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File: MV2005L2-0015

William Liu  
Regulatory Specialist  
De Beers Canada Inc.  
Suite 300 – 1601 Airport Road NE  
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CALGARY AB T2E 6Z8

Sent via E-mail

Dear William Liu:

**2019 AEMP Annual Report – Resubmission required  
De Beers Canada Inc. – Gahcho Kue Mine, NT**

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on August 27, 2020 to review De Beers' 2019 AEMP Annual Report, which was submitted under Part I, Condition 6 of Water Licence MV2005L2-0015.

The Board requires that De Beers resubmit the 2019 AEMP Annual Report, by **October 1, 2020**, in accordance with Board directives resulting from this review, as summarized in Table 1 (attached). This Report will be considered to be approved upon receipt of this information and written conformity of confirmation from Board staff. De Beers should include a concordance table in the next submission to indicate where Board directives have been addressed.

The Board requires that De Beers follow the directives summarized in Table 2 in future AEMP Annual Reporting. De Beers should include these items in a concordance table to reference the section in the submissions where those items are addressed.

The Board understands that an AEMP Workshop will be held by Board staff this fall to discuss the Aquatic Effects Re-evaluation Report and AEMP Design Plan. The Board believes it will be beneficial to further discuss outstanding concerns related to AEMP design identified during this review at the workshop as summarized in Table 3. De Beers can further elaborate on these review comments during the workshop.

If you have any questions or concerns, please contact Jacqueline Ho at (867) 766 7455 or email [jho@mvlwb.com](mailto:jho@mvlwb.com) or Angela Love at (867) 766 7456 or email [angela.love@mvlwb.com](mailto:angela.love@mvlwb.com).

Yours sincerely,



Mavis Cli-Michaud  
MVLWB, Chair

Copied to:      Distribution List

Attached:      Table 1: De Beers – Gahcho Kue – Board Directives for the 2019 AEMP Annual Report  
                    Table 2: De Beers – Gahcho Kue – Board Directives for future AEMP Annual Reporting  
                    Table 3: De Beers – Gahcho Kue – Outstanding concerns to be discussed at upcoming  
                    AEMP Workshop and/or next version of AEMP Design Plan

**Table 1: De Beers – Gahcho Kue – Board Directives for the 2019 AEMP Annual Report**

|     | <b>Board Directives for 2019 AEMP Annual Report</b>   | <b>Comment ID</b> |
|-----|---|-------------------|
| 1.  | Either reference the September 2019 SNP report or include rationale for not collecting weekly water quality samples in Section 3.4.1.4.2 in the next iteration of the 2019 AEMP Annual Report.          | ENR-3             |
| 2.  | Include the detail regarding operational difficulties of monitoring Lake N11 water level in section 4.2.1, and include the mitigation measure to prevent data loss                                      | ENR-6, 7          |
| 3.  | Correct the statement “similar in June and lower in June” in section 4.4.3.1.2 to “lower in June and similar in July.”.   | ENR-8             |
| 4.  | include the implications of a lower than expected spill elevation from Lake D2/D3 in response to ENR-9 in section 4.4.2.2.1   | ENR-9             |
| 5.  | Include the hydrology observation of Lake N17 in Table 4.5-1  | ENR-11            |
| 6.  | include the hydrological comparison to EIS predictions in Table 4.5-1   | ENR-12            |
| 7.  | Revise the applicable table (5.6-1 or Table 5.6-2) to reflect consistent wording of the low action level for Toxicological impairment   | ENR-15            |
| 8.  | Correct the error in Table 5.2-2 to reflect the correct water quality monitoring information re SNP station located at the edge of the mixing zone.   | ENR-18            |
| 9.  | Correct the footnote of Table 7.3-2 to read: (a) = duplicate samples; (b) = split samples   | ENR-25            |
| 10. | Update the footnote of Table 7.4-1 or text in section 7.2.2.2 to clarify the discrepancy in the field measurement method used to determine the euphotic zone depth in response to review comment ENR-26 | ENR-26            |
| 11. | Correct the error in Table 7.2-8 to list the Lake N11 and Lake 3 instead of Area 8 and Lake 3   | ENR-28            |
| 12. | Clarify the use of non-metric multidimensional scaling (nMDS) and metric multidimensional scaling (mMDS) for different plankton dataset in response to ENR-30.  | ENR-30            |
| 13. | verify the accurate of y-axis for figure 7G-1 as a 0 to 5000 scale for that parameter seems improbable  | ENR-32            |
| 14. | Identify and update the plots where the x symbol for 2014 has been plotted as 2011  | ENR-34            |
| 15. | Correct the Table 8.2-3 from Area 8 and Lake 3 to Lake N11 and Lake 3.  | ENR-36            |
| 16. | Correct Table 8.4-6 to replace “Yes” with a decreasing arrow for the Nematoda Density Significance of BA x CI interaction Term  | ENR-37            |
| 17. | Report all endpoints in the analyses, including the case for removing endpoints from the analyses for benthic invertebrates in Section 8.2.3.3  | ENR-38            |
| 18. | Correct the error among the chlorophyll a statements and response rating in Section 14.3.2.1.2 in response to ENR-49  | ENR-49            |
| 19. | Include the unit of microsiemens per centimetre for the field-measured specific conductivity for the x axis of Figure 13.2-1.   | ENR-50            |
| 20. | Update Table 13.2-1 to reflect the correct dilution factor in response to ENR-51.   | ENR-51            |
| 21. | Use correct spelling of Dettah, and Łutsel K'e in Map 2.1-1.  | MVLWB-1           |
| 22. | Revise the first sentence in section 2.3.1 to clarify the construction dates and completeness for dykes A, F, and G   | MVLWB-2           |
| 23. | Correct the text on page 3-10 to be consistent with Table 3.4-2's peak precipitation value  | MVLWB-4           |
| 24. | Update the text to reflect the correct value for field measured specific conductivity in section 5.4.1.1.   | MVLWB-6           |
| 25. | Update the footnote of Table 7.3-2 to read read: (a) = duplicate samples; (b) = split sample  | MVLWB-7           |
| 26. | Include the explanation of regional effects observed in East Lake in response to MVLWB-9  | MVLWB-9           |

