required are identified in detail in Schedule 4, conditions 2 and 3 of the Licence.

<u>Part F, condition 6 and 7 and Schedule 4, conditions 4 and 5: Erosion and Sediment Management and Monitoring Plan</u>

Part F, condition 6 identifies the requirements for the Erosion and Sediment Management and Monitoring Plan. This Plan is required by the Licence to ensure any potential release of sediment is

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[214] See Post Environmental Assessment Information Package, dated April 1, 2019.
[215] Mackenzie Valley Land and Water Board Online Review System Board-issued IR Response, Comment ID 164.

managed in accordance with the *Waters Act*, and the objectives listed in Part F, conditions 1 of the Licence. CIRNAC-GMRP included an Erosion and Sediment Management and Monitoring Plan to support its Post-EA Information Package and Type A Land Use Permit Application.

CIRNAC-GMRP were clear in acknowledging that the Erosion and Sediment Management and Monitoring Plan, like most of the Site-Wide Management and Monitoring Plans, was designed to be an umbrella document, setting the stage for sediment and erosion control measures and requirements that would be established more specifically through Construction Plans for each Engineered Structure of the Project. As pointed out by Bill Slater and GMOB during the online review, requirements for sediment and erosion control were not identified in the schedules for Design and Construction Plans. In response, details about erosion and sediment evaluations and management and monitoring requirements have been included in the schedules for the Design Plans and Construction Plans, identified in Section 5.6 above.

The Board notes comments provided during the GMRP review and CIRNAC-GMRP's acknowledgement that there is information missing to inform the Erosion and Sediment Management and Monitoring Plan. Among other things, this includes maps or diagrams identifying areas in the Project area that may be most susceptible to erosion. CIRNAC-GMRP have requested that the Site-Wide Management and Monitoring Plans be approved at issuance for the Existing Condition (Phase 1) of the Project, but that updates be required for review and approval prior to the initiation of Active Remediation and Adaptive Management (Phase 2). CIRNAC-GMRP have confirmed that any shortcomings identified during the review can and will be incorporated into the next version of the Plan for review.

The Erosion and Sediment Management and Monitoring Plan is being approved by the Board for the Existing Condition (Phase 1) of the Project only. The Erosion and Sediment Management and Monitoring Plan must be revised and re-submitted a minimum of 90 days prior to the Project's plans to initiate Active Remediation and Adaptive Management (Phase 2). Erosion and Sediment Management and Monitoring Plan requirements are identified in detail in Schedule 4, conditions 4 and 5 of the Licence. Schedule 4, condition 5 specifically responds to concerns identified during the review process.

<u>Part F, condition 8 and 9 and Schedule 4, condition 6 and 7: Dust Management and Monitoring Plan</u>

Part F, condition 8 identifies the requirements for the Dust Management and Monitoring Plan which includes an Air Quality Monitoring Plan as an appendix. This Plan is required by the Licence to ensure any potential releases are managed in accordance with the *Waters Act*, and the objectives listed in Part F, conditions 1. CIRNAC-GMRP included a Dust Management and Monitoring Plan to support its Post-EA Information Package and Type A Land Use Permit Application.

CIRNAC-GMRP were clear in acknowledging that the Dust Management and Monitoring Plan, like most of the Site-Wide Management and Monitoring Plans, was designed to be an umbrella document, setting the stage for dust control measures and requirements that would be established more specifically through Construction Plans for each Engineered Structure of the Project.

The Board notes comments provided during the review and CIRNAC-GMRP's acknowledgement that there is information missing to inform the Dust Management and Monitoring Plan. CIRNAC-GMRP have requested that the Site-Wide Management and Monitoring Plans be approved at issuance for the Existing Condition (Phase 1) of the Project, but that updates be required for review and approval prior to the initiation of Active Remediation and Adaptive Management (Phase 2). CIRNAC-GMRP have

confirmed that any shortcomings identified during the review can and will be incorporated into the next version of the Plan for review.

The Dust Management and Monitoring Plan is being approved by the Board for the Existing Condition (Phase 1) of the Project only. The Dust Management and Monitoring Plan must be revised and re-submitted a minimum of 90 days prior to the Project's plans to initiate Active Remediation and Adaptive Management (Phase 2) to reflect updates as identified during the public review. The changes required are identified in detail in Schedule 4 conditions 6 and 7 of the Licence; Schedule 4, condition 7 specifically responds to concerns identified during the review process. Of particular interest is the Board's requirement to include adaptive management thresholds for $PM_{2.5}$, NO_2 and metals (arsenic, antimony, lead, iron, and nickel). This requirement responds to concerns raised by ECCC in its intervention to measure concentrations of arsenic, co-located metals, and other pollutants that have the potential to impact human health and establish trigger values and adaptive management strategies in the Dust Management and Monitoring Plan.[216]

Part F, condition 10 and 11 and Schedule 4, condition 8: Tailings Management and Monitoring Plan

Part F, condition 11 identifies the requirements for the Tailings Management and Monitoring Plan. This Plan is required by the Licence to ensure any potential releases are managed in accordance with the *Waters Act*, and the objectives listed in Part F, condition 1. CIRNAC-GMRP included a Tailings Management and Monitoring Plan to support its Post-EA Information Package and Type A Land Use Permit Application.

The Board notes comments provided during the review and CIRNAC-GMRP's acknowledgement that there is information missing to inform the Tailings Management and Monitoring Plan. CIRNAC-GMRP have requested that the Site-Wide Management and Monitoring Plans be approved at issuance for the Existing Condition (Phase 1) of the Project, but that updates be required for review and approval prior to the initiation of Active Remediation and Adaptive Management (Phase 2). CIRNAC-GMRP have confirmed that any shortcomings identified during the review can and will be incorporated into the next version of the Plan for review.

The Tailings Management and Monitoring Plan is being approved by the Board for the Existing Condition (Phase 1) of the Project only. The Tailings Management and Monitoring Plan must be revised and re-submitted a minimum of 90 days prior to the Project's plans to initiate Active Remediation and Adaptive Management (Phase 2) to reflect updates identified during the public review. The changes required are identified in detail in Schedule 4, condition 8 of the Licence. The Tailings Management and Monitoring Plan must address all Tailings management plans for the Giant Mine site, including the Tailings Containment Area and the Foreshore Tailings.

During the Project review, ECCC consistently identified concerns with CIRNAC-GMRP's plans for the management of the Foreshore Tailings. CIRNAC-GMRP have proposed to cover the Foreshore Tailings with a riprap rock cover to limit the likelihood of erosion and human contact with the Tailings material buried below. ECCC argued that Water quality and the health of benthic populations in the area should also be monitored under the Aquatic Effects Monitoring Program (AEMP) to ensure that the cover placed will prevent long term leaching of contaminants into Great Slave Lake.[217] During the public hearing, CIRNAC-GMRP agreed to carry out the monitoring recommended by ECCC and suggested that

[216] See ECCC Intervention, dated November 7, 2019.
[217] See ECCC Intervention, dated November 7, 2019.

a monitoring program would be best established through discussions with DFO during the Fisheries Authorization process and presented as part of the special study for the AEMP.[218]

The Board acknowledges ECCC's concerns regarding the potential release of contaminants from the Foreshore Tailings and have clearly included the need to identify monitoring plans for the Foreshore Tailings into the Tailings Management and Monitoring Plan schedule. If CIRNAC-GMRP believe the Foreshore Tailings monitoring is best addressed through the Water Management and Monitoring Plan or the AEMP, cross-references can be made, but because the Foreshore is a Tailings management component, some discussion should be included in the Tailings Management and Monitoring Plan. Updates are expected to also come through the Design Plan(s) developed for the Foreshore Tailings. DFO made similar recommendations to CIRNAC-GMRP in its intervention, including the need to evaluate fish use monitoring of the area through the completion of a Fish and Fish Habitat Assessment in the Foreshore Tailings area.[219] Any updates to monitoring of the Foreshore Tailings in response to engagement with DFO and development of Design Plans will need to be reflected in updates to the Tailings Management and Monitoring Plan.

Part F, condition 12 and 13 and Schedule 4, condition 9: Borrow Materials and Explosives Management and Monitoring Plan

Part F, condition 12 identifies the requirements for the Borrow Materials and Explosives Management and Monitoring Plan. This Plan is required by the Licence to ensure the identification, development, operation, and closure of borrow sources used to support Closure Activities are managed in accordance with the *Waters Act*, and the objectives listed in Part F, condition 1. CIRNAC-GMRP did not include a version of the Borrow Materials and Explosives Management and Monitoring Plan with its Post-EA Information Package or Land Use Permit Application; however, the Draft Water Licence submitted as part of the Post-EA Information Package did include a condition for its submission including suggestions for the Plan's requirements in a draft schedule.

Through the Board's process, it became clear that many reviewers still have concerns about the need to disturb additional lands to provide borrow material to support proposed closure activities. Sources of borrow are largely required to provide materials to construct the Non-Hazardous Waste Landfill, Tailings (and pit) covers, realign Baker Creek, and backfill open pits. Support for these activities, namely the backfilling of open pits, were provided by most parties during the Surface Design Engagement (SDE) process prior to CIRNAC-GMRP submitting its Post-EA Information Package and Type A Land Use Permit Application. During the July, 2019 technical sessions, the City of Yellowknife, YKDFN, NSMA, Yellowknife Historical Society, Ryan Silke, and Great Slave Sailing Club all expressed its concerns with the draft plans for borrow sources provided in support of the CRP, and provided suggestions for alternative locations to consider for borrow development.[220] CIRNAC-GMRP acknowledged that additional engagement was necessary for the development of the Borrow Materials and Explosives Management and Monitoring Plan. Within the context of ongoing design for pit fill placement, the advancement of the design must incorporate quarry objective Q1 ("New disturbance due to borrow quarry areas is minimized, to the extent practicable"). This has led to a preference for partial-fill versus complete-fill approaches where this is capable of meeting Closure Objectives for the pits.

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[218] See Public Hearing Transcript, January 22, 2020, pp 31.
[219] See DFO Intervention, dated November 6, 2019.
[220] See Technical Session Transcript, July 12, 2019, pp 222-240.

During the week of December 2, 2019, CIRNAC-GMRP hosted a Borrow Engagement Workshop in Dettah and Yellowknife. The purpose of these meetings was to collect feedback on borrow concerns and priorities for the development of the Borrow Materials and Explosives Management and Monitoring Plan.[221]

The Draft Licence included schedule items for the Borrow Materials and Explosives Management and Monitoring Plan that would require: a rational supporting the choice in borrow sources including aesthetics, health and safety, cultural significance, and environmental considerations; a description of borrow requirements, sources, methods for quarrying, and storage of borrow materials; and information regarding Reclamation of borrow source locations. In their review comments on the Draft Licence, GMRP indicated that some of the information outlined in the schedule items will be provided in the Borrow Design Plan, and certain information would be included in the Waste Management Plan, not the Borrow Materials and Explosives Management and Monitoring Plan.[222] The Board has moved the schedule items from the Borrow and Materials and Explosives Management and Monitoring Plan to the Board Directives for the Borrow Design Plan (Schedule 3, Condition 2) or Board Directives for the Waste Management and Monitoring Plan (Schedule 4, Condition 1) as appropriate.

The Borrow Materials and Explosives Management and Monitoring Plan must be submitted to the Board, for approval, a minimum of 120 days prior to the Project's plans to initiate Active Remediation and Adaptive Management (Phase 2). This plan must identify known, appropriate borrow sources being proposed to support Remediation activities, the intended geochemical verification methods to ensure proposed sources will not generate acid or leach metals to the environment, monitoring programs, and plans to reclaim any on-site borrow sources. If concerns remain following these engagement efforts and review of the Plan, they can be addressed through the Board's process.

Part F, condition 14 and 15 and Schedule 4, condition 10: Arsenic Trioxide Frozen Shell Management and Monitoring Plan

Part F, condition 14 identifies the requirement for the Arsenic Trioxide Frozen Shell Management and Monitoring Plan. This Plan is required by the Licence to ensure the long-term operation and maintenance of the Arsenic Trioxide Frozen Shell is managed and monitored in accordance with the *Waters Act*, and the objectives listed in Part F, condition 1. CIRNAC-GMRP did not include a version of the Arsenic Trioxide Frozen Shell Management and Monitoring Plan with its Post-EA Information Package and Land Use Permit Application, however, the Draft Water Licence submitted as part of the Post-EA Information Package did include a condition for its submission including suggestions for the Plan's requirements in a draft schedule.

The plan to freeze underground arsenic trioxide dust was finalized and approved during EA0809-001. Mechanisms to address alternatives should better solutions be identified in the future are built into the measures of the Report of EA (see measures 2, 3, 4, 18 and 19) and should be achievable based on the design of the frozen shell and Closure Objectives and Criteria associated with its establishment presented in the CRP. Objective F2 for the freeze program, for example, asserts that "reversibility for future developments in Remediation has been maintained".[223] Additional criteria may be presented for review and approval through the Design Plan(s) associated with the development of the Arsenic

[221] See GMRP's Borrow Engagement Session Report, dated January 17, 2020.
[222] Giant Mine Remediation Project Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 185.
[223] See GMRP's Response to Information Requests from Technical Session 2, dated October 10, 2019.

Trioxide Frozen Shell. The Design Plan(s) will be distributed for review and comment. The Arsenic Trioxide Frozen Shell Management and Monitoring Plan must be submitted to the Board, for approval, a minimum of 120 days prior to the Project's plans to initiate Active Remediation and Adaptive Management (Phase 2). If concerns remain following the review of the Arsenic Trioxide Frozen Shell Management and Monitoring Plan and Design Plan(s), they can be addressed through the Board's process.

Operation of Structures and Facilities

The Board has included one standard condition with respect to the operation of structures and facilities on site. The *Engineered Structures* condition is a slightly modified version of a standard condition intended to identify any limitations that apply to the Construction, operation, and maintenance of site components. In the case of the GMRP, the major structures and facilities associated with Remediation activities have been defined as 'Engineered Structures'. The intent of this condition is to ensure compliance with design specifications and/or best practices, prevent structural failure, and minimize environmental impacts. Reporting associated with this condition is required in the Water Licence Annual Report.

Inspection of Structures and Facilities

The Board has included several standard conditions with respect to the inspection of structures and facilities on site. Because the Post-Construction monitoring required for all Project Components is to be outlined in Design Plans, the frequency and types of inspections must be laid out in that Plan for public review and Board approval. These conditions ensure that Engineered Structures of the GMRP will be regularly inspected, often by a third-party, to ensure stability is maintained and any issues can be detected and addressed efficiently. Dam Safety Reviews are conducted by a third-party as per the *Canadian Dam Safety Guidelines* and are submitted to the Board. During the public hearing, Board staff asked if CIRNAC-GMRP could provide a tabulated summary of information on the Project's Dams in the Annual Water Licence Report.[224] As CIRNAC-GMRP agreed, the Board has also included this requirement in the Annual Water Licence Report.

Discharge Locations and Rates

As described in the Water Management and Monitoring Plan section of these Reasons for Decision, above, the Project requires authorization for the Discharge of Effluent from first the Effluent Treatment Plant and subsequently from the Water Treatment Plant, once operational. The *Effluent Discharge – Effluent Treatment Plant and Water Treatment Plant* condition ensures that the Project can only Discharge Effluent in the approved Receiving Environments. Through this condition, GMRP is also permitted to use treated Effluent for dust suppression, paste backfill, or other Project activities as described and approved in the Dust Management and Monitoring Plan, pursuant to Schedule 4, condition 6 g) iii. or Water Management and Monitoring Plan, pursuant to Schedule 4, condition 2 a) iv. g.

The *Notification – Waste Deposit* is a standard requirement should GMRP propose to dispose of Waste in another nearby facility. Currently, domestic Waste and Sewage is being transferred to the City of Yellowknife municipal facilities, a practice that is likely to continue on some level for the life of this Project.[225] Additionally, the proposed Non-Hazardous Waste Landfill for the GMRP is being designed to contain only non-hazardous Waste. It is possible that some Waste streams might be best managed

[224] See Public Hearing Transcript, January 21, 2019, pp 222-223.
[225] See Review Summary and Attachments – Management Plans Group 1 (Standard).

using the services of local hazardous Waste management companies, such as KBL Environmental Ltd. This condition allows for the alternate management of Wastes to off-site facilities. Permission to accept Wastes from external facilities is a requirement of the Waste Management and Monitoring Program.

Effluent Quality Criteria

The Board's approach to managing the deposit of Waste to the Receiving Environment through water licence conditions is described in the Board's *Water and Effluent Quality Management Policy*.[226] The Board has included several conditions with respect to those Discharges, including EQC of the Discharges, the demonstration of meeting the EQC prior to Discharges, or recommencing Discharge, and required actions should Effluent not meet EQC. Appendix 1 describes the Board's decision regarding *Effluent Quality Criteria – Effluent Treatment Plant* and *Effluent Quality Criteria – Water Treatment Plant* conditions.

Part F, condition 26: *Effluent Quality Criteria – Effluent Treatment Plant*

EQC included for the Discharge of Effluent from the Effluent Treatment Plant as per the *Effluent Quality Criteria – Effluent Treatment Plant* condition, are as follows in Table 2:

Table 2: Final EQC for ETP - Water Licence MV2007L8-0031

Parameters	Maximum Average Concentration (mg/L)	Maximum Grab Concentration (mg/L)
pH (pH unit)	6.5 to 8.5	
Total Ammonia	See Table Below	See Table Below
Total Arsenic	0.3	0.6
Chloride	660	720
Total Copper	0.03	0.06
Total Lead	0.003	0.006
Total Nickel	0.1	0.2
Nitrate (as N)	13	25
Sulphate	1310	1440
Total Zinc	0.1	0.2
Total Suspended Solids	15	30
Total Petroleum Hydrocarbons	3	5

mg/L = milligrams per litre

[226] See *MVLWB Water and Effluent Quality Management Policy* (March 31, 2011).

pH	Maximum Average Total Ammonia Concentration (mg-N/L)	Maximum Grab Total Ammonia Concentration (mg-N/L)
6.5	3.1	6.2
7.0	2.7	5.5
7.1	2.6	5.3
7.2	2.5	5.0
7.3	2.4	4.7
7.4	2.2	4.4
7.5	2.0	4.1
7.6	1.8	3.7
7.7	1.7	3.3
7.8	1.5	3.0
7.9	1.3	2.6
8.0	1.1	2.3
8.1	0.97	2.0
8.2	0.83	1.7
8.3	0.71	1.4
8.4	0.60	1.2
8.5	0.51	1.0

mg-N/L = milligrams of Nitrogen per litre

Part F, condition 27: *Effluent Quality Criteria – Water Treatment Plant*

EQC included for the Discharge of Effluent from the Water Treatment Plant as per the *Effluent Quality Criteria – Water Treatment Plant* condition, are as follows in Table 3:

Table 3: Final EQC WTP - Water Licence MV2007L8-0031

Parameters	Maximum Average Concentration (mg/L)	Maximum Grab Concentration (mg/L)
pH (pH unit)	6.5 to 8.0	
Total Ammonia	See Table Below	See Table Below
Total Antimony	0.2	0.3
Total Arsenic	0.01	0.02
Total Copper	0.024	0.033

Total Lead	0.003	0.008
Total Nickel	0.1	0.15
Nitrate (as N)	13	25
Total Zinc	0.08	0.16
Total Suspended Solids	15	30
Total Petroleum Hydrocarbons	3	5

mg/L = milligrams per litre

pH	Maximum Average Total Ammonia Concentration (mg-N/L)	Maximum Grab Total Ammonia Concentration (mg-N/L)
6.5	10.9	22
7.0	9.7	19
7.1	9.2	19
7.2	8.8	18
7.3	8.3	17
7.4	7.7	15
7.5	7.1	13
7.6	6.5	11
7.7	5.8	9.6
7.8	5.2	8.1
7.9	4.6	6.8
8.0	4.0	5.6

mg-N/L = milligrams of Nitrogen per litre

The *Testing Before Discharge – Effluent Treatment Plant* and *Testing Before Discharge – Water Treatment Plant* conditions ensure that Effluent meets EQC prior to Discharge, and that both the Board and the Inspector(s) are notified prior to commencing or resuming Discharges. These conditions are not intended to apply to maintenance shutdowns, power outages, or similar reasons, and SNP Water quality data would not have to be submitted to the Board and an Inspector following these occurrences. The *Effluent Quality Criteria – Exceedance – Effluent Treatment Plant and Water Treatment Plant* condition ensures specific action is taken by CIRNAC-GMRP should the EQC not be met. A version of this condition was submitted by CIRNAC-GMRP in their proposed Draft Water Licence with their Post-EA Information Package; Board staff changed requirement to include cease Discharge (a) and added the requirement to report the Discharge not meeting EQC as a spill in (c).

The *Water Treatment Plant Effluent Quality Criteria Report* condition was included in CIRNAC-GMRP's Draft Water Licence. At the public hearing, Board staff asked CIRNAC-GMRP to clarify the intent of this

report.[227] Based on CIRNAC-GMRP's explanation, this condition requires CIRNAC-GMRP to submit an update to the Board on the design of the WTP that demonstrates EQC remain achievable. CIRNAC-GMRP suggested further refinement of the condition upon reviewing the Draft Licence[228].

The Board notes that CIRNAC-GMRP are also required to ensure Discharge is not acutely toxic, in accordance with the *Fisheries Act* and the *Effluent Quality – Toxicity – Effluent Treatment Plant and Water Treatment Plant* condition. This is a standard condition.

As described above, the *Discharge Quality – Toxicity, Runoff and Seepage and Runoff and Seepage Discharge – Authorization* conditions together ensure that Runoff, Seepage and Contact Water are managed as approved in the Water Management and Monitoring Plan. The Board's reasons for decision regarding the management of Contact Water and the transition to Runoff are included in the sections above.

5.8 Part G: Conditions Applying to Spill Contingency Planning and Schedule 5

The conditions in Part G are consistent with standard conditions found in previous Licences issued by the Board. Part G of the Licence contain conditions related to spill contingency planning and reporting, reclamation of spills and Unauthorized Discharges, and emergency response for the GMRP. The purpose of this part is to ensure that CIRNAC-GMRP and its contractors are fully prepared to respond to spills and Unauthorized Discharges so that impacts on the Receiving Environment are prevented or minimized. Part G, condition 1 sets out the objectives for the management of spills. It is consistent with the principles of objective-based regulation and reminds the Licensee of the need to manage spills with the goal of minimizing impacts on the receiving environment.

The Spill Contingency Plan is a standard condition for Licences issued by the Board. The purpose of the plan is the same as the overall purpose of this part of the Licence. It provides the site-wide plans for spill avoidance, response, mitigation and reporting. It ensures that CIRNAC-GMRP, and its Main Construction Manager, Parsons Inc., have identified lines of authority and responsibility, action plan(s) for responses to spills and Unauthorized Discharges, and reliable reporting and communication procedures. The Spill Contingency Plan is a defined term in the Licence, referencing the Indian and Northern Affairs Canada's *Guidelines for Spill Contingency Planning*.[229] CIRNAC-GMRP included a Spill Contingency Plan in the Post-EA Information Package and Land Use Permit Application. The Board has given interim approval of the Spill Contingency Plan because it sufficiently meets the guidelines and reflects the scope of the proposed activities, but an update is required prior to the initiation of Active Remediation and Adaptive Management (Phase 2). Specifically, the Spill Contingency Plan should be submitted within 90 days of the effective date of this Licence, as per the *Spill Contingency Plan – Revised* condition. It is expected that updates committed to during the ORS review will be incorporated at that time. The requirements have been provided in detail in Schedule 5, condition 1.

Reporting requirements in the *Report Spills* condition are consistent with the *GNWT Spill Contingency Planning and Reporting Regulations*. Spills must be reported to ensure adequate cleanup occurs, necessary mitigation measures are implemented, and records are maintained. In addition to reporting spills, this condition also explicitly requires the Permittee to maintain records of all spills, to report each 'reportable' spill to an Inspector within 24 hours, and to submit reports to the Board and

[227] See Public Hearing Transcript, January 21, 2020, pp. 88-90.
[228] Giant Mine Remediation Project Online Review System Draft Land Use Permit and Draft Water Licence Conditions, Comment ID 106.
[229] See *INAC Guidelines for Spill Contingency Planning* (2007).

Inspector within 30 days regarding the spill and the Permittee's cleanup efforts. The intent of this condition is to ensure the Licensee is aware of the standard procedure following a spill or Unauthorized Discharge.

The remaining three conditions in this part outline best management practices for the prevention of spills and response in the event a spill occurs. The intent is to limit any potential negative impacts to the Receiving Environment when hazardous materials and Wastes are stored and used on site.

5.9 Part H: Conditions Applying to Aquatic Effects Monitoring Program and Schedule 6

Part H and Schedule 6 of the Licence contain conditions applying to the Aquatic Effects Monitoring Program (AEMP) for the Project. The requirement of an AEMP was specifically outlined in measure 17 of EA0809-001 for the Giant Mine Remediation Project. Measure 17 requires the AEMP to be developed for the Project as per the *Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories*, June 2009, with corresponding Action Levels and management response framework. A more current guidance document, *Guidelines for Aquatic Effects Monitoring Programs*, March 2019[230] (the AEMP Guidelines), was issued by the Land and Water Boards of the Mackenzie Valley and the Government of the Northwest Territories prior to CIRNAC-GMRP submitting their Post-EA Information Package and Type A Land Use Permit Application. The 2019 document is therefore referenced in the Water Licence in place of the 2009 document.

A typical AEMP consists of an initial Design Plan, and then on a three-year cycle, the submission of an AEMP Re-evaluation Report, followed by re-design of the AEMP, if required, as outlined in the AEMP Guidelines.[231] The application of the AEMP Guidelines to the GMRP is unique when compared to a development that is just commencing operations; aquatic effects have already been realized in Baker Creek and Yellowknife Bay due to historic mining operations and the GMRP has been monitoring aquatic effects since 2003 under an Environmental Effects Monitoring Program as per ECCC's Metal and Diamond Mining Effluent Regulations (MDMER).[232] The Board notes that the AEMP Guidelines indicate that "an AEMP may be required even for projects that have mandatory aquatic effects monitoring requirements required by other regulators."[233]

The Board also recognizes that the AEMP for this Project is unique as the Receiving Environment will shift from Baker Creek to Yellowknife Bay during this Licence, once the WTP becomes operational. With these considerations, the Board has included the *Objective – Aquatic Effects Monitoring Program* condition which includes standard requirements of an AEMP but also ensures measures 12, 13, 15 and 17 of EA0809-001 are met. Schedule 6, condition 1 includes standard requirements of an AEMP Design Plan as well as the requirements of measures 12, 13, 15 and 17 of EA0809-001.

In their proposed Draft Water Licence submitted with the Post-EA Information Package,[234] CIRNAC-GMRP proposed a two-phased AEMP, as clarified in the second technical session.[235] The initial Baker

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[230] See the Boards' Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[231] Ibid.
[232] See Metal and Diamond Mining Effluent Regulations, Government of Canada, 2002.
[233] See Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[234] See Post-EA Information Package, Draft Water Licence.
[235] See Technical Session Transcript for September 13, 2019, pp. 159-162.

Creek AEMP Design Plan that was submitted with the Post-EA Information Package focuses on Baker Creek, the current Receiving Environment of the ETP. Following this, CIRNAC-GMRP proposed that the AEMP shift to focus on Yellowknife Bay, the location of the outfall for the WTP. CIRNAC-GMRP submitted a "conceptual" AEMP for Yellowknife Bay with the Post-EA Information Package. Prior to Discharge from the WTP, CIRNAC-GMRP proposed to conduct a Yellowknife Bay Special Study, the results of which would inform the Design Plan for the AEMP focused on Yellowknife Bay.

During the review, CIRNAC-GMRP requested that the Board approve the Baker Creek AEMP Design Plan with issuance of the Water Licence[236] and suggested that the Baker Creek AEMP be revised and resubmitted 30-60 days post-issuance with administrative updates identified during the review.[237] Throughout the proceeding, several reviewers recommended that the AEMP not be compartmentalized into two programs for Baker Creek and Yellowknife Bay, respectively. CIRNAC-GMRP explained that proposing the two separate AEMPs was made with the intent to follow the Board's AEMP Guidelines.[238,239] During the proceeding, it was recommended that the Project have one comprehensive AEMP.[240] CIRNAC-GMRP agreed that the Project could have one comprehensive AEMP.[241]

In considering the role of the AEMP in the Project, the Board considered GMOB's Intervention:

> *GMOB's initial concerns with the AEMPs provided by the GMRP related to there being two distinct programs, and not considering measuring improvements in the study designs. Two distinct programs would make it difficult to provide a comprehensive assessment of the aquatic receiving environment and GMOB also considers that an environmental improvement could be considered a Project related effect. In response to comments and through discussions at the technical sessions, it became apparent that the GMRP was not proposing that there be two distinct AEMP's, but rather that the Project was envisioning an AEMP that would evolve with the project, however the GMRP continues to maintain that the focus of the AEMP's should be on the impacts of discharges from the site. GMOB supports the approach of developing a single AEMP for the Project that adapts as the Project progresses. This program would initially focus on Baker Creek but evolve to include Yellowknife Bay once the new WTP is commissioned. GMOB accepts that the initial iteration could mirror the current EEM monitoring as that will provide continuity with current monitoring and site activities, but a new design plan should be developed in response to planned remediation activities on the site. Though a number of parties' comments and discussion during the technical sessions identified an interest in also measuring environmental improvements resulting from the remediation, the GMRP does not propose to do this in the combined AEMP. The GMRP argued that this is not the intent of an AEMP, but that monitoring under other programs such as the DFO Authorization and Community Based Monitoring would serve to measure and report on improvements.*
>
> *Ideally, there would be one comprehensive aquatic monitoring program for Baker Creek and Yellowknife Bay that tracks and reports on both impacts and improvements resulting from the*

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[236] See Technical Session Transcript for July 9, 2019, p. 44.
[237] See Technical Session Transcript for July 12, 2019, p. 142.
[238] See Technical Session Transcript for July 11, 2019, pp. 102-124.
[239] See Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[240] See Technical Session Transcript for September 13, 2019, pp. 159-162.
[241] See Technical Session Transcript for September 13, 2019, p.162.

remediation of the site. GMOB expects the AEMP will form an important component of any overarching aquatic monitoring program. As specifics of these studies are not yet available, it is difficult to provide specific recommendations regarding potential tie-ins to the AEMP. However, to facilitate overall integration of aquatic monitoring programs, the AEMP Annual Reports should include a summary of the results of the other studies, as well as a discussion regarding whether the results of any of these studies have influenced interpretation of the AEMP results or future re-designs.

A single AEMP should be developed for the entire Project. This program can evolve as the discharge from the Project moves from the current ETP and Baker Creek to the new WTP and direct discharge into Yellowknife Bay.

The overall aquatic monitoring for the Project should be designed to measure improvements to the aquatic receiving environment as well as potential impacts. Improvements to the aquatic environment may be reflected in monitoring conducted under other programs, e.g. DFO authorization or Community Based Monitoring; the results of these programs should be summarized in the AEMP Annual Reports.[242]

In response, CIRNAC-GMRP explained its approach to aquatic monitoring and reporting for the Project, which aligns with the Board's decision regarding the AEMP versus monitoring activities that fall specifically under the CRP:

The GMRP would like to clarify GMOB's statement that: "GMRP proposes that remediation success will be monitored and reported under other plans such as performance monitoring reports, construction monitoring plans and the Fisheries Act Authorization" (GMOB Intervention, p 30). The GMRP does not propose that remediation success would be monitored or reported under construction monitoring plans, nor has GMRP proposed "performance monitoring reports." GMRP has stated that post-construction monitoring results relevant to closure criteria will be made available in the Annual Water Licence Report during active remediation. The Annual Water Licence Report will also include updates on the progress of the CRP. Once the Project transitions from Active Remediation to Post-Closure (i.e., once the Final Closure and Reclamation Report has been submitted), the GMRP will monitor the remediation success under the Post-Closure Monitoring and Maintenance Plan and will communicate and evaluate progress in the Performance Assessment Reports. The GMRP agrees with the recommendation to have a single AEMP that evolves over time through the standard MVLWB re-evaluation process. The GMRP proposes that the current 'Baker Creek AEMP Study Design' be approved and renamed to "AEMP Study Design". The concepts outlined in the draft Yellowknife Bay AEMP Study Design will be retained and used for upcoming engagement and future versions of the AEMP Study Design. The focus of the AEMP will change to Yellowknife Bay. Based on the MVLWB's standard 3-year schedule for AEMP re-evaluations, the 2026 AEMP will shift focus to Yellowknife Bay, as discharge to Yellowknife Bay is scheduled to commence in 2026.

The GMRP agrees with a brief summary of the various aquatic/biological monitoring programs in a central location. However, the location of that summary will change over time, as outlined below. Detection of improvements will not occur until the end of remediation and into post-closure; there is ample time to discuss and refine format and reporting. Therefore, the GMRP

[242] See GMRP Public Hearing – GMOB Intervention – Nov 7-19, pp. 29-31.

submits a Water Licence clause directing the Project on where to report all these programs is not necessary.

Early years of remediation where habitat is not yet restored: The AEMP and the SNP are the primary monitoring tools. The GMRP agrees with GMOB that AEMP results will be reported via the AEMP Annual Report. Additional water data will be found in the SNP program in the Water Licence Annual Report. The AEMP will focus on detecting the possible negative effects of construction and release of treated effluent. In general, no positive effects to aquatics are expected until late in remediation. This is because the restoration of Baker Creek occurs near the end of remediation after the contaminated material has been removed, tailings are covered, and the freeze has begun.

Late remediation after restoration of aquatic habitat: The GMRP proposes that the Water Licence Annual Report will be the location for summaries of aquatic monitoring in late remediation. This is because aquatic monitoring at this stage of remediation will be conducted either though the Fisheries Act Authorization(s) for Baker Creek and Yellowknife Bay, and an AEMP for Yellowknife Bay and the anticipated Community-based monitoring program (scope yet to be determined). These programs will assess the expected early positive improvements to aquatics related to habitat restoration and the new water treatment plant operation as well as possible negative effects related to treated effluent discharge to Yellowknife Bay.

Post-Closure: Post-Closure Monitoring and Maintenance Plan will conduct water quality and remaining aquatic monitoring. Annual results will be reported in the Annual Water Licence Report. The success of remediation will be measured against the closure criteria and reported in the Performance Assessment Report, nominally proposed to occur every five years. In summary, in alignment with the MVLWB AEMP and Closure guidance documents, the overall aquatic monitoring results are expected to be summarized in reports as follows:

1. *Early Remediation: Annual AEMP Report*
2. *Late Remediation: Annual Water Licence Report*
3. *Post-Closure: Performance Assessment Report (PAR)*[243]

To reflect the evolving understanding and discussions regarding the Project's AEMP, the Board has decided that an updated version of the AEMP, a Project-wide AEMP Design Plan, is required for resubmission and approval within 90 days of Licence issuance. However, the Board has decided that the AEMP Design Plan that was submitted with the Post-EA Information Package (AEMP Design Plan – Baker Creek) can be considered interim approved for the Existing Condition (Phase 1) period. The revision to the Design Plan due within 90 days of Licence issuance must address commitments made by CIRNAC-GMRP to during the Water Licence proceeding. These requirements are identified in the *Aquatic Effects Monitoring Program Design Plan* condition and specific requirements for the updated AEMP Design Plan that reflect comments and recommendations from the review are articulated in Schedule 6, condition 2. The required updates outlined in Schedule 6, condition 2 are based on commitments made by GMRP to update the AEMP Design Plan in response to comments received during the public review of the Post-EA Information Package, mostly from ECCC.[244] As the commitments made by GMRP to update the AEMP Design Plan resolved ECCC's comments, the Board has decided that the AEMP Design Plan that is re-submitted within 90 days of Licence issuance will

[243] See GMRP Public Hearing – Response to Interventions – Dec2-19, pp. 39-41.
[244] See ECCC Online Review System Review 6 of 7 (Management Plans Group 2 (Water)), Comment ID 7, 15, 17, 20, 23-25, 29, 31, 32.

not require further public review and Board approval, but rather a confirmation of conformity by Board staff. CIRNAC-GMRP indicated that the initial Baker Creek-focused AEMP would undergo re-evaluation in approximately 2023[245], as per the Boards' AEMP Guideline.[246] The requirement to re-evaluate the AEMP Design Plan by 2023 is included in the *Aquatic Effects Monitoring Program Design Plan* and the *Aquatic Effects Monitoring Program Re-Evaluation Report* conditions. These documents will require public review and Board approval following submission.

The Boards' AEMP Guidelines[247] recommend a three-year cycle for re-evaluation and possible re-design of AEMP's; however, CIRNAC-GMRP recommended a trigger in relation to the commencement of Discharge from the WTP for the Re-evaluation and Design Plan that would occur in 2026. The AEMP Guidelines state that revisions to the Design Plan at times other than the typical three-year cycle may be considered, particularly where new information or special studies are considered. CIRNAC-GMRP's Draft Water Licence in the Post-EA Information Package proposed that an AEMP Design Plan, together with an Aquatic Effects Baseline Report for Yellowknife Bay, be submitted 6 months prior to Discharge from the WTP. In the public hearing[248] CIRNAC-GMRP suggested that both an AEMP Re-evaluation Report and a new AEMP Design Plan could be submitted 12-months prior to commencing Discharge from the New Water Treatment Plant.[249] The Board has captured this through the *Aquatic Effects Monitoring Program Design Plan – Updated* and *Aquatic Effects Monitoring Program Re-Evaluation Report* conditions.

In their proposed Draft Water Licence submitted with the Post-EA Information Package,[250] CIRNAC-GMRP also included a condition for submission and approval of a Plume Delineation Study Design prior to the commencement of Discharge from the WTP as per the *Guidelines for Effluent Mixing Zones*,[251] with the Plume Delineation Study to take place during the first open-Water season of WTP Discharge, and the results reported in the following AEMP Annual Report.[252] Upon reviewing the Draft Licence posted by Board staff, CIRNAC-GMRP clarified that the Plume Delineation Study Design will be submitted to the Board with the 2023 AEMP Design Plan. The Board has included this requirement as the standalone *Plume Delineation Study Design* condition as this relates to EA0809-001 measures 12, 13 and 15. The Board has included the *Plume Delineation Study Report* condition to require GMRP to submit the results of the Plume Delineation Study Report in the AEMP Annual Report following completion. This condition refers to current best practices and the MVLWB/GNWT *Guidelines for Effluent Mixing Zones* and approved EA0809-001 measures 12, 13, and 15 for the development of the study design. The *Aquatic Effects Monitoring Program Annual Report* condition is a standard condition requiring an AEMP Annual Report in accordance with the AEMP Guidelines. Schedule 6, condition 3 lists the requirements of the AEMP Annual Report. The Board notes that CIRNAC-GMRP is only required to refer to the results and interpretations of the Plume Delineation Study and the Reference Area Reconnaissance Special Study one time each, after completion of each

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[245] See Public Hearing January 21, 2020, pp.18-19.
[246] See Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[247] See Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[248] See MVLWB Online Registry
[249] See Public Hearing January 21, 2020, p. 118.
[250] See Post-EA Information Package, Draft Water Licence.
[251] See Guidelines for Effluent Mixing Zones, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, September 2017.
[252] See Technical Session Transcript for September 13, 2019, pp. 157-160.

respective Study.

