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August 24, 2021

File: MV2005L2-0015

William Liu
De Beers Canada Inc.
Suite 300 – 1601 Airport Road NE
Airport Corporate Center
Calgary AB T2E 6Z8

Sent by e-mail

Dear William Liu:

**Re: Aquatic Effects Monitoring Program Design Plan (Version 6.1) – Resubmission Required
De Beers Canada Inc. – Gahcho Kué Mine, NT**

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on August 19, 2021 and reviewed De Beers' Aquatic Effects Monitoring Program (AEMP) Design Plan Version 6.1, which was submitted to fulfill Part I, Condition 3 of Water Licence MV2005L2-0015 on May 14, 2021.

The Board has approved the AEMP Design Plan Version 6.1 as an interim submission. De Beers Canada Inc. is required to submit a revised version, to be identified as Version 6.2, in accordance with comments and commitments made during the review as summarized in Table 1 (attached) by **September 15, 2021**, for confirmation of conformity from Board staff

If you have any questions or concerns, please contact [Angela Love](#) at (867) 766-7456 or [Jacqueline Ho](#) at (867) 766-7455.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mavis Cli-Michaud".

Mavis Cli-Michaud
Chair, Mackenzie Valley Land and Water Board

BCC'd to: Gahcho Kué Distribution List

Attached: Reasons for Decision
Table 1: Board Directives on the AEMP Design Plan Version 6.1

Table 1: MV2005L2-0015 - Board Directives on the AEMP Design Plan Version 6.1

Item	Requirements	Review Comment Reference (V 6.1)
a.	De Beers to add the following sentence to the Spatial and Seasonal Patterns sub-section (Section 6.2.3.5) of the Water Quality chapter of the AEMP Design Plan: "The data included in the "Before" period for the BACI analysis will include baseline data for the given waterbody as well as pre-impact data collected in the AEMP in 2015 and 2016 (for Lake N11) and 2015 (for Area 8)."	GNWT-ENR-2
b.	De Beers to correct the text in Section 6.4.3.4 Data Analysis and Interpretation - Plankton (p.6-41) to include reference to total phosphorus (TP) and total nitrogen (TN).	GNWT-ENR-6
c.	De Beers to update the text in Table 8.4-2 for the Action Level – Toxicological Impairment for the Plankton Component criterion 1b as follows. "1b. Lake-wide average value for total zooplankton abundance or total zooplankton biomass below the regional mean and trending toward the lower bound of the regional normal range over a period of at least three years."	GNWT-ENR-10
d.	De Beers to include the trophic status categories for chlorophyll a concentration, based on Vollenweider and Kerekes (1980), as a footnote to Table 8.4-3 as follows: "Oligotrophic: mean: 1.7 µg/L, range 0.3-4.5 µg/L; Mesotrophic: mean: 4.7 µg/L, range 3.0-11 µg/L; and Eutrophic: mean: 14.3 µg/L, range 3.0-78 µg/L."	GNWT-ENR-13
e.	De Beers to add a statement to the appropriate action level response(s) in Section 8.4.1.3 regarding the use of the sediment quality triad approach for assessing sediment contamination.	GNWT-ENR-16
f.	De Beers to correct information provided in the Concordance Table as follows: (1) add reference to Section 6.2.3.4 (Table 6.2-3) to clarify the nitrogen species to be analyzed for Board directive (aa) from the 2015-2018 Aquatic Effects Re-evaluation Report (review dated May 20, 2020); (2) change reference to Section 8.4.2.2 for Board Directive (I) from the AEMP Workshop (Review dated March 5, 2021); (3) update reference for maps showing flow paths to Section 3; (4) delete the text in Table A-2: "Added statement that AEMP monitoring station locations have not changed since Version 5"; and, (5) change reference for rationale for the removal of Lake M1 from the Hydrology program to Section 6.1.2.	MVLWB-1, 2
g.	De Beers to revise text in Section 5.4.1 Hydrology (p. 5-9) as follows: "Therefore, water level and flow-through are expected to increase at Lake N11. A slight decrease in water level and flow through are expected at Area 8 but the decrease will be partly offset by pumping under the Downstream Flow Mitigation Plan from Lake N11 to Area 8 that will propagate through the M watershed. Lake 410 will receive inflows from both Lake N11 and Area 8, and the changes to the M watershed flows will be partially offset by changes in the N watershed flows."	MVLWB-3
h.	De Beers to incorporate a footnote to Table 8.4-2 that cross-references information in Section 6.2.3.5 regarding statistical methods for calculating the measures of central tendency for clarification of the water quality component.	MVLWB-5
i.	De Beers to incorporate footnotes associated with relevant Action Level tables in Section 8 that cross-references information in Section 6.4.3.4 regarding statistical methods for calculating the measures of central tendency for clarification of the plankton component.	MVLWB-6
j.	De Beers to incorporate footnotes associated with relevant Action Level tables in Section 8 that cross-references information in Section 6.7.3.6 regarding statistical methods for	MVLWB-7