**Table 2: De Beers – Gahcho Kue – Board Directives for future AEMP Annual Reporting**

|     | <b>Board Directives for future AEMP Annual Reporting</b>  | <b>Comment ID</b> |
|-----|---|-------------------|
| 1.  | Address commitment to investigate the potential 2019 dust deposition anomaly by using 2020 data and report the findings   | ENR-5             |
| 2.  | include the hydrological comparison to EIS predictions  | ENR-12            |
| 3.  | Ensure consistent wording for the low action level for Toxicological Impairment   | ENR-15            |
| 4.  | Provide discussion on extractable petroleum hydrocarbon   | ENR-20            |
| 5.  | Consider changing the size or shape of symbol for censored data   | ENR-22            |
| 6.  | Continue to monitor sediment silver concentrations in Lake N11 on an annual basis, and take into consideration the elevated baseline detection limits when interpreting BACI analysis results | ENR-23            |
| 7.  | Consider providing a summary table for each endpoint, the units, and the transformation applied in response to ENR-32   | ENR-32, 33        |
| 8.  | Define x in the legend of the plots as statistical outliers   | ENR-34            |
| 9.  | Provide additional literature from the NWT region to provide more localized analysis of mercury concentrations on site.   | ENR-45            |
| 10. | Provide coordinates for the Lake Station on Map   | MVLWB-5           |

**Table 3: De Beers – Gahcho Kue – Outstanding concerns to be discussed at upcoming AEMP Workshop and/or next version of AEMP Design Plan**

|     | <b>Discussion Topic for upcoming AEMP Workshop and recommendation for next version AEMP Design Plan</b>   | <b>Comment ID</b> |
|-----|---|-------------------|
| 1.  | Discussion on monitoring at Lake A1 due to water level rise and downstream flow mitigation  | ENR-10            |
| 2.  | Revise the sampling procedure of water to reflect the current water sampling procedure in response to ENR-13.   | ENR-13            |
| 3.  | Discussion on magnitude of acceptable changes with respect to water chemistry in Lake D2/D3   | ENR-14            |
| 4.  | Discussion on discrepancy between sampling timing in the 2019 AEMP Annual Report (Table 5.2-1) and the approved AEMP Design Plan (Table 7.5.2, Table 9.2.1) and clarify on sampling timing for water quality (July, August, or September) | ENR-17            |
| 5.  | Consider alternative statistical analyses for both evaluation and action level assessments of sediment parameters with inadequate baseline characterization   | ENR-24            |
| 6.  | Discussion on the use of non-metric multidimensional scaling (nMDS) and metric multidimensional scaling (mMDS) for different plankton dataset in response to ENR-30.  | ENR-30            |
| 7.  | Discussion on plankton sample size and use of analysis of similarities (ANOSIM)   | ENR-31            |
| 8.  | Reporting all required benthos end point and alternative analysis when correlation is weak between total biomass and total density  | ENR-38            |
| 9.  | Action levels for fish habitat and community – flow mitigation action levels  | ENR-42, 43,       |
| 10. | Discuss on incorporating mercury tissue data from control sites into the analysis following a BACI approach   | ENR-46            |
| 11. | Discuss the discharge rates on September 20 and 21 and implications on calculation of the Dilution Factor   | ENR-52            |
| 12. | Discuss the potential impacts to the fish community and fish survival (lethal and sublethal effects) from reduced dissolved oxygen levels over winter due lake level rise in D2/D3  | ENR-55            |