The Board has decided to use a time requirement in relation to the commencement of Discharge from the WTP for the submission of the 2026 Re-evaluation Report, the Plume Delineation Study Design, the Aquatic Effects Baseline Report for Yellowknife Bay, and the AEMP Design Plan – these have been included as the *Aquatic Effects Monitoring Program Design Plan - Updated, Aquatic Effect Baseline Report, Plume Delineation Study Design, and Aquatic Effects Monitoring Program Re-Evaluation Report* conditions in the Licence. The Board decided that this timing was appropriate because these submissions should be made with respect to the new Receiving Environment for the Project, triggered by the WTP being operational. The Board also decided that the AEMP Re-evaluation Report should come three months prior to the AEMP Design Plan to ensure that information can be reviewed and considered for the submission of the Design Plan. Should the WTP not commence Discharge in 2026 as planned at the time of Water Licence issuance, AEMP re-evaluation and possible re-design would still be required for Board approval on a three-year cycle (Part H, condition 2 and 8(a) of the Water Licence). The Board has included specific, standard requirements for the Re-evaluation Report in Schedule 6, condition 4. The Board notes that the Re-Evaluation Report must only include reviews and summaries of the AEMP Baseline Report for Yellowknife Bay, Plume Delineation Study and Reference Area Reconnaissance Special Study only when relevant following completion of those respective studies.

In addition to the Board's Reasons for Decision regarding the timing of AEMP submissions given above, the *Aquatic Effects Monitoring Program Design Plan – Updated* condition ensures the AEMP Design Plan meets the Board's AEMP Guidelines[253] and EA0809-001 measures 12, 13 and 15. The *Aquatic Effects Baseline Report* condition ensures that the Aquatic Effects Baseline Report for Yellowknife Bay shall inform the AEMP Design Plan. In their review of the Draft Licence, CIRNAC-GMRP clarified that the AEMP Re-evaluation Report would provide an analysis of the results of Baseline Report for Yellowknife Bay.

CIRNAC-GMRP also clarified that because Baker Creek will be undergoing major works as per the CRP, AEMP monitoring in that Receiving Environment will ease-off coinciding with the Receiving Environment shifting to Yellowknife Bay:

> *The Baker aquatics monitoring would occur, and likely complete, and then you would transition over to the fish habitat -- or sort of construction-based monitoring over a course of years, as you stagger and go from upstream to downstream with your realignment and your removal of contaminated sediment. And then once the creek is open and restored, you would be monitoring fish in that post construction under your fish habitat authorization. And at that time, you're not thinking about aquatic effects monitoring in Baker Creek itself anymore.*[254]

GMRP-CIRNAC proposed that, in order to specifically follow the Board's AEMP Guidelines,[255] the AEMP focus on monitoring negative effects from the Project's operations in the Receiving Environment of the Effluent Discharge, and that according to the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*,[256] monitoring for improvement and

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[253] See Guidelines for Aquatic Effects Monitoring Programs, Government of the Northwest Territories and Land and Water Boards of the Mackenzie Valley, March 2019.
[254] See Technical Session Transcript for July 11, 2019, p. 133.
[255] See the Boards' Guidelines for Aquatic Effects Monitoring Programs, March 2019.
[256] See Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories, Aboriginal Affairs and Northern Development Canada and the Mackenzie Valley Land and Water Board, November, 2013.

positive change in the aquatic environment be conducted via the CRP and its associated monitoring and performance assessments.[257] CIRNAC-GMRP also clarified that, after 2026, the biological monitoring in Baker Creek would be linked to that required under the Fisheries Authorization for Construction in Baker Creek; biological monitoring will be specifically reviewed and approved in the Baker Creek Design Plan[258] and monitoring data will be presented in Annual Water Licence Reports, the PAR and the Post-Closure Monitoring Plan.[259]

The *Low Action Level Exceedance* and *Moderate or High Action Level Exceedance* conditions are standard conditions regarding the requirements for Action Level exceedances. Schedule 6, condition 5 includes standard requirements for an AEMP Response Plan, if required.

Regarding engagement and stakeholder participation in the AEMP, CIRNAC-GMRP has committed to establishing an aquatic engagement group, comprised of members from ECCC, YKDFN, NSMA or other Environmental Agreement signatories who wish to participate.[260] Schedule 6, condition 3(f) requires information on engagement activities that have informed the AEMP.

During the proceeding, YKDFN requested involvement in developing aquatic monitoring for the Project; CIRNAC-GMRP responded that a draft strategy is being developed as to how stakeholders can participate in the AEMP and an approach to co-develop a Community-Based Monitoring Program. CIRNAC-GMRP explained that with their intent to closely follow the AEMP Guidelines and legal obligations with respect to aquatic monitoring, it is necessary to retain certain control of the AEMP; however; CIRNAC-GMRP communicated their willingness to have input on the Community-Based Monitoring Program and participation from stakeholders in the development of the AEMP.[261] For these reasons, the Board has not included a specific condition regarding the requirement of particular stakeholder participation. The Board also notes that the AEMP Design Plan and AEMP Annual Report, as well as the Water Licence Annual Water Licence Report, requires CIRNAC-GMRP to report on any information regarding Community-Based Monitoring.

Considering all of the evidence presented above, the Board decided that the AEMP in the Water Licence refers to one comprehensive AEMP, with the understanding that the program may shift and evolve over time due to Discharge location, Project activity and Construction, and stakeholder engagement. The Board is confident that (1) the three-year cycle and trigger-related AEMP re-evaluation and re-design required in the Water Licence, (2) CIRNAC-GMRP's commitment to engagement on the AEMP, and the (3) direction articulated in the AEMP Guidelines[262] provide ample requirements for a robust AEMP for the Project.

5.10 Part I: Conditions Applying to Compensation

5.10.1 Compensation Decisions and Conditions Related to Water Compensation

Pursuant to subsection 72.03(5) of the MVRMA, the Board must make a decision on compensation matters including any compensation claims made in this proceeding before it can issue a licence. Because of the complexity of the issues related to water compensation in relation to the GMRP

[257] See Technical Session Transcript for July 11, 2019, p. 146-148.
[258] See Technical Session Transcript for September 12, pp. 124-128.
[259] See GMRP Public Hearing – Response to Interventions – Dec2-19, pp. 39-40.
[260] See GMRP Public Hearing – Response to Interventions – Dec2-19, pp. 26-27.
[261] See GMRP Public Hearing – Response to Interventions – Dec2-19, pp. 69.
[262] See the Boards' Guidelines for Aquatic Effects Monitoring Programs, March 2019.

the MVLWB decided to address compensation concerns separate from matters related to the contents of the proposed water licence. A chronological summary of the compensation process undertaken by the Board follows:

- **April 1, 2019** – Post-EA Information Package for Licence Application MV2007L8-0031 and Land Use Permit Application MV2019X0007 submitted to the Board;
- **April 10, 2019** – Post-EA Information Package and Land Use Permit Application deemed complete and regulatory review commenced by the Board;
- **May 1-2, 2019** – Great Slave Sailing Club (GSSC) and City of Yellowknife (the City) submit questions regarding a process for claiming Water Compensation;
- **May 3, 2019** – Document with a description of "Claims for Compensation Process" emailed to parties in response to questions;
- **May 9, 2019** – First update on the process for Compensation Claims provided through an updated Work Plan distributed to entire distribution list;
- **June 28, 2019** – Distribution of an 'Outline of the Framework for Water Compensation Claims' to assist parties in the GMRP proceeding understand the legislative framework for such claims, who may be eligible, and the notification requirements for potential claimants as established by the Board. Included a Claim for Compensation Notification Form;
- **July 9-12, 2019** – First Technical Session;
- **August 15-20, 2019** – Notifications of Intent to Claim for Water Compensation received from 29 parties;
- **August 26, 2019** – Re-distribution of an outline of the general process the Board follows for considering Claims for Water Compensation. Document included a Claim for Water Compensation Form;
- **September 3, 2019** – Request from the City of Yellowknife to allow for Information Requests as part of the Claims for Compensation process;
- **September 9, 2019** – MVLWB response to the City's Letter regarding the Compensation Claims Process and Information Requests;
- **September 9-12, 2019** – Closure Workshop & Second Technical Session;
- **September 23, 2019** – Extension request for Claims for Compensation from the Great Slave Yacht Club (GSYC) and Great Slave Sailing Club (GSSC);
- **September 26, 2019** – Claims for Water Compensation deadline (extended);
- **October 10, 2019** – Letter from CIRNAC-GMRP to the City regarding process to mitigate Town Site Claim;
- **October 16, 2019** – Letter from the City regarding efforts to mitigate Town Site Claim;
- **October 18, 2019** – Claims for Water Compensation received from 26 parties (Lang, Brookes, City of Yellowknife (2), Coad-Fullerton, Cutler, Drover, GSSC, Guy-Seale, Hodson, Hutchinson-Andrejek, Kellett, Krisch, McCrea, McDonald-Burles, McCullum, McLeod, Morrison-Bowie, O'Beirne, Pamplin, Schlagintweit-Fancott, Walz-Saunders, Yellowknife Historical Society, Andrews, Archer, and Peer-Smith);
- **November 8, 2019** – CIRNAC-GMRP Extension Request for Response to Claims for Compensation;
- **November 12, 2019** – CIRNAC-GMRP Response to Claims for Compensation deadline (extended);
- **November 15, 2019** – CIRNAC-GMRP Response to Claims for Compensation due;
- **November 26, 2019** – Extension Request for Replies to the CIRNAC-GMRP Response to Claims for Compensation submitted by the GSYC and GSSC;
- **November 27, 2019** – Replies to CIRNAC-GMRP Response to Claims for Compensation deadline (extended);

- **December 13, 2019** – Replies to CIRNAC-GMRP Response to Claims for Compensation received from five parties (City of Yellowknife, McLeod, Pamplin, Guy-Seale, and Waltz-Saunders);
- **January 20-24, 2020** – Public Hearing held for Licence Application MV2007L8-0031 and Permit Application MV2019X0007;
- **February 5, 2020** – Request for Updates from Board Staff on the status of Claims for Compensation;
- **March 23, 2020** – Intervener Closing Statements on Applications due and Responses on Updated Status of Claims received from four parties (GSSC, the City, Hodson, McCullum) and CIRNAC-GMRP. James Hodson confirms his intent to withdraw his Claim for Compensation and John McCullum and the City confirms their intent to continue their Claims for Compensation;
- **March 30, 2020** – Great Slave Sailing Club confirms its intent to withdraw its Claim for Water Compensation;
- **April 1, 2020** – Becky Lang confirms her intent to withdraw her Claim for Compensation;
- **April 2, 2020** – Yellowknife Historical Society confirms its intent to continue its Claim for Compensation and Kris Schlagintweit confirms intent to withdraw the Schlagintweit-Fancott Claim for Compensation;
- **April 16, 2020** – Evan Walz and Sonya Evan confirm their intent to withdraw their Claim for Compensation;
- **April 17, 2020** – Proponent Closing Statements on Claims for Compensation due; and
- **June 29, 2020 –** Claims for Compensation presented to the Board for decision.

After due consideration of the GMRP Applications and the record in this proceeding, all the claims made for compensation, including evidence in support of these claims, the argument, response and any replies made by the parties and the statutory framework and applicable law, the Board has decided to deny all claims for water compensation made in relation to the GMRP Application for MV2007L8-0031.

The Board finds that there are no existing licensees with precedence who would be significantly adversely or adversely affected by the issuance of water licence MV2007L8-0031. In addition the Board finds that there are no applicants with precedence within the meaning of ss. 72.02(5) of the MVRMA.

The Board has also dismissed all the remaining compensation claims by listed claimants set out in paragraph 72.03(5)(b) of the MVRMA.

The Board's detailed reasons for decision in relation to each of the remaining water compensation claims are set out in Appendix 3 to these Reasons for Decision. Each claimant has been provided with the specific decision related to their claim. Copies have been provided to the GMRP.

5.10.2 Licence Condition Related to Compensation

Part I of licence MV2007L8-0031 includes a condition specifically addressed to the mitigation of water compensation claims. That condition is set out below:

> *The Licensee shall, at least 90 days prior to Active Remediation at the Town Site, submit a Public Access Plan, for Board approval, that identifies how the Licensee will maintain access to a public boat launch at the Giant Mine Town Site at all times during the open*

water season, and if required, how the Licensee will design and construct an alternate public boat launch in the area, or ensure a level of access similar to that available at the date of issuance.

This condition is intended to address the uncertainty associated with the GMRP commitment to address access to Yellowknife Bay for the GSSC, its members and residents of Yellowknife. The GMRP provided the final text of its commitment on March 27, 2020 as follows:

GMRP has committed to making best efforts to plan and conduct the project to minimize the time required and the impact on the users of the Town Site area. The GMRP will make best efforts to maintain continuous public access to Great Slave Lake for boating through the Town Site area during boating season. The GMRP has proposed achieving this by constructing a boat launch comparable to the existing one at the Giant Mine boat launch near the site of the GSSC if necessary, and to make sure that at least one of the existing or new boat launches will be accessible by the public over the duration of the project during boating season to the greatest extent possible (as outlined in the October 10, 2019 letter to the City of Yellowknife from the GMRP.)[263]

The City of Yellowknife indicated that this language was not firm enough to address its concerns as set out in the Town Site Claim and informed the Board that it would continue with that water compensation claim.

In its final submission the City of Yellowknife requests that the Board order the GMRP to enter into a compensation agreement which would ensure that the alternate boat launch and access is actually constructed. The Board does not have the authority to order that "an agreement be reached", or even that an agreement be negotiated. While a mutually acceptable negotiated outcome would be preferable, this sort of negotiation is voluntary and specific outcomes cannot be required by the regulator.

The Board nevertheless agrees that the language of the GMRP commitment cited above is equivocal and only commits the Project to "best efforts" not to a specific outcome or certain mitigation. The GSSC and several compensation claimants withdrew their claims on the basis of this commitment, but it is the Board's view that the City and the majority of the recreational boaters continued with the compensation process because of the lack of certainty of mitigation inherent in the GMRP commitment. Despite the Board's findings with respect to the eligibility or recreational boaters to claim water compensation under the MVRMA, this remains an important issue. The Board decided to dismiss the City's Town Site Claim for a number of reasons set out in Appendix X, but the decision to include the condition above in Part I of the licence is also an important component of the foundation for that decision.

Resolving compensation claims is a precondition that must be met for the Board to have authority to issue the GMRP licence. A failure by the GMRP to meet its commitment or a dispute over the mitigation effects of the work done by the Project could undermine the Board's decision on the licence.

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[263] GMRP Letter to MVLWB re Addressing Water Compensation Claims dated March 27, 2020, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20GMRP%20Update%20-%20Status%20Claims%20for%20Compensation%20-%20Varied%20-%20Mar27-20.pdf

The language in s.72.04 of the MVRMA grants broad authority to the Board to impose conditions in a licence. It says that the Board may, subject to the Act and regulations, include "any conditions which it considers appropriate" in a licence. Paragraph (e) of s.72.04 actually speaks to conditions about "closure and abandonment of an undertaking". In the Board's view, these provisions provide authority to impose a condition which will eliminate compensation claims by mitigating the impacts which are the cause for those claims. Mitigating the effects of water use or the deposit of waste within the context of the Project is the broad purpose of the water licence drafted by the Board. There should be no argument that the effects of the licensed activity on the statutorily listed water users can include impacts on the activities they undertake based on their rights related to water. This is core of the water compensation scheme in the MVRMA and water laws in the three northern territories.

In the Boards view it is better to mitigate impacts with licence conditions than to require payments for damages to other affected water users. The Board considers a condition requiring the GMRP to plan for its operations and design an alternative boat launch in order to avoid effects on the City's Town Site users to be an appropriate use of its authority under s. 72.04 of the MVRMA.

5.11 Annex A: Surveillance Network Program

Annex A of the Licence contains conditions applying to the Surveillance Network Program (SNP). The SNP details the sampling and monitoring requirements required by the Licence. Requirements for measuring flows, volumes, and meteorological data are based on standard Water license conditions as are the reporting requirements.

CIRNAC-GMRP submitted a proposed SNP in the Post-EA Information Package[264] and then submitted an updated SNP as an Undertaking following the Public Hearing.[265] The SNP annexed to this Licence is formed by the recommendations made by CIRNAC-GMRP in the Undertaking and the rationales provided in the Post-EA Information Package. The Board has included the following SNP stations with the associated rationale as requirements for MV2007L8-0031:

SNP Station	Location	Rationale
SNP 43-1	Treated Effluent Discharge from the Effluent Treatment Plant	Point of compliance; ensures Effluent from the Effluent Treatment Plants meets the EFFLUENT QUALITY CRITERIA – EFFLUENT TREATMENT PLANT condition. Monitors volume of Effluent Discharged.
SNP 43-1A	Treated Effluent Discharge from the outfall of the Water Treatment Plant	Point of compliance; ensures Water Treatment Plant Effluent meets the EFFLUENT QUALITY CRITERIA – WATER TREATMENT PLANT condition. Monitors volume of Effluent Discharged.
SNP 43-5	Baker Creek just prior to entering Yellowknife Bay	Monitors quality of combined Water leaving Baker Creek to Yellowknife Bay including input from adjacent lake.

[264] See CIRNAC Post-Environmental Assessment Information Package submitted on April 1, 2019: Proposed
[265] See CIRNAC Responses to Undertakings #2 submitted to the MVLWB on February 19, 2020: Undertaking #2.

SNP 43-11	Baker Creek, upstream of SNP 43-1 (instream reference area).	Monitors Water quality entering site upstream of the Effluent Treatment Plant.
SNP 43-12	End of breakwater at the outlet of Baker Creek to Back Bay (sampled from the Great Slave Sailing Club)	Monitors Water quality of initial mixing in Yellowknife Bay; related to EA0809-001, Measure 13. Maintains long-term dataset at this location.
SNP 43-16	Trapper Creek below the Northwest Pond Tailings Dams (Dam 21A, B, C, and D) and above the confluence of Trapper Creek and Baker Pond/Baker Creek	To characterize Runoff, lateral Seepage, and upstream loading to Baker Creek.
SNP 43-17	Minewater from the Supercrest area at 750L (overflow of High Test Line to Northwest Pond)	Monitors the quality of underground Minewater pumped into Northwest Pond, when activated as needed for supplemental pumping.
SNP 43-21	Akaitcho Shaft pumping Minewater from underground to Northwest Pond	Monitors the quality of Minewater pumped from underground to Northwest Pond.
SNP 43-21A	New submersible Akaitcho pumps transferring Water to Northwest Pond	Monitors the quality of Minewater from underground to Northwest Pond.
SNP 43-23	Baker Creek, Reach 1	Monitors the Water quality at Baker Creek upstream of input from the Non-Hazardous Waste Landfill and Joe Lake watershed.
SNP 43-24	Fresh Water Intake from Yellowknife Bay	Monitors the volume of water use; ensures the WATER SOURCE AND MAXIMUM VOLUME condition is met.
SNP 43-25	Location to be determined. This is a new station that will be activated once SNP 43-12 becomes inactive.	Monitors the Water quality of initial mixing in Yellowknife Bay; related to EA0809-001, Measure 13. Maintains long-term dataset at this location.
SNP 43-26a	New sump at on-site Non-Hazardous Waste Landfill	Monitors the Water quality of Runoff and Seepage from the on-site non-hazardous landfill. Monitors pump-back volume.
SNP 43-26b	New sump at on-site Non-Hazardous Waste Landfill	Monitors the Water quality of Runoff and Seepage from the on-site non-hazardous landfill. Monitors pump-back volume.
SNP 43-26c	New sump at on-site Non-Hazardous Waste Landfill	Monitors the Water quality of Runoff and Seepage from the on-site non-hazardous landfill. Monitors pump-back volume.
SNP 43-27a	Edge of mixing zone, station 1	Monitors the Water quality at the edge of the mixing zone and compare to water quality objectives.
SNP 43-27b	Edge of mixing zone, station 2	Monitors the Water quality at the edge of the mixing zone and compare to water quality objectives.

SNP 43-27c	Edge of mixing zone, station 3	Monitors the Water quality at the edge of the mixing zone and compare to water quality objectives.
SNP 43-28	Location to be determined once new pumps installed at C-Shaft area	Sample Minewater influent at the new pump location at C-Shaft.
SNP 43-29	Sump for South Pond - formerly SMP-1	Monitors the Water quality of Runoff and Seepage from South Pond - includes pumpback from Dam 11. Monitors pump-back volume.
SNP 43-30	Sump on north end of Northwest Pond - formerly SMP-2	Monitors the Water quality of Runoff and Seepage from Northwest Pond - includes pumpback from Dam 22 and existing landfill. Monitors pump-back volume.
SNP 43-31	Sump on north end of North Pond - formerly SMP-3	Monitors the Water quality of Runoff and Seepage from North Pond and Dam 3 - close to Yellowknife River. Monitors pump-back volume.
SNP 43-32	Sump downstream of Dam 1 and Polishing Pond – formerly SMP-4	Monitors the Water quality of Runoff and Seepage from the Polishing Pond. Monitors pump-back volume.
SNP 43-33	Sump south of B2 Pit near Brock Pit - formerly SMP-5	Monitors the Water quality of Runoff and Seepage from B2 Pit. Monitors pump-back volume.
SNP 43-34	Contact Water from Mill Pond cover	Monitors the Water quality of Contact Water from Mill Pond before flow to Baker Creek.
SNP 43-35	Contact Water from B4 Pit	Monitors the Water quality of Contact Water from B4 Pit before flow to Trapper Creek.
SNP 43-36	Contact Water from C1 Pit	Monitors the Water quality of Contact Water from C1 Pit before flow to Baker Creek.
SNP 43-37	Contact Water from B1 Pit	Monitors the Water quality of Contact Water from B1 Pit before flow to Baker Creek.
SNP 43-38	Contact Water from A2 Pit to Baker Creek	Monitors the Water quality of Contact Water from A2 Pit before flow to Baker Creek.
SNP 43-39	Contact Water from covered Northwest Pond	Monitors the Water quality of Contact Water from covered Northwest Pond before flow into Trapper Creek.
SNP 43-40	Contact Water from covered Polishing Pond to Baker Creek	Monitors the Water quality of Contact Water from Polishing Pond before flow to Baker Creek.
SNP 43-41	Contact Water from A1 Pit	Monitors the Water quality of Contact Water from A1 Pit.
SNP 43-42	Contact Water from B3 Pit	Monitors the Water quality of Contact Water from B3 Pit.
SNP 43-43	Contact Water from Central Pond spillway	Monitors the Water quality of Contact Water from Central Pond spillway.
SNP 43-44	Contact Water from North Pond spillway	Monitors the Water quality of Contact Water from North Pond.
MW00-02	Shallow well – south of Northwest Pond	Monitors Groundwater quality between Northwest Pond and Trapper Creek.

MW00-03A/B	Shallow well – north of Northwest Pond	Monitors Groundwater quality between Northwest Pond and Trapper Lake.
MW01-2A/B	Shallow well – within the Foreshore Tailings	Monitors Groundwater quality in Foreshore Tailings area.
MW01-04A/B	Shallow well – north of Tailings release, northwest of North Pond	Monitors Groundwater quality between Northwest Pond and Yellowknife River.
S-DIAND-001	Deep Multi-port Groundwater Well - Near Baker Creek and YK Bay zones 4, 8 & 10	Monitors and characterizes bedrock Groundwater quality near Baker Creek and Yellowknife Bay.
S-DIAND-022	Deep Multi-port Groundwater Well - East of Northwest Pond zones 2, 4 & 11	Monitors and characterizes bedrock Groundwater quality east of Northwest Pond.
S-DIAND-023	Deep Multi-port Groundwater Well - South of North Pond and north of Central Pond zones 2 & 10	Monitors and characterizes bedrock Groundwater quality south of North Pond and north of Central Pond.
S-1954	Deep Multi-port Groundwater Well - South of South Pond, near the Foreshore Tailings and towards Yellowknife Bay zones 2 & 5	Monitors and characterizes bedrock Groundwater quality south of South Pond, near the Foreshore Tailings and towards Yellowknife Bay.
S-1955	Deep Multi-port Groundwater Well - Shoreline of Yellowknife Bay zones 2 & 6	Monitors and characterizes bedrock Groundwater quality.
S-1956	Deep Multi-port Groundwater Well - East of South Pond, towards Yellowknife Bay zones 4 & 10	Monitors and characterizes bedrock Groundwater quality.
S-2224	Deep multiport well - North of North Pond and Dam 3C zones 3 & 9	Monitors and characterizes bedrock Groundwater quality.
MW19-2	Location to be determined, South of the Northwest Pond	Monitors and characterizes bedrock Groundwater quality.
To be Determined	West of the Northwest Pond	Monitors Groundwater quality.
To be Determined	South of the Northwest Pond	Monitors Groundwater quality.
To be Determined	North-northeast of Dam 3C toward Yellowknife Bay	Monitors Groundwater quality.
To be Determined	East-northeast of Dam 3D toward Yellowknife Bay	Monitors Groundwater quality.
To be Determined	East of North Pond	Monitors Groundwater quality.
To be Determined	East of Central Pond	Monitors Groundwater quality.
To be Determined	North of the City of Yellowknife Solid Waste Disposal Facility,	Monitors Groundwater quality.

	entering the site boundary	
To be Determined	Calcine and Mill Pond Area	Monitors Groundwater quality.

The Board notes that SNP monitoring will evolve through the term of the Licence and note that the requirements of Design Plans (Schedule 3, condition 1) and the Water Management and Monitoring Plan (Schedule 4, condition 2) include updates to the Surveillance Network Program.

5.12 Annex B: Table of Submissions

Annex B of the Licence contains a table that summarizes the information CIRNAC-GMRP is required to submit as required by the Licence conditions. The reasons for requiring all plans and reports from the Licence are detailed in Sections 5.3 through 5.10.

5.13 Annex C: Table of Revision History

Annex C of the Licence contains a table which identifies updates and tracks changes made to the Licence. This table is currently blank because this is a new Licence, but it will be updated throughout the life of the Licence.

6.0 Decision – Land Use Permit MV2019X0007

In making its decision and preparing these Reasons for Decision, the Board has reviewed and considered:

1) The Report of Environmental Assessment EA0809-001 and the measures and suggestions therein, as approved by the Responsible Minister;
2) The comments and recommendations made during the regulatory processes;
3) The evidence and submissions from CIRNAC-GMRP received by the Board;
4) The written comments and submissions from parties received by the Board; and
5) The Staff Report prepared for the Board.

Having due regard to the facts, circumstances, and the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA, the Board has determined that Permit MV2019X0007 should be issued subject to the scope, definitions, conditions, and term contained therein. The Board's determinations and reasons for this decision are set out below.

The scope, definitions, conditions, and term set forth in the Permit have been developed to address the Board's statutory responsibilities and the concerns that arose during the regulatory processes. The Reasons for Decision set out below focus on the major concerns and issues raised by parties, including those that were the subject of substantive argument submitted by one or more parties.

6.1 Term of Permit

CIRNAC-GMRP has applied for a term of five years for the Permit. A Land Use Permit will be required for the duration of the GMRP. The term applied for under the Water Licence is 20 years. Subsections 26(5) of the MVLUR allows for a Permit term of not more than five years. After reviewing the submissions made during this regulatory process, the Board has determined an appropriate term for this undertaking is the maximum allowable term of five years to allow the GMRP to progress through the land use activities, as proposed before needing to apply for an extension or renewal.

6.2 Part A: Scope of Permit

The scope of the Permit reflects the triggers identified in the Mackenzie Valley Land Use Regulations (MVLUR) for activities on land within the boundaries of a local government.[266] It ensures the Permittee is entitled to conduct activities which have been applied for and screened by the Board. In setting out the scope of the Permit, the Board endeavoured to provide enough detail to identify and describe the authorized activities, without be unduly restrictive or prescriptive, and to allow for Project flexibility throughout the life of the Permit. The scope was also developed with the understanding that all existing activities permitted onsite would be covered under this Permit. Upon issuance, CIRNAC-GMRP will be able to apply for a discontinuance of all existing Board-issued authorizations.

6.3 Part B: Definitions

The Board defined items in the Permit to ensure a common understanding of conditions, to avoid future differences in interpretation, and to use wording similar to that found in previously issued Permits. For the most part, the definitions used wording from the Board's *Standard Land Use Permit Conditions Template* (Standard Template). Where appropriate, the Board created new definitions, changed standard wording, or used specific definitions to describe specific facilities related to this Project as described below:

- **Active Remediation and Adaptive Management (Phase 2)** - included in the Scope of the Permit and to clarify the scope, and to identify a trigger used in Permit conditions for the updating and resubmission of Site-Wide Management and Monitoring Plans.
- **Arsenic Trioxide Frozen Shell** - included to reflect the specific remedial effort related to this Project.
- **Closure and Reclamation Completion Report** - included to provide a description of the Plan's purpose as required by Permit conditions.
- **Engineered Structure** - this is a standard definition, however, the structures identified are particular to the Project and are meant to identify the parts of the Project for which reviewers can expect to see Construction Plans. Engineered Structures associated with the Project were identified by the GMRP in response to the Board-issued IR following the review of the Draft Licence.[267] The term distributed in the Draft Licence was 'Engineered Component'.
- **Environmental Assessment (EA0809-001)** - Environmental Assessment EA0809-001, conducted by the Mackenzie Valley Environmental Impact Review Board for the Giant Mine Remediation Project.
- **Existing Condition (Phase 1)** - included in the Scope of the Permit.
- **Existing Effluent Treatment Plant System (Effluent Treatment Plant)** - included to accurately reflect and identify components specific to the GMRP.
- **Foreshore Tailings** - included to accurately reflect and identify components specific to the GMRP.
- **New Water Treatment Plant (WTP)** - included to accurately reflect and identify components specific to the GMRP.
- **Non-Hazardous Waste Landfill -** similar to the definition for Solid Waste Facility but adjusted to reflect and identify site-specific Project components.
- **Perpetual Care Plan** - included to provide a description of the Plan's purpose as required by Licence conditions.
- **Project Component** - included to clarify the parts of the Project, as identified in the Giant Mine Remediation Project Closure and Reclamation Plan, that require detailed design and the

[266] See Mackenzie Valley Land Use Regulations, subsection 4(b).
[267] See CIRNAC-GMRP Response to Board-Issued IR, dated May 25, 2020.

submission of associated Design Plan(s). The definition of Project Components explicitly identifies the project components that were discussed thoroughly during technical sessions and the Closure Criteria Workshop. This term is meant to provide clarification on what mine components reviewers can expect to review detailed Design Plans for, moving forward though the life of the Licence.[268]

- **Site-Wide Management and Monitoring Plans** - included to differentiate the Plans through which general, site-wide monitoring and management requirements are identified from the Design Plans which may be used to introduce Project Component-specific monitoring and management details that are less broadly applicable.
- **Tailings Containment Areas** - included to accurately reflect and identify components specific to the GMRP.

6.4 Part C: Conditions Applying to All Activities

The subheadings below correspond to the headings in the conditions section of the Permit, as outlined in section 26(1) of the MVLUR. Most conditions in the Permit are from the Board's Standard Template and are not discussed in detail in these Reasons for Decision unless notable due to recommendations or concerns raised during the public review. Where applicable, the Board's reasons for including non-standard conditions are discussed.

26(1)(a) Location and Area

The conditions included in this section are consistent with the Board's Standard Template. During the public review of the Draft Permit, the CIRNAC Lands Inspector recommended that the 10 meter right-of-way be reconsidered for the condition *Width Right-Of-Way* given that a 10 meter right-of-way for roads may not provide enough space for heavy haul trucks.[269] GMRP indicated in a review comment that 30 meters would be more appropriate to conduct work under the Permit in a safe manner.[270] The Board has updated the condition accordingly.

26*(1)(b) Time*

The conditions included in this section are consistent with the Board's Standard Template. The only change is in the *Initial Notification – Contact Inspector* and *Identify Agent* conditions that have been edited to refer to the initiation of activities approved under Design Plans and described in Construction Plans. The GMRP is a long-term project that includes up to twelve closure components. These components are identified in the Project Component definition and the Closure Activities for each component, as described in the CRP, will be subject to updates through the submission of Design Plans and Construction Plans. Additionally, contractors hired to complete the Remediation activities for each component have not yet been identified and are expected to vary. The initiation of Construction for each component is a significant step in the Remediation of the Giant Mine site. An Inspector must be notified in order to facilitate inspections to ensure that the Permittee is in compliance with the Terms and Conditions of the Permit and the Board must be aware of the contractors completing the work on the Proponent's behalf. This initial contact is important to establish regular communication between the Permittee and an Inspector, as well as to confirm contact information for numerous other conditions that will require communication between the Permittee, an Inspector, and the Board.

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[268] See Technical Session Transcript July 9, 2019, pp 71-73, 152.
[269] See Review Comment Summary Table – Draft Land Use Permit and Water Licence Conditions (hyperlink).
[270] See Review Comment Summary Table – Draft Land Use Permit and Water Licence Conditions (hyperlink).

26(1)(c) Type and Size of Equipment

The conditions included in this section are consistent with the Board's Standard Template.

26(1)(d) Methods and Techniques

The first 13 conditions included in this section have been developed to reflect specific requirements of the Project in relation to the Construction, management and monitoring methods and techniques associated with this land use operation. These plans include an Erosion and Sediment Management and Monitoring Plan, Dust Management and Monitoring Plan, Tailings Management and Monitoring Plan, Borrow Materials and Explosives Management and Monitoring Plan, Arsenic Trioxide Frozen Shell Management and Monitoring Plan, Design Plans, and Construction Plans. These are non-standard plans referred to and/or submitted with the Post-EA Information Package and the Land Use Permit Application. Detailed requirements for submission of these plans are outlined in Part E and F of the associated Water Licence (MV2007L8-0031). The Board expects the plan submissions under the Licence to satisfy the requirements of this Permit and the timing associated with their submissions are aligned. The conditions of the Permit require CIRNAC-GMRP to comply with commitments presented and approved within those plans and outline the requirement for CIRNAC-GMRP to update its Management and Monitoring Plans for Board approval prior to initiation of Active Remediation and Adaptive Management (Phase 2). Mirror requirements are found in the associated Licence.

The rest of the conditions in this section are consistent with the Board's Standard Template except for some minor edits to the standard *Refill Craters* and *Mineral Exploration* conditions. Craters resulting from the use of explosives can be a safety hazard to people and animals. Explosives will be used for the GMRP to source borrow material to support Remediation activities. The Borrow Materials and Explosives Management and Monitoring Plan and associated Borrow Design Plans and Construction Plans are required to outline the Remediation activities, including Closure Objectives and Criteria, for any sources of borrow used on-site. The plan, however, is not necessarily to refill craters caused by blasting, but to contour craters to best suit the surrounding topography. As a result, the name of the standard condition has been changed to *Recontour Craters* and phrasing of the condition itself has been changed to reflect the GMRP CRP and to refer to applicable plans where closure conditions will be described in detail. The *Mineral Exploration* condition has not been changed but to better reflect Project activities, its name has been updated to read *Drill Casings*. The GMRP includes geotechnical drilling activities to assess and monitor underground conditions throughout the site. The substance of the condition for the closure of boreholes applies to drilling activities at Giant Mine, however, drilling is not being done for mineral exploration purposes.

26(1)(e) Type, Location, Operation of All Facilities

The conditions included in this section are consistent with the Board's Standard Template.

26(1)(f) Control or Prevention of Ponding of Water, Flooding, Erosion, Slides, and Subsidence of Land

The conditions included in this section are consistent with the Board's Standard Template except for some minor edits to the standard *Minimize Approach* and *Excavation and Embankments* conditions. The term "minimize" in the standard condition is somewhat vague, but it allows an Inspector to use their discretion to ensure that low-grade crossings are selected, and erosion is prevented at all Watercourse crossings. Contouring approaches would have the same intended effect of preventing erosion and potential impacts on fish Habitat. The condition has also been

edited to refer to the appropriate Design Plan(s) where Watercourse crossings are identified, and activities associated with them are provided in detail for review and Board approval. Likewise, the *Excavation and Embankments* condition has been edited to refer to applicable Design Plans where Waste material management regarding safety, aesthetics, and erosion prevention will be described in more detail. Details of the Design Plans and the Board's reasons for requiring them are provided in Section 5.6, above.

26(1)(g) Use, Storage, Handling, and Ultimate Disposal of Any Chemical or Toxic Material

The conditions included in this section are consistent with the Board's Standard Template except for some minor edits to the standard *Drilling Waste Disposal* and *Waste Petroleum Disposal* conditions. All site-wide Waste management practices have been laid out, for approval, in the Waste Management and Monitoring Plan. To minimize duplication in Board approvals, the *Drilling Waste Disposal* and *Waste Petroleum Disposal* conditions have been edited to be less prescriptive and refer, instead, to approved Waste management practices described in the Waste Management and Monitoring Plan. CIRNAC-GMRP's Waste Management Plan describes the disposal methods for all Toxic Material handled onsite.

26(1)(h) Wildlife and Fish Habitat

CIRNAC-GMRP included a Wildlife and Wildlife Habitat Management and Monitoring Plan (WWHMMP) in the Post-EA Information Package and Land Use Permit Application, which details mitigations to reduce or eliminate impacts to wildlife and wildlife Habitat. On July 5, 2019, The Government of the Northwest Territories Department of Environment and Natural Resources (GNWT-ENR) wrote to CIRNAC-GMRP[271] to share its determination that a Wildlife Management and Monitoring Plan would not be required under subsection 95(1) of the *Wildlife Act*.[272] In the reasons for the determination, GNWT-ENR refer to the general nature of Remediation projects as being beneficial to wildlife and wildlife Habitat through the reduction of contaminant loadings to the Receiving Environment, the removal of physical hazards, and the restoration of wildlife Habitat on previously disturbed sites. In its letter, GNWT-ENR also referred to its participation in the review of the WWHMMP submitted with the Post-EA Information Package and Land Use Permit Application and its general satisfaction regarding the monitoring and mitigation plans described within.

GNWT-ENR's requirement for a Wildlife Management and Monitoring Plan is independent of the regulatory process outlined in the MVRMA and does not necessarily preclude the Board's need to ensure wildlife Habitat is being protected under its jurisdiction. The Board notes that provisions in the MVLUR apply to protection of wildlife Habitat, and not wildlife itself. Impacts to wildlife are the jurisdiction of the GNWT through the *Wildlife Act*. In general, the Board agrees with GNWT-ENR's assessment of the overall beneficial nature of effects on wildlife and wildlife Habitat as a result of the GMRP. The WWHMMP submitted with the Post-EA Information Package and Land Use Permit Application has been reviewed and approved by the Board. Unlike other Site-Wide Management and Monitoring plans, the Board has decided that Board approval of WWHMMP updates are not required. Commitments made for Plan updates during the ORS review are expected with the next iteration of the WWHMMP. These have been identified in

[271] See GNWT-ENR Letter, 2019 Re: Wildlife Act Section 95(1) determination of the requirement for a Wildlife Management and Monitoring Plan for the Giant Mine Remediation Project, dated July 5.
[272] See the Wildlife Act, Government of the Northwest Territories.

detail in the Board's decision letter and can be confirmed by Board staff following submission.[273] This includes the commitment to provide an evaluation of potential programs for small mammal and insect monitoring and sampling.[274]

Standard conditions in Permit MV2019X0007 reflect the requirements of CIRNAC-GMRP to comply with commitments outlined in the WWHMMP. In response to comments on the ORS, CIRNAC-GMRP committed to maintaining an up-to-date WWHMMP and to providing regular wildlife reports (monthly, annual and comprehensive) to the Board for the Public Registry.[275] During the public hearing, the GMRP committed to providing this reporting, including the evaluation of potential programs for small mammal and insect monitoring and sampling, through the Water Licence Annual Report.[276] Though it is unusual to require land use reporting requirements through a condition of a Licence, the Board has decided that, to reduce the number of submissions, this commitment will be reflected in the requirements of the Water Licence Annual Report. At the September technical sessions, the GNWT representative for the GMRP responded to concerns identified by the City of Yellowknife about the review of wildlife monitoring and plan updates. Though the GNWT are not requiring a WMMP, it will continue to provide advice and feedback to CIRNAC-GMRP on its programs and monitoring results.[277] Additionally, if issues with large predators or problem wildlife are identified at site, CIRNAC-GMRP will contact GNWT-ENR for advice and assistance in their safe management.[278]

26(1)(i) Storage, Handling, and Disposal of Refuse or Sewage

The conditions included in this section are all consistent with the Board's Standard Template. A Waste Management Plan is a standard requirement for land use permits issued by the Board. This Plan is intended to ensure that all Waste management activities are carried out in a way that is consistent with best practices and applicable guidelines to minimize Waste released from the Project. This Plan is also required under Part F of the Licence and the Board's reasons for including this Plan, and requiring revisions and re-submittals, are described above in Section 5.7. The Board mirrored these conditions to the extent possible with the Licence requirements to ensure one submission will satisfy conditions of both the Licence and Permit.