Item	Requirements	Review Comment Reference (V 6.1)
	calculating the measures of central tendency for clarification of the water quality component.	
k.	De Beers to update text in Section 6.4.3.4, under the heading "Plankton Community Variables" (Page 6-42), as follows: "Spatial, seasonal, and temporal trends in abundance and biomass (as totals and by group) will be assessed annually using time series plots."	MVLWB-8
l.	De Beers to update reference to Environment and Climate Change Canada (where appropriate).	MVLWB-9
m.	De Beers to include a cross-reference in Section 7 to link the Fish Tasting/Fish Consumption Study to Section 1.5 as well as add a statement to clarify that Plume Delineation results will be reported in the AEMP Annual Report.	MVLWB-10



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Reasons for Decision

Issued pursuant to section 72.25 of the *Mackenzie Valley Resource Management Act* and Section 54 of the *Waters Act*

Water Licence – Aquatic Effects Monitoring Program Design Plan	
Preliminary Screener	MVLWB
Reference/File Number	MV2005L2-0015
Company	De Beers Canada Inc.
Project	Mining and Milling, Gahcho Kué, NT
Date of Decision	August 19, 2021

These Reasons for Decision set out the Mackenzie Valley Land and Water Board's (the Board or MVLWB) decision on Aquatic Effects Monitoring Program (AEMP) Design Plan made by De Beers Canada Inc. (De Beers) to the Board on May 14, 2021 for Water Licence (Licence) MV2005L2-0015.

1.0 Background

The Gahcho Kué Mine is an active diamond mine located about 280 kilometers northeast of Yellowknife and 140 kilometers from Łutsel K'é in the Northwest Territories. Licence MV2005L2-0015 was issued on September 24, 2014. Construction of the required infrastructure began in 2015, the commencement of the processing plant occurred in June 2016, and full production began in September 2016. The three ore bodies, 5032, Hearne, and Tuzo, were delineated by an initial drilling program to establish the optimum pit design for the safe excavation of the ore bodies. Several amendments to Licence MV2005L2-0015 have been approved since the initial issuance.

Licence MV2005L2-0015 required an Aquatic Effects Re-evaluation Report on July 31, 2019, as per Part I, Condition 4, and a revised AEMP Design Plan on September 30, 2019, as per Part I, Condition 3. On May 28, 2019, De Beers submitted a request to extend the submission date for the AEMP submissions as more time was required to incorporate the 2018 monitoring data in addition to 2015 to 2017 dataset.¹ On July

¹ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Re-evaluation Report and Design Plan Extension Request - May1 19](#)

18, 2019, the Board approved De Beers' extension request to submit the AEMP submissions on December 13, 2019.²

On December 13, 2019, the AEMP submissions were received by the Board.³ The AEMP submissions were distributed for review on December 18, 2019. The review comment and proponent response due dates were extended multiple times due to complexity of the AEMP submissions and the COVID-19 pandemic. Ultimately, the review of the AEMP submissions concluded on April 3, 2020.

On March 19, 2020, De Beers submitted an application to amend Licence MV2005L2-0015, which the Board approved on March 10, 2021. The 2020 amendment application included proposed changes to Effluent Quality Criteria (EQC) and site-specific water quality objectives (SSWQOs), which could have implications for AEMP benchmarks in the AEMP Design Plan. A Technical Session for the 2020 amendment application was held from July 7, 2020 to July 9, 2020. After the Technical Session, Board staff determined further discussion were required regarding the AEMP submissions. As per the *MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs* (AEMP Guidelines)⁴, the review process may include technical workshops, in addition to normal written comments and recommendations from parties. The outstanding concerns of the AEMP submissions included the following:

- Including 2015 and 2016 monitoring data as baseline data;
- Proposed changes to action levels;
- Updated EIS predictions including qualitative predictions for Raised Lakes D2/D3; and
- Implications of 2020 amendment application on AEMP Design Plan.