26(1)(j) Protection of Historical, Archaeological, and Burial Sites

The conditions included in this section are somewhat consistent with the Board's Standard Template. Edits to the conditions in the section reflect project specific conditions, explained below.

The standard setback distance for known or suspected archaeological sites in the *Archaeological Buffer* condition is 150 metres. The intent of this condition is to protect cultural sites, whether known or suspected. The 150 metres distance reflects the desire of the Prince of Wales Northern Heritage Centre (PWNHC) to have an adequate buffer surrounding sites whose precise locations have not been confirmed using recent technology. In the case of the GMRP, recent

[273] ECCC Online Review System Review 7 of 7 (Other Management Plans), Comment ID 2, 3, 4, 5, 6, and 7.
[274] Slater Environmental Online Review System Review 7 of 7 (Other Management Plans), Comment ID 13.
[275] City of Yellowknife Online Review System Review 7 of 7 (Other Management Plans), Comment ID 46 and 47.
[276] See Public Hearing Transcripts January 20, 2020 pp. 84-85.
[277] See Technical Session Transcripts September 13, 2019, pp 69-70.
[278] City of Yellowknife Online Review System Review 7 of 7 (Other Management Plans), Comment ID 46 and Technical Session Transcripts September 13, 2019, pp 70-71.

archaeological overview and impact assessments have been completed and the precise location and footprint of nearby archaeological and heritage sites have been identified. For this reason, and to reflect the requirements of section 6 of the MVLUR, the Board requires the 30 metres minimum buffer be maintained.

In its closing statements, the YKDFN requested that they be included on any decisions regarding archaeological or heritage resources encountered at the Giant Mine Site.[279] Paragraph 12 (b) of the MVLUR requires the Board or Inspector to notify any affected First Nation and the PWNHC if, in the course of a land-use operation, a suspected historic or archaeological site or burial site is discovered. The Board has added a requirement to the *Site Discovery and Notification* condition that requires CIRNAC-GMRP to notify any affected Aboriginal communities and organizations where a suspected archaeological or historical site, or burial ground, is discovered. The *Site Disturbance* condition has been modified as proposed by CIRNAC-GMRP. The PWNHC did not provide feedback on the recommended edits to this criterion during the course of its review. The standard conditions require that no archaeological specimen or site shall be removed, disturbed or displaced. CIRNAC-GMRP acknowledge that there are archeological sites within contaminated areas that will require Remediation; therefore, some sites will be disturbed. The GMRP have committed to work with the PWNHC to mitigate these sites, prior to disturbance. To reflect these requirements, the conditions allows for the disturbance of archaeological sites or specimens once deemed sufficiently mitigated by the PWNHC.

In its Draft Permit, CIRNAC-GMRP proposed that the standard *AIA* condition be edited to recognize the work already conducted through the completion of an Archaeological Overview Assessment and Archaeological Impact Assessment of all areas that will potentially be disturbed as a result of the Remediation activities planned for the site. CIRNAC-GMRP acknowledge that there are other areas within the boundary that may need to be assessed if additional areas of the site are to be disturbed (e.g., if soil Remediation activities are expanded, or if other borrow sources are required) and therefore, propose that the condition explicitly refer only to areas that have not already been assessed. The PWNHC commented on the ORS with a recommendation that the standard AIA condition be retained for the Permit.[280] In response, CIRNAC-GMRP agreed. The Board is of the opinion that the standard AIA condition wording embodies the same principles as that suggested by CIRNAC-GMRP and will not require undue work for the evaluation of archaeological resources.

26(1)(k) Objects and Places of Recreational, Scenic, and Ecological Value

The Board did not require conditions in this section to satisfy its mandate and did not receive any comments during the review of the Draft Permit.

26(1)(l) Security Deposit

The Board is authorized to require the Permittee to provide security to the Minister by subsection 32(1) of the MVLUR. Subsection 71(1) of the MVRMA specifies how the security may be applied. Section 94 of the MVRMA outlines that Her Majesty in right of Canada and the territorial government are not required to post security pursuant to section 71. Since the applicant for the GMRP is jointly the federal and territorial governments, security is not being applied. Nevertheless, the R*esponsibility for Remediation Costs* condition remains as a basic

[279] See YKDFN Closing Statement, dated March 23, 2020.
[280] PWNHC Online Review System Review 1 of 7 (Land Use Permit), Comment ID 1.

statement of responsibility for costs to restore site. It is in accordance with MVLUR sections 29 (final clearance requirements) and 15 (restoration of Permit area).

26(1)(m) Fuel Storage

The conditions included in this section are all consistent with the Board's Standard Template. A Spill Contingency Plan is a standard requirement for land use permits issued by the Board. This Plan is intended to ensure that action plans for responses to spills and Unauthorized Discharges has been established to effectively control and clean up spills and Unauthorized Discharges, with the goal of preventing or limiting damage to the receiving environment. This Plan is also required under Part G of the Licence and the Board's reasons for including this Plan, requirements for revisions and re-submittals, and reporting requirements are described above in Section 5.8. The Board mirrored these conditions to the extent possible with the Licence requirements to ensure one submission will satisfy conditions of both the Licence and Permit. A revised Spill Contingency Plan should be submitted 90 days prior to the commencement of Phase 2.

For clarity, the Drip Trays condition, which requires the use of drip trays for all vehicle parked for two or more hours does not include the personal vehicles of employees, visitors, or contractors.

26(1)(n) Methods and Techniques for Debris and Brush Disposal

The conditions included in this section are consistent with the Board's Standard Template.

26(1)(o) Restoration of the Lands

The first seven conditions included in this section have been developed to reflect specific requirements of the Project in relation to Remediation of the GMRP site. These plans include the CRP, Post-Closure Monitoring and Maintenance Plan Table of Contents, CRP Completion Report, Final Closure and Reclamation Report, and PARs. The CRP and PARS are required to be in accordance with the MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.*[281] The CRP was submitted with the Post-EA Information Package and the Land Use Permit Application. Detailed requirements for submission of these plans are outlined in Part D of the associated Water Licence (MV2007L8-0031). The Board expects the Closure and Reclamation Plan re-submission under the Licence to satisfy the requirements of this Permit, and the timing associated with the submission in the Licence and Permit accounts for the different effective dates of the Licence and Permit. The Board requires the CRP to be re-submitted and approved by the Board prior to GMRP entering Active Remediation and Adaptive Management (Phase 2). The conditions of the Permit require CIRNAC-GMRP to comply with commitments presented and approved within those plans.

The remainder of the conditions included in this section are largely consistent with the Board's Standard Template. To reflect Project-specific conditions at the Giant Mine site, the *Disposal of Overburden* condition has been modified to be less prescriptive. Much (if not all) overburden at the Giant Mine site is highly contaminated and will require careful management, as described in the Waste Management and Monitoring Plan, CRP, and associated Design Plans and Construction Plans. As a result, the condition is now identified as the *Management of Overburden* and requires

[281] See MVLWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*, 2013.

the Permittee adhere to commitments identified in all applicable plans. The Final Design Plans will provide detail on how overburden will be managed for site components where overburden will be removed; details will be updated in associated management plans, as is applicable.

CIRNAC-GMRP are proposing limited active revegetation activities for the purpose of minimizing erosion for some site components such as Baker Creek, the former South Pond area, and quarries/borrow sources .[282] The *Active Revegetation* condition has, therefore, been modified to refer to plans that describe these revegetation plans in detail. The standard condition requires revegetation of (all) disturbed sites. This has been revised to refer to the CRP, and associated Design Plans and Construction Plans where detailed revegetation plans will be provided.

26(1)(p) Display of Permits and Permit Numbers

The conditions included in this section are consistent with the Board's Standard Template. Standard wording has been revised to reflect conditions at the Giant Mine site. There are no campsites associated with the Project but there is a main administrative building where a copy of all Board authorizations should be available.

26(1)(q) Biological and Physical Protection of the Land

The conditions included in this section are all consistent with the Board's Standard Template. An Engagement Plan is a standard requirement for land use permits issued by the Board. This Plan is intended to ensure adequate and effective engagement with potentially affected parties has occurred prior to the submission of the Post-EA Information Package and Land Use Permit Application (in the form of the Engagement Log) and is planned for throughout the life of the Project. This Plan is also required under Part B of the Licence and the Board's reasons for including this Plan, and requiring revisions and re-submittals, are described above in Section 6.3. The Board mirrored these conditions to the extent possible with the Licence requirements to ensure one submission will satisfy conditions of both the Licence and Permit. A revised Engagement Plan should be submitted six months following the effective date the Permit, or 90 days following the effective date of Licence MV2007L8-0031, whichever date comes first.

CIRNAC-GMRP have also committed to submitting a Traffic and Access Management Plan.[283] In response to comments from the City of Yellowknife on the ORS[284] and during the September technical sessions,[285] CIRNAC-GMRP agreed that they could submit the Traffic and Access Management Plan to the Board so that it would be available on the Public Registry but did not think that it should be for review and Board approval "as it is intended to inform the dust and wildlife habitat management plans." The Traffic Management Plan will be specific to vehicle movement on-site and will provide details on areas where site vehicles and traffic from the wider area (i.e. off-site traffic) may interact. As these activities are not under the Board's jurisdiction, a Traffic and Access Management Plan has not been included as a condition in the Permit.

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[282] See Giant Mine Remediation Projects Closure and Reclamation Plan, January 2019.
[283] See Giant Mine Remediation Project Developer's Assessment Report, October 2010.
[284] City of Yellowknife Online Review System Review 7 of 7 (Other Management Plans), Comment ID 8.
[285] See Technical Session Transcripts September 13, 2019, pp 71.

7.0 Conclusion

Subject to the scopes, definitions, conditions, and terms set out in the Licence and Permit, and for the reasons expressed herein, the MVLWB is of the opinion that the land-use activities, Water use, and Waste disposal associated with the GMRP can be completed by CIRNAC-GMRP while providing for the conservation, development, and utilization of Waters in a manner that will provide the optimum benefit for all Canadians and in particular for the residents of the Mackenzie Valley.

Water Licence MV2007L8-0031 and Land Use Permit MV2019X0007 contain provisions that the Board deems necessary to ensure and monitor compliance with the MVRMA and the Regulations made thereunder, and to provide appropriate safeguards in respect of CIRNAC-GMRP's use of the land and Water affected by the Licence.

SIGNATURE

Mackenzie Valley Land and Water Board

July 28, 2020

Mavis Cli-Michaud, Chair

Date

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Appendices

Appendix 1: Detailed Reasons for Decision for Effluent Quality Criteria for the Giant Mine Remediation Project

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1.0 Introduction

The Post-EA Information Package and Land Use Permit application for the Giant Mine Remediation Project (GMRP) proposed Effluent Quality Criteria (EQCs) for an existing Effluent Treatment Plant (ETP) system and a New Water Treatment Plant (WTP).

Minewater at the mine site is currently pumped from the underground to surface by deep well pumps from the Akaitcho pumping system at the northern end of the site, or collected from surface runoff, and stored in the Northwest Pond for treatment in the ETP. The ETP currently operates seasonally and discharges during open-water conditions to Baker Creek through a siphon from a Polishing Pond.[286] Baker Creek is a stream that flows through the mine site into Yellowknife Bay. Yellowknife Bay is a large bay on the north arm of Great Slave Lake.

To meet the Giant Mine Remediation Project Report of Environmental Assessment EA0809-001[287] measures for arsenic, a WTP is required to be constructed to replace the existing ETP. The ETP will continue to operate until the new WTP is commissioned. There will be a transition period of approximately one year while the WTP is tested and the existing ETP remains as a functional backup.[288]

Once commissioned, the WTP will operate year-round and discharge via an outfall directly to Yellowknife Bay. The Minewater collection point for WTP treatment will be relocated from the Akaitcho pumping system (Akaitcho area), located at the north end of the mine site, to the C-Shaft area, located near the center of the mine site.[289] The C-Shaft pump will pump directly to the WTP.

The suitability of effluent Water for discharge into Baker Creek from the ETP and into Yellowknife Bay from the WTP will be based on comparison to EQCs as defined in the Water Licence, and on the requirement that the effluent prior to discharge is not acutely toxic to aquatic life.

Section 2.0 describes the evidence related to the setting of EQCs for the ETP and WTP effluent, including determination of the Water Quality Objectives (WQOs) on which they may be based, consideration of the mixing zone at the edge of which WQOs are to be met, determination of the Parameters of Potential Concern (POPC) which require EQCs, and the determination of EQCs that are consistent with meeting WQOs.

The EQCs for the Project have been determined based on the evidence before the Board. The EQCs or other conditions of MV2007L8-0031 may be amended in the future if relevant evidence is presented to the Board.

2.0 Effluent Quality Criteria Determinations for Discharge from the Existing Effluent Treatment Plant and the New Water Treatment Plant

As per the *Water and Effluent Quality Management Policy* (the Policy), the Board sets water licence conditions, including EQCs, with the goal of ensuring that current and future Water uses in the Receiving Environment will be protected. As stated in the Policy:

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[286] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[287] See MVEIRB Report of Environmental Assessment (EA0809-001), June 20, 2013.
[288] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[289] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

Protection of water quality in the Receiving Environment is the primary objective. The level of protection will be defined by the water quality standards that have been set site-specifically for the Receiving Environment in question. Effluent Quality Criteria (EQC) will be set for a project to ensure that water quality standards will be met. [290]

EQCs that are set to meet this Policy objective are called Water quality-based EQCs. In the case of the GMRP, Water quality-based EQCs were considered with the goal of protecting Water uses in Baker Creek and Yellowknife Bay. Water quality based EQCs are discussed further in Section 2.2.

The second objective of the Policy is to ensure that the amount of Waste to be deposited to the Receiving Environment is minimized. As stated in the Policy:

The Boards expect proponents to identify and implement Waste prevention and/or minimization measures, whenever feasible. Implementation of such measures may be stipulated in the terms and conditions of a water licence. The Boards can assess how these measures are expected to impact effluent from a project in order to set EQC that proponents can reasonably and consistently achieve. [291]

EQCs that are set to meet this Policy objective, not derived specifically to meet a WQO, are called "technology-based EQCs." In the case of the Project, ETP and WTP technology based EQCs are based on consideration of achievability at the ETP and WTP. As discussed further in Section 2.3, technology based EQCs for this Water Licence are based on CIRNAC-GMRP's own predictions of what may be reasonably and consistently achievable.

The Board's general process for setting EQCs is to first derive the Water quality based EQCs and then consider whether (a) the EQCs are reasonably achievable, and (b) if the EQCs could be made more stringent based on what is technologically feasible for the site.[292] Final EQCs for the Project are summarized in Section 2.4. The step wise process for deriving EQCs can be summarized as:

1) Determine the Parameters for Review. In this step, the Board evaluates the evidence to determine which chemical parameters may be elevated in the effluent relative to background concentrations, and therefore may need to be regulated through EQCs in the water licence.
2) Derive Water Quality Based EQCs. As described above, EQCs are first derived with the goal of ensuring that the WQOs for the Receiving Environment will be met during all phases of the project.
3) Evaluate Technology Based EQCs. These EQCs are not calculated per se but are based on what effluent quality the proponent can reasonably and consistently achieve at the end-of-pipe.
4) Determination of final EQC values for the water licence. Generally, the Board will choose those EQCs that are the lower of the values derived as per steps 2 and 3; however, and as per the Policy, the

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[290] See MVLWB *Water and Effluent Quality Management Policy*, dated March 31, 2011.
[291] See MVLWB *Water and Effluent Quality Management Policy*, dated March 31, 2011.
[292] See, for example, Reasons for Decision from the MVLWB for MV2011L2-0004 (renewal of De Beers Canada Water Licence for the Snap Lake Diamond Mine) and MV2008L2-0002 (Canadian Zinc's Prairie Creek Mine), and MV2017L8-0008 (Miramar Northern Mining Ltd. Con Mine), as well as the WLWB decisions on W2012L2-0001 (Dominion Diamond's Ekati Diamond Mine), and W2008L2-0004 (Fortune Mineral's NICO Mine).

Board will ensure that EQCs are set at levels that the proponent can reasonably and consistently achieve.[293]

An Effluent Quality Criteria (EQC) Report [294] was submitted by CIRNAC-GMRP as part of its Post-EA Information Package and Land Use Permit Application to support and justify proposed EQCs for the Project. In response to comments and questions during the second technical session held from September 11 to 13, 2019, CIRNAC-GMRP submitted responses to information requests that provided the following:

- Proposed EQCs for chloride and sulphate based on concentrations that can be technically achieved in effluent discharge from the ETP;[295]
- Calculated concentrations of chloride and sulphate in WTP effluent that would result in meeting Site-Specific Water Quality Objectives (SSWQOs) at the edge of the mixing zone;[296]
- Predicted concentrations of chloride and sulphate in WTP effluent;[297]
- Proposed EQCs for total ammonia for the ETP and WTP;[298]
- Proposed EQCs for nitrate for the ETP and WTP;[299] and
- The validation completed by Golder Associates Ltd.'s toxicologist regarding the SSWQOs for chloride, potassium and nitrate that were developed for other mine sites and their proposed use for the GMRP.[300]

Based on the evidence presented, the steps undertaken by the Board to set EQCs for discharges from the Project are described in the following sections.

2.1 Parameters for Review

As described in the EQC Report,[301] a formal screening process to identify POPC was not completed for the existing ETP because CIRNAC-GMRP requested to the Board that the discharge concentrations similar to present-day concentrations from the ETP be permitted through the Water Licence process until the WTP is commissioned.[302] As described in the EQC Report,[303] a formal POPC screening was completed by CIRNAC-GMRP for the WTP only. As such, this section only addresses parameters for review for the WTP. The technology-based approach to deriving EQCs for the ETP is discussed in Section 2.3.

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[293] See, for example, Reasons for Decision from the MVLWB for MV2011L2-0004 (renewal of De Beers Canada Water Licence for the Snap Lake Diamond Mine) and MV2008L2-0002 (Canadian Zinc's Prairie Creek Mine), and MV2017L8-0008 (Miramar Northern Mining Ltd. Con Mine), as well as the WLWB decisions on W2012L2-0001 (Dominion Diamond's Ekati Diamond Mine), and W2008L2-0004 (Fortune Mineral's NICO Mine).
[294] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[295] See Technical Session 2- Information Request Response 03, dated October 2019
[296] See Technical Session 2- Information Request Response 04, dated October 2019
[297] See Technical Session 2- Information Request Response 05, dated October 2019
[298] See Technical Session 2- Information Request Response 06, dated October 2019
[299] See Technical Session 2- Information Request Response 07, dated October 2019
[300] See Technical Session 2- Information Request Response 08, dated October 2019
[301] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[302] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[303] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

Parameters for review for the WTP included 43 routinely monitored Water quality parameters, as described in the EQC Report,[304] and the parameters listed in Schedule 5 of a Board letter to Adrian Paradis, Regulatory Manager GMRP-AANDC entitled, Submission Requirements for Mining and Milling Water Licence and Land Use Permit Applications – Giant Mine Remediation Project – Yellowknife, NT.[305]

2.2 Determination of Water Quality Based Effluent Quality Criteria

The derivation of Water quality based-EQCs involves the following subtasks:

a) Derivation of numeric WQOs for the Receiving Environment (see Section 2.2.1);
b) Definition of a mixing zone or other location downstream of the site where the WQOs must be met (see Section 2.2.2);
c) Identification of POPC. POPC are those chemical parameters that, in the Board's opinion, have "the potential to adversely affect Water quality in the Receiving Environment"[306] (see Section 2.2.3); and
d) Calculation of numeric EQCs to meet WQOs at the specified location for each POPC (see Section 2.2.4).

2.2.1. Determination of Numeric Site-Specific Water Quality Objectives

WQOs define the level of Water quality that must be maintained in order to protect a given Water use in a specific Receiving Environment. WQOs may be described either numerically (e.g., grams of a substance per liter) or as narrative statements. WQOs are required to be met at the mixing zone boundary, or other location downstream, during the most restrictive mixing conditions.

Table 1, below, summarizes the numeric WQOs chosen by the Board for the Project. For some constituents, the value of the WQO was influenced by site-specific Water hardness, pH, dissolved organic carbon (DOC) and/or temperature in the Receiving Environment (i.e. Yellowknife Bay). Such influences were incorporated into the evaluation and are discussed further below. In its determination of numeric SSWQOs for the protection of Water uses in the Receiving Environment, the Board applied the following principles:

- The Board adopted the lowest relevant Canadian Water quality guideline value as a SSWQO (or WQO) unless there was evidence that the guideline value was overly conservative or otherwise inappropriate for the Receiving Environment.
- Similar to other Board decisions, if a parameter did not have either a toxicity-based guideline or a proposed SSWQO, the Board decided not to assign a numeric objective to that parameter at this time. The reason for this decision is that in the absence of a guideline or other SSWQO, the Board has no evidence that the parameter will increase to levels in the Receiving Environment that would affect traditional Water uses such as fishing or drinking. Nonetheless, all of these parameters will be monitored in the effluent and Receiving

[304] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[305] See MVLWB Letter from Zabey Nevitt, Executive Director, MVLWB, to Adrian Paradis, Regulatory Manager GMRP – AANDC, Submission Requirements for Mining and Milling Water Licence and Land Use Permit Applications – Giant Mine Remediation Project – Yellowknife, NT, dated August 20, 2014.
[306] See MVLWB *Water and Effluent Quality Management Policy*, dated March 31, 2011.

Environment and based on those results, parties may recommend additional toxicity-based guidelines or SSWQOs in the future.

The WQOs used in deriving EQCs are generally based on chronic toxicity data and are therefore typically lower in concentrations than WQOs based on acute toxicity data. The chronic values are intended to be protective of aquatic life under long-term exposure at the WQO concentration and are directly relevant in the Receiving Environment. The acute values are considered to be protective only for short-term exposures, and are directly relevant in the effluent, because effluent is required not to be acutely toxic.

Chronic WQOs, based on long-term exposure, were taken from the lowest of Canadian Council of Ministers of the Environment (CCME) Federal Environmental Quality Guidelines for the Protection of Aquatic Life,[307] and Health Canada *Guidelines for Canadian Drinking Water Quality*,[308] or a proposed SSWQO for Yellowknife Bay. WQOs or guidelines from other jurisdictions such as the British Columbia Ministry of the Environment, published literature, or objectives developed for other mines in the Northwest Territories were also considered. The chronic WQOs, listed in Table 1, were used by the Board to identify POPC as described in Section 2.2.3 and used by the Board in its current evaluation of EQCs for the Project.

For WQOs modified by hardness, a predicted 5th percentile hardness of 29 mg/L as $CaCO_3$ in Yellowknife Bay[309] was applied. For WQOs modified by pH, DOC and temperature, the 5th percentile and/or 95th percentile in Yellowknife Bay at stations S25, S26 and S15 between 2012 and 2018 were applied.[310] Where applicable, hardness, pH, DOC and temperature at the time of monitoring are to be applied when adjusting the SSWQO or WQO.

[307] See Canadian Council of Ministers of the Environment (CCME) Federal Environmental Quality Guidelines for the Protection of Aquatic Life.
[308] See Health Canada *Guidelines for Canadian Drinking Water Quality*.
[309] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[310] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

Table 1: Water Quality Objectives for the Project

Constituent	Unit	SSWQO or WQO	Reference
Major Ions			
Chloride	mg/L	128	Eq. 1 Note 1; Elphick et al. (2011)[311] with Struewing et al. (2015)[312]
Fluoride	mg/L	1.5	Health Canada (2019)[313]
Potassium	mg/L	41	Rescan (2012)[314]
Sulphate	mg/L	128	Eq.2 Note 1; BC ENV (2019)[315]
Nutrients			
Total Ammonia	mg-N/L	1.2 (1.2)	Note 2 (Note 2a)
Un-ionized Ammonia	mg-N/L	0.019	CCME (2010)[316]
Nitrate	mg-N/L	3.2 (16.4)	Eq. 3; Note 1 (Note 1a); Rescan (2012)[317]
Nitrite	mg-N/L	0.04	Eq.4; BC ENV (2019)[318]
Total Metals			
Aluminum	µg/L	240	Note 3 (GMRP, 2019)[319]
Antimony	µg/L	6	Health Canada (2019)[320]
Arsenic	µg/L	10	Health Canada (2019)[321]

[311] Elphick JRF, Bergh KD, Bailey HC. 2011. Chronic toxicity of chloride to freshwater species: Effects of hardness and implications for water quality guidelines. Environmental Toxicology and Chemistry 30: 239-246.

[312] Struewing KA, Lazorchak JM, Weaver, PC, Johnson, BR., Funk,DH, Buchwalter,DB. 2015. Part 2 Sensitivity comparisons of the mayfly *Centroptilum triangulifer* to *Ceriodaphnia dubia* and *Daphnia magna* using standard reference toxicants; NaCl, KCl and $CuSO_4$. Chemosphere 139:597-603.

[313] Health Canada. 2019. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, ON.

[314] Rescan (Rescan Environmental Services Ltd.). 2012. EKATI Diamond Mine: Site-Specific Water Quality Objective for Potassium. Prepared for BHP Billiton Canada Inc. Yellowknife, NWT, Canada.

[315] BC ENV (British Columbia Ministry of Environment & Climate Change Strategy). 2019. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture Summary Report. Water Protection & Sustainability Branch. Ministry of Environment & Climate Change Strategy. British Columbia. August 2019.

[316] CCME (Canadian Council of Ministers of the Environment). 2010. Canadian water quality guidelines for the protection of aquatic life: Ammonia. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

[317] Rescan (Rescan Environmental Services Ltd.). 2012. Ekati Diamond Mine. Site-Specific Water Quality Objective for Nitrate. 2012. Prepared for BHP
Billiton Canada Inc. Yellowknife, NT, Canada.

[318] BC ENV (British Columbia Ministry of Environment & Climate Change Strategy). 2019. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture Summary Report. Water Protection and Sustainability Branch. Ministry of Environment & Climate Change Strategy. British Columbia. August 2019.

[319] Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

[320] Health Canada. 2019. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, ON.

[321] Health Canada. 2019. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, ON.

Constituent	Unit	SSWQO or WQO	Reference
Barium	µg/L	1000	Health Canada (2019)[322]
Boron	µg/L	1500	CCME (2009)[323]
Cadmium	µg/L	0.09	Eq. 5; Note 1; Note 4; BC ENV (2019)[324]
Chromium	µg/L	5	ECCC (2018)[325]; hexavalent chromium
Cobalt	µg/L	1.4	Eq.6; Note 5
Copper	µg/L	6.3	Note 4; (GMRP, 2019)[326]
Iron	µg/L	300	CCME (1999)[327]
Lead	µg/L	1	Eq. 7; Note 1
Manganese	µg/L	270	Note 4; Note 6; CCME (2019)[328]
Molybdenum	µg/L	73	CCME (1999)[329]
Nickel	µg/L	25	Eq. 8; Note 1; CCME (1999)
Selenium	µg/L	1	CCME (1999)[330]
Silver	µg/L	0.25	CCME (2015)[331]
Strontium	µg/L	10700	McPherson et al. (2014)[332]

[322] Health Canada. 2019. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, ON.
[323] CCME (Canadian Council of Ministers of the Environment). 2009. Canadian water quality guidelines for the protection of aquatic life: Boron. In: Canadian environmental quality guidelines, 2009, Canadian Council of Ministers of the Environment, Winnipeg.
[324] BC ENV (British Columbia Ministry of Environment & Climate Change Strategy). 2019. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture Summary Report. Water Protection and Sustainability Branch. Ministry of Environment & Climate Change Strategy. British Columbia. August 2019.
[325] ECCC (Environment and Climate Change Canada). 2018. Canadian Environmental Protection Act, 1999 Federal Environmental Quality Guidelines, Hexavalent Chromium, Ottawa, ON. May 2018.
[326] GMRP (Giant Mine Remediation Project) Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[327] CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines, 1999. Canadian Environmental Quality Guidelines Summary Table, Winnipeg, MB, Canada.
[328] CCME (Canadian Council of Ministers of the Environment). 2019. Canadian water quality guidelines for the protection of aquatic life: manganese. *In*: Canadian environmental quality guidelines, 1999. Canadian Council of Ministers of the Environment, Winnipeg, MB.
[329] CCME (Canadian Council of Ministers of the Environment). 1999. Canadian water quality guidelines for the protection of aquatic life: Molybdenum. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.
[330] CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines, 1999. Canadian Environmental Quality Guidelines Summary Table, Winnipeg, MB, Canada.
[331] CCME (Canadian Council of Ministers of the Environment). 2015. Canadian water quality guidelines for the protection of aquatic life: Silver. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.
[332] McPherson CA, Lawrence GS, Elphick JR, Chapman PM. 2014. Development of a strontium chronic effects benchmark for aquatic life in freshwater. Environmental Toxicology and Chemistry 33:2472–2478.

Constituent	Unit	SSWQO or WQO	Reference
Thallium	µg/L	0.8	CCME (1999)[333]
Uranium	µg/L	15	CCME (2011)[334]
Vanadium	µg/L	120	ECCC (2016)[335]
Zinc	µg/L	7.2	Eq.9; Note 4; Note 7

Notes:

Note 1. Hardness Dependent. 5th percentile hardness concentration of 29 mg/L as $CaCO_3$ predicted in Yellowknife Bay. Hardness at the time of monitoring should be applied.

> Note 1a. The SSWQO for a maximum hardness concentration of 160 mg/L as $CaCO_3$ is shown in parentheses. This SSWQO applies in Baker Creek, where hardness exceeds 160 mg/L as $CaCO_3$.

Note 2. The SSWQO for total ammonia for WTP was calculated using a species sensitivity distribution model and a 5th percentile hazard concentration based on the 95th percentile pH of 7.9 and temperature of 16 °C in Yellowknife Bay for stations S25, S26 and S15 between 2012 and 2018. See Table 4 of Technical Session IR#06 for the SSWQO for total ammonia in Yellowknife Bay with varying pH and a Water temperature of 20 °C. pH at the time of monitoring should be applied.

> Note 2a. The SSWQO for total ammonia for the ETP (in parentheses) was calculated using a species sensitivity distribution model and a 10th percentile hazard concentration based on the 85th percentile pH of 8.1 and temperature of 20 °C in Baker Creek at SNP 43-5 from 2011 to 2018. See Table 2 of Technical Session IR#06 for the SSWQO for total ammonia in Baker Creek with varying pH and a Water temperature of 20 °C. pH at the time of monitoring should be applied.

Note 3. Based on the 5th percentile of predicted hardness of 29 mg/L as $CaCO_3$ in Yellowknife Bay, and pH of 6.7 and dissolved organic carbon (DOC) of 4.45 mg/L measured in Yellowknife Bay for stations S25, S26 and S15 between 2012 and 2018.

Note 4. Applies to the dissolved fraction.

Note 5. Based on a hardness of 52 mg/L as $CaCO_3$.

Note 6. Based on a 95th percentile pH of 7.9 and a 5th percentile hardness of 29 mg/L as $CaCO_3$. See Table 5 of CCME (2019) manganese factsheet. pH and hardness at the time of monitoring should be applied.

Note 7. Based on the 5th percentile predicted hardness of 29 mg/L as $CaCO_3$, and observed DOC of 4.45 mg/L in Yellowknife Bay for Stations S25, S26 and S15 between 2012 and 2018, and the 95th percentile for pH of 7.9 in Yellowknife Bay for Stations S25, S26 and S15 between 2012 and 2018. Hardness, PH and DOC at the time of monitoring should be applied.

Eq. 1: SSWQO =	79.02ln(H) - 138.28	Hardness (H) value as $CaCO_3$ is not < 10 and not > 160 mg/L
Eq. 2: WQO =	128	Hardness (H) value as $CaCO_3$ is not < 0 and not > 30 mg/L
	218	Hardness (H) value as $CaCO_3$ is not < 31 and not > 75 mg/L
	309	Hardness (H) value as $CaCO_3$ is not < 76 and not > 180 mg/L
	429	Hardness (H) value as $CaCO_3$ is not < 181 and not > 250 mg/L

[333] Canadian Council of Ministers of the Environment. 1999. Canadian water quality guidelines for the protection of aquatic life: Thallium. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

[334] Canadian Council of Ministers of the Environment. 2011. Canadian water quality guidelines for the protection of aquatic life: Uranium. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

[335] ECCC (Environment and Climate Change Canada). 2016. Canadian Environmental Protection Act, 1999 Federal Environmental Quality Guidelines, Vanadium, Ottawa, ON. May 2016.

Eq. 3: SSWQO =	$e^{(0.9518 \ln(H) - 2.032)}$	Hardness (H) value as $CaCO_3$ is not < 20 and not > 160 mg/L
Eq. 4: WQO =	0.02	Chloride < 2 mg/L
	0.04	Chloride is not < 2 and not > 4 mg/L
	0.06	Chloride is not < 4 and not > 6 mg/L
	0.08	Chloride is not < 6 and not > 8 mg/L
	0.10	Chloride is not < 8 and not >10 mg/L
	0.20	Chloride is >10 mg/L
Eq. 5: SSWQO =	$e^{(0.736 \ln(H) - 4.943)}$	Hardness (H) value as $CaCO_3$ is not < 3.4 and not > 285 mg/L
Eq. 6: SSWQO =	$e^{(0.414 \ln(H) - 1.29)}$	Hardness (H) value as $CaCO_3$ is not < 52 and not > 396 mg/L
Eq. 7: WQO =	1	Hardness (H) value as $CaCO_3$ is not < 0 and not > 60 mg/L
	$e^{(1.273 \ln(H) - 4.705)}$	Hardness (H) value as $CaCO_3$ is not < 60 and not > 180 mg/L
	7	Hardness (H) value as $CaCO_3$ is > 180 mg/L
Eq. 8: WQO =	25	Hardness (H) value as $CaCO_3$ is not < 0 and not > 60 mg/L
	$e^{(0.76 \ln(H) + 1.06)}$	Hardness (H) value as $CaCO_3$ is not < 60 and not > 180 mg/L
	150	Hardness (H) value as $CaCO_3$ is not > 180 mg/L
Eq. 9: WQO =	$e^{(0.947[\ln(H)] - 0.815[pH] + 0.398[\ln(DOC)] + 4.625)}$	Hardness (H) value as $CaCO_3$ is not < 23.4 and not > 399 mg/L; pH is not < 6.5 and not > 8.13, and DOC is not <0.3 and not > 22.9 mg/L

2.2.2. Mixing Zone Considerations

The MVLWB et al. 2017 Guidelines for Effluent Mixing Zones[336] indicate that the dimensions of a regulated mixing zone for lakes should initially consider "a maximum radius of 100 m or 25% of the width of the lake, whichever is smaller, and not exceed 10% of the available volume for mixing and not extend closer to shore than the mean low water mark". The Guideline also states, however, that "the final dimensions of a regulated mixing zone may be set larger or smaller than what is listed here based on the evidence provided during individual water licensing processes". The Guidelines also state that "the exact dimensions of a regulated mixing zone will be determined by the Boards on a case-by-case basis and the sizes may vary depending on the characteristics of the receiving waters and the effluent associated with each individual undertaking." It is clear that the Board may consider a mixing zone either larger or smaller than 100 m, based on evidence provided.

To meet Environmental Assessment Measure 15 (protect water uses 200 m from the outfall) as well as Measures 12 and 13 (meet water quality objectives in the vicinity of Baker Creek), the CIRNAC-GMRP proposed a combined mixing zone that includes inflows from both the WTP effluent and Baker Creek[337]. CIRNAC-GMRP has also provided evidence that the combined mixing zone will allow the Project to meet its EQCs and WQOs for all parameters while accounting for the

[336] MVLWB, GLWB, SLWB, WLWB, and GNWT. Guidelines for Effluent Mixing Zones, September 2017
[337] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019

influence of Baker Creek water quality in the mixing zone[338]. In addition, there were no concerns raised regarding the proposed size of the mixing zone throughout the proceedings from stakeholders.

The Board has decided that, with respect to the protection of Water uses, the SSWQOs defined above in section 2.2.1 should be met at the edge of the GMRP's proposed combined mixing zone that encompasses the inflows of Baker Creek and the WTP outfall.[339] This combined mixing zone will be based on a 200 m radius from the center point of the space between the southeast edge of the breakwater and the south shore near the Great Slave Sailing Club, and a 200 m radius from the WTP outfall pipe, as illustrated in the GMRP EQC Report.[340]

2.2.3. Determination of Parameters of Potential Concern

The Board's *Water and Effluent Quality Management Policy* states:

> *Once all reasonable measures have been taken to limit the amount of Waste, concerns may still exist about the quantity, concentration, and type of Waste to be deposited, and in these cases the Boards will set EQC in the water licence. EQC 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 Waste which, in the Boards' opinion, has the potential to adversely affect water quality in the Receiving Environment.*[341]

POPC are, therefore, defined as those chemical parameters in the effluent that have, in the Board's opinion, the potential to adversely affect Water quality in the Receiving Environment. In this step of the EQC setting process, the Board considers the evidence as to which chemical parameters qualify as POPC.

As described in the EQC Report,[342] a formal POPC screening was completed by CIRNAC-GMRP for the WTP only. As such, this section only addresses POPC screening for the WTP. In the EQC Report,[343] CIRNAC-GMRP identified seven parameters from the parameters for review list (Section 2.1) to be considered as POPC in the WTP discharge: chloride, sulphate, antimony, arsenic, copper, lead, and nickel.

Parameters were removed from the initial list of parameters for review to leave a subset that were considered as POPC in the WTP discharge. Several parameters were pre-screened and removed from the initial list, for one of the following reasons:

- Represented by another parameter. Turbidity was eliminated because it was represented by total suspended solids (TSS). Total dissolved solids (TDS) was removed from the list because the constituent ion components of TDS are present on the parameters for review list.

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[338] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[339] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[340] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[341] See MVLWB *Water and Effluent Quality Management Policy*, dated March 31, 2011.
[342] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[343] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

- The parameter was a numerical indicator of Water quality rather than a parameter of Water itself. These included specific conductivity, total alkalinity, and temperature.
- The routine monitored parameter had concentrations below detection limits in both source Waters and receiving environment greater than 90% of the time. These parameters included beryllium, bismuth, mercury and tin.
- The parameter was unlikely to be of toxicological concern. These parameters included total organic carbon, DOC, calcium, magnesium, and hardness.
- The parameter did not have toxicity-based guidelines or objectives or aquatic toxicity data. These parameters included lithium and titanium.
- The parameter was subject to a technology based EQC. These parameters included TSS, pH and total petroleum hydrocarbon.

Total phosphorous was also eliminated from the initial list of parameters for review because phosphorus concentrations in the mine pool are uncertain because of arsenic interference[344] in the analytical method for phosphorous, which results in high detection limits. In addition, *E. coli* and/or fecal coliforms were also removed from the list of initial parameters for review because the influent to the WTP will not contain sewage as domestic Wastewater will be trucked off site.[345]

Removal of the remaining 28 parameters, listed below, from the list was based on predicted concentrations in WTP effluent, or predicted concentrations in the future mixing zone:

- Major ions (chloride, fluoride, potassium, sulphate);
- Nutrients (ammonia, nitrite and nitrate); and
- Total metals and metalloids (aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, uranium, vanadium, and zinc).[346]

Remaining parameters were removed if:

- Predicted concentration in the future WTP effluent did not exceed background concentrations in Yellowknife Bay (Step 1);
- Predicted concentration in the future WTP effluent did not exceed chronic WQOs or SSWQO (Step 2); or if
- Predicted concentration in the future mixing zone in Yellowknife Bay did not exceed background concentrations in Yellowknife Bay (Step 3).

The predictions for the WTP effluent were based on a site Water quality model that predicted underground and WTP influent concentrations. In Step 1, the predicted median and 95th percentile concentrations in the WTP effluent between the timeframe of 2026 and 2040, with a removal efficiency observed for the existing ETP applied, were used and compared to Yellowknife Bay background concentrations. The removal efficiency observed for the existing ETP was applied for most parameters, with the exception of nitrate, nitrite and ammonia, for which no removal was applied. For arsenic the predicted concentrations in the WTP effluent were set to 0.01 mg/L

[344] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[345] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[346] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

to meet the EA0809-001 measure where arsenic is to meet the Health Canada *Guidelines for Canadian Drinking Water Quality*[347] of 0.01 mg/L.

The background concentrations were determined as the lowest median value from Water samples from Yellowknife Bay near the proposed outfall and in Back Bay between 2011 and 2018, with and without the inclusion of regional background concentrations over the ETP discharge period, used in a human health and ecological risk assessment completed for the Project.

For Step 3, a three-dimensional (3-D) Yellowknife Bay model was used to predict median and 95th percentile concentrations in Yellowknife Bay between the timeframe of 2026 and 2040 for two areas (grids) intended to represent concentrations in the future mixing zone. These grids included:

1) a 200 m by 200 m area where Baker Creek and the WTP discharges into Yellowknife Bay; and
2) a 200 m by 200 m area immediately adjacent to the first grid.[348] The concentrations predicted to represent concentrations in the future mixing zone were compared to Yellowknife Bay background concentrations used in Step 1.

The results of Step 3 were checked using the seasonal statistics of predicted concentration (median and 95th percentile predicted concentrations near the Breakwater in Yellowknife Bay during under ice and open water periods) because concentrations can vary seasonally due to regional influences such as salt exclusion and flow conditions. This check did not affect the results of the Step 3 screening process.[349]

The results of Step 1 to Step 3 of the screening process are summarized in Table 5-8 of the EQC Report.[350] Based on these results, the Board accepts the following seven (7) proposed POPC for the WTP and the need to derive EQCs for each of these POPC:

- Major Ions: chloride, sulphate; and
- Total Metals and metalloids: antimony, arsenic, copper, lead and nickel.

Total Phosphorous

During the Water Licence proceedings, the Giant Mine Oversight Board (GMOB) recommended "that additional work on potential nutrient loadings to Yellowknife Bay as a result of the Project should be completed," acknowledging that for "phosphorus, this may need to wait until an appropriate analytical method has been developed".[351] In response to GMOB, CIRNAC-GMRP indicated that they are "continuing to work with laboratories to develop an appropriate analytical method for phosphorus and progress will be reported in Annual Water Licence Reports." As such, the Board accepts that total phosphorous should be reconsidered as a potential POPC for the Project once reliable phosphorous data are available, and that information on the analytical

[347] See Health Canada *Guidelines for Canadian Drinking Water Quality*.
[348] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[349] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[350] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[351] Review 6 of 7 - Giant Oversight Board – ID-4.

method development for phosphorus should be communicated through the Annual Water Licence Report.

Nitrogen Compounds

During the Project proceeding, GMOB also noted that "GMRP should already have estimates of tonnages of quarry material needed to implement its proposed remediation strategy, therefore it should be possible to estimate potential loadings of nitrogen to the environment."[352] In response to GMOB, CIRNAC-GMRP noted that "the Borrow Materials and Explosives Management [and Monitoring] Plan will contain details of how the GMRP will manage its explosives use in a safe and efficient manner that will reduce the risk of explosives and consequently nitrogen reaching the receiving environment. Completing the proposed estimate is premature until further details on volumes, agents, and mitigations are determined."[353]

During the second technical session, CIRNAC-GMRP asked to develop EQC for total ammonia instead of unionized ammonia, from an operational standpoint, and an EQC for nitrate because more work on the design and advancing of the Project had identified nitrate as a new POPC for both the ETP and WTP.[354] As such, CIRNAC-GMRP committed to provide proposed EQCs for total ammonia and nitrate for both the ETP and WTP as Information Requests.[355,356] In these Information Requests, CIRNAC-GMRP acknowledged that a limitation of the EQC Report "was that the models did not account for a source of residual nitrate and ammonium from quarrying activities during active remediation… and it is recognized that nitrate and ammonia loadings will likely increase during quarrying, due to anticipated use of explosive ammonium nitrate fuel oil."[357] As such, the Board considers total ammonia and nitrate to be POPC for the ETP and WTP.

Parameters of Potential Concern

For the ETP, while a formal POPC screening process was not completed by the GMRP, both nitrate and total ammonia were specifically identified as POPC for the ETP, based on the evaluation by CIRNAC-GMRP noted above. The Board recognizes that additional parameters may be of potential concern but accepts a technology-based approach for other parameters (see Section 2.3) until the ETP can be replaced by the WTP.

For the WTP, the Board recognizes seven POPC (chloride, sulphate, antimony, arsenic, copper, lead and nickel) as well as a need to reconsider the status of total phosphorus, as discussed above.

2.2.4. Calculation of Numeric Effluent Quality Criteria to Meet Water Quality Objectives

Numeric EQCs are often calculated as the product of the SSWQO and the minimal dilution factor predicted at the edge of the mixing zone, with a correction for the background concentration in receiving Water.

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[352] Review 6 of 7 - Giant Oversight Board – ID-4.
[353] Review 6 of 7 - Giant Oversight Board – ID-4.
[354] See Technical Session Transcripts September 13, 2019, pp.63
[355] See Technical Session 2- Information Request Response 06, dated October 2019
[356] See Technical Session 2- Information Request Response 07, October 2019
[357] See Technical Session 2- Information Request Response 06, dated October 2019

GMRP proposed two types of EQC calculated for POPC for the ETP and WTP:

- Maximum Grab Concentration (MGC), representing the maximum concentration of a parameter in a single grab sample of effluent; and
- Maximum Average Concentration (MAC), representing the running average of four consecutive weekly analytical results of the effluent.[358]

The procedure used by CIRNAC-GMRP[359] for the derivation of Water-quality based EQCs followed the methodology described by United States Environmental Protection Agency (US-EPA)[360] and Alberta Environmental Protection (AEP).[361] In summary, the procedure involves:[362]

- Calculation of a Waste Load Allocation (WLA), which represents the maximum concentration of a parameter that can be discharged to the Receiving Environment under the a "worst-case" or most limiting condition while meeting the chronic WQO at the edge of the mixing zone.
- Calculation of a Long-Term Average (LTA) concentration, based on the WLA, and allowing for expected variation of effluent quality around the average. This represents a long-term average concentration in effluent that is consistent with exceeding the WLA for a biologically meaningful period of time, assumed to be four days.
- Calculation of the MGC and MAC, based on the LTA, and allowing for expected variation in effluent quality around the average. The MGC represents the concentration in a grab sample that is consistent with the LTA concentration, and the MAC represents the average concentration of four samples per month collected during the time of discharge from the ETP or WTP to the receiving environment that is consistent with the LTA concentration.

2.2.4.1 Existing Effluent Treatment Plant

Nitrate and total ammonia, identified as POPC for the ETP in Section 2.2.3, were subjected to derivation of Water-quality based EQCs.[363] During the second technical session, CIRNAC-GMRP proposed to derive EQCs for nitrate and total ammonia for the ETP[364] because the initial EQC evaluation for the ETP did not account for a source of residual nitrate and ammonium from quarrying activities during the active remediation period at the Giant Mine site.[365] Because CIRNAC-GMRP recognizes that nitrate and ammonia loadings will likely increase during quarrying due to anticipated use of explosive ammonium nitrate fuel oil, GMRP's initial request to discharge concentrations similar to present-day ETP concentrations (i.e. technology based EQC) does not apply for nitrate and total ammonia.[366] As such, CIRNAC-GMRP proposed Water quality based EQCs for nitrate and total ammonia.

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[358] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[359] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[360] US EPA (United States Environmental Protection Agency). 1991. *Technical Support Document for Water Quality Based Toxics Control*. EPA 505-2-90-001. Washington, DC, USA.
[361] AEP (Alberta Environmental Protection). 1995. *Water Quality Based Effluent Limits Procedures Manual*. Edmonton, AB, Canada.
[362] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[363] See Technical Session 2- Information Request Response 06 and 07, dated October 2019
[364] See Technical Session Transcripts September 13, 2019, pp.63
[365] See Technical Session 2- Information Request Response 06, dated October 2019.
[366] See Technical Session 2- Information Request Response 06, dated October 2019.

Initially, CIRNAC-GMRP proposed MGC and MAC EQCs for un-ionized ammonia to align with the Metal and Diamond Mining Effluent Regulations (MDMER) requirements. Although this ammonia discharge limit was the only proposed EQC for a nitrogen parameter for the ETP, there were concerns during the first and second technical sessions that the proposed un-ionized ammonia discharge limit might be in an acutely toxic range.[367,368] During the second technical session, CIRNAC-GMRP asked if they could propose a total ammonia EQC in place of the already proposed un-ionized ammonia EQC for the Project, through an Information Request (#6).[369] CIRNAC-GMRP notes in the response to Information Request #6 that total ammonia EQC is simpler for treatment plant operators and inspectors because it can be directly measured, whereas un-ionized ammonia is calculated based on total ammonia, field pH and field temperature.[370]

The EQCs for nitrate and total ammonia was derived using the US EPA/AEP[371,372] methodology assuming 100% of Baker Creek is effluent. The SSWQO for nitrate was based on a hardness dependent equation (Table 1) using the maximum hardness concentration of 160 mg/L as $CaCO_3$ for the hardness in the equation, as hardness concentrations in Baker Creek are greater than 160 mg/L.[373] The SSWQO for total ammonia was calculated using a species sensitivity distribution model and a 10th percentile hazard concentration normalized to an 85th percentile field pH and Water temperature of 8.1 and 20°C, respectively, as observed at Baker Creek SNP 43-5 from 2011 to 2018.

The derived nitrate EQC was also compared to the acute WQO value for the protection of aquatic life of 124 mg-N/L from CCME (1999)[374] and 33 mg-N/L from the British Columbia Ministry of Environment (BC ENV, 2018)[375] to ensure that the derived EQC would not result in an acutely toxic effluent. The nitrate EQC was not found to exceed the acute WQO for nitrate.[376] The total ammonia EQC was also found not to exceed the acute SSWQO for total ammonia.[377]

CIRNAC-GMRP completed an evaluation of projected nitrate and ammonia concentrations to assess the achievability of the proposed nitrate and total ammonia EQCs, and to identify

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[367] See Technical Session Transcripts July 11, 2019, pp.63-65.
[368] See Technical Session Transcripts September 12, 2019, pp.150
[369] See Technical Session Transcripts September 13, 2019, pp.63.
[370] See Technical Session 2- Information Request Response 06, dated October 2019.
[371] US EPA (United States Environmental Protection Agency). 1991. *Technical Support Document for Water Quality Based Toxics Control*. EPA 505-2-90-001. Washington, DC, USA.
[372] AEP (Alberta Environmental Protection). 1995. *Water Quality Based Effluent Limits Procedures Manual*. Edmonton, AB, Canada.
[373] See Technical Session 2- Information Request Response 06, dated October 2019.
[374] CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines, 1999. Canadian Environmental Quality Guidelines Summary Table, with updates to 2018. Winnipeg, MB, Canada.
[375] BC ENV (British Columbia Ministry of Environment). 2018. *British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture Summary Report*. Water Protection and Sustainability Branch. Ministry of Environment & Climate Change Strategy. British Columbia. March 2018.
[376] See Technical Session 2- Information Request Response 06, dated October 2019.
[377] See Technical Session 2- Information Request Response 06, dated October 2019.

explosives management factors to which concentrations are particularly sensitive for different blasting scenarios. The blasting scenarios consisted of two explosive Waste rates (1% and 5%) and two powder factors (0.25 kg of ammonium nitrate fuel oil (ANFO)/t of borrow and 0.63 kg of ANFO/t of borrow).[378] This evaluation indicated that the nitrate and total ammonia EQCs are achievable for the ETP except for blasting scenarios with the highest explosive Waste rate and power factors. CIRNAC-GMRP notes that they "will implement appropriate mitigations in quarrying activities to contain blasting residuals and achieve low Waste rates and powder factors" with details provided in the Borrow Materials and Explosives Management and Monitoring Plan.[379]

The Board believes that the approach for deriving the Water-quality based EQCs for nitrate and total ammonia is appropriate for the ETP and has accepted CIRNAC-GMRP's proposed EQCs for the ETP. In addition, no intervenors objected to the methodology during the Water Licence proceedings for the Project.

2.2.4.2 New Water Treatment Plant

For the WTP POPC identified in Section 2.2.3, all the POPC were subjected to Water quality-based EQCs, except for arsenic, chloride and sulphate, which were subjected to technology-based EQCs. Although zinc was not identified as a POPC in Section 2.2.3, a Water quality-based EQC was also proposed for zinc, to align with the list of MDMER metals.[380]

The US EPA/AEP methodology was used to derive EQCs for nitrate, total ammonia, copper, lead, and nickel. The three-dimensional (3-D) Yellowknife Bay model, which is time varying, was used to derive the EQCs for antimony and zinc because these EQCs based on the US EPA/AEP methodology were not initially anticipated to be reasonably and consistently achieved for the Project based on existing ETP removal efficiencies. The three-dimensional (3-D) Yellowknife Bay model was used to identify constant concentrations of antimony and zinc that the WTP could discharge to the Receiving Environment so that the concentrations would remain below the WQO or SSWQO (Table 1) at the mixing zone boundary. The constant concentration for each parameter became the MAC EQC.[381]

Although the antimony EQC was calculated using a Water quality-based approach, CIRNAC-GMRP suggests that the EQC is considered technology-based because treatment will be required to lower antimony concentrations to an EQC considered acceptable for discharge. The Board considers the EQC for antimony to be Water-quality based.

The derived Water quality based EQCs were also compared to acute WQO values, listed in Table 5-9 of the EQC Report,[382] to ensure that the derived EQCs would not result in acutely toxic effluent. For nitrate, the MGC EQC was below the acute guidelines for the protection of

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[378] See Technical Session 2- Information Request Response 06, dated October 2019.
[379] See Technical Session 2- Information Request Response 06, dated October 2019.
[380] See Technical Session 2- Information Request Response 06, dated October 2019.
[381] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[382] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

aquatic life of 124 mg-N/L from CCME (1999)[383] and 33 mg-N/L from the BC ENV (2018).[384,385.] For total ammonia the MGC EQC was above the acute guideline for the protection of aquatic life at a temperature of 16°C and effluent pH values between 7.4 and 8.0. As such, the MGC in this pH range was lowered to the acute SSWQO value.[386]

CIRNAC-GMRP's evaluation to assess the achievability of the proposed nitrate and total ammonia EQCs for the WTP under different blasting scenarios (two explosive Waste rates and two powder factors) indicates that the nitrate and total ammonia EQCs are achievable for scenarios with the lowest explosive Waste rate.[387]

The Board believes that the approach for deriving the Water quality EQCs for nitrate, total ammonia, antimony, copper, nickel, lead and zinc are appropriate for the WTP and therefore the Board accepts CIRNAC-GMRP's proposed EQCs for the WTP. In addition, no intervenors objected to the methodology during the Water Licence proceedings.

2.3 Technology-Based Effluent Quality Criteria for the Existing Effluent Treatment Plant and the New Water Treatment Plant

2.3.1. Existing Effluent Treatment Plant

For the ETP, CIRNAC-GMRP proposed the MDMER[388] discharge limits as the starting point for proposing EQCs for pH, total suspended solids (TSS), un-ionized ammonia, arsenic, copper, lead, nickel, zinc, radium-226 and cyanide. For copper, lead, nickel and zinc, which had historical and predicted concentrations below the MDMER limits in the ETP, the proposed EQCs were lowered below the MDMER limits based on consideration of measured concentrations in the treated effluent at SNP 43-1 between 2011 and 2018, and predicted future treated effluent concentrations between 2019 and 2026.[389] Cyanide was also lowered below the MDMER limits based on historical treatment efficiency and Minewater quality at Akaitcho.

For TSS, un-ionized ammonia, arsenic, and radium-226, the EQCs for the ETP were set to the MDMER limit. For pH, the upper end of the pH range was lowered to 9.0 (within MDMER range) to reflect the measured pH range in effluent from the existing ETP, and to be consistent with other licences permitted in the Northwest Territories.

An EQC for total petroleum hydrocarbons was also proposed by CIRNAC-GMRP because of the additional traffic and fuel storage on site and the potential for release of hydrocarbons from

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[383] CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines, 1999. Canadian Environmental Quality Guidelines Summary Table, with updates to 2018. Winnipeg, MB, Canada..
[384] BC ENV (British Columbia Ministry of Environment). 2018. *British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture Summary Report*. Water Protection and Sustainability Branch. Ministry of Environment & Climate Change Strategy. British Columbia. March 2018.
[385] See Technical Session 2- Information Request Response 06, dated October 2019.
[386] See Technical Session 2- Information Request Response 06, dated October 2019.
[387] See Technical Session 2- Information Request Response 06, dated October 2019.
[388] Government of Canada. 2002. *Metal and Diamond Mining Effluent Regulations*, Part II, Vol. 146, No. 6. Published in the Canada Gazette, SOR/2002-222. https://laws-lois.justice.gc.ca/eng/regulations/SOR-2002-222/index.html
[389] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

potentially unidentified areas impacted by historical operations.[390] The total petroleum hydrocarbon EQCs were set at values similar to other mines in the NWT.[391,392]

The Board considers the proposed EQCs for other POPC, taken from MDMER, as technology-based values. The Board must evaluate proposed EQCs in terms of whether they satisfy the objectives of the *Water and Effluent Quality Management Policy* (see Section 2.0). Specifically, the Board must set EQCs such that (a) Water quality standards will be met within an appropriate mixing zone in the Receiving Environment, and (b) Waste deposited to the Receiving Environment is minimized, while EQCs are reasonably achievable.

Based on the evidence provided, the Board accepts that the technology based EQCs proposed for the existing ETP meet the objectives of the *Water and Effluent Quality Management Policy*.

Un-ionized Ammonia

As noted in Section 2.2.4, CIRNAC-GMRP initially proposed EQC for un-ionized ammonia to align with the MDMER requirements, but due to concerns about the level of protection of the un-ionized ammonia MDMER limit for aquatic life, and the practicality of using total ammonia concentrations for treatment plant operators and inspectors instead of calculated un-ionized ammonia concentrations, CIRNAC-GMRP has requested a total ammonia Water quality based EQC instead of an un-ionized ammonia technology-based EQC.[393] Based on the evidence presented and discussed in Section 2.2.4, the Board accepts that an EQC for total ammonia should replace the value initially proposed for un-ionized ammonia.

Radium-226 and Cyanide

CIRNAC-GMRP proposed EQCs for radium-226 and cyanide for the ETP to align with the MDMER discharge limits.[394] During the proceedings, GMOB recommended that the list of regulated parameters for the ETP more accurately reflect POPC in the ETP discharge, rather than the parameters required by the MDMER, and that including parameters that are of no concern such as radium-226 in the list of EQCs may actually cause undue concern from affected parties.[395] During the public hearing, CIRNAC-GMRP was supportive of GMOB's recommendation to remove the EQCs for radium-226 and cyanide because CIRNAC-GMRP did not identify them as POPC.[396] However, during the public hearing, ECCC did note that if radium-226 and cyanide were dropped from the Water Licence, they would still be required quarterly under the MDMER.[397] The Board agrees with GMOB that the proposed radium-226 and cyanide EQCs should be excluded from the Water Licence, as these parameters, based on the evidence presented, are not considered to be POPC for the ETP.

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[390] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[391] MVLWB (2014) Type A Water Licence MV2005L2-0015. De Beers Canada Inc. - Gahcho Kué
[392] WLWB (2018) Type A Water Licence W2012L2-0001. Dominion Diamond Mines ULC.
[393] See Technical Session Transcripts September 13, 2019, pp.63.
[394] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[395] Review 6 of 7, GMOB – ID13
[396] Public Hearing, Day 1, GMRP Presentation, pp.108
[397] See Public Hearing Transcript, January 20, 2020, p.161.

Chloride and Sulphate

As noted in Section 2.1, a formal screening process to identify POPC was not completed for the existing ETP because GMRP requested that discharge concentrations similar to present-day ETP discharge be permitted through the Water Licence process until the WTP is commissioned, and that the proposed EQCs for the ETP be equal to or less than the MDMER discharge limits [398].

During the initial review of the Water Licence Application, GMOB "recommended that the list of regulated parameters more accurately reflect the true parameters of potential concern in the ETP discharge rather than the parameters listed by the MDMER"[399]. GMOB further suggested "that a more consistent method of identifying EQC parameters is to choose those with historic effluent concentrations that exceed SSWQOs". Using the information provided in Appendix B, of the EQC Report[400], GMOB noted that chloride and sulphate, among others, would be POPC for the ETP by this criterion[401].

Recognizing the limitations of the existing ETP, GMRP was asked during the first technical meeting if they could propose EQCs for chloride and sulphate based on the known performance of the existing ETP[402]. The GMRP indicated that while construction continues, parameters that don't have an MDMER would remain broadly stable to present day and the project would continue to manage to non-acutely lethal discharge.[403]

During the second technical meeting, GMRP was asked by the Board consultant, EcoMetrix, if there was any technical reason why they could not develop EQCs for chloride and sulphate based on present day ETP performance[404]. GMRP indicated that there was no technical reason why EQCs could not be established for chloride and sulphate for the ETP, and accepted an information request to develop EQCs for chloride and sulphate based on concentrations that can be technologically achieved in effluent discharge from the ETP.[405,406]

The EQCs proposed for chloride and sulphate for the ETP were based on historical monitoring data for effluent discharge (station SNP 43-1), with consideration of concentrations in the mine pool (stations SNP 43-21 and SNP 43-21A), future predictions for the ETP, and balancing environmental protection and flexibility to complete closure works. GMRP used a visual comparison of influent and effluent quality to develop EQCs for chloride and sulphate.[407]

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[398] Crown-Indigenous Relations and Northern Affairs Canada (CIRNA) and Government of Northwest Territories (GNWT). Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, January 2019.
[399] Review 6 of 7, GMOB-13
[400] Crown-Indigenous Relations and Northern Affairs Canada (CIRNA) and Government of Northwest Territories (GNWT). Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, January 2019.
[401] Review 6 of 7, GMOB-13
[402] Technical Session 1 – Day 3, p.60-61, July 11, 2019
[403] Technical Session 1 – Day 3, p.62, July 11, 2019
[404] Technical Session 2- Day 2, p.133-134, September 12, 2019
[405] Technical Meeting 2- Day 2, pp.134-135
[406] Technical Session 2- Information Request 03, October 2019
[407] Ibid

For sulphate, the GMRP proposed the MAC (1310 mg/L) and the MGC (1440 mg/L) at 5% and 15%, respectively, above the maximum sulphate concentration measured in effluent between 2011 and 2018. GMRP notes that "these values were selected to provide a nominal increase above the current condition to allow for flexibility to continue closure works, including the addition of ferric sulphate to remove arsenic from the ETP influent[408]. Federal acute guidelines for sulphate were not available to determine if the proposed MAC or MGC for sulphate was considered to be acutely toxic; however, acutely toxic discharge will be avoided through the requirement for acute toxicity testing prior to discharge.

For chloride, the GMRP has proposed the MAC (660 mg/L) at 15% above the maximum chloride concentration measured in effluent between 2011 and 2018. A higher percentage was selected for chloride compared to sulphate because of chloride variability in the mine pool and ETP discharge. The MGC was set at 720 mg/L using a derivation from the Iowa Department of Natural Resources that considers the toxicity modifying effect of hardness and sulphate. Both the MAC and MGC for chloride were found to be above the CCME acute guideline for chloride of 640 mg/L, which does not consider toxicity modifying factors. However, evidence presented in the information request response from GMRP suggests that "the proposed EQC for chloride would provide adequate protection against acute toxicity to site-relevant taxa under site-relevant conditions of exposure"[409].

Both the GMOB[410] and Slater Environmental[411] interventions noted that the EQCs for chloride and sulphate proposed by the GMRP in the information request response[412] were based on concentrations that can be technologically achieved in effluent discharge from the ETP, and reasonable for the ETP.

Based on the evidence presented, the Board accepts the EQCs for chloride and sulphate proposed by GMRP for the ETP.

2.3.2. New Water Treatment Plant

For the WTP, the EQC Report[413] proposed technology based EQCs for antimony (see Section 2.2.4) and for arsenic. As noted in Section 2.2.3, technology based EQCs were also identified for TSS, pH and total petroleum hydrocarbon. Although chloride and sulphate were identified as POPC in Section 2.2.3 for the WTP, the EQC Report did not propose EQCs for chloride and sulphate because the chloride and sulphate concentrations did not exceed the chronic SSWQO at the mixing zone boundary. The EQC Report also identified technology based EQCs for radium-226, cyanide and un-ionized ammonia, parameters not identified as POPC in Section 2.2.3, to algin with MDMER parameters.

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[408] Ibid

[409] Technical Session 2- Information Request 03, October 2019

[410] GMOB Intervention, November 7, 2019

[411] Slater Environmental Intervention, November 14, 2019

[412] Technical Session 2- Information Request 03, October 2019

[413]See Public Hearing Transcript, January 20, 2020, p.161.

The Board considers the proposed EQCs for other POPC, taken from MDMER, as technology-based values. The Board must evaluate proposed EQCs in terms of whether they satisfy the objectives of the *Water and Effluent Quality Management Policy* (see Section 2.0). Specifically, the Board must set EQCs such that (a) Water quality standards will be met within an appropriate mixing zone in the Receiving Environment, and (b) Waste deposited to the receiving environment is minimized, while EQCs are reasonably achievable.

The Water quality standards to be met in the receiving environment are the chronic SSWQOs described in Section 2.2.1 (Table 1). The edge of the mixing zone where Water quality standards should be met is described in Section 2.2.2.

Arsenic

The EQC for arsenic is based on meeting concentrations below the Health Canada *Guidelines for Canadian Drinking Water Quality*[414] value of 0.01 mg/L at the outfall as per EA0809-001 measure 14 and 15. The EQC for arsenic is technology based because the WTP will be designed to reduce arsenic concentrations to meet the arsenic value *Guidelines for Canadian Drinking Water Quality*.[415]

Chloride and Sulphate

Chloride and sulphate were identified as POPC for the WTP. However, GMRP did not derive EQCs for these POPC because the predicted concentrations for chloride and sulphate were well below their respective chronic SSWQO (Table 1) at the edge of the mixing zone and near background concentrations at 200 m from the outfall; chloride is predicted to remain below the CCME acute guideline of 640 mg/L (there is no acute guideline available for sulphate); and the WTP is currently not designed to treat for chloride and sulphate, and the most effective treatment option for these parameters is reverse osmosis which CIRNAC-GMRP does not recommend as they believe that reverse osmosis has numerous disadvantages for a minimal environmental benefit.[416]

Both GMOB[417] and Slater Environmental[418] in their interventions and throughout the Water Licence proceedings recommended that an EQC for chloride and sulphate should be included in the Water Licence for the WTP. GMOB notes that the sulphate EQC for the WTP could be set at the same level as for the ETP, whereas a lower EQC could be considered for chloride based upon model predictions from 2026 onwards[419]. In response to GMOB's intervention[420], CIRNAC-GMRP indicated that they disagree that EQCs for sulphate and chloride are required for the WTP. CIRNAC-GMRP reiterated that they "submitted evidence to support this position, including low discharge volumes, high assimilative capacity of the receiving environment, concentrations at the mixing zone boundary well below chronic guidelines for chloride and sulphate, and no viable

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[414] See Health Canada *Guidelines for Canadian Drinking Water Quality*.
[415] See Public Hearing Transcript, January 20, 2020, p.161.
[416] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[417] GMOB Intervention, November 7, 2019
[418] Slater Environmental Intervention, November 14, 2019
[419] GMOB Intervention, November 7, 2019
[420] See CIRNAC-GMRP response to Interventions

option for salt removal or treatment". In addition, "for concentrations at the mixing zone to approach water quality objectives, end-of-pipe concentrations for both parameters would likely need to be greater than 5,000 mg/L". CIRNAC-GMRP also noted in their response to interventions that in lieu of EQCs for chloride and sulphate that they intend to monitor and report total dissolved solids (TDS) and its constituent ion concentrations through the SNP and AEMP; will not discharge effluent that is acutely toxic, in accordance with the Fisheries Act; and will make comparisons to model predictions annually and will report results to the MVLWB for review[421].

During the Public Hearing, the Board consultant asked CIRNAC-GMRP if the WTP would be able to meet EQCs for chloride and sulphate equal to those proposed for the ETP and if the WTP could perform better than the ETP for sulphate as suggested by the model predictions[422]. CIRNAC-GMRP noted that based on the uncertainties noted in Appendix D of the EQC Report[423], the Project cannot commit to those with the same certainty that they can for the ETP. These uncertainties include: the water quality in the mine pool is variable with depth; the apportionment of infiltration and the effect of climate change on infiltration is uncertain; data from the C- shaft is limited; the major ion concentrations are generally higher at deeper locations in the mine; and the exact location in the C-shaft from which the WTP influent will be pumped has not been determined[424].

In response to the Board consultant questioning if the Project would like the opportunity to propose or recommend EQCs for chloride and sulphate for the WTP during the Public Hearing, CIRNAC-GMRP noted that there are consequences to arbitrarily setting a number that potentially cannot be met, and that would include stopping discharge and using the mine pool for storage; using the mine pool for storage comes with its own challenges because the Project will need to manage that mine water and mine pool level carefully. The GMRP also noted that there is no feasible method for treating salts that would result from the potential water treatment of sulphate and chloride.[425]

In their closing statements both GMOB[426] and Slater Environmental[427] indicated that EQCs should be established for sulphate and chloride for the WTP to:

- address uncertainty with the future mine pool and future loadings in Yellowknife Bay;
- meet the Proponent's screening approach (Steps 1 to 3) that identified chloride and sulphate as parameters of potential concern (POPC);
- keep chloride and sulphate top of mind when reviewing future water quality data; and
- provide enough time to implement mitigation measures to protect the receiving environment.

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[421] Ibid

[422] Public Hearing Transcript -Day 2- pp.91

[423] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

[424] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.

[425] Public Hearing Transcript, Day 5, p.13-18.

[426] See GMOB Closing Statement, March 20, 2020.

[427] See Slater Environmental Closing Statement, March 23, 2020.

The Board understands: that there is uncertainty regarding the future influent for the WTP; that predicted sulphate and chloride concentrations are slightly above background concentrations in Yellowknife Bay and are not trending towards water quality objectives; and that there may be challenges to the Project if unachievable EQC are not met. For example, CIRNAC-GMRP will need to cease discharge and store the mine water in the mine pool until the EQC are met. Schedule 4, Condition 2 (iv) (d) of the Water Licence indicates that a specific chloride and sulphate management and monitoring plan for the Water Treatment Plant, including frequency of monitoring and specific Action Levels and response plans shall be included in the Water Management and Monitoring Plan. The Board believes that requirements for chloride and sulphate management included in Schedule 4, Condition 2 meet the concerns of stakeholders and protects the Receiving Environment while providing flexibility to CIRNAC-GMRP to implement mitigation measures should the Water Management and Monitoring Plan action levels for chloride and sulphate be exceeded or show increasing concentrations. This approach also algins with the Board's *Water and Effluent Quality Management Policy*, without the need to establish EQCs for chloride and sulphate for the WTP at this time.

Radium-226 and Cyanide

CIRNAC-GMRP proposed EQCs for radium-226 and cyanide for the ETP to align with the MDMER discharge limits.[428] Throughout the proceedings, GMOB did not see a reason to have radium-226 and cyanide EQCs for the WTP.[429] GMOB noted in their intervention that "having EQCs for these parameters may, in fact, cause unnecessary public concern if people believe these are POPC when they are not."[430] During the public hearing, GMRP was supportive of GMOB's recommendation to not have EQCs for radium-226 and cyanide because GMRP did not identify them as POPC.[431] However, during the Public Hearing, ECCC did note that if radium-226 and cyanide were dropped from the Water Licence, they would still be required quarterly under the MDMER.[432]

Although the MDMER includes discharge limits for radium-226 and cyanide, the Board does not consider that EQCs should be set for these parameters in the Water Licence because these parameters are not considered to be POPC, and because their inclusion could be misleading to the Public and does not align with the Board's Policy.

Un-ionized ammonia

GMRP initially proposed an EQC for un-ionized ammonia to align with the MDMER requirements, but later proposed a total ammonia Water quality based EQC in place of an un-ionized ammonia technology-based EQC during the Water Licence proceedings.[433] Based on the evidence presented and discussed in Section 2.2.4, the Board accepts that an EQC for total ammonia should replace the EQC proposed for un-ionized ammonia.

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[428] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[429] Review 6 of 7-GMOB-ID-17
[430] See GMOB Intervention, dated November 7, 2019, pp.28
[431] Public Hearing, Day 1, GMRP Presentation, pp.108
[432] See Public Hearing Transcript, January 20, 2020, p.161.
[433] See Technical Session Transcripts September 13, 2019, pp.63.

Total Suspended Solids, pH and Total Petroleum Hydrocarbons

TSS were also set equal to the MDMER limits. These limits were noted to be similar to TSS EQCs for other mines in NWT including Ekati Diamond Mine, the Diavik Diamond Mine and the Gahcho Kué Mine, which have MAC and MGC EQCs of 15 and 25 mg/L, respectively. CIRNAC-GMRP notes that with the unit operations of coagulation, clarification, and filtration, the WTP will meet the proposed TSS EQC.[434] The Board accepts the TSS EQC proposed by CIRNAC-GMRP.

A pH range of 6.5 to 8.0 is proposed for the WTP so that un-ionized ammonia will be below MDMER limits and will be similar to pH values in Yellowknife Bay.[435] As there were no objections to this pH range throughout the hearing, the Board accepts a pH range of 6.5 to 8.0 for the WTP.

CIRNAC-GMRP proposed MAC and MGC EQCs as well as a narrative EQC for total petroleum hydrocarbons. The Board accepts that the MAC and MGC EQCs are similar to values set at other mines in the NWT.[436,437] The proposed narrative EQC was that "discharge from the new WTP shall be managed to prevent the appearance of any visible film on the surface of Yellowknife Bay." The Board accepts that the narrative EQC should be included in the Water Licence.

Based on the evidence provided, the Board accepts that the technology based EQCs proposed for the existing WTP meet the objectives of the Board's *Water and Effluent Quality Management Policy*.

2.4 Final Effluent Quality Criteria for Discharge at SNP 43-1 and SNP 43-1A

In review of all the evidence, the Board has concluded that the recommended EQC for the Project as shown in Part F and summarized in Table 2 for the ETP and Table 3 for WTP will be reasonably and consistently achievable.

Table 2: Final Effluent Quality Criteria for the Existing Effluent Treatment Plant at SNP 43-1

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
pH (pH unit)	6.5 to 8.5	
Total suspended solids	15	30
Nitrate (as N)	13	25
Total ammonia[a]	See Table 4	See Table 4
Total arsenic	0.3	0.6
Total copper	0.03	0.06
Total lead	0.003	0.006
Total nickel	0.1	0.2

[434] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[435] See Giant Mine Remediation Project Effluent Quality Criteria Report, Version 1.0, dated January 2019.
[436] MVLWB (2014) Type A Water Licence MV2005L2-0015. De Beers Canada Inc. - Gahcho Kué
[437] WLWB (2018) Type A Water Licence W2012L2-0001. Dominion Diamond Mines ULC.

Total zinc	0.1	0.2
Chloride	660	720
Sulphate	1310	1440
Total petroleum hydrocarbons	3	5

Table 3: Final Effluent Quality Criteria for the New Water Treatment Plant at SNP 43-1A

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
pH (pH unit)	6.5 to 8.0	
Total suspended solids	15	30
Nitrate (as N)	13	25
Total ammonia	See Table 4	See Table 4
Total antimony	0.2	0.3
Total arsenic	0.01	0.02
Total copper	0.024	0.033
Total lead	0.003	0.008
Total nickel	0.1	0.15
Total zinc	0.08	0.16
Total petroleum hydrocarbons	3	5

Table 4: Final Total Ammonia Effluent Quality Criteria for the Existing Effluent Treatment Plant and the New Water Treatment Plant

Parameter	Existing ETP		New WTP	
	Maximum Average Concentration	Maximum Concentration of Any Grab Sample	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
pH	(mg-N/L)	(mg-N/L)	(mg-N/L)	(mg-N/L)
6.5	3.1	6.2	10.9	22
7.0	2.7	5.5	9.7	19
7.1	2.6	5.3	9.2	19
7.2	2.5	5.0	8.8	18
7.3	2.4	4.7	8.3	17
7.4	2.2	4.4	7.7	15
7.5	2.0	4.1	7.1	13
7.6	1.8	3.7	6.5	11
7.7	1.7	3.3	5.8	9.6

7.8	1.5	3.0	5.2	8.1
7.9	1.3	2.6	4.6	6.8
8.0	1.1	2.3	4.0	5.6
8.1	0.97	2.0	NA	NA
8.2	0.83	1.7	NA	NA
8.3	0.71	1.4	NA	NA
8.4	0.60	1.2	NA	NA
8.5	0.51	1.0	NA	NA

Notes:

Note 1. Grey shading indicates that the EQC is the acute site-specific water quality objective (SSWQO)

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Appendix 2: Incorporation of Measures and Suggestions from Environmental Assessment EA0809-001 for the Giant Mine Remediation Project

Table 1: Measures from the EA0809-001 for the Giant Mine Remediation Project

#	Topic	Approved Measures from EA0809-001	Where item is addressed in the Licence/Permit
1	Life of Project	To prevent the significant adverse impacts on environment and the significant public concern from the proposed perpetual timeframe, the Project will proceed only as an interim solution, for a maximum of 100 years.	Term of Licence is only 20 years.
2	Closure Approach/Research	Every 20 years after the beginning of Project implementation, the Developer will commission an independent review of the Project to evaluate its effectiveness to date, and to decide if a better approach can be identified. This will: 1. consider results of the ongoing research 2. be participatory in nature 3. follow the requirements of procedural fairness and be transparent in nature. If the periodic review identifies a better approach that is feasible and cost-effective, the Developer will further study it, and make the study and its results of the study public.	Term of Licence is 20 years. Report results can be used to support a renewal application, as required.
3	Research Funding	To facilitate active research in emerging technologies towards finding a permanent solution for dealing with arsenic at the Giant mine site, the Developer will fund research activity as advised by stakeholders and potentially affected Parties through the Oversight Body. The ongoing funding for this research, and the additional resources required to manage its coordination, will be negotiated and included as part of the environmental agreement specified in Measure 7 and will make best use of existing research institutions and programs. The Oversight Body will ensure through the research activity that, on a periodic basis:	Not Applicable to conditions of the Licence or Permit under the Board's jurisdiction.