On July 22, 2020, Board staff notified De Beers and Parties that an AEMP Technical Workshop would be held to discuss outstanding questions on the AEMP submissions.⁵ On October 27, 2020, Board staff distributed the agenda for the AEMP Technical Workshop.⁶ On November 17-19, 2020, the AEMP Technical Workshop was held, and 12 Information Requests (IR) generated from the workshop were sent to De Beers on November 20, 2020.⁷ On January 11, 2021, De Beers submitted the response to the IRs.⁸ By February 10, 2021, comments and recommendations on the responses to IRs from the AEMP Technical Workshop were received. De Beers responded by March 5, 2021. On April 13, 2021, the Board approved the Aquatic Effects Re-evaluation Report and directed De Beers to resubmit the requested changes for the AEMP Design Plan in accordance with the Board's directive for public review and Board decision.⁹

² See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - Approval for Extension date to submit AEMP - Jul18 19](#)

³ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Design Plan V6 - Dec17 19](#); [MV2005L2-0015 - De Beers Gahcho Kué - Aquatic Effects Re-evaluation Report - Dec13 19](#)

⁴ See MVLWB website for [MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs](#) (2019)

⁵ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Technical Workshop for AEMP Design Plan and ReEvaluation Report - July 22 20](#)

⁶ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Technical Workshop Agenda - Oct 27 20](#)

⁷ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Workshop Information Request - Nov20 20](#)

⁸ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - AEMP Workshop Information Request - De Beers Responses - Jan 11 21](#)

⁹ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - Board Decision - AEMP Re-evaluation Report and Various Management Plans - Apr 13 21](#)

On May 14, 2021, De Beers submitted the AEMP Design Plan V 6.1 in accordance with the Board's directives.¹⁰

The AEMP Design Plan V 6.1 is required to fulfill Part I, Condition 3 of Licence MV2005L2-0015. The AEMP Design Plan V 6.1 is also required to be in accordance with the Board's AEMP Guidelines.

2.0 Public Review

By June 29, 2021, comments and recommendations on the AEMP Design Plan V 6.1 were received from two Parties and Board staff:

- Environment and Climate Change Canada (ECCC)
- The Government of the Northwest Territories – Department of Environment and Natural Resources (GNWT-ENR)

ECCC indicated it had no comments.

De Beers responded by July 13, 2021.

3.0 Decision

De Beers adequately responded to all reviewer comments. The outstanding issues are all related to relatively minor points of clarification including cross-reference corrections, minor wording modifications, and typographical corrections. Reviewers identified several items requiring clarification or additional information, as well as some minor errata, which De Beers indicated a commitment to update/correct. The Board directs De Beers to revise the AEMP Design Plan with the directives summarized in Table 1 below. These corrections are minor and can be for Board staff conformity.

Table 1: Board Directives for AEMP Design Plan V 6.1

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¹⁰ See MVLWB Online Registry for [MV2005L2-0015 - De Beers Gahcho Kué - Aquatic Effect Monitoring Program Design Plan - Version 6.1 - May 14 21](#)

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4.0 Conclusion

After reviewing the submission from De Beers Canada Inc., the written comments received by the Board and the Staff Report prepared for the Board, the Board, having due regard to the facts, circumstances, the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA and *Waters Act* and Regulations made thereunder, has determined that:

The AEMP Design Plan Version 6.1 can be approved as an interim submission. De Beers Canada Inc. is required to submit a revised submission in accordance with comments and commitments made during this review by September 15, 2021, for confirmation of conformity from Board staff.

Water Licence MV2005L2-0015 contains provisions that the Board deems necessary to ensure and monitor compliance with the MVRMA and the *Waters Act* and the Regulations made thereunder, and to provide appropriate safeguards in respect of De Beers Canada Inc.'s use of the waters and deposit of waste. The Board will provide additional referenced material or documents if requested in writing to do so.

SIGNATURE

Mackenzie Valley Land and Water Board



Mavis Cli-Michaud, Chair

August 19, 2021

Date