		1. reports on relevant emerging technologies are produced; 2. research priorities are identified; 3. research funding is administered; 4. results of research are made public, and 5. results of each cycle are applied to the next cycle of these steps.	
4	Closure Approach/Research	The Oversight Body will provide the results of the research funding by the Developer to the periodic reviews of the Project described in Measure 2. If better technology options are identified through the funding research in-between these periodic 20-year reviews, these will be reported publicly by the Oversight Body to the Parties, the Developer and the Canadian Public. The developer will consider these technologies and make decision regarding their feasibility. The developer will make such decisions public.	If technological advances are incorporated during the life of the Licence, they can be included through an amendment and/or through updates provided in the Water Licence Annual Report. If outcomes from work completed by the Giant Mine Oversight Board impact any Management or Monitoring Plans or Closure Activities, they should be captured though Annual Updates as required by Licence conditions, or through the submission of Design Plans specific to a changed component.
5	Quantitative Risk Assessment (QRA)	In order to mitigate significant adverse impacts that are otherwise likely, the Developer will commission an independent quantitative risk assessment to be completed before the Project receives regulatory approvals. This will include: 1. Explicit acceptability thresholds, determined in consultation with potentially affected communities 2. An examination of risks from a holistic perspective, integrating the combined environmental, social, health and financial consequences. 3. Possible events of a worst-case/ low frequency high consequence nature 4. Additional considerations specified in Appendix D of the Report of EA From this, the Developer will identify any appropriate Project improvements and identify management responses to avoid or reduce the severity of predicted unacceptable risks.	As required by the measure, the QRA was required prior to regulatory approval, and has been completed by CIRNAC-GMRP. Results will be presented to the public and carried forward in future versions of Design Plans as required. A summary of engagement on findings from the QRA are required to be included in the Water Licence Annual Report as part of engagement completed under the Engagement Plan. A summary of results of the QRA are also required to be included in the GMRP CRP. A discussion of how the results of the QRA have been incorporated into design, and an explanation of how proposed monitoring will assess the risks identified in

			the QRA, are requirements for Design Plans that are to be submitted under the Licence.
6	Long-term Funding	The Developer will: • investigate long-term funding options for the ongoing maintenance of this Project and for contingencies, including a trust fund with multi-year up front funding, • involve stakeholders and the public in discussions on funding options; and, • make public a detailed report within three years that describes its consideration of funding options, providing stakeholders with the opportunity to comment on the report.	The final long-term funding report was engaged upon and provided outside the Water Licence process. Based on discussion from the public hearing and the reasons described in the Reasons for Decision, the Board has identified why it is confident in the financial responsibility of CIRNAC-GMRP for the life of this authorization, and beyond, as required under paragraph 72.03(5)(d) of the MVRMA.
7	Environmental Agreement and GMOB	The Developer will negotiate a legally-binding environmental agreement with, at a minimum, the members of the Oversight Working Group, and other appropriate representative organizations, to create an independent Oversight Body for the Giant Mine Remediation Project. These negotiations will build on the existing discussion paper and draft environmental agreement of the Giant Oversight Working group. This oversight body will exist for the life of the Project unless otherwise agreed by the Parties to the Environmental Agreement. Every effort will be made to have the Oversight Body in place as early as possible. The negotiations will make significant progress within six months of the Ministers' environmental assessment decision or proceed to mediation. The Developer will cover any mediation costs. The environmental agreement will include a dispute resolution mechanism to ensure compliance with the agreement and a stable funding mechanism for the Oversight Body.	Environmental Agreement signed outside the Water Licence process. GMOB has been established and have been involved in the regulatory review of the Project.
8	Role of GMOB	The activities of the oversight body will include: • Keeping track of monitoring activities by the Developer and the results of those activities, including water quality and aquatic effects monitoring, health monitoring and other monitoring • Considering the adequacy of funding for the Project and ongoing research • Providing advice to the Developer, regulators and government on ongoing improvements in monitoring and Project management to prevent risks and mitigate any potential impacts	Not Applicable to conditions of the Licence or Permit under the Board's jurisdiction.

		• Sharing the oversight body's conclusions with the general public and potentially affected communities in a culturally appropriate manner	
9	Health Effects Monitoring Program (HEMP)	The Developer will work with other federal and territorial departments as necessary to design and implement a broad health effects monitoring program in Ndilǫ, Dettah and Yellowknife focussing on arsenic and any other contaminants in people which might result from this Project. This will include studies of baseline health effects of these contaminants and ongoing periodic monitoring. This will be designed with input from: • Health Canada, GNWT Health and Social Services and the Yellowknife medical community; and • The Yellowknives Dene and other potentially affected communities. The organization conducting the monitoring will provide regular plain language explanations of the monitoring results in terms that are understandable to lay people, and communicate this to potentially affected communities in a culturally appropriate manner.	As required by the measure, the HEMP is required to be carried out by a third-party. It was established in 2017. Results will continue to be presented to the public. A summary of engagement on findings from the HEMP are required to be included in the Water Licence Annual Report as part of engagement completed under the Engagement Plan. If future outcomes of the HEMP impact any Management or Monitoring Plans or Closure Activities, they should be captured though Annual Updates as required by Licence conditions, or through the submission of Design Plans specific to a changed component.
10	Human Health and Ecological Risk Assessment (HHERA)	The Developer will commission a comprehensive quantitative human health risk assessment by an independent, qualified human health risk assessor selected in collaboration with Health Canada, the Yellowknives Dene, the City of Yellowknife, and the Developer. This human health risk assessment will be completed before the Project receives regulatory approvals. It will: 1. Include a critical review of the 2006 Tier II human health risk assessment and the previous screening reports; 2. Consider additional exposures and thresholds (as specified in Appendix F of the Report of EA); 3. Decide whether a Tier III risk assessment is appropriate; 4. Provide a plain language explanation of the results in terms that are understandable to the general public, and communicate this to potentially affected communities in a culturally appropriate manner; 5. Provide interpretation of results and related guidance; and 6. Inform the broad health effects monitoring program (described in Measure 9 above).	The HHERA is included as an appendix to the CRP and has been used to support proposed closure activities. A summary of activities and monitoring conducting in accordance with the Wildlife and Wildlife Habitat Protection Plan is required to be provided in the Annual Water Licence Report. This should include an evaluation of potential programs for small mammal and insect monitoring and sampling.

		The Developer may conduct the human health risk assessment concurrently with the quantitative risk assessment described in Measure 5. Based on the results of this human health risk assessment, and on any existing results of the health effects monitoring program (described in Measure 9 above), the Developer will, if necessary in response to this information, identify, design and implement appropriate design improvements and identify appropriate management responses to avoid or reduce the severity of any predicted unacceptable health risks.	
11	Baker Creek Diversion Options	The Developer, with meaningful participation from the Oversight Body and other parties, will thoroughly assess options for, and the environmental impacts of, diversion of Baker Creek to a north diversion route previously considered by the Developer or another route that avoids the mine site and is determined appropriate by the Developer. Within one year of the project receiving its water licence, a report outlining a comparison of options including the current on-site realignment will be provided to the appropriate regulatory authorities, the Oversight Body and the public. Once informed by the advice of the Oversight Body and regulatory authorities, the Developer will determine and implement the preferred option. In doing so, the Developer will consider the advice of the Oversight Body, regulatory authorities, and the public, and will ensure that the primary considerations in selecting an option are to: a) Minimize the likelihood of Baker Creek flooding and entering the arsenic chambers, stopes and underground workings, and b) Minimize the exposure of fish in Baker Creek to arsenic from existing contaminated sediments on the minesite or tailings runoff. If off-site diversion is selected, the Developer will seek required regulatory approvals to implement the diversion within five years of receiving its initial water licence.	Pre-Application engagement and reporting led to Project changes described in the GMRP CRP: Changes include pit fill and recontouring, removal of sediments from Baker Creek, Baker Creek realignment including erosion-resistant berms, enlarged floodplain, etc. These activities are part of the Project as approved by the Board and implementation reports are required through Design Plans, Construction Plans, Closure and Reclamation Completion Reports, and Performance Assessment Reports before final closure can be confirmed, where possible. Water Quality requirements: EQCs, AEMP, SNP Water monitoring are established to ensure contaminants in Baker Creek and Yellowknife Bay are being reduced and minimized through closure efforts. All monitoring data will be reported for review and approval through the Annual Water Licence Report.
12	Site-Specific Water Quality Objectives (SSWQOs)	To prevent significant adverse impacts on Great Slave Lake from contaminated surface water in the existing or former channel of Baker Creek,	Effluent Quality Criteria (EQC) have been established as conditions of the Licence and Surface Runoff Criteria will be

		should it be re-routed to avoid the mine site, the Developer will ensure that water quality at the outlet of Baker Creek channel will be site-specific water quality objectives based on the CCME *Guidance on the Site-Specific Application of Water Quality Guidelines in Canada.*	established through approvals of the Water Management and Monitoring Plan. EQCs have been calculated so that SSWQOs will be met upon completion of the GMRP Active Remediation and Adaptive Management (Phase 2) and will be met in the vicinity of the outlet of Baker Creek (see measure 13) and at the edge of a 200 m mixing zone (see measure 15) that includes the Project's new Water Treatment Plant outfall and the influence of Baker Creek. Compliance with EQCs, measured at SNP stations should ensure SSWQOs are being met and any impacts on aquatic life are aligned with AEMP predictions and requirements.
13	Site-Specific Water Quality Objectives (SSWQOs)	The Developer will design and, with the applicable regulators, manage the Project to ensure that, with respect to arsenic and any other contaminants of potential concern, the following water quality objectives are achieved in the vicinity of the outlet of the existing or former Baker Creek channel, should it be re-routed to avoid the mine site, excluding Reach 0: a) Water quality changes due to discharge from Baker Creek will not reduce benthic invertebrate and plankton abundance or diversity; b) Water quality changes due to discharge from Baker Creek will not harm fish health, abundance or diversity; c) Water quality changes due to discharge from Baker Creek will not adversely affect areas used as drinking water sources, d) Water quality changes due to discharge from Baker Creek will not adversely affect any traditional or recreational users; and, e) There is no increase in arsenic levels in Great Slave Lake due to discharge from Baker Creek beyond the parameters	Measure 13 a) through d) are satisfied by selecting Water Quality Objectives for Yellowknife Bay that are protective of aquatic life and drinking Water. Arsenic concentrations in Great Slave Lake, beyond the edge of the mixing zone (200 m from breakwater), will not increase from present-day concentrations as demonstrated in the EQC Report and supporting documentation (see measure 12). The Annual Water Licence Report and Aquatic Effects Monitoring Program (AEMP) Annual Report will provide annual summaries and analysis of all monitoring results occurring at the Giant Mine site including an analysis of how this measure is being met.

		described in Measure 12.	Effluent Quality Criteria (EQC) have been established as conditions of the Licence and Surface Runoff Criteria will be established through approvals of the Water Management and Monitoring Plan. Compliance with EQCs measured at SNP stations should ensure SSWQOs are being met and any impacts on aquatic life are aligned with AEMP predictions, requirements and action plans.
14	Water Treatment Plant (WTP)	The Developer will add an ion exchange process to its proposed water treatment process to produce water treatment plant effluent that at least meets Health Canada drinking water standards (containing no more than 10 µg/L of arsenic), to be released using a near shore outfall immediately offshore of the Giant mine site instead of through the proposed diffuser. The Developer will achieve this concentration without adding lake water to dilute effluent in the treatment plant.	The ion exchange process and near shore outfall in the vicinity of Baker Creek are approved as part of the Project, as applied for. Health Canada drinking Water standards for arsenic are included in the end-of-pipe EQCs for the WTP as a condition of the Licence.
15	Water Treatment Plant (WTP) Effluent Quality Criteria (EQC)	The Developer and regulators will design and manage the Project so that, with respect to arsenic and any other contaminants of potential concern: 1. Water quality at the outfall will meet the Health Canada Guidelines for Canadian Drinking Water Quality; and, 2. The following water quality objectives in the receiving environment are met: a) Water quality changes due to effluent discharge will not reduce benthic invertebrate and plankton abundance or diversity at 200 metres from the outfall; b) Water quality changes due to effluent discharge will not harm fish health, abundance or diversity; c) Water quality changes due to effluent discharge will not adversely affect areas used as drinking water sources; and, d) There is no increase in arsenic levels in Yellowknife Bay water at 200 metres from	Measure 15 is satisfied by selecting Effluent Quality Criteria at the outfall that are protective of aquatic life and drinking Water. The Annual Water Licence Report and Aquatic Effects Monitoring Program (AEMP) Annual Report will provide annual summaries and analysis of all monitoring results occurring at the Giant Mine site including an analysis of how this measure is being met. A Plume Delineation Study is also being required to verify that the extent of treated Effluent in the Receiving Environment is meeting measure limits and requirements. Results of the Plume Delineation Study will inform the AEMP Re-evaluation Report.

		the outfall; and e) There is no increase in arsenic levels in Yellowknife Bay sediments at 500 metres from the outfall.	Effluent Quality Criteria (EQC) and Surface Runoff Criteria have been established as either conditions of the Licence or through approvals of the Water Management and Monitoring Plan, respectively. Compliance with EQCs, measured at SNP stations should ensure SSWQOs are being met and any impacts on aquatic life are aligned with AEMP predictions and requirements.
16	Arsenic Re-suspension	Before construction, the Developer will model re-suspension of arsenic from sediments and resulting bioavailability in the vicinity of the outfall. If the modelling results indicate that the outfall may re-suspend arsenic from sediments, the Developer will modify the outfall design until operation does not cause re-suspension of arsenic from sediment.	The potential of sediment resuspension is being mitigated through design of a sediment cover, rather than modelling. Details on cover design and monitoring will be provided for review and approval through the submission of a Design Plan.
17	Aquatic Effects Monitoring Program (AEMP)	Before operating the outfall, the Developer will design and implement a comprehensive aquatic effects monitoring program that is sufficient to determine if the water quality objectives listed in Measure 15 are being met. This program will: 1. at a minimum, be able to identify any accumulation of arsenic over time in the water, sediment or fish in the receiving environment 2. include appropriate monitoring locations near Ndilǫ, in Back Bay and in Yellowknife Bay, with a focus on areas in the vicinity of the outfall and areas used by people. 3. include the establishment of a baseline for aquatic effects in Back Bay before beginning Project construction and installation of the outfall. 4. be developed according to AANDC *Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories*, June 2009, with	AEMP requirements are outlined in the Licence including the need to submit to the Board, for approval, Aquatic Effects Monitoring Program Design Plans, an Aquatic Effects Baseline Report for Yellowknife Bay, a Plume Delineation Study, and AEMP Re-Evaluation Reports. The Annual Water Licence Report and Aquatic Effects Monitoring Program (AEMP) Annual Report will provide annual summaries and analysis of all monitoring results occurring at the Giant Mine site including an analysis of how this measure is being met. Effluent Quality Criteria (EQC) have been established as conditions of the Licence and Surface Runoff Criteria will be established through approvals

		corresponding action levels and management response framework.	of the Water Management and Monitoring Plan. Compliance with EQCs, measured at SNP stations should ensure SSWQOs are being met and any impacts on aquatic life are aligned with AEMP predictions and requirements.
18	Freeze Design	Prior to preparing chambers and stopes for freezing, the Developer will conduct a comprehensive quantitative risk assessment evaluating both wet and dry methods for the initial freezing design, with respect to current risks and implications for future removal. This will include an evaluation of potential effects of the proposed freezing and wetting method on the thawing or frozen excavations, and potential impacts of ongoing design changes prior to implementing the Project. The Developer will release a plain language report to the public describing its considerations and the resulting design.	A dry method passive freeze system has been approved as part of the Project, as applied for. Additional assessment completed as per measure 18 identified the dry method to be sufficient to meet closure objectives; it does not require wetting of arsenic trioxide dust before freezing. The dry method would facilitate future removal which satisfies measure 19. The Freeze Optimization Study identified that a passive system is sufficient to achieve a frozen state, reducing long-term operational and energy needs.
19	Reversibility	Considering the results of the risk assessment described in Measure 18, the Developer will not adopt any method of freezing that significantly reduces opportunities for future arsenic removal or other remediation by future technologies.	Closure Objective F2 of the CRP and associated Closure Criteria address reversibility in the CRP. Closure Criteria must be demonstrated through Performance Assessment Reports prior to the Project moving from Active Remediation and Adaptive Management (Phase 2) to Long-term Monitoring and Maintenance (Phase 3) of closure.
20	Dust Control	The Developer will conduct all major demolition and construction activities with the potential to release large amounts of dust or contaminants into the air when wind directions will minimize the chances of dust and contaminants blowing into the City of Yellowknife, Dettah and Ndilǫ.	The Air Quality Monitoring Program (AQMP) was developed in accordance with measure 25 and includes monitoring details for activity-specific monitoring, fence line monitoring at the project boundary, and community monitoring. The AQMP is included as an appendix to the Dust Management and Monitoring Plan.

			The Dust Management and Monitoring Plan addresses both wind erosion of existing site features and minimizing dust generation during implementation of Closure Activities. It is subject to review and is for Board approval. Results of Dust Monitoring will be reported in the Water Licence Annual Report.
21	Dust Monitoring	The Developer will collect dust and contaminant level data from soil and vegetation in the vicinity of major reclamation activities before and after major demolition or construction activities to serve as a baseline for any related adaptive management activities that may follow.	The Air Quality Monitoring Program (AQMP) was developed in accordance with measure 25 and includes monitoring details for activity-specific monitoring, fence line monitoring at the project boundary, and community monitoring. The AQMP is included as an appendix to the Dust Management and Monitoring Plan. The Dust Management and Monitoring Plan addresses both wind erosion of existing site features and minimizing dust generation during implementation of Closure Activities. It is subject to review and is for Board approval. Baseline conditions have been identified and are used for determining action levels in the event impacts are measured. Results of Dust Monitoring including any mitigative measure, if required, will be reported in the Annual Water Licence Report.
22	Cover Design	The Developer will conduct a study to determine appropriate depth of the tailings cap and B1 pit cover, in consultation with Environment Canada and responsible regulators, to verify that the depth proposed will ensure the tailings cap and B1 pit cover are not compromised by vegetation growth. The Developer will provide a report of	Detailed cover design plans will be required in the component-specific Design Plans for Board approval. The current closure plan for pit covers includes a rock cover to discourage vegetation growth. Geomembrane liners may also

		this study to the Mackenzie Valley Land and Water Board before it issues a water license for the Project.	be used to improve the quality of Runoff Water, further discouraging the growth of vegetation on these features. These activities have been approved as part of the CRP.
23	Tailings Management and Monitoring	The Developer will work cooperatively with responsible regulatory authorities and interested Parties in the development and submission of a Tailings Monitoring and Management Plan prior to receiving regulatory approvals. This plan will not only identify potential issues for the management of tailings but will also identify mitigation measures to prevent problems related to the tailings cap failure, and will include consideration of the B1 pit cover as applicable.	A Tailings Monitoring and Management Plan was provided with the Application and will be resubmitted for review and approval prior to the initiation of Active Remediation and Adaptive Management (Phase 2). Detailed cover design plans will be required in the component-specific Design Plans for Board approval. Where not yet available, mitigation measures to prevent problems related to cap failure will be addressed in more detail.
24	Cover Design	The Developer will physically prevent all-terrain vehicle access to the tailings cap and B1 pit cover to prevent the surface from being eroded or otherwise compromised. The Developer will monitor the effectiveness of this prevention, and will take any additional management measures as necessary to prevent all- terrain vehicle access.	ATV passage over coarse rock covers on Tailings, if it occurs, will not harm the performance and structure of the covers. It will, in fact, be more likely to harm the vehicles. Detailed cover design plans will be required in the component-specific Design Plans for Board approval. Monitoring activities for Active Remediation are outlined in the Tailings Management and Monitoring Plan. Post-closure monitoring requirements will be identified in the component-specific Design Plans and the Post-Closure Monitoring and Maintenance Plan.
25	Air Quality Monitoring Plan (AQMP)	The Developer will work cooperatively with responsible regulatory authorities and interested Parties in the development and submission of an Air Quality Management Plan which incorporates an ongoing air quality monitoring program. This ongoing monitoring program will include all	The Air Quality Monitoring Program (AQMP) was developed in accordance with measure 25 and includes monitoring details for activity-specific monitoring, fence line monitoring at the project

		previously identified on-site air quality monitoring stations and one off-site air quality monitoring station near Niven Lake. At a minimum, ambient concentrations of NO2 and PM2.5 will be monitored at the Niven lake site. Total suspended particulate and metal concentrations will be monitoring at the on-site locations. This air quality monitoring program will identify action levels and trigger additional management and mitigation activities, if required.	boundary, and community monitoring. The AQMP is included as an appendix to the Dust Management and Monitoring Plan. Results of air quality monitoring will be reported in the Water Licence Annual Report.
26	End Use	In conjunction with Measure 10 above, the Developer will consider the results of the comprehensive human health risk assessment, and consult with the YKDFN and City of Yellowknife when determining suitable end uses of the site, to ensure that those proposed uses do not pose a health risk to people, including toddlers.	The HHERA was completed in 2018 and results were presented to the YKDFN, the City of Yellowknife and other affected parties. The HHERA did assess risk levels for toddlers. The CRP provides constraints to end land use (specifically Figure 3.4-1 Post-Closure Site Conditions). A site-wide Closure Objective and associated Closure Criteria is for residual risks to be identified and for local residents to continually be informed of residual hazards. The core development area will have access controls designed to restrict and/or discourage access. Future uses for the remaining areas and ongoing communications about the site and its risks are identified and described in the Perpetual Care Plan. Future use will be determined by the GNWT and/or the City of Yellowknife. Engagement associated with the Perpetual Care Plan is to be reported annually in the Annual Water Licence Report. The Perpetual Care Plan should be included as an appendix to the Post-Closure Monitoring and Maintenance Plan that will be required for Long-term

			Monitoring and Maintenance (Phase 3).

Table 2: Suggestions from the Environmental Assessment EA0809-001 for the Giant Mine Remediation Project

#	Topic	Suggestion from EA0809-001	Where item is addressed in the Licence/Permit
1	Engagement	The Developer should further consult with surrounding communities, including Dettah, Ndilǫ and the City of Yellowknife, prior to finalizing its Project design, so that design improvements may be incorporated to address any remaining concerns.	These suggestions were taken into consideration by the Board when reviewing the Engagement Plan and Engagement Log in support of the Permit Application and Post-EA Information Package. Surface Design Engagement (SDE) was completed as part of additional engagement, in support of this suggestion.
2	Monument	The Developer should create a monument as a memorial to the impacts of past contamination from Giant Mine on Aboriginal communities and the environment.	Not Applicable to conditions of the Licence or Permit under the Board's jurisdiction.
3	Education	To encourage widespread learning from and remembering of the experiences of the Giant Mine, the Developer, in conjunction with the GNWT Department of Education, Culture and Employment, should: 1. Develop an education resource unit on the impacts of Giant Mine on the land and on people, including impacts on Aboriginal peoples, and 2. Distribute this resource unit for use within the school curriculum across Canada.	Not Applicable to conditions of the Licence or Permit under the Board's jurisdiction.
4	Perpetual Care	The Federal Contaminated Sites Action Program should develop a policy framework and guidance for the perpetual care and management of remediated contaminated sites.	A Perpetual Care Plan for the Giant Mine Remediation Project is a requirement under the Environmental Agreement. Under the Agreement, a draft will be available by June 2020. Engagement associated with the Perpetual Care Plan is to be reported annually in the Annual Water Licence Report. The Perpetual Care Plan should be included as an appendix to the Post-Closure Monitoring and Maintenance Plan that will be required for Long-term Monitoring and Maintenance (Phase 3).

5	Long-term Funding	To ensure long-term funding throughout the life of the Project, the Developer should create an independently managed self-sustaining trust fund with multi-year up-front funding for the ongoing maintenance of this Project and for contingencies. A third-party expert should independently manage this trust fund. Annual reports on the condition of the fund should be provided to stakeholders and the public.	This suggestion is linked to the outcome of measure 6. A report was engaged upon and provided outside the Water Licence process.
6	Objectivity	To reduce public concern about the multiple roles of AANDC in this Project and to increase public confidence, AANDC should produce guidelines to clarify reporting structures to ensure that Project inspectors, advisors and managers employed by the federal government can perform their duties objectively and without undue pressure from within the federal government. These should be made available to the public within six months of Ministerial acceptance of this Report of Environmental Assessment.	Not Applicable to conditions of the Licence or Permit under the Board's jurisdiction. Treasury Board Values and Ethics Code for the Public Sector is available to the public at http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=25049
7	Soil Quality	Based on the results of the health risk assessment described in Measure 10, the appropriate government authorities should remediate garden and playground soils where arsenic concentrations exceed current guidelines for urban soils in Canada.	The Project, as proposed, includes three standards for soil Remediation: residential for the old Townsite area; industrial throughout disturbed areas; and un-remediated in undisturbed forest/wetland/bedrock areas. Future land use beyond those committed to in the CRP, Land Use Permit Application or Post-EA information Package are beyond the Board's jurisdiction.
8	Health	The Developer should consider the Trail Human and Environmental Health Committee as a model for the development of the health program.	As required by the measure, the HEMP is required to be carried out by a third-party. It was established in 2017. Results will continue to be presented to the public. A summary of engagement on findings from the HEMP are required to be included in the Water Licence Annual Report as part of engagement completed under the Engagement Plan. If future outcomes of the HEMP impact any Management or Monitoring Plans or Closure Activities, they should be captured though Annual Updates as required by Licence conditions, or through the

			submission of Design Plans specific to a changed component.
9	Fish Habitat Compensation	During its review of the diversion of Baker Creek, the Department of Fisheries and Oceans should consider the habitat loss of the existing Baker Creek and decide on any habitat design requirements for the diversion to the extent it deems appropriate. Any resulting habitat compensation requirements should be applied on the new diversion	Closure Criteria and the consequent development of Design Plans for the Baker Creek realignment will be updated based on outcomes of engagement for DFO fisheries authorizations. The Water Licence includes a requirement for the Engagement Plan to be updated to clarify the engagement process with respect to all Fisheries Authorizations.
10	Engineered Wetlands	The Developer should investigate the potential advantages and disadvantages of adding an engineered wetland to the Project to reduce arsenic in surface drainage. This investigation should include possible locations in the channel that formerly contained Baker Creek and in the Baker Creek diversion. On completion, the Developer should make a public report of the results of this investigation and of any resulting changes to Project design. This should be completed before a water license is issued for the Project.	The implementation of constructed wetlands is a possibility being investigation through a Reclamation Research Plan, submitted in support of the CRP. Any research results are required to be reported in the Annual Water Licence Report. If research supports its development, a detailed Design Plan will be submitted for review prior to Construction.
11	Dust Management and Monitoring	To manage the risks of airborne exposure of contaminated dust from deconstruction of buildings or other structures on site, the Developer should: • prepare a dispersion model of dust plume given typical wind direction and speed • define the meteorological window of opportunity to describe acceptable wind conditions to eliminate the potential for a dust cloud release and transport of surrounding communities. • consult a meteorologist to develop a sound model of weather conditions, to indicate when winds are steady and not gusting, blowing to the north • stop if winds change or any dust controlling equipment fails	The Air Quality Monitoring Program (AQMP) was developed in accordance with measure 25 and includes monitoring details for activity-specific monitoring, fence line monitoring at the project boundary, and community monitoring. The AQMP is included as an appendix to the Dust Management and Monitoring Plan. The Dust Management and Monitoring Plan addresses both wind erosion of existing site features and minimizing dust generation during implementation of closure activities. It is subject to review and is for Board approval. Baseline conditions have been identified and are used for determining action levels in the event impacts are measured.

			Results of Dust Monitoring including any mitigative measure, if required, will be reported in the Annual Water Licence Report.
12	Dust Management and Monitoring	To prevent impacts on people from potentially harmful contaminant releases from deconstruction of buildings or other structures on site at the Giant Mine site, the Land and Water Board should specify allowable wind directions and wind speeds in degrees, to ensure that contaminated structures are not demolished during blustery multi-directional winds at ground level.	The Air Quality Monitoring Program (AQMP) was developed in accordance with measure 25 and includes monitoring details for activity-specific monitoring, fence line monitoring at the project boundary, and community monitoring. The AQMP is included as an appendix to the Dust Management and Monitoring Plan. The Dust Management and Monitoring Plan addresses both wind erosion of existing site features and minimizing dust generation during implementation of Closure Activities. It is subject to review and is for Board approval. Baseline conditions have been identified and are used for determining action levels in the event impacts are measured. Results of Dust Monitoring including any mitigative measure, if required, will be reported in the Annual Water Licence Report.
13	Pit Fill	The Developer should investigate options for filling in the pits, in consultation with the City of Yellowknife and YKDFN.	Filling or partially filling the pits is part of the Project, as applied for and approved by the Board. Pit consultation and other surface reclamation features discussed as part of SDE between 2015-2017. The outcomes of the SDE support the proposed CRP activities for closure of the pits. Details on pit fills will be provided for review and approval through component-specific Design Plans.
14	Foreshore Tailings Cover and Monitoring	The Developer should consider the baseline conditions for existing fish habitat in Back Bay (including a fish habitat assessment in the area of the foreshore tailings and the aquatic effects baseline required in Measure 17) and develop a	Fish Habitat surveys of the foreshore tailing areas, the near shore contaminated sediments and the outfall area in Yellowknife Bay began in 2018.

		foreshore tailings cover design and foreshore tailings monitoring and mitigation plan for review by the Department of Fisheries and Oceans pursuant to habitat provisions of the *Fisheries Act*.	Further conceptual and detailed design for the extension of the Foreshore Tailings Area cover is required. This updated design will require consideration of projected Water levels in the lake, wading depths, and maintenance of appropriate isolation of the Tailings. As part of detailed design, assessment of additional variables such as wave transformations (i.e., shoaling, diffractions, or refraction), Water currents, and regulatory considerations will also be required. Closure Criteria and the consequent development of Design Plans for the Foreshore Tailings will be updated based on outcomes of engagement for DFO fisheries authorizations. The Water Licence includes a requirement for the Engagement Plan to be updated to clarify the engagement process with respect to all Fisheries Authorizations.
15	Landfill Design	The Developer should consult with the City of Yellowknife in the design of any landfill on the Giant Mine site.	Engagement complete as identified in the Engagement Plan and Engagement Log. Further engagement will be required to support detailed design for the Non-Hazardous Waste Landfill Design Plan, which will be distributed for review and approval.
16	Impacts on Traditional Use	The Developer should consult with Aboriginal groups with respect to reduced traditional use cumulatively resulting from the proposed Project in combination with contamination from Giant Mine. This should occur prior to finalizing Project design, so that design improvements may be used to address any remaining concerns.	A Traditional Knowledge Study is underway with both NSMA and YKDFN, and the outcomes of that work will further inform future versions of Management Plans, Design Plans, and Construction Plans as required. Standard conditions for addressing how TK inform submissions to the Board are included in the Licence. The Engagement Plan outlines how engagement shall progress

			throughout the life of the Project.

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Appendix 3: Reasons for Decision on Water Compensation Claims

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1.0 Introduction

The Giant Mine Remediation Project ("GMRP") has applied for a water licence for remediation of historic contamination from the Giant Mine.

The City of Yellowknife, the Yellowknife Historical Society ("YKHS"), the Great Slave Sailing Club ("GSSC"), a number of recreational sail boaters, and Becky Jane Lang each filed water compensation claims associated with GMRP's proposed water licence.

The GSSC, Becky Jane Lang, and some of the recreational sail boaters withdrew their claims for compensation.

The Mackenzie Valley Land and Water Board (the "Board" or "MVLWB") set out a detailed framework, including a timeline for addressing water compensation claims, described in earlier in these Reasons for Decision, as part of its work planning for this licensing proceeding. This Appendix:

- provides an outline of and the Board's comments on the statutory authorities and decisions related to water compensation,
- summarizes the remaining claims and the parties' arguments on compensation, and
- contains the Board's analysis of and compensation decision for each remaining claim.

2.0 Water Compensation Framework

The Board regulates the use of water and the deposit of waste in the Mackenzie Valley pursuant to the *Mackenzie Valley Resource Management Act*[438] ("MVRMA") through the issuance of water licences.[439] MVRMA, s. 72.03 governs the issuance of Type "A" and Type "B" water licences.

Where the use of water or deposit of waste proposed in a Type "A" water licence application will result in significant adverse effects or adverse effects, depending on the category of affected water user,[440] the affected parties listed in s. 72.03(5) may submit a claim for water compensation. To be successful in a claim for compensation, claimants must:

1. be eligible for compensation, and
2. be able to demonstrate to the Board that the activities (the use of water or deposit of waste) proposed in the water licence application will result in an adverse effect, and damages.

The Board is responsible for determining appropriate compensation pursuant to MVRMA, s. 72.03(6).

2.1 Eligibility and Adverse Effect

MVRMA, s. 72.03(5) sets out three categories of claimants eligible to submit claims for water compensation:

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438 SC 1998, c. 25 [MVRMA].

439 The MVLWB also regulates the use of waters and the deposit of waste through the *Waters Act*, SNWT 2014, c.18.

440 The threshold for a water compensation claim varies depending on the category of user that is affected. See paragraphs 72.03(5)(a) and (b) of the MVRMA.

1. **Existing Licensees**. This category includes any existing licensee who already holds a licence issued under the MVRMA or any other licence relating to the use of waters or deposit of waste, or both, issued under any territorial law or the *Nunavut Waters and Nunavut Surface Rights Tribunal Act.*[441]

2. **Applicants with Precedence**. This category includes any other applicant whose application for a water licence was filed earlier and whose proposed use of waters would take precedence over a subsequent applicant's proposed use by virtue of MVRMA, s. 72.26 or any territorial law.[442]

3. **Listed Claimants**. Listed Claimants are applicants that meet the specific requirements of MVRMA, s. 72.03(5)(b). The list includes:
   a) domestic users;
   b) instream users;
   c) authorized users;
   d) authorized waste depositors;
   e) persons who use waters or deposit waste, or both, without a licence under the authority of any territorial law;
   f) persons referred to in paragraph 61(d) of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*
   g) owners of property;
   h) occupiers of property; and
   i) holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature.

MVRMA, s. 72.03(5)(a) provides that the Board shall <u>not</u> issue a water licence unless the licence applicant satisfies the Board that:

1. the proposed use of waters or deposit of waste would not *significantly adversely affect* water use by Existing Licensees and Applicants with Precedence, or

2. where *significant adverse effects* are unavoidable, that the applicant has entered into a compensation agreement with Existing Licensees and Applicants with Precedence whose water use would be significantly adversely affected.

MVRMA, s. 72.03(5)(b) further provides that the Board shall <u>not</u> issue a water licence unless the licence applicant satisfies the Board that compensation *that the Board considers appropriate* has been or will be paid by the applicant to the following parties who would be *adversely affected* by the use of waters or the deposit of waste proposed by the applicant, and who have notified the Board within the time period stipulated in the notice of the application:

1. Existing Licensees and any other Applicants with Precedence to whom MVRMA, s. 72.03(5)(a) does not relate, and

2. Listed Claimants who meet the specific requirements of MVRMA, s. 72.03(5)(b) at the time the water licence application was filed with the Board.

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441 MVRMA, s. 72.03(5)(a)(i)(A).

442 MVRMA, s. 72.03(5)(a)(i)(B).

The Board has held that "it is the responsibility of the claimant to demonstrate on a balance of probabilities that they experience or will experience adverse effects and, if so, the nature of those adverse effects as they related to claimed compensation."[443]

2.2 Appropriate Compensation

MVRMA, s. 72.03(6) requires the Board to consider "all relevant factors" in determining whether compensation for claims by Listed Claimants is appropriate, including but not limited to:

a) provable loss or damage
b) potential loss or damage
c) the extent and duration of the adverse effect, including the incremental adverse effect
d) the extent of the use of waters by persons who would be adversely affected, and
e) nuisance, inconvenience and noise.

The Board has explained that:

- "Provable loss or damage refers to those losses and damages that, on a balance of probabilities, will occur as a result of activities proposed in the Licence"
- "Potential loss or damage refers to those losses and damages that are likely to occur as indicated through evidence or argument,"[444] and
- "Incremental effects are… prospective in nature. The incremental adverse effects are those adverse effects resulting from or likely to result from the proposed activities under the Licence that is being sought and which accumulate over time."[445]

In *Carter v Northwest Territories Power Corp*.,[446] the Northwest Territories Supreme Court confirmed that the Board does not have the authority to award compensation for past loss and damage, incurred under previous licences.[447]

In the Board's Carter Compensation Decision relating to the Type "A" Water Licence MV2011L4-0002 for the Taltson Twin Gorges Hydroelectric Generating Station, the Board explained the burden of proof claimants bear when they claim compensation for losses and damages:

> *A claimant for compensation bears the burden of proving that the damages alleged have or will be caused by the Applicant on the civil standard of proof. The civil standard is often expressed as evidence sufficient to prove that alleged damages are "more likely than not" or*

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443 MVLWB Reasons for Decision for Carter Family Compensation Claim in relation to Type A Water Licence MV2011L4-0002 for the Taltson Twin Gorges Hydroelectric Generating Station dated July 11 and 13, 2017 at para 50, retrieved from: http://registry.mvlwb.ca/Documents/MV2011L4-0002/MV2011L4-0002%20-%20NTPC%20-%20Board%20Recommendation%20for%20Approval%20-%20Update%20to%20Type%20A%20Water%20Licence%20and%20RFD%20-%20Compensation%20-%20Aug10-17.pdf [Carter Compensation Decision].

444 Carter Compensation Decision at para 25-26.

445 Carter Compensation Decision at para 40.

446 2014 NWTSC 19 [*Carter* NWTSC Decision].

447 *Carter* NWTSC Decision at para 128.

by saying that the preponderance of evidence supports an allegation. The same standard of proof applies to any valuation of damages, costs or other compensation claimed.[448]

Water compensation claimants must therefore prove that, based on the evidence, it is more likely than not that the claimants will suffer the damages claimed. The Board would like to emphasize that claimants are responsible for submitting evidence in support of their claims for damages to meet the burden of proof. In this matter, several claimants alleged losses or damages and provided little to no evidence to support their claims for damages or the monetary amounts claimed. Claimants cannot simply state that they will suffer losses and expect to be awarded compensation. To successfully claim provable or potential loss or damage, a claimant must convince the Board that the preponderance of the evidence supports that the claimant will or are likely to suffer losses or damages and that the amount of damages claimed is reasonable.

2.2.1. Clarification on Nuisance, Inconvenience and Noise

In the Carter Compensation Decision, the Board explained that nuisance:

> *[a]s a cause of action in litigation is an interference with another person's use or enjoyment of land that is both substantial and unreasonable. It includes not only physical interference but also impacts on the health, comfort or convenience of the owner or occupier of the property. Noise is one possible form of nuisance.*[449]

In the Board's Sandy Point Lodge Compensation Decision in relation to Type "B" Water Licence MV2016L8- 0006 for the Gordon Lake Group Remediation Project the Board indicated that:

> *[a]t least in respect of the claim for nuisance, inconvenience and noise, the evidence provided must convince the Board that SPL will be adversely affected by the activities associated with Water Licence MV2016L8-0006 and that those effects will be substantial and unreasonable given that the activities are designed for the greater benefit of the residents of the Mackenzie Valley and of other Canadians.*[450]

This substantial and unreasonable interference test is the common law test for nuisance in a civil claim.

GMRP's response to the claimants' water compensation claims, however, suggests that this common law nuisance test applies to all grounds for water compensation claims:

> *Generally the claimant needs to prove that the applicant's interference with their use and activities would be substantial (non-trivial) and unreasonable to constitute adverse effects justifying an award of compensation. In determining what may constitute a substantial and unreasonable interference sufficient to amount to an adverse effect, the Board must balance the interference against the purpose of the applicant's proposal and the net benefit of this proposal to residents of the Mackenzie Valley and other Canadians. The more a proposed project will benefit and align with public interest, the more substantial*

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448 Carter Compensation Decision at para 19.

449 Carter Compensation Decision at para 41.

450 MVLWB Reasons for Compensation Decision (MV2016L8- 0006) dated February 16, 2017, retrieved from: http://registry.mvlwb.ca/Documents/MV2016L8-0006/MV2016L8-0006%20-%20DIAND-CARD%20-%20Compensation%20-%20Reasons%20for%20Decision%20-%20Feb16-17.pdf.

and unreasonable the interference with the claimant's use and activities will need to be to justify awarding compensation under the MVRMA.[451]

The Board wishes to clarify that this balancing test applies only to claims for nuisance, inconvenience, and noise. Further, in the Carter Compensation Decision, the Board held that:

> *The content of "nuisance, inconvenience and noise" as a factor that must be considered by the Board when determining compensation does not necessarily conform exactly to the definition developed in civil litigation proceedings. First, the opportunity for a claimant to file a civil claim is separately preserved by section 60 of the* Waters Act *[s.72.27 MVRMA]. Second, the factor itself lists both inconvenience (an element of the definition of nuisance) and noise (an example of a nuisance) as elements to be individually considered. Consequently, while the Board may consider the definition above, it is not bound to the confines of this definition and must continue to interpret this factor in a manner that best suits the objectives and purpose of section 26 and the [*Waters Act*] as a whole.*[452]

Thus in the context of a compensation claim, the law of nuisance allows the Board to consider the reasonableness and impacts of a nuisance caused by a project for which a licence application has been received in relation to the benefits of the project on the Mackenzie Valley.[453]

However, it will not always be appropriate for the Board to conduct a simple balancing act and weigh all of a claimant's rights to water compensation against the public interest. Some further considerations related to the GMRP argument cited above are:

- the MVRMA water compensation regime was established so that eligible claimants experiencing adverse effects from a proposed use of water can receive compensation
- MVRMA, s. 72.03 does not explicitly require claimants to prove that the adverse effects on the claimant outweigh the public benefits of a proposed use of water, and
- MVRMA, s. 72.03(6) requires the Board to consider "all relevant factors" in determining whether compensation for water claims is appropriate, including but not limited to, nuisance, inconvenience and noise, leaving discretion with the Board to consider any relevant factor outside of the common law nuisance test.

If the Board were to apply a rigid balancing test in all cases, compensation claimants could be required to prove that any adverse effects that they experience or expect to experience outweigh the public benefits of a project. This is a very high, perhaps impossible standard to meet, particularly for small, individual claimants, for example, individual instream or domestic users of water.

Requiring claimants to meet such a high standard in relation to all elements of a claim could, in the Board's view, defeat the purpose of the MVRMA water compensation regime. The City of

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451 GMRP Response at pg. 5.

452 Carter Compensation Decision at para 42.

453 The GMRP is a project where government action is improving a seriously contaminated site. The "public interest" is served by this cleanup, but may nonetheless be difficult to quantify. Projects such as resource development and mining activities conducted for profit may be less obviously in the public interest.

Yellowknife raised similar concerns with the way the GMRP interpreted the nuisance test in its reply submissions and the Board agrees with these submissions.[454]

3.0 Summary of Claims and Board Analysis

3.1 City of Yellowknife Pipeline Claim

3.1.1. Summary of City's Claim

The City holds Type "A" Water Licence MV2009L3-0007, which authorizes the City to use water from the Yellowknife River to supply drinking water to residents of the City, and the Ndilǫ and Dettah communities ("City Water Licence"). The City's water is conveyed from the Yellowknife River via submarine pipeline (the "Pipeline"). The City of Yellowknife provided Notification of Intent to File a Claim for Water Compensation[455] and a subsequent Water Compensation Claim[456] related to the Pipeline.

The current City Water Licence was effective as of May 31, 2010 and expires May 30, 2022.[457]

The City notes that it depends on water from the Pipeline for sewage, firefighting, education, business activities, tourism and recreation.[458]

Prior to using the Pipeline, the City obtained its drinking water from Yellowknife Bay on Great Slave Lake. However, water quality concerns related to the Giant Mine caused the City to switch to using the Yellowknife River for drinking water.

Eligibility

The City asserts that it is eligible for water compensation because it is either an Existing Licensee or Applicant with Precedence, or a Listed Claimant (domestic user).[459]

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454 City of Yellowknife Water Compensation Claim Reply dated December 13, 2019 at pg. 9-10, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20Yellowknife%20-%20Reply%20to%20GMRP%20Claim%20for%20Compensation%20Response%20-%20Dec13-19.pdf [City Reply].

455 City of Yellowknife Notice of Intent to Claim (Water Pipeline), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20Yellowknife%20Notification%20of%20Intent%20to%20Claim%20Water%20Pipeline%20-%20Aug15-19.PDF [City Notice (Water Pipeline)].

456 City of Yellowknife Water Compensation Claim (Water Pipeline) dated October 18, 2019, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20YK%20-%20Claim%20for%20Water%20Compensation%20(Water%20Pipeline)%20-%20Oct18-19.pdf [City Claim (Water Pipeline)].

457 See City Water Licence MV2009L3-0007 at Exhibit A of City of Yellowknife Water Compensation Claim (Water Pipeline) dated October 18, 2019, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20YK%20-%20Claim%20for%20Water%20Compensation%20(Water%20Pipeline)%20-%20Oct18-19.pdf [City Water Licence].

458 City Claim (Water Pipeline) at pg. 8.

459 City Notice (Water Pipeline), s. 3.

Adverse Effect

The City's submissions indicate that the "Pipeline is at the end of its functional life. It must either be replaced or the City must switch back to obtaining its water from Yellowknife Bay."[460]

The City asserts that the activities proposed in the GMRP's water licence application "would significantly adversely affect the City's ability to obtain water from Yellowknife Bay."[461] In particular, the City notes that GMRP's application proposes to continue to store hazardous waste at and discharge mine water into the Northwest Pond until at least 2028.[462]

The City's concern is that the proposed water licence:

- Perpetuates or increases the risk of a catastrophic release of arsenic into Yellowknife Bay from the Northwest Pond. The City explains that prolonged precipitation could cause a failure of the Northwest Pond leading to the discharge of arsenic, among other things, into Yellowknife Bay, rendering the water in Yellowknife Bay undrinkable pursuant to the *National Guidelines for Canadian Drinking Water* ("Guidelines"), adopted under the *Water Supply System Regulations* pursuant to the *Public Health Act*,[463] and

- Contemplates depositing waste, including arsenic, in and around Yellowknife Bay in concentrations exceeding drinking water standards and levels recommended by the Mackenzie Valley Environmental Impact Review Board ("MVEIRB").[464]

The City asserts that "the incremental, gradual or accumulative effects of both proposed licenced activities are significant"[465] and "prevent the City from using Yellowknife Bay as a drinking water source for years to come."[466]

The City argues that "as a direct result of the activities proposed in the water licence" (i.e., the risk posed by the application activities on Yellowknife Bay), the City must replace the Pipeline. The City supports this submission with the *City of Yellowknife Potable Water Source Selection Study* prepared by AECOM Engineers and dated December 6, 2017 ("AECOM Study").[467] The AECOM Study recommends that the City choose Yellowknife River as a drinking water source. The AECOM Study notes that "arsenic contamination of the Yellowknife Bay source water due to a major failure at Giant Mine has a low probability of occurring, but is considered plausible… this "short-term" risk only exists until the end of the remediation phase of the Giant Mine project."[468]

The City asserts that any adverse and incremental effects will last at least until (a) the Northwest Pond is dewatered (best case 2033), (b) the new water treatment plant proposed in the water

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460 City Notice (Water Pipeline), Schedule A, para 5.
461 City Notice (Water Pipeline), Schedule A, para 6.
462 City Notice (Water Pipeline), Schedule A, para 10.
463 City Notice (Water Pipeline), Schedule A, paras 9 and 10.
464 City Claim (Water Pipeline), pg. 3.
465 City Claim (Water Pipeline), pg. 6.
466 City Claim (Water Pipeline), pg. 7.
467 City Claim (Water Pipeline), Exhibit B.
468 City Claim (Water Pipeline), Exhibit B (AECOM Study), at pg. 31.

licence application is in operation (best case 2026), or the post-closure phase commences (timing unknown).[469]

Appropriate Compensation

The cost to replace the Pipeline is $34,482,959. The City has obtained $25,800,000 in funding from Infrastructure Canada. The City seeks compensation for the shortfall ($8,620,740), as provable loss or damage, or in the alternative as potential loss or damage, or in the further alternative for nuisance, inconvenience and noise.[470] The City argues that "the loss is provable because the City must construct the Pipeline to secure its water supply."[471]

The City further argues that the activities proposed in the GMRP application are a nuisance or inconvenience because:

> *Clean water is a statutory right. Putting that water supply in jeopardy not only puts the health of the majority of the population of the Mackenzie Valley and a strategic centre in Canada's North at risk, but also causes significant nuisance and inconvenience, adversely affecting the actual, emotional, economic, spiritual and cultural well being of Yellowknife's residents. The risk of having to live with an actual or contaminated water supply is extremely stressful, to say the least.*[472]

No Compensation Agreement

The City indicates that GMRP has refused to enter a compensation agreement with the City for the Pipeline, as GMRP "takes the position that the water Pipeline is outside the scope of remediation."[473]

3.1.2. Summary of GMRP Response

Eligibility

GMRP concludes that the City is eligible to make a claim because it holds the City Water Licence MV2009L3-0007. The MVLWB granted the City Water Licence as a renewal of water licence N1L3-0032 which was issued in 2002. GMRP states that as the holder of the successor licence to N1L3-0032 the City's use of water takes precedence over the GMRP's water licence application which was submitted to the Board on October 19, 2007, pursuant to MVRMA, s. 72.26(1). However, the GMRP argues that its proposed activities take precedence over any rights or authorizations included in amendments to the City's Water Licence that post-date October 18, 2007.[474]

GMRP further argues that the City is not a Listed Claimant because the City is not a "domestic user."[475] Therefore, the "City's eligibility to submit a compensation claim… is based entirely on its status as a water licensee at the time of the initial GMRP water licence application."[476] Since N1L3-0032 and the City Water Licence only authorized the City to (1) obtain fresh water from

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469 City Claim (Water Pipeline), pg. 5.
470 City Claim (Water Pipeline), Cover Letter.
471 City Claim (Water Pipeline), pg. 4.
472 City Claim (Water Pipeline), pg. 11.
473 City Claim (Water Pipeline), pg. 15.
474 GMRP Response at pg. 6.
475 GMRP Response at pg. 6.
476 GMRP Response at pg. 6.

Yellowknife River, and (2) obtain water from Yellowknife Bay on an emergency basis, the City may only base its claim for compensation on these grounds.

Adverse Effect

GMRP argues that its "proposed use of water and deposit of waste will have no adverse effect on the City's licenced right to draw water from Yellowknife River or from Yellowknife Bay on an emergency basis." Further, GMRP's proposed activities "will not create or increase the risk of contamination in Yellowknife Bay, nor will the Project activities increase a risk of failure of the Northwest Pond. On the contrary, the work the GMRP proposes to carry out will further reduce that risk which is already very low. The GMRP will not deposit wastes in a manner that would raise the level of contamination in Yellowknife Bay."[477]

Appropriate Compensation

GMRP argues that the City is suffering no immediate, nor will there be future loss or damage from the proposed Project activities. The cost to replace the Pipeline is not compensable because "the GMRP is not the reason that the Yellowknife River water pipeline needs to be replaced."[478] "Whether the Project proceeds or not, the City will be required to replace the pipeline or build a new water treatment plant to withdraw water from Yellowknife Bay."[479]

Further, the City cannot claim that the Project will force the City to continue drawing water from Yellowknife River instead of Yellowknife Bay, because the City is not currently authorized to draw water from Yellowknife Bay other than on an emergency basis. To draw water from Yellowknife Bay, on a regular basis the City would require a new licence or amendment, which cannot be the basis for a compensation claim.[480] In addition to this argument, GMRP also states that "nothing relating to the Project will restrict the City's ability to draw water from Yellowknife Bay." The water quality in Yellowknife Bay currently complies with the *Guidelines for Canadian Drinking Water Quality* at the City's water intake, and the Project will further reduce the concentration of contaminants entering Yellowknife Bay.

GMRP argues that the City has not submitted any evidence in support of its claim for nuisance and inconvenience or that there will be "actual, emotional, economic, spiritual or cultural effects to the wellbeing of users of the City's drinking water."[481] Even if there were such evidence, GMRP argues that the City cannot be compensated in the name of its residents, and that Yellowknife residents had the opportunity to file their own compensation claims with the Board.[482]

The City itself is "not actually experiencing, or reasonably expected to experience, any inconvenience or nuisance from the Project activities" because the Project will not prevent the City from drawing water from the Yellowknife River, and the arsenic concentrations in Yellowknife Bay meet the *Guidelines for Canadian Drinking Water Quality*.[483]

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477 GMRP Response at pg. 7.
478 GMRP Response at pg. 11.
479 GMRP Response at pg. 11.
480 GMRP Response at pg. 11.
481 GMRP Response at pg. 12.
482 GMRP Response at pg. 12.
483 GMRP Response at pg. 12.

3.1.3. Summary of City's Reply

Eligibility

In its reply, the City states that N1L3-0032 dates back to at least 1977 and that the City's right to draw water from Yellowknife Bay therefore dates back to 1977.[484] The version of N1L3-0032 dated 1977 provides that the City shall obtain all water for municipal purposes from the Yellowknife River, and may in an emergency obtain water for municipal purposes from Yellowknife Bay.[485]

The City also notes that in 1981, the City applied to have an alternate primary water intake from Yellowknife Bay.[486] The City's application was contingent on the water quality of water in Yellowknife Bay being tested.[487] N1L3-0032 was renewed again in 1982. The renewed licence continues to provide that the City shall obtain water from Yellowknife River, and may in an emergency obtain water from Yellowknife Bay.[488] The renewed licence also provided that the City may obtain all water from Yellowknife Bay if the City makes certain modifications to the water supply. In 1983, the City determined that the water in Back Bay was not suitable to drink, due to levels of bacteria, lead and arsenic in the water.[489]

The City argues that, contrary to GMRP's assertion, its right to use water is not "frozen in time to the expressly authorized uses in the current licence" as that interpretation is contrary to the grammatical and ordinary meaning of s. 72.26(2).[490] Further, MVRMA, s. 72.12 allows the Board to amend and renew licences. The City argues that "[a] renewal, with or without changes, will be deemed to be a continuation of the original licence. Therefore, even if the City does not already have an entrenched right to take water from Yellowknife Bay that takes precedence over the GMRP's application—which is denied—if the City were to expressly apply for the use of Yellowknife Bay as a primary water source in its next renewal application in 2022, that right obtained through a renewal would have precedence over the proposed use by GMRP."[491]

Adverse Effect

The City argues that the activities proposed by GMRP will both cause actual contamination in Yellowknife Bay and continue and promulgate the contamination that already exists. The City notes that MVEIRB has determined that the discharge of water proposed by GMRP will "at least until 2026, cause significant adverse impacts on water quality and the environment in Back Bay."[492] The proposed effluent will not meet the *Guidelines for Canadian Drinking Water Quality* for arsenic until 2026 at the earliest, and will contribute to arsenic loading in Yellowknife Bay.[493] The City says the City should not bear the risk and costs associated with GMRP's inability to meet

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484 City Reply at pg. 12.
485 City Reply, Schedule A, N1L3-0032 dated 1977, Part B, Conditions 1 and 2.
486 City Reply at pg. 12.
487 City Reply, Schedule B.
488 City Reply, Schedule C, N1L3-0032 dated 1982, Part B, Conditions 1 and 2.
489 City Reply, Schedule D.
490 City Reply at pg. 13.
491 City Reply at pg. 13.
492 City Reply at pg. 14.
493 City Reply at pg. 14.

the drinking water standards, which is a requirement in Measure 14 of MVEIRB's environmental assessment for the Project.[494]

The City also argues that GMRP is wrong in arguing that the Board cannot award compensation for the perpetuation of the risk of a release from the Northwest Pond. The City asserts that the Board in the Carter Compensation Decision awarded "compensation for adverse effects of a new licence that 'continues or promulgates' activities that negatively impact an ongoing water use."[495] The City argues that the adverse effect is the risk of failure, and that the risk of failure has been established on a balance of probabilities.[496] The "consequences of the risk are so great that the City has no choice but to eliminate the risk entirely. The City states that the adverse effect of failure would not be short term. If the City were drawing water from Yellowknife Bay during a catastrophic event, the City would be required to evacuate its residents (who would have no drinking water) and the length of time that would be required to clean up Yellowknife Bay is unclear.[497]

Appropriate Compensation

The City's reply asserts that the City's losses are provable "because the City must construct the water pipeline in order to mitigate against the risk of the Northwest Pond and the continued arsenic loading from the effluent treatment plant discharge… It is precisely because of the GMRP's activities that the pipeline needs to be replaced. The risks and continued contamination caused by the GMRP have and continue to prevent the City from drawing its water from Yellowknife Bay."[498] Further, "[r]equiring the GMRP to compensate the City is merely a continuation of the obligation that the federal government and Giant Mine assumed in order to secure the City's water supply… The problem has not yet been solved and the City's costs of avoiding that problem must continue to be to the account of the proponent of the Giant Mine who took on the obligation to avoiding it in the first place."[499]

Regarding the actual, emotional, economic, spiritual effects to the wellbeing of users of the City's drinking water, the City notes that MVEIRB has "acknowledged the stress and anxiety of the effects of arsenic contamination on the community."[500]

The City highlights letters from the YKDFN and NSMA supporting the City's application to the Disaster Mitigation & Adaptation Fund for constructing a new Pipeline and argues that they should be given weight in support of the City's compensation claim as well.[501]

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494 City Reply at pg. 15.
495 City Reply at pg. 16.
496 City Reply at pg. 17.
497 City Reply at pg. 18.
498 City Reply at pg. 18.
499 City Reply at pg. 18.
500 City Reply at pg. 19.
501 City Reply at pg. 19.

3.1.4. Board Analysis and Reasons

Eligibility

The City is an "Existing Licensee" and not an "Applicant with Precedence"

The City is an Existing Licensee, because it currently holds the City Water Licence.[502]
The City is not an Applicant with Precedence. Applicants with Precedence are *applicants* whose proposed use of water takes precedence based on MVRMA, s. 72.26 or any territorial law.[503] The City is not currently an Applicant for a water licence. There are no other Applicants with Precedence.

In the current City Water Licence (MV2009L3-0007), condition C.1 provides that the City "shall obtain all Waters from Yellowknife River using the Water Supply Facilities for municipal undertakings as described in the Water Licence Application received by the Board on July 10, 2009 or as otherwise approved by the Board."[504]

The City Water Licence refers to Yellowknife Bay in provisions of the Surveillance Network Program, which requires the City to measure and record the daily quantity of Water pumped from Yellowknife Bay at Station Number 0032-2 in cubic metres.[505] The Location and Description of Surveillance Network Stations indicates that Station Number 0032-2 is the wet well water intake in City Pumphouse #1, and that water *quantity* sampling is required to determine the quantity of Yellowknife Bay Water for use as an emergency potable water supply source. Water *quality* sampling is not required.[506]

The rights set out in the current City Water Licence are not substantively different from those set out in the versions of N1L3-0032 dated 1977 and 2002. Both N1L3-0032 and the City Water Licence authorize the City to obtain fresh water from Yellowknife River, and to obtain water from Yellowknife Bay on an emergency basis. Therefore, GMRP's argument attempting to distinguish between the City's rights under N1L3-0032 and the City Water Licence for water compensation purposes is not helpful because of the legal effect of ss. 72.26(2) and (3) of the MVRMA and because the water use rights granted by the two licences are essentially the same.

The Board recognizes that the City historically had the right to draw all water for municipal purposes from Yellowknife Bay. The Board also recognizes that the concentrations of contaminants in water caused by Giant Mine activities have precluded the City from using Yellowknife Bay as a source of drinking water for many years, and that concerns about the use of water from Yellowknife Bay motivated the construction of the Pipeline.

However, the City's right to compensation is not based on its historical right to use water. The City's right to compensation is based on its status as an Existing Licensee and its rights under the current City Water Licence. The question for the Board is whether the City, as an Existing Licensee

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502 See MVRMA, s. 72.03(5)(a)(i)(A) and (b)(i) and *Waters Act*, s.26(5)(a)(i)(A) and (b)(i).
503 See MVRMA, s. 72.03(5)(a)(i)(B) and (b) and *Waters Act*, s.26(5)(a)(i)(B) and (b).
504 City Claim (Water Pipeline), Exhibit A (City Water Licence), C.1 at pg. 4.
505 City Claim (Water Pipeline), Exhibit A (City Water Licence), Surveillance Network Program at pg. 21.
506 City Claim (Water Pipeline), Exhibit A (City Water Licence), Surveillance Network Program at pg. 15.

operating under the current City Water Licence, will be significantly adversely affected by the use of waters and deposit of waste proposed by the GMRP.

The City is not a "Domestic User"

Since the City is an Existing Licensee, the City need not be a Listed Claimant (domestic user) to qualify for compensation. However, the Board agrees with GMRP's conclusion that the City is not a domestic user.
MVRMA, s. 51 and the *Waters Act*, s. 1 define a "domestic user" as a person who uses waters:

a) for household requirements, including sanitation and fire prevention;
b) for the watering of domestic animals; or
c) for the irrigation of a garden adjoining a dwelling-house that is not ordinarily used in the growth of produce for a market.

As noted by GMRP, the City does not use water for the watering of domestic animals or for irrigation of dwelling-house gardens. GMRP argues that:

> *The City is not using waters for household requirements either. While the City draws water so that its residents can in turn use water for their own individual household requirements, the City itself does not use water for household requirements within the meaning of this definition. This definition is meant to capture the needs of an individual household, which uses a small amount of water that subsection 72(2) of the MVRMA exempts it from the general prohibition on using waters without a licence or regulatory authorization. What Parliament intended to cover are individual houses, cottages, and cabins not serviced by a municipality. In contrast, the City drawing a large quantity of water each day to make it available to houses and business in Yellowknife and Ndilǫ qualifies as a municipal undertaking requiring a water licence in accordance with section 8 and Item 1 of Schedule VI of the* Mackenzie Valley Federal Areas Water Regulation*. This is why the City has a water licence authorizing the use of its water pipeline. Finally, if the City requires water for extinguishing fires, it is entitled to do so by paragraph 72(1)(c) of the MVRMA.*[507]

As indicated by GMRP, the City's activities qualify as a municipal undertaking requiring a water licence under the *Waters Regulations*.[508] Schedule B of these Regulations specifies that municipal undertakings include any activity in a municipality that uses only a municipal water and sewage system, including domestic, horticultural, fire protection, commercial or industrial activities.

The City Cannot Submit Claim on Behalf of its Residents

As an Existing Licensee, the City has the right to use water, and specifically, to withdraw water from the Yellowknife River and provide such water to residents. Residents of Yellowknife then purchase or obtain water from the City through the municipal system. The City argues in its reply submissions that the City should be permitted to seek compensation for damages to its residents, in part, for reasons of efficiency (because the Board does not have resources to adjudicate a water

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507 GMRP Response at pg. 6.
508 SOR/93-303 [Mackenzie Valley Federal Areas Waters Regulations].

compensation claim brought by each resident of Yellowknife).[509] However, in the Board's view, the residents of Yellowknife are not eligible claimants in any event.

Residents of Yellowknife are not eligible claimants because they obtain water through the municipal system. They are not the primary users of the water and these residents do not use water in a way that establishes an individual statutory right to use water.

The MVRMA, s. 51 defines a "use" in relation to waters broadly as "a direct or indirect use of any kind" but eligibility for compensation is based on a right to water use or a connection to the water as set out in s. 72.03(5). The users categorized as potential claimants under s. 73.03(5) must possess a listed statutory, property or other right that could be interfered with by activities proposed by a water licence applicant. As indicated these users with rights include:

- existing Licensees and Applicants with Precedence, as well as licensees under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, possess rights under existing or future water licences.
- owners and occupiers of property possess private property rights.
- persons who use water or deposit waste without a licence under federal or territorial law derive these rights from statute or regulation.
- holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature, are also rights-holders.

City water users who get their water from the municipal system do not possess or exercise these kinds of rights. The primary user is the City and it has a right to compensation. City residents using water from the municipal system do not qualify as Listed Claimants under paragraph 72.03(5)(b).

Adverse Effect

As indicated above, the question is whether the City, as an Existing Licensee operating under the current City Water Licence, will be significantly adversely affected by the use of waters and deposit of waste proposed by the GMRP.

The current City Water Licence authorizes the City to obtain water from Yellowknife River, and contemplates the City obtaining water from Yellowknife Bay for emergency purposes.

The City has not provided any evidence that its operations under the current City Water Licence will more likely than not be adversely affected by the use of waters and deposit of waste proposed by GMRP. In particular, the City has not provided any evidence that the activities proposed will more likely than not impact the City's ability to obtain water from the Yellowknife River, or Yellowknife Bay on an emergency basis. There is no evidence before the Board that the GMRP project will more likely than not affect either the quality or quantity of water available to the City from the Yellowknife River.

The City indicates concern that GMRP's water licence application (1) perpetuates or increases the risk of a catastrophic release of arsenic into Yellowknife Bay from the Northwest Pond, and (2)

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[509] City Reply at pg. 10-11.

contemplates depositing waste, including arsenic, in and around Yellowknife Bay.[510] The City argues that "as a direct result of the activities proposed in the water licence" (i.e. the risk posed by the application activities on the Giant site and in Back Bay), the City must replace the Pipeline.

The Board disagrees. The City's own evidence confirms that the Pipeline must be replaced, regardless of GMRP's activities.[511] The replacement is an "end of service life" issue not a response to a change caused by the GMRP. In addition, it appears that waters drawn from Yellowknife Bay by the City have for over a decade been well below the *Guidelines for Canadian Drinking Water Quality* limit for arsenic.[512]

Further, the Northwest Pond is already in existence, and was constructed and operated under previous water licences issued to operators of Giant Mine. As discussed above, the Northwest Territories Supreme Court confirmed in *Carter* that the Board may only award compensation for future adverse effects caused by an applicant's proposed use of water or deposits of waste, not for loss or damage incurred under previous licences. The effects of any risk alleged to result from the mere existence of the Northwest Pond are not compensable.

In any event, the City has not provided technical evidence which proves that the risk of failure of the Northwest Pond will increase due to GMRP activities. The evidence on the record shows the contrary. The GMRP proposal for temporary use and management of the Northwest Pond will reduce the risk from this facility. Regarding the effects of arsenic loading in Yellowknife Bay from the Northwest Pond, the AECOM Report notes that "[a]rsenic contamination of the Yellowknife Bay source water due to a major failure at Giant Mine has a low probability of occurring but is considered plausible… this "short-term" risk only exists until the end of the remediation phase of the Giant Mine project."[513] The GMRP has submitted evidence indicating that GMRP's proposed activities will reduce arsenic being discharged into Yellowknife Bay and arsenic loading over time.[514]

The City is required to demonstrate that remediation activities proposed in the water licence application will "more likely than not" significantly adversely affect the City's rights under the City Water Licence.

In the Board's view, the GMRP's activities do not increase the risk of failure of the Northwest Pond or the risk of contamination of Yellowknife Bay. Further, GMRP's proposed activities will not affect the City's right to draw water from the Yellowknife River.

The GMRP's proposed activities are not likely to adversely affect the City's ability to draw water from Yellowknife Bay in an emergency. The evidence available to the Board indicates that water quality at the City's Yellowknife Bay water intake is below arsenic levels set out in the *Guidelines*

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510 City Claim (Water Pipeline), pg. 3.

511 City Claim (Water Pipeline), Exhibit B (AECOM Report), pg. i.

512 Board Decision to allow monthly water withdrawals for MV2009L3-0007, January 17, 2019. The evidence submitted in relation to this application indicates that in March 2018 the Chief Public Health Officer had no concerned with the quality of Yellowknife Bay water withdrawals with respect to arsenic.

513 City Claim (Water Pipeline), Exhibit B (AECOM Report), pg. i.

514 GMRP Response at pg. 10.

for Canadian Drinking Water Quality and that GMRP's proposed activities are not likely to change that.

The City has not proven that a significant adverse effect will or is likely to result from the activities proposed in GMRP's water licence application.

Appropriate Compensation

The Board agrees with GMRP that the City's costs for replacing the Pipeline are not compensable because the need for the replacement of the Pipeline does not result from the activities proposed under GMRP's water licence application. The City Water Licence requires the City to obtain all drinking water from Yellowknife River through the Pipeline which requires replacement regardless of GMRP's activities.

As set out above, the residents of the City of Yellowknife are not eligible claimants, and the City cannot claim nuisance and inconvenience on behalf of its residents. In any event, the City has not provided any evidence of actual, emotional, economic, spiritual or cultural effects to the wellbeing of users of the City's drinking water which result from the GMRP water use or waste disposal. The City notes in its reply submissions that MVEIRB has "acknowledged the stress and anxiety of the effects of arsenic contamination on the community."[515] The Board does not have jurisdiction to award compensation for stress and anxiety generally related to the arsenic contamination. Compensation must be tied to the adverse effects of GMRP's proposed activities on the City's right to use water under the current City Water Licence.

GMRP's activities will not prevent the City from drawing water from Yellowknife River in accordance with its licence. The likelihood that the project will interfere with the City's ability to draw water for emergency purposes is low. The City has not established that it is more likely that not that the City will experience nuisance or inconvenience.

Summary of Analysis and Board Decision

The City of Yellowknife is eligible for compensation as an existing Licensee, by virtue of the City Water License. To establish an entitlement to compensation, the City is required to prove that, more likely than not, the water use or deposit of waste proposed in GMRP's water licence application would result in an adverse effect or a significant adverse effect on the City's rights under the City Water License. The City has not established that an adverse effect will or is likely to occur as a result of GMRP's proposed activities.

It is true that the City's Pipeline must be replaced. However, the GMRP remediation project is not the reason the Pipeline must be replaced. In other words, the GMRP project is not the cause of the "adverse effect." Provable loss and potential loss are those losses or damages that will occur or are likely to occur *as a result of* the activities proposed. Because the City's Pipeline replacement is not required *as a result of* GMRP's proposed activities, the City has not established provable or potential loss or damage.

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[515] City Reply at pg. 19.

The City has also not proven that GMRP's proposed activities will "more likely than not" increase the risk of failure of the Northwest Pond or the risk of contamination of Yellowknife Bay and result in an adverse effect on the City's right to use water under the City Water License. The extent of the City's use of water from Yellowknife Bay is limited. The City Water License permits the City to draw water primarily from Yellowknife River, and only from Yellowknife Bay for emergency purposes. The likelihood that the City will be required to draw water from Yellowknife Bay for emergency purposes at the same time that there is a failure of the Northwest Pond resulting in contamination of Yellowknife Bay (such that water at the City's intake does not meet drinking water standards) is very low. Therefore, it is unlikely that a failure of the Northwest Pond would adversely affect the City's right to draw water from Yellowknife Bay for emergency purposes. The City has not established provable loss or damage or nuisance or inconvenience associated with loss of access to safe drinking water from Yellowknife Bay.

In light of the above analysis, the Board concludes that the City's costs for replacing the Pipeline ($8,620,740) are not compensable. The Board dismisses the City's claim for compensation related to the Pipeline.

3.2 City of Yellowknife Town Site Claim

3.2.1. Summary of City's Claim

The City leases and occupies a portion of the Giant Mine Site from the GNWT (the "Town Site" and "Lease"). The term of the Lease is from October 1, 2000 to October 1, 2030. The City uses the Town Site Lease area:

- as a boat launch to facilitate recreational boat, and commercial and industrial vessel access to Great Slave Lake. The boat launch provides access for "vessels used to connect the communities of Yellowknife, Ndilǫ and Dettah and the services they provide to various communities on Great Slave Lake and the Mackenzie River"[516] The boat launch also serves large "commercial fishing and barging vessels that do not have any other suitable access points"[517]
- to sublease to the Great Slave Sailing Club ("GSSC"), and
- to sublease to the Yellowknife Historical Society ("YKHS").

The City of Yellowknife provided Notification of Intent to File a Claim for Water Compensation[518] and a subsequent Water Compensation Claim[519] related to the Town Site.

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[516] City Claim (Town Site) at pg. 3.

[517] City Claim (Town Site) at pg. 3.

[518] City of Yellowknife Notice of Intent to Claim (Town Site), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20Yellowknife%20Notification%20of%20Intent%20to%20Claim%20Dock%20-%20Aug15-19.PDF [City Notice (Town Site)].

[519] City of Yellowknife Water Compensation Claim (Town Site) dated October 18, 2019, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20City%20of%20YK%20-%20Claim%20for%20Water%20Compensation%20(Town%20Site)%20-%20Oct18-19.pdf. [City Claim (Town Site)].

Eligibility

The City asserts that it is eligible as an Existing Licensee, or as a Listed Claimant (occupier of property, domestic user, or authorized user).[520]

Adverse Effect

The City asserts that "as a direct result of the activities applied for in the Licence, the City's use of the Town Site will be suspended from 2021-2031, significantly and adversely impacting the social, recreational, and cultural wellbeing of the City's residents and residents of the Mackenzie Valley more generally."[521]

The City argues that "even for those citizens who do not regularly use the [Leased area], the ability to access the water as provided by the Lease forms an emotional and intangible connection to the water and contributes to the quality of life in Yellowknife."[522]

The "loss of access to the water could have long term and difficult to measure impacts on the City", because loss of the facilities on the City Town Site Lease:

- "will make the City a less desirable place to live" and "will result in loss of quality of life and diminish the City's ability to attract new residents."[523]
- "will result in fewer individuals accessing Great Slave Lake, creating less of a demand for the secondary and tertiary services and infrastructure required to support a recreational and commercial community based on, and connected to, Great Slave Lake"[524]
- "may result in a significant reduction of tourism and related tourism revenue, as well as a lost opportunity to increase tourism in the City and the Mackenzie Valley more broadly"[525]

The City asserts that it will need to conduct a feasibility study to assess alternative boat launch facilities at another location on Great Slave Lake, and that the City does not have the resources to conduct the feasibility study on its own.

The City also asserts that "as a result of the proposed licenced activities, the City has had to postpone renewal of its subleases with the [GSSC] and the YKHS.[526]

Appropriate Compensation

The City asserts that it will experience provable loss (the cost of providing suitable alternate facilities) as a result of the GMRP's licenced activities. The City states that "the fact that the City will incur damages is certain. However, the quantum of damages can only be ascertained with [GMRP's] cooperation" by contracting for a feasibility study to evaluate alternative options for maintaining water access.[527]

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520 City Claim (Town Site) at pg. 2.
521 City Notice (Town Site) at para 6.
522 City Claim (Town Site) at pg. 3.
523 City Claim (Town Site) at pg. 7.
524 City Claim (Town Site) at pg. 7.
525 City Claim (Town Site) at pg. 7.
526 City Notice (Town Site) at para 7-8; City Claim (Town Site) at pg. 3.
527 City Notice (Town Site) at para 4.

The City claims that it is entitled to $290,000 in compensation for provable loss for the cost of the feasibility study, in addition it claims the actual cost of alternative facilities during the Lease suspension period.[528]

The City also asserts that the proposed licence activities will result in a substantial nuisance and inconvenience. The City's inability to exercise its right to access the Lease, and the fact that the City will be prevented from subleasing, "is a complete interference with the City's, and its residents' use and enjoyment of the water, which is both substantial and unreasonable."[529] Waterfront access "provides residents and visitors with year-round opportunities for recreation, tourism, transportation, and economic development, all the while remaining an important cultural and ecologically significant area."[530] Waterfront access "is an integral part of the culture and lifestyle of many residents of the City… the loss of the facility will have intangible and emotional impacts…"[531]

The City estimates the costs attributable to loss of use of the dock by the City's 20,000 residents at $400,000 per year. This is based on an estimate that (1) the average Yellowknife resident uses the Giant mine dock once per year and (2) the City's residents would value use of the boat launch similar to other municipalities in Canada (hypothetical boat launch fee of $20 per day). The City further assumes that the average user of the dock spends 3 hours on the water and values their time at least at $15/hour, resulting in a further loss of value of $900,000 per year. The City therefore claims a total of $13 million for nuisance and inconvenience over the 10 year period of suspended access ($1.3 million/year). The City argues that this figure is conservative as it does not include intangible losses such as negative impact on quality and way of life.[532]

Compensation Agreement

The City notes that it has been negotiating compensation with GMRP, including a feasibility study for alternate dock configurations, but that no agreement has been reached.[533]

3.2.2. Summary of GMRP Response

Eligibility

GMRP submits that the City is a Listed Claimant (owner or occupier of property) because it leases and occupies the Town Site by virtue of the Town Site Lease.[534] However, GMRP asserts that the City is neither a domestic user nor an authorized user.

Adverse Effect

GMRP states that "the City is seeking compensation from the GMRP because the GMRP will require access to various sections of its leased property at various times to the exclusion of the public to carry out the Project. This is not the type of compensation contemplated by the regime

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528 City Claim (Town Site) at pg. 4.
529 City Claim (Town Site) at pg. 9.
530 City Claim (Town Site) at pg. 9.
531 City Claim (Town Site) at pg. 9-10.
532 City Claim (Town Site) at pg. 10.
533 City Notice (Town Site) at para 9.
534 GMRP Response at pg. 13.

set out in the MVRMA, even in connection with respect to (sic) an owner or occupier of property."[535]

Further, "the City is not claiming that GMRP's proposed use of waters or deposit of waste will result in unwanted and adverse effects to it as an owner of property… The City is actually claiming compensation for the temporary loss of use of its leasehold property if it grants access to the GMRP to do the work it wants the GMRP to do on its leasehold property."[536]

GMRP asserts that "given the high importance and significant benefits of the Project to the residents of Yellowknife, Ndilǫ and Dettah, the residents of the Mackenzie Valley, and Canadians in general, the short-term impact of the Project on the City and users of the Giant Mine boat launch should be considered to be reasonable in the circumstances."[537]

Appropriate Compensation

GMRP asserts that the City is not entitled to $290,000 for a feasibility study and additional compensation for the construction of an alternative boat launch and dock. GMRP indicates that it "will make best efforts to build boat launch and dock facilities near the GSSC site, to maintain continuous public access to Great Slave Lake at a comparable level to what is currently provided at the Giant boat launch and dock."[538]

Further, GMRP states the City's compensation claim is "directly linked to the fact that the City wanted the benefit of having its leasehold property remediated to residential soil standards per its own request." GMRP submits that this is a real property matter that the City must resolve with GMRP through negotiations, and that the Board has no jurisdiction to arbitrate a real property negotiation.[539]

Regarding the City's $13 million nuisance and inconvenience claim, GMRP asserts that the City "cannot stand to be compensated in the name of its residents" and "does not have the ability to allege adverse effects on third parties as grounds for compensation to itself."[540] Further, the City did not submit evidence or data on the actual use of the Giant Mine boat dock. GMRP argues that the City's calculation of damages is speculative, and that calculating compensation on the basis of the entire population of Yellowknife is arbitrary, exaggerated and unreasonable.[541]

3.2.3. Summary of City's Reply

The City notes the GMRP's submission that it will make "best efforts to maintain continuous public access to Great Slave Lake… by constructing a boat launch comparable to the existing one at the Giant Mine boat launch… and to make sure that at least one of the existing or new boat launches will be accessible by the public over the duration of the project during the boating season."[542] The

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535 GMRP Response at pg. 14.
536 GMRP Response at pg. 15.
537 GMRP Response at pg. 16.
538 GMRP Response at pg. 16.
539 GMRP Response at pg. 17.
540 GMRP Response at pg. 16.
541 GMRP Response at pg. 16-17.
542 City Reply at pg. 20.

City acknowledges that "satisfaction of the above commitments" should mitigate the City's concerns.[543] However, the City notes that (1) the access issue is complex and resolution will require the involvement of YKHS and GSSC, (2) GMRP has not proposed an agreement to demonstrate how it would meet its commitments, and (3) even with an agreement, the City will be facing a diminished level and quality of access because of a decrease in useable space for residents and the City's subtenants.[544]

The City states that without an enforceable access agreement, it must continue its compensation claim. The City asks the Board to "require GMRP to implement the mitigation measures it proposes by mandating that a compensation agreement be entered into, and not issue a water licence until that has occurred."[545]

Adverse Effect

The City re-asserts that it "uses the lands for the purposes of accessing the water and that the GMRP is seeking to restrict that access, adversely affecting the City's use of those waters." The City clarifies that the adverse effect "is the suspension of the Lease and no, or limited, access to the water. The GMRP's use of water and deposit of waste as set out in their application would completely prevent the City, and its residents, from accessing or using the water to which the City has an entitlement as an owner and occupier for up to ten years."[546]

The City notes that when it requested the soil on the lease lands be remediated to residential standards, "there was no suggestion that access to the Lease would be impeded for up to 10 years." Further, "[r]egardless of the standard of remediation, GMRP will impede access to the City's land."[547] GMRP has provided no evidence that the request to remediate to residential standards is the reason GMRP requires a longer lease suspension.[548]

Appropriate Compensation

In its reply, the City "admits that there is no 'evidence of the number of users of the Giant Mine boat launch and dock', and while it is true that no formal surveys have been conducted" there is anecdotal evidence of hundreds of boats passing through Giant Dock on a summer weekend day.[549] The City, citing *Carter*, notes that the "quantification of damages is an imprecise exercise that requires the Board to exercise its judgement."[550]

The City suggests that evidence is not required to demonstrate that access to Great Slave Lake is a source of an "emotional and intangible connection to the water and contributes to the quality of life of all the residents of Yellowknife." The City asserts that "[t]his fact is self-evidence to Board members, staff, and City residents. An emotional and intangible connection is by its very nature not conducive to being proven as a black and white matter on a rigid legal standard of proof… The

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543 City Reply at pg. 20.
544 City Reply at pg. 20-21.
545 City Reply at pg. 21.
546 City Reply at pg. 22.
547 City Reply at pg. 22.
548 City Reply at pg. 22.
549 City Reply at pg. 22.
550 City Reply at pg. 24.

City believes that this fact is intuitive to those who live here." The City attaches newspaper articles to its reply submissions to demonstrate that there is significant public concern.[551]

The City asserts that it "is no surprise that the damages have not been as precisely calculated as GMRP would like – valuing water and access to it is intangible. The City used the best information and most reasonable estimations at its disposal to come up with the values it proposed."[552]

3.2.4. Board Analysis and Reasons

Eligibility

The Board agrees with GMRP that the City is a Listed Claimant, and specifically an occupier of property, by virtue of the Lease and the City's occupation of the Lease lands. This qualifies the City to make a compensation claim under MVRMA s. 72.03(5)(b)(ix).

The Board wishes to clarify that contrary to the City's compensation claim, the City is not an Existing Licensee in the context of its Town Site claim. The City Water Licence is unrelated to the City's operations at the Town Site. The MVRMA's compensation framework allows an existing licensee to claim compensation for damages to its licensed activities. The City does not conduct licensed activities on its Town Site Lease.

The City also argues that it is a domestic or an authorized user in relation to the Town Site Claim. For the reasons set out in section 3.1.4 above, the City is not a domestic user in relation to this site. The Board also agrees with GMRP that the City is not an authorized user, as the City provided no evidence that it uses waters or disposes of waste without a licence at the Town Site under the authority of regulations.[553]

Adverse Effect

The City asserts that GMRP's proposed licence activities will result in an adverse effect, specifically, loss of access to water with associated impacts on the wellbeing of residents and the City's economy.

The GMRP requires access to the Lease area to the exclusion of the public in order to conduct remediation. The reasons for this are operational and safety related. GMRP's asserts that the period of access required by GMRP has been extended by the City's request that the Town Site be remediated to the more stringent residential criteria, and that a section of the lake bed also be remediated.[554]

As an occupier of property, the City possesses private property rights that have the potential to be adversely affected by the activities proposed in GMRP's licence application. The City's interest in its leased property includes an interest in water access.

In the Board's view, the City's access to water at the Town Site would be impacted by GMRP's proposed activities, if no mitigation measures were in place. However, the GMRP has indicated that it intends, at its own expense, to construct a boat launch comparable to the Giant Mine

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551 City Reply at pg. 21.
552 City Reply at pg. 24.
553 GMRP Response at pg. 14.
554 GMRP Response at pg. 14.

launch near the site of the GSSC.[555] The Board understands that GMRP has proposed to stage and sequence the Project to enable substantially uninterrupted public access to Great Slave Lake by boaters.

In particular, in the GMRP's most recent compensation update to the MVLWB dated March 27, 2020, GMRP advises that:

> *GMRP has committed to making best efforts to plan and conduct the project to minimize the time required and the impact on the users of the Town Site area. The GMRP will make best efforts to maintain continuous public access to Great Slave Lake for boating through the Town Site area during boating season. The GMRP has proposed achieving this by constructing a boat launch comparable to the existing one at the Giant Mine boat launch near the site of the GSSC if necessary, and to make sure that at least one of the existing or new boat launches will be accessible by the public over the duration of the project during boating season to the greatest extent possible (as outlined in the October 10, 2019 letter to the City of Yellowknife from the GMRP.)*[556]

The Board further understands that these steps proposed by GMRP led to the GSSC withdrawing its claim for compensation.[557]

Assuming these GMRP commitments to mitigation are honoured, the public will not lose access to Great Slave Lake for ten years, which loss of access is the foundation for the City's Town Site claim. The City will not be required to undertake a feasibility assessment, and construct a new dock and launching facility. This GMRP action will offset the adverse effect claimed by the City.

The City indicated in its reply submissions that satisfaction of GMRP's commitments should mitigate the City's concerns, but that since no agreement has been reached with GMRP, the City has no comfort that GMRP will satisfy its commitments.[558] The City asks the Board to "require GMRP to implement the mitigation measures it proposes by mandating that a compensation agreement be entered into, and not issue a water licence until that has occurred."[559]

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555 GMRP Response at pg. 16.

556 GMRP Letter to MVLWB re Addressing Water Compensation Claims dated March 27, 2020, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20GMRP%20Update%20-%20Status%20Claims%20for%20Compensation%20-%20Varied%20-%20Mar27-20.pdf

557 GMRP Response at pg. 16; Letter from GMRP to City of Yellowknife re Mitigated Impact on Boat Launch Access dated October 10, 2019, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Letter%20to%20City%20of%20YK%20Re%20-%20Water%20Compensation%20Claims%20Mitigation%20and%20Accomodation%20-%20Oct10-19.pdf; Letter from GSSC to GMRP re Mitigated Impact on Boat Launch and Sailing Club Access dated March 10, 2020, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20GSSC%20Update%20-%20Status%20of%20Claim%20for%20Compensation%20%E2%80%93%20Mitigated%20Impact%20on%20Boat%20Launch%20-%20Mar10-20.pdf;.

558 City Reply at pg. 20.

559 City Reply at pg. 21.

The Board does not have the authority to order that "an agreement be reached", or even that an agreement be negotiated. This sort of negotiation is voluntary and outcomes cannot be required by the regulator. Nevertheless, the Board agrees with the City that GMRP's commitment is equivocal and only commits to make "best efforts" to construct a boat launch and maintain water access, and not to actually mitigate impacts of GMRP's water use on the City's rights.

Resolving compensation claims is a precondition that must be met for the Board to have authority to issue the GMRP water licence. The language in s.72.04 of the MVRMA grants broad authority to the Board to impose conditions on a licence. It says that the Board may, subject to the MVRMA and regulations, include "any conditions which it considers appropriate" in a licence.

To ensure that the adverse effect on the City's water access will be mitigated, the Board has included a condition in GMRP's water license requiring GMRP to meet its commitments as outlined above (see Water License MV2007L8-0031, Part I, Condition 1).

In its reply submissions, the City argues that even if GMRP is required to fulfil its commitments, the City will be facing a diminished level and quality of access because of a decrease in useable space for residents and the City's subtenants.[560] This is essentially a nuisance and inconvenience claim. In the Board's view, GMRP's remediation of the Lease area is an example of a situation where the effects resulting from the work, in particular any nuisance associated with the cleanup work, can be evaluated by comparison to the benefits of the project to the public interest.

Cleaning up this area to a residential standard at a cost estimated at $30 million will be a significant long term benefit to the City and its residents. Given GMRP's mitigation plans, the Board finds that nuisance associated with the cleanup will clearly be offset by the long-term value to the public interest of the work which will be done on the Lease area.

Appropriate Compensation

As concluded in the Board's analysis of the City's Pipeline claim above, the City does not have standing to be compensated in the name of its residents, nor can the City allege adverse effects on third parties as grounds for compensation payable to itself.[561]

The City did not provide specific evidence on use of the Giant Mine boat launch and dock to prove its claim to nuisance and inconvenience. The claim for intangible and emotional impacts is poorly substantiated and the explanation of the City's $13 million dollar claim for loss of the use of the boat launch is not based on any objective data. The Board is not convinced based on the preponderance of the City's evidence that the residents of Yellowknife will suffer $1.3 million per year in damages ($13 million over 10 years) because they cannot access Great Slave Lake through the Giant Mine boat dock. Claimants are responsible for submitting evidence in support of their claims for damages to meet the burden of proof. In the Board's view, the City has not met its burden of proof in this case. The amount of damages claimed by the City is speculative and without foundation in fact.

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560 City Reply at pg. 20-21.

561 GMRP Responses at pg. 16.

Further, GMRP has committed to build a new boat launch and substantially maintain water access. The Board is requiring GMRP, as a condition of GMRP's water license, to fulfil these commitments. Therefore the entire population of Yellowknife will not suffer nuisance and inconvenience related to loss of access to water.

Summary of Analysis and Board Decision

The City of Yellowknife is eligible for compensation as an occupier of the Town Site by virtue of the City Lease and the occupation of the Lease lands. To establish an entitlement to compensation, the City is required to show that more likely than not GMRP's proposed activities will result in an adverse effect to the City's rights under the Lease, and in particular the City's right to access water.

The Board has determined that the City's access to water at the Town Site will be adversely affected by GMRP's proposed activities if no mitigation measures are in place.

However, the Board is requiring GMRP to fulfill its commitment to construct a boat launch comparable to the Giant Mine launch near the site of the GSSC at its own expense. The Board is also requiring GMRP to stage and sequence the Project to enable substantially uninterrupted public access to Great Slave Lake by boaters.

MVRMA, s. 72.03(6) requires the Board to consider "all relevant factors" in determining whether compensation for claims by Listed Claimants is appropriate, including but not limited to provable/potential loss or damage, the extent and duration of the adverse effect (including incremental adverse effects) and nuisance, inconvenience or noise.

If GMRP constructs a new boat launch and stages the project to provide substantially uninterrupted access to the lake, the extent and duration of the adverse effect (or any incremental adverse effect) on the City/public's right to access the water will be minimal. The City will not be required to conduct a feasibility assessment and construct a dock. In other words, no provable/potential loss or damage will result from GMRP's activities. Similarly any nuisance or inconvenience to the public related to loss of access to water will have been substantially mitigated.

As a result, the Board concludes that City should not receive $290,000 in compensation for the feasibility study nor the actual cost of constructing and operating alternative facilities during the Lease suspension period. The City should also not receive $1.3 million per year in damages associated with loss of access of water in the name of its residents ($13 million over 10 years).

3.3 Yellowknife Historical Society Claims

3.3.1. Summary of YKHS' Claim

The Yellowknife Historical Society ("YKHS") seeks water compensation totalling $237,834.00. The YKHS provided Notification of Intent to File a Claim for Water Compensation[562] and a subsequent Water Compensation Claim.[563]

Eligibility

The YKHS asserts that it is eligible for compensation as both an occupier of property and an owner of property under the MVRMA, s. 72.03(5)(b).

The YKHS currently occupies leasehold property at the Giant Mine Town Site. The YKHS leases the property from the City of Yellowknife. Situated on the leased property is the former Giant Mine Rec Hall, which is wholly owned by the YKHS, as well as the surrounding parking area.[564]

The YKHS also has customary use of areas outside the leased land. The customary use areas include the Giant Mine "Commissary" building, which has been used as storage for the YKHS's museum collections since 2001, and the YKHS's outdoor displays.[565]

Adverse Effect

The YKHS asserts that the YKHS's current renovation plans and future operations will be adversely affected by the remediation work proposed as part of the GMRP's water licence application.[566]

The YKHS is in the process of establishing a museum and interpretive centre at the old Giant Mine Rec Hall in Yellowknife. The interpretive centre will showcase the story of Yellowknife, and will include an exhibit hall, coffee shop, gift shop, meeting room, archives, library, outdoor displays, and walking trails. The interpretive centre will be located next to the marina, drawing visitors who are in the area for boating activities, and the museum and interpretive center are anticipated to become a focal point for heritage and culture in the region. The YKHS says it has spent $1M to renovate the site so far. The YKHS plans for the site are expected to be completed in 2025.[567]

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562 Yellowknife Historical Society, "Notice of an Intent to file a Claim for Water Compensation" (15 August 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Yellowknife%20Historical%20Society%20Notification%20of%20Intent%20to%20Claim%20-%20Aug15-19.pdf [YKHS Notice].

563 Yellowknife Historical Society, "Giant Mine Remediation Project Claim for Compensation – File: MV2007L8-0031" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20YKHS%20-%20Claim%20for%20Water%20Compensation%20-%20Oct17-19.pdf [YKHS Claim].

564 YKHS Notice.

565 YKHS Claim at pg. 2.

566 YKHS Claim at pg. 1.

567 YKHS Claim at pg. 2.

The YKHS claims that there will be adverse effects to the following current and future YKHS operations:

1. **YKHS Outdoor Displays and Surrounding Area:** A number of heavy outdoor displays will need to be temporarily moved to another part of the site or relocated while soil remediation is occurring. The YKHS will be required to pay for moving equipment.[568]
2. **Storage of Museum Collections:** The reconfiguration of Baker Creek will impact the YKHS's Commissary building where museum collections are currently stored. This loss of storage results in the need to provide alternative storage for the museum collections for 4-5 years during site remediation, or possibly longer depending on the Baker Creek re-alignment.[569]
3. **Museum Centre Operations when completed in 4-5 Years:** The YKHS claims that noise and dust created from the remediation activities adjacent to the museum will cause inconvenience and affect the aesthetic appeal of the site for visitors. The YKHS also claims that the removal of the marina amounts to excising a significant source of revenue from marina users who would be expected to use the YKHS's café, gift shop, and outdoor deck facilities.[570]

Appropriate Compensation

The YKHS claims the following amounts of compensation:

1. **YKHS Outdoor Displays and Surrounding Area:** The YKHS obtained a quote from Weatherby Trucking totalling $77,532.50 for the cost to move displays to an alternate site, and to bring the displays back to the site.[571] The YKHS also claims $46,281 for the original investment to set up the display.[572]
2. **Storage of Museum Collections:** The YKHS obtained a quote from DC Moving totalling $14,326 for the costs to relocate the entire contents of the Commissary buildings.[573] The YKHS also claims costs required to provide alternative storage for the museum collections. If alternative storage can be provided on-site using seacans or trailers, the estimated total cost is $30,000 for three storage units. In the alternative, if off-site storage is required, the estimated cost is $4,000 per year for 5 years at a total cost of $20,000.[574] The YKHS did not provide any documents to support the amounts claimed for on-site or off-site storage.
3. **Museum Centre Operations when Completed in 4-5 Years:** The YKHS estimates that the loss of visitor revenue from noise and dust to be $20,000 per year for the 2 years following the opening of the new interpretive centre in 2025, for a total of $40,000.[575] The YKHS estimates the loss of revenue from marina users to be $2,000 for 4 months of the year, totalling $8,000 per year. The YKHS has claimed this amount for three years following the opening of the new interpretive centre, for a total of $24,000.[576] The YKHS did not provide any documents to support these amounts claimed.

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568 YKHS Claim at pg. 4.
569 YKHS Claim at pg. 4.
570 YKHS Claim at pg. 5.
571 YKHS Claim at pg. 6.
572 YKHS Claim at pg. 5.
573 YKHS Claim at pg. 7.
574 YKHS Claim at pg. 4.
575 YKHS Claim at pg. 5.
576 YKHS Claim at pg. 5.

3.3.2. Summary of GMRP Response

Eligibility

The GMRP acknowledges that the YKHS currently occupies leasehold property on the Giant Mine Town Site Area, which it has sub-leased from the City of Yellowknife since 2010. This sub-lease between the YKHS and the City of Yellowknife permits the YKHS to engage in land-based activities and uses of the property, and gives the YKHS a legal right to occupy the property.[577]

On this basis, the GMRP concedes that the YKHS may be eligible to make a claim for water compensation as an "occupier of property" pursuant to a valid sub-lease at the time that the GMRP carries out remediation activities on or around the leased property.[578]

However, if any of these elements are missing, the YKHS will not be eligible for compensation. The GMRP points out that the sub-lease between the YKHS and the City of Yellowknife includes specific provisions for the termination of the lease on six months' notice due to remediation activities at the property. The GMRP suggests that the YKHS knew or ought to have known that its lease may be terminated to allow the Project to be carried out, and that the YKHS would be responsible for all of its costs related to the termination of the lease and any necessary relocation.[579]

Adverse Effect

The GMRP argues that the GMRP's proposed water use and deposit of waste provide no basis for compensating the YKHS pursuant to the MVRMA.[580]

The GMRP plans to remediate the Town Site, including the property currently occupied by the YKHS. The GMRP argues that this remediation will constitute an improvement to the property, and that any impacts suffered by the YKHS should be considered reasonable in the circumstances.[581]

The GMRP argues that the YKHS will not suffer an adverse effect from the remediation activities. Rather, "the disturbance will be what can be expected when governments pursue public works in the public interest, and will not constitute a nuisance."[582] Further, the YKHS will be a beneficiary of the remediation. Should the YKHS continue to lease the property following the remediation, they will occupy a safer and healthier site.[583]

The GMRP also argues that it would be unfair for the Board to determine that the effects of the remediation would unreasonably impact the YKHS so as to justify an award of compensation. The YKHS entered into the sub-lease with the City of Yellowknife *after* the GMRP had originally applied for its water licence. It was well-known that the Giant Mine Site would be remediated, and this is reflected in the provisions within the sub-lease that provide for termination to enable the

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577 GMRP Response at pg. 22.
578 GMRP Response at pg. 22.
579 GMRP Response at pg. 22.
580 GMRP Response at pg. 23.
581 GMRP Response at pg. 23.
582 GMRP Response at pg. 23.
583 GMRP Response at pg. 23.

remediation to occur. The YKHS decided to continue with its activities and use of the land despite this knowledge.[584]

Finally, the GMRP points out that the YKHS claims compensation for its anticipated loss of access to and use of its leasehold property. However, the City of Yellowknife as the lessor could legally and legitimately interrupt the YKHS's occupancy and use of the property. If the YKHS's sub-lease is lawfully terminated, there is no obligation for the GMRP to compensate the YKHS as the society will no longer be an occupier of property.[585]

Appropriate Compensation

The GMRP argues that the YKHS provided "scant evidence" to support the amounts of compensation it claims.[586] The GMRP acknowledges that the YKHS did provide quotes from Weatherby Trucking and DC Moving for the costs of moving and relocating outdoor displays and museum collections. However, the YKHS did not provide any evidence for the alleged loss of visitor revenue. In the absence of this evidence, the GMRP suggests that estimating these losses would be very speculative.[587]

Finally, the GMRP suggests that a remediated property would be better for YKHS's business than a contaminated property. The GMRP points out that the YKHS has not considered the possibility that a remediated leasehold property would be healthier and safer, and may encourage more guests to visit the museum and displays.[588]

3.3.3. YKHS Reply to GMRP Response

The YKHS did not submit a reply to the GMRP's response.

3.3.4. Board Analysis and Reasons

The YKHS is eligible to make a claim for compensation as an occupier of property under the MVRMA, s. 72.03(5)(b)(ix). This YKHS status depends on its sub-lease with the City of Yellowknife. The Board agrees that the YKHS's claim for compensation is contingent on the YKHS having a continuing and valid sub-lease with the City of Yellowknife at the time that the remediation takes place.

The YKHS has been a tenant of the City for 10 years and has invested significant funds into the Lease property towards the establishment of a museum. There is no evidence to indicate that the City intends to terminate the YKHS's occupation of the property.

The GMRP notes that there are terms referencing the remediation of the Town Site included in the YKHS's sub-lease with the City of Yellowknife. It is clear that the YKHS signed its sub-lease in 2010, three years after the GMRP submitted its water licence application. The Board concludes that from the outset of its tenure the YKHS knew that it was on land that would be affected by

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584 GMRP Response at pg. 23.
585 GMRP Response at pg. 23.
586 GMRP Response at pg. 24.
587 GMRP Response at pg. 24.
588 GMRP Response at pg. 24.

remediation activities. The sub-lease includes a term stipulating that the YKHS may not claim costs against the City related to the remediation of the site.

The terms of this sub-lease between YKHS and the City are not a bar to the YKHS compensation claim. Nonetheless, the YKHS must still satisfy MVRMA requirements before the Board can award compensation.

The YKHS also claims eligibility as an "owner of property." In the context of s. 72.03(5)(b)(viii) and (ix) of the MVRMA the Board interprets "property" to mean real property. The only real property mentioned by the YKHS in its claim for water compensation is the Giant Mine Rec Hall building which is affixed to the land on its Lease area. Any other property referred to by the YKHS is movable and the costs of such activities form the substance of its compensation claim. The building and the fate of the building, if remediation takes place, may be dealt with in the lease itself. But the YKHS has not made a claim for the loss of the building. Therefore, the Board does not further address the YKHS claim for eligibility as an "owner of property."

Adverse Effect

The use of water proposed by the GMRP under the water licence affects lands within the Town Site Area, where YKHS operations are situated. The remediation activities in the Town Site Area will entail excavation of contaminated soil and backfilling with clean fill as well as stabilizing areas with natural vegetation. The GMRP also proposes major and minor realignments to Baker Creek to widen the channel and mitigate flooding risks and to remove contaminated sediments from the creek.[589] These changes will affect YKHS operations.

The YKHS will thus be adversely affected by the use of waters proposed by the GMRP. The YKHS has and continues to use the leased property at the Town Site Area to establish a heritage destination within the City of Yellowknife. The YKHS maintains a public display of artifacts for visitors, and is working to develop a community museum utilizing the Giant Mine Rec Hall building at the Town Site Area. The YKHS has invested significant funds into these uses, which will be impacted by the GMRP's remediation activities at the Town Site Area.

The YKHS will be required to move their outdoor displays to allow remediation work to take place at the Town Site Area. The YKHS will also be required to move their museum collections from the Commissary building to an alternative storage location, either on or off-site, due to the realignment of Baker Creek. The YKHS will be required to spend time and money packing and moving this property from its current location at the Town Site Area to accommodate the remediation activities. Once remediation is complete the YKHS property will have to be moved back. The requirement to make these changes and the consequential direct expenditures amounts to an adverse effect.

The YKHS has also demonstrated that there will more likely than not be an adverse effect on their museum operations. The YKHS has outlined that the noise and dust from the remediation activities adjacent to the museum will cause inconvenience, and deter visitors from the site. Further, the removal of the marina will impact the number of visitors expected to use the YKHS's facilities. However, as detailed further in the "Appropriate Compensation" portion of the analysis,

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589 GMRP Response at pg. 2.

below, the YKHS has failed to quantify the damages resulting from these adverse effects on these museum operations.

Appropriate Compensation

The Board agrees with the GMRP that the YKHS has provided minimal evidence of any damages that the YKHS will suffer as a result of the GMRP's use of water or deposit of waste.

The only documentary evidence the YKHS provided to the Board is for the costs associated with moving outdoor displays and museum collections. The YKHS provided a quote from Weatherby Trucking totalling $77,532.50 for the cost to move displays to an alternate site, and to bring the displays back to the site after remediation is complete.[590]

The YKHS also provided a quote from DC Moving totalling $14,326 for the costs to relocate the entire contents of the Commissary buildings.[591] There is written evidence supporting these costs and the estimates appear to be reasonable.

However, it is a general principle of the law of damages that claimants have an obligation to mitigate any losses. A claimant is not entitled to recover compensation for a loss that could have been avoided by the claimant taking reasonable action.[592] If a claimant unreasonably fails to mitigate their losses, the quantum of damages may be reduced to the extent that mitigation would have avoided the loss. For example, in circumstances where a claimant's mitigation could have partially avoided or reduced the loss, Courts have decided that a partial reduction of the damage claimed may be justifiable.[593] Further, if the claimant takes reasonable steps to mitigate any losses, the claimant may recover the costs and expenses incurred to mitigate the damages.[594]

What is reasonable in the context of the YKHS claim is a question of fact. Here, the YKHS entered into a sub-lease with the City three years after GMRP submitted its water licence application. The sub-lease contemplated these future remediation activities. YKHS knew or ought to have known from the outset that it was leasing land that would be affected by GMRP's remediation activities. Despite this knowledge, the YKHS continued to sub-lease the land and has invested money into establishing a museum and interpretive centre at the site. The YKHS knew or ought to have known that GMRP's future remediation activities would adversely affect the YKHS's museum operations. The YKHS did not plan for the impacts of this reasonably foreseeable remediation on its operations. YKHS now claims for damages associated with these impacts. It would have been more prudent and reasonable for the YKHS to plan for and take mitigative action to avoid these predictable costs and damages from the outset of its land tenure. The adverse effects for which the YKHS now claims compensation were entirely predictable. The City anticipated them and made provision to limit its liability in its sublease with the YKHS.

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590 YKHS Claim at pg. 6.

591 YKHS Claim at pg. 7.

592 S.M. Waddams, "Chapter 15: Mitigation" in *The Law of Damages* (2019) at 15.70.

593 See, for example: *Doug Boehner Trucking & Excavating Ltd. V United Gulf Developments Ltd.,* 2014 NSCA 54.

594 S.M. Waddams, "Chapter 15: Mitigation" in *The Law of Damages* (2019) at 15.290.

Based on YKHS's failure to mitigate, the Board concludes that the amounts claimed by the YKHS for moving outdoor displays and museum collections are not compensable.

The YKHS also claimed compensation for additional damages or costs which are set out below and for which no proof of damages was provided.

First, the YKHS claimed $46,281 for the original investment to set up the outdoor display. It is not clear whether this claim is for retroactive costs. Was this the amount expended to cover the initial set-up costs for the outdoor displays? Or is the cost to re-establish all of the outdoor displays once remediation is complete and the displays can be moved back onto the leased property? The YKHS evidence does not answer these questions. Regardless, the YKHS provided no explanation of what these alleged costs are for or how they reached this figure.

Second, the YKHS claimed an amount for the costs required to provide alternative storage for the museum collections currently housed at the "Commissary" building. The YKHS estimated that it would incur a cost of $30,000 if on-site storage could be provided, or $20,000 for off-site storage. The YKHS did not provide any documents or other evidence to support the amounts claimed for these storage costs.

Finally, the YKHS also claimed costs for the loss of revenue from museum centre operations that are anticipated once the museum and interpretive centre open in 2025. The YKHS provide no evidence of current or historical revenues and offered no reasonable projections of these losses.

These amounts claimed by YKHS are speculative, not supported by evidence and therefore not compensable.

Summary of Analysis and Board Decision

YKHS is eligible for compensation as an occupier of property by virtue of its sub-lease with the City for lands within the Town Site Area.

YKHS has established that it will suffer an adverse effect from the remediation activities. The YKHS will be required to move its outdoor displays, and find alternative storage for its museum collections. This constitutes provable loss or damage (loss or damage that will more likely than not occur as a result of GMRP's proposed activities). The YKHS has provided quotes for the cost to move its outdoor displays and museum collection, totalling $91,858.50.

The YKHS has failed to establish that there will be more likely than not damages related to the expense claimed for alternative storage for museum collections, future museum operations, and for the investment to set up museum displays. The YKHS has provided no evidence of the extent or duration of any future adverse effect on museum operations. The YKHS has not established that it will experience provable or potential loss or damage or nuisance or inconvenience.

The YKHS had specific knowledge of future remediation activities planned for its Lease area when it entered into its sub-lease with the City of Yellowknife. It is a core principle of the law on damages that claimants should mitigate their losses and damages when possible. The YKHS has provided no evidence of any effort to mitigate the readily foreseeable damages and disruption which would result from the remediation of the Giant Town Site area.

MVRMA, s. 72.03(6) requires the Board to consider "all relevant factors" in determining whether compensation for claims by Listed Claimants is appropriate. The Board considers YKHS's failure to mitigate its losses and damages as a factor relevant to its determination of compensation. The Board denies YKHS' compensation claim on the basis that YKHS' made no effort to mitigate its losses and damages.

3.4 Recreational Boaters' Claims

Twenty-one (21) compensation claims were submitted by recreational boaters who are members of the GSSC.

Three recreational boaters' claims were withdrawn: Kris Schlagintweit[595], James Hodson[596], and Evan Walz and Sonya Saunders.[597]

The Board has concluded that none of the recreational boaters are eligible for compensation. Because the Board believes that the recreational boaters' claims all fail on the basis of eligibility and for the same reasons, the Board has:

- set out its reasons for decision on the eligibility issue once below. These reasons apply to each of the recreational boaters' claims, and
- not engaged in an analysis of adverse effect or appropriate compensation because the Board has decided that these recreational boaters are not eligible to advance a compensation claim.

3.4.1. Summary of Claims

Kevin and Karen McLeod (Yellowknife, NT)

Kevin and Karen McLeod[598] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users.

The McLeods are members of the GSSC, and use the GSSC site to store, maintain, and launch their sailboat. The McLeods have installed a wet mooring and anchor lines at the site.

The McLeods submit that they will suffer provable losses or damages, including (1) $3000 to repair their sailboat cradle to highway standards to move their sailboat, (2) $800 to extract and insert

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595 Kris Schlagintweit, "Email Correspondence between K. Schlagintweit and MVLWB Withdrawing Claim for Water Compensation" (2 April 2020), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Schlagintweit-Fancott%20-%20Status%20of%20Claims%20for%20Water%20Compensation%20-%20Mitigated%20-%20Apr2-20.pdf

596 James Hodson, "Letter from J. Hodson to MVLWB Withdrawing Claim for Water Compensation" (26 March 2020), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Hodson%20Update%20-%20Status%20of%20Claim%20for%20Compensation%20-%20Mitigated%20-%20Mar27-20.pdf

597 Evan Walz and Sonya Saunders, "Claim Form for Water Compensation" (16 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Walz-Saunders%20-%20Claim%20for%20Water%20Compensation%20-%20Oct%2016-19.pdf

598 Kevin and Karen McLeod, "Claim Form for Water Compensation" (22 September 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031-%20DIAND-GIANT%20-%20McLeod%20-%20Claim%20for%20Water%20Compensation%20-%20Sept22%20-19.pdf

the sail boat from its new storage location to the lake, (3) $1,600 to secure a new storage facility, and (4) $800 to move the wet mooring.

The McLeods also submit that they may suffer potential future losses or damages related to the loss of community support and logistics for sailing on the lake. The McLeods indicate that they may have to sell the vessel (loss of $9,500) or move the vessel to a different jurisdiction for sale ($7,000).

In terms of mitigation, the McLeods state that "once the plan is finalized every effort will be made to reduce costs and impacts."

Derek Cutler (Yellowknife, NT)

Derek Cutler[599] claims eligibility as a Listed Claimant, and specifically as a domestic and in-stream user.

Mr. Cutler is a member of the GSSC, and uses the GSSC site to store, maintain and launch his sailboat. Mr. Cutler has a mooring system at the site, and requires an extended ramp to launch his sailboat from his trailer.

Mr. Cutler submits that he will suffer provable losses or damages, including (1) $1,800 to repair his trailer to get it road ready to move his sailboat, (2) $800/year in fees to store the sailboat at an alternative site, and (3) $400 to move his mooring.

Mr. Cutler also claims that he may suffer potential future losses or damages if the GSSC does not regain access to the site and there is no infrastructure to support sailing in Yellowknife in the future. Mr. Cutler asserts that he would be required to move his sailboat to southern Canada at a cost of $7,000 which is slightly less than the value of the boat. Mr. Cutler emphasized in his claim that "once the work is done, there is no guarantee that the land will be returned to the [GSSC]."

Mr. Cutler claims that he will suffer inconvenience by not having access to the GSSC location, and indicates that he is unsure how to place a monetary value on that inconvenience.

Mark Peer and Leslie Smith (Yellowknife, NT)

Mark Peer and Leslie Smith[600] claim eligibility as Listed Claimants, and specifically as domestic users, in-stream users, and occupiers of property.

Mr. Peer and Ms. Smith are members of the GSSC, and store, operate, moor, and maintain their sailboat at the GSSC site. Mr. Peer and Ms. Smith also store and operate a recreational rowing boat at the site. Mr. Peer and Ms. Smith participate in activities at the GSSC, including social events and racing.

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599 Derek Cutler, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Cutler%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct17-19.pdf

600 Mark Peer and Leslie Smith, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031-%20DIAND-GIANT%20-%20Peer-Smith%20-%20Claim%20for%20Water%20Compensation%20-%20Oct18-19.pdf

Mr. Peer and Ms. Smith submit that they will suffer provable losses or damages, including (1) $1,400 to upgrade and register their trailer to meet highway standards to transport their sail boat, (2) $900/year to transport the sailboat to and from a new storage location to the lake, (3) $700/year to secure off site storage, (4) $400 to relocate their sail boat mooring, (5) $1,400 to purchase a small boat trailer to transport their rowing boat, and (6) $635/year to store the rowing boat off-site.

Mr. Peer and Ms. Smith also submit that they will suffer potential losses or damages of $4000/year related to loss of use and enjoyment if no suitable moorage and shore access is secured. Further, Mr. Peer and Ms. Smith claim potential damages associated with loss of support to operate a sailing vessel at the lake, including (1) $20,000 in costs to relocate the sailboat to New Brunswick and (2) $20,000 associate with loss of investment in the boat. Mr. Peer and Ms. Smith note that the ability to sail is one of the main reasons that they stay in Yellowknife.

Mr. Peer and Ms. Smith also assert that nuisance or inconvenience could result because alternate launching locations must be secured, and coordination of same could result in excessive noise and congestion.

J.P Guy and C.L Seale (Yellowknife, NT)

J.P. Guy and C.L. Seale[601] claim eligibility as Listed Claimants, and specifically as domestic users, in-stream users, and occupiers of property.

J.P. and C.L. are members of the GSSC, and store, maintain, and launch their sailboat from the GSSC site. J.P. and C.L. also maintain a mooring at the site, and participate in cruising, racing, and social activities at the GSSC.

J.P. and C.L. submit that they will suffer provable losses or damages including (1) $2,494.80 for offsite storage of the sailboat, mast, and trailer, (2) $1,890 to transport the boat and trailer to and from the dock for launching, and (3) $5,670 in additional crane fees to step and unstep the boat's mast for transportation and storage.

J.P. and C.L. also submit that they will suffer potential future losses or damages if access is not restored after remediation. J.P. and C.L. claim either $8,100 (cost to drive the boat and trailer to British Columbia for sale) or $70,000 (fair market value of the boat) in potential damages.

David Kellett and Sheila Bassi-Kellett (Yellowknife, NT)

David Kellett and Sheila Bassi-Kellett[602] claim eligibility as Listed Claimants, and specifically as domestic and instream-users.

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601 J.P. Guy and C.L. Seale, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Guy%20-%20Seale%20-%20Claim%20for%20Water%20Compensation%20-%20Oct18-19.pdf

602 David Kellett and Sheila Bassi-Kellett, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Kellett%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct17-19.pdf

Mr. Kellett and Ms. Bassi-Kellett are members of the GSSC and use the GSSC site to store their sailboat and trailer, and to launch their sailboat. They also use the clubhouse building on the site for informational meetings and social gatherings of GSSC members.

Mr. Kellett and Ms. Bassi-Kellett submit that if GSSC loses access to the site, they will suffer provable losses or damages, including (1) $1,300 to make the trailer roadworthy to move the boat to a new storage area, (2) $400/year in increased costs for launching/relaunching the boat, and (3) $1,600/year for alternative storage and transportation to and from the alternative storage site.

Mr. Kellett and Ms. Bassi-Kellett also submit that if access to water is not restored, the boat would lose value for resale in Yellowknife and claim $10,000 in potential future losses and damages for same. Mr. Kellett and Ms. Bassi-Kellett submit that the cost of transporting the boat may prohibit selling the boat in other parts of Canada.

Sherry and Gerald Drover (Yellowknife, NT)

Sherry and Gerald Drover[603] claim eligibility as Listed Claimants, and specifically as domestic users, in-stream users, and occupiers of property.

The Drovers are members of GSSC. The Drovers state that they occupy the GSSC property by virtue of their membership. The Drovers store, maintain and launch their sailboat and maintain a mooring at the GSSC site. The Drovers also participate in cruising, racing, and social activities at the GSSC.

The Drovers submit that they will suffer provable losses and damages including (1) $1,767.15 in costs for offsite-commercial storage for their boat and trailer, (2) $1,890 in costs to transport the boat and trailer to and from the public dock for launching, (3) $5,670 in costs associated with stepping and unstepping the mast, (4) $200 for support cribbing for the mast, and (5) $36 to register the trailer so it can travel on public roads.

The Drovers submit that if access to water is not restored, the Drovers will suffer potential losses or damages and claim $8,100 in damages to transport the boat and trailer to British Columbia for resale, or $104,100 for loss in investment (purchase price of boat plus upgrades).

Terry and Diane Brookes (Yellowknife, NT)

Terry and Diane Brookes[604] claim eligibility as Listed Claimants, and specifically as domestic users, in-stream users, and occupiers of property.

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603 Sherry and Gerald Drover, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Drover%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct17-19.pdf

604 Terry and Diane Brookes, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Brookes%20-%20Claim%20for%20Water%20Compensation%20-%20Oct17-19.pdf

The Brookes are members of the GSSC, and use the GSSC site to store, operate, maintain, and launch their sailboat. The Brookes also participate in activities at the GSSC site, including social events and racing.

The Brookes submit that they will suffer provable losses and damages including, (1) $14,000 to purchase a trailer to transport the sailboat, (2) $800/year to lift the boat in and out seasonally including mast stepping/unstepping, (3) $1,600/year for storage of the sailboat, (4) $400 to relocate or construct a new mooring, (5) $2000 for loss in value of the sailboat cradle, and (6) $500/year to rent a vehicle to tow the trailered sailboat to and from the storage location.

The Brookes also submit that if access is not restored, and there is no support to operate a sailing vessel at the lake, they will suffer potential future losses including (1) $22,500 for the replacement value of the sailboat, and (2) $1,500/year for loss of sailing enjoyment.

The Brookes claim nuisance and inconvenience costs of $1,500/year associated with personal time to address this issue. The Brookes note that the value of damages associated with loss of sailing enjoyment and nuisance and inconvenience is subjective.

In terms of mitigation, the Brookes note that "once the plan is finalized every effort will be made to reduce costs and impacts."

Dawn Andrews (Yellowknife, NT)

Dawn Andrews[605] claims eligibility as a Listed Claimant, and specifically as a domestic user, in-stream user, and occupier of property.

Ms. Andrews is a member of GSSC, and asserts that she is an occupier of the GSSC property by virtue of her membership. Ms. Andrews stores her sailboat and trailer at the GSSC property and maintains and launches the boat at the Giant Mine boat launch. Ms. Andrews also participates in training classes at the GSSC property.

Ms. Andrews submits that she will suffer provable losses and damages, including (1) $1501.50 for off-site commercial storage for the boat and trailer, (2) $2,600 for costs to travel to and attend sailing training courses outside of Yellowknife, and (3) $4,000 for crane costs if a boat launch is not available.

Lora Archer (Yellowknife, NT)

Lora Archer[606] claims eligibility as a Listed Claimant, and specifically as a domestic user, in-stream user, and occupier of property.

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605 Dawn Andrews, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-DIAND-GIANT%20-%20Andrews%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct17-19.pdf

606 Lora Archer, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-DIAND-GIANT%20-%20Archer%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct18-19.pdf

Ms. Archer is a member of GSSC and claims eligibility on the basis of occupying the property by virtue of her membership. Ms. Archer stores, maintains and launches two sailboats from the GSSC property. Ms. Archer maintains two moorings at the GSSC site. Ms. Archer also participates in the cruising, racing and social activities of the GSSC.

Ms. Archer submits that she will suffer provable and potential losses and damages, including (1) $4,413.75 for offsite commercial storage for her boat and trailer, (2) $3,852 to transport the boat and trailer to and from the public dock, and (3) $2,568 in costs associated with stepping and unstepping the boat masts.
Ms. Archer also submits that she will suffer potential losses or damages, valued as the cost to transport the boats to British Columbia ($21,000) or loss of value of the two boats ($12,000).

Ms. Archer notes that she may suffer nuisance or inconvenience associated with loss of general enjoyment of the area, but does not ascribe a monetary value to same.

Terrance and Joanna Pamplin (Yellowknife, NT)
Terrance and Joanna Pamplin[607] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users.

The Pamplins are members of GSSC and assert that they are occupiers of the GSSC property by virtue of their membership. The Pamplins store, maintain, and launch their sailboat at the property. The Pamplins participate in cruising, racing, open houses and sailing school lessons at the property.

The Pamplins submit that they will suffer provable and potential losses, including (1) $18,768 in costs to design and manufacture a boat trailer to move their boat, (2) $8,000 to deliver the trailer from the south, (3) $800/year for lift in/out expenses, and (4) $1,600 for storage should it become necessary to store the boat elsewhere. The Pamplins also claim (5) $650/season for vessel insurance, and (6) $1,000 associated with removal and re-installation of the mast for transportation.

The Pamplins note that the value of boats at the GSSC has been "reduced to less than zero due to the uncertainty of whether there will ever be a suitable facility at which we could launch, retrieve and store, maintain our vessel… It is likely that boats such as ours will become un-sailable and un-saleable." On this basis, the Pamplins claim potential losses and damages associated with vessel value, and specifically $65,000 for the current insured value of the vessel and $197,000 in replacement value.

The Pamplins assert that noise and inconvenience will greatly increase due to the GMRP project, and suggest that the area will no longer have "a quiet, recreational feeling."

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607 Terrance and Joanna Pamplin, "Claim Form for Water Compensation" (16 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Pamplin%20-%20Claim%20for%20Water%20Compensation%20-%20Oct16-19.pdf

Joanna Pamplin included a statement in the Pamplins' claim about the special value that access to Great Slave Lake holds for her. She indicates that if the GSSC is closed and access to the lake is lost, the Pamplins will have to move elsewhere.

Doug Morrison and Susan Bowie (Yellowknife, NT)

Doug Morrison and Susan Bowie[608] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users.

Mr. Morrison and Ms. Bowie are members of the GSSC, and use the GSSC site to store, maintain, and launch their sailboat. Mr. Morrison and Ms. Bowie maintain a mooring at the GSSC site, and store a zodiac at the site to access their boat from shore when it is moored.

Mr. Morrison and Ms. Bowie claim that they will suffer provable losses and damages, including (1) $660/year to store the boat and cradle offsite, (2) $5,000 to commission the construction of a boat trailer from the south to take the boat from the storage location to the government dock, (3) $3,000 approximately to transport the trailer to Yellowknife, and (4) increased crane charges for lift in and lift out.

Mr. Morrison and Ms. Bowie also claim that they will suffer potential losses or damages from loss of enjoyment if there is no comparable location to store the boat and zodiac. Mr. Morrison and Ms. Bowie claim $18,000 in damages if the site remains inaccessible for six years. This figure comprises a portion of the cost to travel south and rent a sailboat for several weeks.

Mr. Morrison and Ms. Bowie further claim that they will experience nuisance and inconvenience from the GSSC members being dispersed and because it will be more difficult and time consuming to load boats into the water at the government dock in Old Town. Mr. Morrison and Ms. Bowie claim $4000/year in nuisance and inconvenience costs.

In terms of mitigation, Mr. Morrison and Ms. Bowie highlight that they will coordinate with the GSSC and its members to minimize the costs of disruption from the GMRP project.

John McCullum (Yellowknife, NT)

John McCullum[609] claims eligibility as a Listed Claimant, and specifically as a domestic and in-stream user and as an occupier of property.

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608 Doug Morrison and Sue Bowie, "Claim Form for Water Compensation" (16 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Morrison-Bowie%20-%20Claim%20for%20Water%20Compensation%20-%20Oct%2016-19.pdf

609 John McCullum, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20McCullum%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct18-19.pdf; John McCullum, "Email Correspondence between J. McCullum and MVLWB re Status of Claim for Water Compensation" (27 March 2020), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20McCullum%20Update%20-%20Status%20of%20Claim%20for%20Compensation%20-%20Active%20-%20Mar27-20.pdf

Mr. McCullum is a member of the GSSC, and uses the GSSC site to store, maintain, and launch his sailboat. Mr. McCullum also maintains a mooring at the site and stores his dinghy at the site to access the mooring.

Mr. McCullum claims that he will suffer provable losses and damages, including (1) $7,260 to purchase a sail boat trailer, (2) $5,023 to transport the trailer to Yellowknife, (3) $1,353 in offsite storage costs for storage of the boat and trailer, (4) $3,600 in lift-out and lift-in costs including costs associated with stepping and unstepping of the mast, (5) $800 to move the mooring, and (6) $400 to hire a driver to move the boat from the offsite storage and back after remediation is complete.

Mr. McCullum also claims potential losses and damages of $4,000 (the value of the boat) if access to the area is not restored over the long-term.

Mr. McCullum also alleges that he will suffer nuisance and inconvenience from being unable to use his boat for its intended purpose, and from having to arrange for the transportation and alternative storage of the boat. Mr. McCullum claims damages of $4,158 (equivalent to cost to rent a comparable boat for three weeks), and $2,250 (value of a week of Mr. McCullum's time for making arrangements to move the boat).

Ian and Rita McCrea (Yellowknife, NT)

Ian and Rita McCrea[610] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users and as occupiers of property.

The McCreas are members of the GSSC and claim that they occupy the GSSC property by virtue of their membership. The McCreas store, maintain, and launch their sailboat at the GSSC site. The McCreas also maintain a mooring at the GSSC site and access the mooring by dinghy. The McCreas participate in cruising, racing, and social activities at the GSSC.

The McCreas claim that they will suffer provable losses and damages, including (1) $2,114 in off-site storage costs, (2) $1,890 in costs to transport the boat and trailer to and from the public dock, and (3) $5,670 in costs associated with stepping and unstepping the mast of the boat.

The McCreas also claim potential losses and damages if the boat is denied access over the long term, and specifically either $32,500 (cost of the boat), or $10,500 (cost to transport the boat to British Columbia for sale).

Greg and Val Krisch (Edmonton, AB)

Greg and Val Krisch[611] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users and as occupiers of property.

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610 Ian and Rita McCrea, "Claim Form for Water Compensation" (10 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20McCrea%20-%20Claim%20for%20Water%20Compensation%20-%20Oct10-19.pdf

611 Greg and Val Krisch, "Claim Form for Water Compensation" (17 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Krisch%20-%20Claim%20for%20Water%20Compensation%20-%20Oct17-19.pdf

The Krischs are members of the GSSC and claim that they are occupiers of the GSSC site by virtue of their membership. The Krischs store, maintain, and launch their sailboat at the GSSC site. The Krischs also maintain a mooring at the site which they access from a dinghy. The Krischs participate in the cruising and social activities at the GSSC.

The Krischs claim provable losses and damages, including (1) $1,247 in costs for offsite storage of the boat and trailer, (2) $13,461 to purchase a trailer to transport the boat and trailer, and (3) $1,417 for stepping and unstepping of the mast.

The Krischs also claim that if they are denied access to the area long-term, they will suffer potential losses or damages, and specifically either $32,000 (cost of the boat) or $7,000 (cost to haul boat and trailer to British Columbia for sale).

Ben McDonald and Jacquelyn Burles (Yellowknife, NT)

Ben McDonald and Jacquelyn Burles[612] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users and as occupiers of property.

Mr. McDonald and Ms. Burles are members of the GSSC and claim that they occupy the GSSC site by virtue of their membership. Mr. McDonald and Ms. Burles use the GSSC property to store, maintain and launch their sailboat. Mr. McDonald and Ms. Burles maintain a mooring at the property and access the mooring by dinghy. Mr. McDonald and Ms. Burles participate in the cruising and social activities at the GSSC.

Mr. McDonald and Ms. Burles claim provable losses and damages, including (1) $2,114 for offsite storage for the boat and trailer, (2) $1,890 to transport the boat and trailer to and from the public dock, (3) $20,000 for acquiring a trailer to move the boat, and (4 $800 to move the mooring.

Mr. McDonald and Ms. Burles also claim that if there is no capacity for sailing to continue in Yellowknife, they will suffer potential losses and damages valued at $57,000 (total investment in boat minus resale value in south).

Mr. McDonald and Ms. Burles further assert that trucking the boat from a remote storage location to the waterside will be a substantial nuisance and inconvenience. Mr. McDonald and Ms. Burles note that if the GMRP project were to result in them no longer being able to sail on Great Slake Lake, the nuisance and inconvenience would be beyond substantial (priceless). The ability to sail was an important factor in Mr. McDonald's and Ms. Burles's decision to remain in Yellowknife after retiring.

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[612] Ben McDonald and Jacquelyn Burles, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20McDonald-Burles%20-%20Claim%20for%20Water%20Compensation%20-%20Oct18-19.pdf

Andy Hutchinson and Harold Andrejek (Yellowknife, NT)

Andy Hutchinson and Harold Andrejek[613] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users.

Mr. Hutchinson and Mr. Andrejek are members of the GSSC. Mr. Hutchinson and Mr. Andrejek store, maintain, and launch their sailboat at the GSSC site, and maintain a slip on the dock at the GSSC site.

Mr. Hutchinson and Mr. Andrejek claim provable losses and damages, including (1) $6,200 to redesign and manufacture new chassis and a cradle to safely remove and deliver the sailboat to a new location, (2) $1,247 in costs for offsite commercial storage of the boat and trailer, and (3) $1,890 to transport the boat and trailer to and from the public dock for launching.

If access for sailing is denied long-term, Mr. Hutchinson and Mr. Andrejek assert that they will also suffer potential losses and damages, and specifically either $14,300 (cost to transport boat to British Columbia or Alberta for sale) or $13,600 (value of boat).

Dwayne Coad and Jan Fullerton (Oakfield, NS)

Dwayne Coad and Jan Fullerton[614] claim eligibility as Listed Claimants, and specifically as domestic and in-stream users and occupiers of property.

Mr. Coad and Ms. Fullerton are members of the GSSC and claim that they are occupiers of the GSSC site by virtue of their membership. Mr. Coad and Ms. Fullerton store, maintain, and launch their sailboat from the GSSC property. Mr. Coad and Ms. Fullerton use the dock at the GSSC property for loading/unloading and repair/maintenance access.

Mr. Coad and Ms. Fullerton indicate that they have listed the boat for sale in Yellowknife but are having difficulty selling it because of the local market and upcoming remediation (residents are reluctant to purchase large boats where there is access uncertainty).

Mr. Coad and Ms. Fullerton claim that they will suffer provable losses or damages including (1) $2,000 to repair and renovate their cradle to highway standards, (2) $1,421 in off-site storage fees for the boat and cradle, (3) $1,800 for stepping and unstepping the mast for transportation, and (4) costs associated with transporting the boat and cradle to and from the alternative storage site (monetary value unavailable).

Mr. Coad and Ms. Fullerton also state that if they cannot sell the boat in Yellowknife and there are no reasonable solutions for local storage, they will need to relocate the boat to British Columbia. The claimants estimate that they will suffer potential losses and damages of $26,900 associated with shipping the boat to British Columbia and losses on re-sale.

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613 Andy Hutchinson and Harold Andrejek, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Hutchinson-Andrejek%20-%20Claim%20for%20Water%20Compensation%20-%20Oct18-19.pdf

614 Dwayne Coad and Jan Fullerton, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Coad-Fullerton%20-%20Claim%20for%20Water%20Compensation%20-%20Oct18-19.pdf

Regarding mitigation, the claimants note that GSSC representatives and working with parties to minimize the negative impact of the project on all involved.

Katie O'Beirne (Yellowknife, NT)

Katie O'Beirne[615] claims eligibility as a Listed Claimant, and specifically as a domestic and in-stream user and occupier of property.

Ms. O'Beirne is a member of the GSSC and claims to be an occupier of the property by virtue of her membership. Ms. O'Beirne stores, maintains and launches a sailboat from the GSSC property.

Ms. O'Beirne claims provable losses or damages, including (1) $2,500/year for offsite commercial storage for the boat and trailer, (2) $600 one time cost and $600/year to transport the boat and trailer to and from the alternative storage location, (3) $2,000 for trailer upgrades to haul the boat legally on the highway, and (4) $1,600/year to step and unstep the mast.

Ms. O'Beirne also asserts that if access for boats is denied long-term, she will suffer potential losses and damages of $27,000 (cost to transport boat to British Columbia for resale) or $9,000 (value of boat and cost of disposal).

3.4.2. Summary of GMRP Response

The GMRP takes the position that boaters, sailors, and others navigating on water are not Listed Claimants, and are not eligible to make a water compensation claim. The recreational boaters' use of the water is limited to navigating on Great Slave Lake for recreational purposes, which GMRP argues is not a "use" of water under the MVRMA.[616]

Recreational Boaters are not "Domestic Users" of Water under the MVRMA

The GMRP states that the recreational boaters do not fit within the definition of "domestic users" of water contained in s. 51 of the MVRMA. Under this definition, a domestic user means a person who uses water (a) for household requirements, (b) fort the watering of domestic animals, or (c) for the irrigation of a garden adjoining a dwelling-house.[617] The GMRP submits that the recreational boaters do not use water for any of these purposes.[618]

Recreational Boaters are not "Instream Users" of Water under the MVRMA

The GMRP concludes that the recreational boaters are not "instream users" as defined in s. 51 of the MVRMA. In order to be an "instream user," one must use water to earn income or for subsistence purposes. The GMRP states that the recreational boaters' use of water does not meet this purpose.[619]

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615 Katie O'Beirne, "Claim Form for Water Compensation" (18 October 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20O%E2%80%99Beirne%20-%20Claim%20Form%20for%20Water%20Compensation%20-%20Oct18-19.pdf

616 GMRP Response at pg. 25-26.

617 MVRMA, s. 51.

618 GMRP Response at pg. 26.

619 GMRP Response at p 26.

Recreational Boaters are not "Authorized Users" of Water under the MVRMA

In order to be an "authorized user," the GMRP argues that one must "use waters without a licence but under the authority of territorial law." The GMRP submits that the recreational boaters are not "authorized users" as defined in s. 51 of the MVRMA because navigating on Great Slave Lake is not a "use" of waters under the MVRMA or the NWT *Waters Act*.[620]

The GMRP claims that the recreational boaters fit within an exception under the definition of "use" for shipping activities regulated by the *Canada Shipping Act, 2001*.[621] The GMRP argues that the recreational boaters' uses of Great Slave Lake are shipping activities regulated by the *Canada Shipping Act, 2001* (CSA, 2001). While shipping activities are not expressly defined in that Act, the GMRP states that one of the objectives of the CSA, 2001 is to promote safety in recreational boating. The GMRP claims that this Act applies to "pleasure craft," defined as a vessel used for pleasure and that does not carry passengers.[622] Further, a "vessel" is a boat, ship, or craft designed, used, or capable of being used solely or partly for navigation in, on, through or immediately above water.[623]

The GMRP cites a case called *R v Rice* to support the argument that "navigation" and "shipping" have been interpreted as terms "which envisage traffic on navigable waters and the use which may be made of navigable water in that regard."[624] The GMRP concludes that the fact that the recreational boaters operate pleasure craft for navigational purposes, as regulated by the CSA, 2001, takes them outside of the definition of "use" under the MVRMA and the *Waters Act*.[625]

The GMRP submits that its interpretation is consistent with the purpose and general framework of the MVRMA, which is intended to govern the use of waters and the deposit of waste in waters rather than navigation.[626] Neither the MVRMA nor the *Mackenzie Valley Federal Areas Waters Regulations*[627] make any mention of navigation in relation to the regulation of water, except to say that shipping under the CSA, 2001 is excluded from the definition of "use" in that legislation.[628]

Recreational Boaters are not "Occupiers of Property" under the MVRMA

The GMRP submits that the recreational boaters who are members of the GSSC are not Occupiers of Property under the MVRMA. Rather, they attend a public property leased from the City of Yellowknife to use the Giant Mine boat launch to access Great Slave Lake for navigational purposes. The GMRP argues that this is similar to using a public park.[629] Should the boat launch close to allow remediation to take place, there would be no impact on any legal right of the GSSC members.[630]

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620 GMRP Response at pg. 26.
621 SC 2001, c 26 [*CSA, 2001*].
622 CSA, 2001, s. 2.
623 CSA, 2001, s. 2.
624 (1963), [1963] 1 CCC 108, 1962 CarswellOnt 239 at para. 14 (Ont County Ct).
625 GMRP Response at pg. 27. The definition of use in the MVRMA is the same as that in the *Waters Act*.
626 GMRP Response at pg. 28.
627 SOR/93-303.
628 GMRP Response at pg. 28.
629 GMRP Response at pg. 28.
630 GMRP Response at pg. 28.

The GMRP turns to the common law to interpret the meaning of "occupier of property" and argues that being an "occupier of property" involves having physical possession of, responsibility for, and control over the property.[631] The GSSC is the legal occupier of the boat launch property, not the individual sailing club members. The GSSC has the legal right to occupy the property by virtue of its sub-lease to the land with the City of Yellowknife, has responsibility and control over the property, and control over who may enter the property.[632]

The GMRP submits that individual members of the GSSC are not occupiers of property in a legal sense because they do not control who may enter the property, and they have no control over the GSSC facilities or the activities at the property.[633]

The GMRP acknowledges that the GSSC grants permission to some GSSC members to store their boat, cradle, and other equipment at the GSSC facilities. The GMRP argues that this limited use of the property does not result in individual sailboat owners becoming Occupiers of Property under the MVRMA.[634]

Adverse Effect

The GMRP argues that the GMRP's use of water and shoreline work in the Town Site Area or Yellowknife Bay will not interrupt boating and sailing activities on Great Slave Lake in any significant manner. Therefore, there will be very little or no impact to the recreational boaters' ability to navigate Great Slave Lake during the remediation works.[635]

However, the GMRP acknowledges that the remediation will involve an interruption to the recreational boaters' use of the Town Site Area, the foreshore, and the lakebed near the Town Site. The GMRP has committed to minimizing the length of this disturbance. The GMRP will make best efforts to maintain continuous public access to Great Slave Lake for boating, which will mitigate most of the issues raised by the recreational boaters.[636] Further, the GMRP submits that the remediation work at the Town Site Area will constitute an improvement, and that the recreational boaters will directly benefit from a safer and healthier boat launch site.[637]

The GMRP also argues that the recreational boaters knew of the potential for remediation, as the GSSC sub-lease with the City of Yellowknife provides for termination of the sub-lease for that reason. In light of this knowledge, the GMRP submits that it would be unfair for the GMRP to be ordered to provide compensation to the recreational boaters.[638]

Further, the GMRP submits that the recreational boaters do not have a right to permanent and unimpeded access to the GSSC facilities or the Giant Mine boat launch, and the recreational

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631 GMRP Response at pg. 28-29, citing *MacDonald v The Town of Goderich,* [1948] OR 751, [1948] DLR 569 (Ont Sup Ct [High Ct Jus]).

632 GMRP Response at pg. 29.

633 GMRP Response at pg. 29.

634 GMRP Response at pg. 30.

635 GMRP Response at pg. 30-31.

636 GMRP Response at pg. 32.

637 GMRP Response at pg. 31.

638 GMRP Response at pg. 31.

boaters' rights of access depend on the GSSC's sub-lease with the City of Yellowknife. As stated above, this sub-lease may be terminated to permit remediation work to take place.[639]

Finally, the GMRP submits that the remediation work has high importance and significant benefits to both local residents and Canadians as a whole, and so the impact of the project on the recreational boaters should be considered reasonable in the circumstances.[640]

Appropriate Compensation

The GMRP concludes that "generally, the recreational boater claimants did not submit enough evidence to support the amounts of compensation they are claiming."[641] The GMRP submits that the Board should not award any compensation to the recreational boaters.

The recreational boaters generally claim compensation due to the interruption of access to Great Slave Lake and for the interruption to the use of the GSSC facilities for storage purposes. The GMRP submits that these interruptions will be temporary, and that compensation would depend on the length of the interruption, which is presently uncertain.[642] Any long-term or permanent interruption to access of the GSSC facilities would not be because of the remediation, but rather the City of Yellowknife's decision on the use of the Town Site Area once remediation is complete.[643]

The GMRP also points out that the recreational boaters should not be awarded compensation for costs they would have incurred in any event (i.e. boat storage fees paid to the GSSC, insurance coverage, and other regular costs and expenses).[644]

Finally, the GMRP claims that water compensation claims for expenses unrelated to the use of water or occupation of property, such as moving boats and mooring equipment, are not compensable.[645]

3.4.3. Recreational Boaters' Reply to GMRP Response

The following recreational boaters submitted a reply to the GMRP response:

1. Evan Walz and Sonya Saunders[646]

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639 GMRP Response at pg. 31.
640 GMRP Response at pg. 31.
641 GMRP Response at pg. 32.
642 GMRP Response at pg. 33.
643 GMRP Response at pg. 33.
644 GMRP Response at pg. 33.
645 GMRP Response at pg. 33.
646 Evan Walz and Sonya Saunders, "Reply to GMRP Claims Response Extension and Funding Request" (26 November 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Walz-Saunders%20-%20Reply%20to%20GMRP%20Claims%20Response%20Extension%20and%20Funding%20Request%20-%20Nov26-19.pdf; Evan Walz and Sonya Saunders, "Reply to GMRP Claim for Compensation Response" (13 December 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20Diand_GIANT%20-%20Walz-Saunders%20-%20Reply%20to%20GMRP%20Claim%20for%20Compensation%20Response%20-%20Dec13-19.pdf

2. Terrance and Joanna Pamplin[647]
3. J.P. Guy and C.L. Seale[648]
4. Kevin and Karen McLeod[649]

These recreational boaters did not provide any new evidence or arguments to support their claims for water compensation in their replies.

In an status update to the Board dated March 27, 2020, [650] John McCullum asked the Board to consider whether GMRP's interpretation of the requirements to qualify as an occupier of property are "overly narrow and fit within the intent of the MVRMA." Mr. McCullum stated that because he pays his GSSC membership fee he has a right to occupy space in the yard. Further, in his view "the MVRMA includes a broad range of categories of people who could be affected by the issuance of a water license because it is the intent of the Act to ensure those people are treated fairly and compensated where they will be affected by the issuance of a license."

3.4.4. Board Analysis and Reasons

Eligibility

Recreational Boaters are not "Domestic Users" or "Instream Users" of Water under the MVRMA

Some recreational boaters argue that they are eligible for compensation as either "domestic users" or "instream users" of water. We agree with the GMRP that the recreational boaters are not "domestic users" or "instream users" of water, as defined under the MVRMA, s. 51.
The MVRMA, s. 51 defines "domestic use" and "instream user" as follows:

> ***domestic user*** means a person who uses waters
> a) for household requirements, including sanitation and fire prevention;
> b) for the watering of domestic animals; or
> c) for the irrigation of a garden adjoining a dwelling-house that is not ordinarily used in the growth of produce for a market.
>
> ***instream user*** means a person who uses waters, otherwise than as described in paragraph (a), (b) or (c) of the definition use, to earn income or for subsistence purposes.

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[647] Terrance and Joanna Pamplin, "Reply to GMRP Claim for Compensation Response" (26 November 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Pamplin%20-%20Reply%20to%20GMRP%20Claim%20for%20Compensation%20Response%20-%20Nov26-19.pdf

[648] J.P. Guy and C.L. Seale, "Reply to GMRP Claim for Compensation Response" (13 December 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20Guy-Seale%20-%20Reply%20to%20GMRP%20Claim%20for%20Compensation%20Response%20-%20Dec13-19.pdf

[649] Kevin and Karen McLeod, "Reply to GMRP Claim for Compensation Response" (13 December 2019), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GINAT%20-%20McLeod%20-%20Reply%20to%20GMRP%20Claim%20for%20Compensation%20Response%20-%20Dec13-19.pdf

[650] John McCullum, "Email Correspondence between J. McCullum and MVLWB re Status of Claim for Water Compensation" (27 March 2020), retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20McCullum%20Update%20-%20Status%20of%20Claim%20for%20Compensation%20-%20Active%20-%20Mar27-20.pdf

The recreational boaters' use of water is limited to navigation on Great Slave Lake. Therefore, the recreational boaters are not eligible for water compensation on these bases.

Recreational Boaters are not "Authorized Users" of Water under the MVRMA

None of the recreational boaters claim to be eligible for water compensation as "authorized users" of water or "persons who use waters without a licence under the authority of any territorial law." However, for completeness the Board wishes to indicate that the Board agrees with the GMRP that the recreational boaters are not "authorized users" of water and are not eligible for compensation on this basis.
The MVRMA, s. 51 defines "authorized user" as follows:

> ***authorized user*** means a person who uses waters without a licence but under the authority of regulations made under paragraph 90.3(1)(m).

The MVRMA, s. 51 defines "use" as follows:

> ***use***, in relation to waters, means a direct or indirect use of any kind <u>other than a use connected with shipping activities that are governed by the *Canada Shipping Act, 2001*</u>, including
> a) any diversion or obstruction of waters;
> b) any alteration of the flow of waters; and
> c) any alteration of the bed or banks of a river, stream, lake or other body of water, whether or not the body of water is seasonal. (our emphasis)

The question to be answered is whether the recreational boaters' use of water (i.e. navigation on Great Slave Lake) is considered a "use" within the definition provided in the MVRMA, s. 51. On a plain reading, the definition of "use" is very broad, and does not appear to be restricted to any specific types of water uses. However, the definition contains an exclusion for shipping activities governed by the CSA, 2001.

As GMRP states, the water licensing provisions of the MVRMA have evolved from similar regimes in the *Northwest Territories Waters Act*,[651] and the *Northern Inland Waters Act*.[652] These regimes did not apply to uses that require water in its natural state or public rights in water, such as navigation or recreation. The exclusion of "shipping activities" subject to the CSA, 2001 in the MVRMA supports this conclusion.

Further, as the GMRP states, "shipping activities" is not defined in the CSA, 2001. However, the objectives of the CSA, 2001 include promoting safety in marine transportation and recreational boating.[653] The CSA, 2001 also applies to pleasure craft, defined as "a vessel that is used for pleasure and does not carry passengers."[654] A "vessel" is defined as "a boat, ship or craft designed, used or capable of being used solely or partly for navigation in, on, through or immediately above water."[655]

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651 SC 1992, c 39, repealed 2014, c 2, s 66.
652 RSC 1985, c N-25.
653 *CSA, 2001,* s. 6(b).
654 *CSA, 2001,* s. 2.
655 *CSA, 2001,* s. 2.

The common law also supports the conclusion that recreational boating falls within the purview of "navigation" regulated by the CSA, 2001, thus fitting within the exemption in the definition of "use" in the MVRMA. In *Whitbread v. Walley,*[656] the court held that federal jurisdiction over navigation and shipping extends to vessels operating on inland waterways and extends to pleasure craft as well as commercial vessels. Further, in *La Rochelle c. Austin (Municipalité),*[657] the court held that Parliament has exclusive jurisdiction over navigation. The court stated that navigation law concerns all navigable waters, and federal powers respecting navigation included all types of boats, including pleasure crafts.

The case law thus supports the conclusion that the recreational boaters' use of water fits within the exemption for activities governed by the CSA, 2001. The Board concludes that boaters' activities on the water are not a "use" under the MVRMA and recreational boaters are not eligible to claim compensation for the effects of proposed licensed activities on recreational boating.

Recreational Boaters are not "Occupiers of Property" under the MVRMA

Several recreational boaters argue that they are eligible to claim water compensation as occupiers of property under the MVRMA, s. 72.03(5)(ix). The Board agrees with the GMRP that the recreational boaters are not "occupiers of property" within the meaning of the MVRMA, and are not eligible for compensation on this basis.

The MVRMA does not define "occupier of property." Black's Law Dictionary defines "occupier" as "someone who has possessory rights in, or control over, certain property or premises" or "someone who acquires title by occupancy."[658] At common law, courts have held that the key to occupiers' status at common law is a finding of "control of premises."[659]

Here, the GSSC is the leaseholder of the property occupied by the GSSC. Through this sub-lease, the GSSC has the legal right to occupy the property. The GSSC has control over who enters the property and responsibility over the activities that occur on the property. The GSSC collects membership fees, provides boat storage at the property, and exercises control over the status of individual club members.
Individual members of the GSSC are not occupiers of the property, as they do not exhibit these characteristics of control over the Lease area.

An individual recreational boater's status as an occupier of their own boat does not make them an occupier of the property that is leased to the GSSC.

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656 [1990] 3 SCR 1273, [1990] SCJ No 138.

657 [2003] JQ No 1852, 131 ACWS (3d) 846 (QB CA), leave to appeal to the SCC refused: 2004 CarswellQue 1553 (SCC).

658 Black's Law Dictionary (11th Ed. 2019), see "occupant".

659 *Fullowka v Royal Oak Ventures Inc,* 2008 NWTCA 4 at para 109, affirmed 2010 SCC 5, citing *Wheat v E Lacon & Co* (1966), [1966] AC 552, [1966] 1 All ER 582 (UK HL).

Adverse Effects and Appropriate Compensation

Because the recreational boaters' water compensation claims fail on the basis of lack of eligibility to make a claim, it as unnecessary to assess the adverse effects alleged by the recreational boaters and appropriate compensation in detail.

4.0 Mitigating the Town Site Claim

Part I of licence MV2007L8-0031 includes a condition specifically addressed to the mitigation of water compensation claims. That condition is set out below:

> *The Licensee shall, at least 90 days prior to Active Remediation at the Town Site, submit a Public Access Plan, for Board approval, that identifies how the Licensee will maintain access to a public boat launch at the Giant Mine Town Site at all times during the open water season, and if required, how the Licensee will design and construct an alternate public boat launch in the area, or ensure a level of access similar to that available at the date of issuance.*

This condition is intended to address the uncertainty associated with the GMRP commitment to address access to Yellowknife Bay for the GSSC, its members and residents of Yellowknife. The GMRP provided the final text of its commitment on March 27, 2020 as follows:

> *GMRP has committed to making best efforts to plan and conduct the project to minimize the time required and the impact on the users of the Town Site area. The GMRP will make best efforts to maintain continuous public access to Great Slave Lake for boating through the Town Site area during boating season. The GMRP has proposed achieving this by constructing a boat launch comparable to the existing one at the Giant Mine boat launch near the site of the GSSC if necessary, and to make sure that at least one of the existing or new boat launches will be accessible by the public over the duration of the project during boating season to the greatest extent possible (as outlined in the October 10, 2019 letter to the City of Yellowknife from the GMRP.)*[660]

The City of Yellowknife indicated that this language was not firm enough to address its concerns as set out in the Town Site Claim and informed the Board that it would continue with that water compensation claim.

In its final submission the City of Yellowknife requests that the Board order the GMRP to enter into a compensation agreement which would ensure that the alternate boat launch and access is actually constructed. The Board does not have the authority to order that "an agreement be reached", or even that an agreement be negotiated. This sort of negotiation is voluntary and outcomes cannot be required by the regulator.

The Board nevertheless agrees that the language of the GMRP commitment cited above is equivocal and only commits the Project to "best efforts" not to a specific outcome or certain mitigation. The GSSC and several compensation claimants withdrew their claims on the basis of this commitment but it is the Board's view that the City and the majority of the recreational boaters continued with the compensation process because of the lack of certainty of mitigation inherent in the GMRP commitment. Despite the

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[660] GMRP Letter to MVLWB re Addressing Water Compensation Claims dated March 27, 2020, retrieved from: http://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20DIAND-GIANT%20-%20GMRP%20Update%20-%20Status%20Claims%20for%20Compensation%20-%20Varied%20-%20Mar27-20.pdf

Board's findings with respect to the eligibility or recreational boaters to claim water compensation under the MVRMA, this remains an important issue. The Board decided to dismiss the City's Town Site Claim for a number of reasons set out in Appendix 3, but the decision to include the condition above in Part I of the licence is also an important component of the foundation for that decision.

Resolving compensation claims is a precondition that must be met for the Board to have authority to issue the GMRP licence. A failure by the GMRP to meet its commitment or a dispute over the mitigation effects of the work done by the Project could undermine the Board's decision on the licence.

The language in s.72.04 of the MVRMA grants broad authority to the Board to impose conditions in a licence. It says that the Board may, subject to the Act and regulations, include "any conditions which it considers appropriate" in a licence. Paragraph (e) of s.72.04 actually speaks to conditions about "closure and abandonment of an undertaking". In the Board's view, these provisions provide authority to impose a condition which will eliminate compensation claims by mitigating the impacts which are the cause for those claims. Mitigating the effects of water use or the deposit of waste within the context of the Project is the broad purpose of the water licence drafted by the Board. There should be no argument that the effects of the licensed activity on the statutorily listed water users can include impacts on the activities they undertake based on their rights related to water. This is core of the water compensation scheme in the MVRMA and water laws in the three northern territories.

In the Board view it is better to mitigate impacts with licence conditions than to require payments for damages to other affected water users. The Board considers a condition requiring the GMRP to plan for its operations and design an alternative boat launch in order to avoid effects on the City's Town Site users to be an appropriate use of its authority under s. 72.04 of the MVRMA.

5.0 Board's Decision on Compensation Claims

For the reasons set out above, the Board dismisses the City's Pipeline Claim and Town Site Claim, the YKHS Claim and the recreational boaters' claims.

ANNEX A
MVRMA Provisions Relevant to Water Compensation

Definitions
51 The definitions in this section apply in this Part.

authorized user means a person who uses waters without a licence but under the authority of regulations made under paragraph 90.3(1)(m).

domestic user means a person who uses waters
a) for household requirements, including sanitation and fire prevention;
b) for the watering of domestic animals; or
c) for the irrigation of a garden adjoining a dwelling-house that is not ordinarily used in the growth of produce for a market.

instream user means a person who uses waters, otherwise than as described in paragraph (a), (b) or (c) of the definition use, to earn income or for subsistence purposes.

use, in relation to waters, means a direct or indirect use of any kind other than a use connected with shipping activities that are governed by the Canada Shipping Act, 2001, including
a) any diversion or obstruction of waters;
b) any alteration of the flow of waters; and
c) any alteration of the bed or banks of a river, stream, lake or other body of water, whether or not the body of water is seasonal.

Conditions for Issuance of Licence
72.03(5) The board shall not issue a licence in respect of a federal area unless the applicant satisfies the board that

a) either
    i. the use of waters or the deposit of waste proposed by the applicant would not adversely affect, in a significant way, the use of waters, whether in or outside the federal area to which the application relates,
        (1) by any existing licensee who holds a licence issued under this Act or any other licence relating to the use of waters or deposit of waste, or both, issued under any territorial law or the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, or
        (2) by any other applicant whose proposed use of waters would take precedence over the applicant's proposed use by virtue of section 72.26 or any territorial law, or
    ii. every licensee and applicant to whom subparagraph (i) applies has entered into a compensation agreement with the applicant;
b) compensation that the board considers appropriate has been or will be paid by the applicant to any other applicant who is described in clause (a)(i)(B) but to whom paragraph (a) does not apply, and to any of the following who were licensees, users, depositors, owners, occupiers or holders, whether in or outside the federal area to which the application relates, at the time when the applicant filed an application with the board in accordance with the regulations made under paragraphs 90.3(1)(d) and (e), who would be adversely affected by the use of waters or the deposit of waste proposed by

the applicant, and who have notified the board within the time period stipulated in the notice of the application given under subsection 72.16(1):

i. licensees who hold a licence issued under this Act or any other licence relating to the use of waters or deposit of waste, or both, issued under any territorial law or the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and to whom paragraph (a) does not apply,

ii. domestic users,

iii. instream users,

iv. authorized users,

v. authorized waste depositors,

vi. persons who use waters or deposit waste, or both, without a licence under the authority of any territorial law,

vii. persons referred to in paragraph 61(d) of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*,

viii. owners of property,

ix. occupiers of property, and

x. holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature;

Factors in determining compensation
(6) In determining the compensation that is appropriate for the purpose of paragraph (5)(b), the board shall consider all relevant factors, including

a) provable loss or damage;

b) potential loss or damage;

c) the extent and duration of the adverse effect, including the incremental adverse effect;

d) the extent of the use of waters by persons who would be adversely affected; and

e) nuisance, inconvenience and noise.

…

Precedence
72.26 (1) If more than one person has a licence, or other authorization to use waters issued by any authority responsible for the management of waters in the Northwest Territories or in Nunavut, in respect of a federal area, the person who first applied is entitled to the use of the waters in accordance with that person's licence or authorization in precedence over the other persons.

Amendments to a licence or authorization
(2) Subsection (1) applies, with any modifications that the circumstances require, in respect of any rights a person acquires through an amendment to that person's licence or authorization.

Renewal or assignment of a licence or authorization
(3) Subject to subsection (2), a licence or authorization that has been renewed or assigned shall, for the purposes of this section, be deemed to be a continuation of the original licence or authorization.