



7th Floor - 4922 48th Street
PO Box 2130, Yellowknife NT X1A 2P6

Tel: 867-669-0506 Fax: 867-873-6610
www.mvlwb.com

November 24, 2021

File: MV2019L2-0004

Sarah McLean
Environment and Permitting Manager
De Beers Canada Inc.
Suite 300 – 1601 Airport Road NE
Calgary AB T2E 4Y9

Sent by email

Dear Sarah McLean,

Re: De Beers Canada Inc. – Snap Lake Mine – Aquatic Effects Monitoring Program (AEMP) Design Plan Version 1.1 and 2012 – 2020 Aquatic Effects Re-evaluation Report – Board Decisions – Water Licence MV2019L2-0004 – Mining and Milling – Snap Lake, NT

The Mackenzie Valley Land and Water Board (Board) met on November 10, 2021 and considered the Aquatic Effects Monitoring Program (AEMP) Design Plan Version 1.1 (V 1.1) and the 2012 – 2020 Aquatic Effects Re-evaluation Report required under Water Licence (Licence) MV2019L2-0004 for the Snap Lake Mine.

2012 – 2020 Aquatic Effects Re-evaluation Report – Approved

The Board has approved the 2012 – 2020 Aquatic Effects Re-evaluation Report¹.

AEMP Design Plan V 1.1 – Revisions Required

The Board approved the AEMP Design Plan V 1.1² on an interim basis and requires the AEMP Design Plan be revised based on Board directions listed in Table 1 and the discussion at the upcoming Closure Technical Workshop. The Board identified the items in Table 1 that should be discussed at the workshop, and items that can be submitted in a revised AEMP Design Plan V 1.2. Table 1 shows which Board directives are for a conformity check as those requirements are simple clarifications to the Design Plan, and which ones require public review. The Board expects De Beers to include this table as a concordance table when resubmitting AEMP Design Plan to record how the Board directive are addressed.

¹ See MVLWB Online Registry for [2012 – 2020 Aquatic Effects Re-evaluation Report](#).

² See MVLWB Online Registry for [AEMP Design Plan V 1.1](#).

Closure Technical Workshop

In the Board's Decision Letter dated October 12, 2021, the Board has directed De Beers to participate in a workshop regarding closure criteria and post-closure monitoring prior to the submission of FCRP Version 1.2. The workshop will be designed to discuss two main closure topics:

1. If and how action levels identified in response frameworks and conditions, that do not trigger low action levels in the AEMP, could be incorporated into the FCRP to better present suitable, measurable closure criteria; and
2. How post-closure monitoring timelines should incorporate the consideration and achievement of positive trends, physical and chemical stability, and long-term sustainability.

The Board require further discussion of the AEMP action levels and monitoring frequency as part of a broadened scope of this Closure Technical Workshop. Given the linkage between the AEMP and the FCRP, that a focused discussion to address concerns related to the AEMP action levels will be the most efficient method to resolve the outstanding issues.

Workshop dates, detailed agenda, and other logistics for planning this workshop, as well as the resubmission dates of the revised AEMP Design Plan can be discussed and arranged with Board staff. Following the workshop, the AEMP Design Plan V 1.2, once submitted, will be distributed on the Board's Online Review System for a focused review on the outstanding items prior to Board decision.

The Board recognizes that the timing of the workshop may influence the date of resubmission for the AEMP Design Plan V 1.2. The submission of the revised AEMP Design Plan shall coincide with the submission of the Final Closure and Reclamation Plan Version 1.2³. De Beers shall strive to submit the revised AEMP Design Plan V 1.2 prior to April 2022.

Full cooperation of De Beers is anticipated and appreciated. Please contact [Jacqueline Ho](#) at (867) 766 7455 or [Shannon Allerston](#) at (867) 765 7465 with any questions or concerns regarding this letter.

Yours sincerely,



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

BCC'd to: De Beers – Snap Lake Distribution List
Joe Heron, Inspector

Attached: Table 1 Board Directives for AEMP Design Plan

³ See MVLWB Online Registry for [Board decision letter on Final Closure and Reclamation Plan Version 1.1](#) – October 12, 2021.

Table 1: MV2019L2-0004 - Board Directives for AEMP Design Plan

Item	Commitment	Review Comment Reference	Resubmission Requirement	Workshop Topic
1.	Discuss the following issues on proposed action levels: 1. Potential issues resulting from requirements for concurrent changes in multiple AEMP components to trigger an action level; 2. The requirement in some action levels for a spatial component where it does not appear to be justified (e.g., triggers require failed toxicity tests at multiple stations); and 3. 3. Where action levels require that a link to the mine be demonstrated, there is a need for a more explicit description of how the change would or would not be considered mine related.	MVLWB # 9, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, and 41	Review	Yes
2.	Reflect that “The reduction in sampling frequency for the plankton component is contingent on results of the 2021 AEMP Annual Report for the Closure schedule”.	MVLWB #8	Conformity	No
3.	Clarify the degree of change in survival, growth or reproduction is allowed before a significance threshold is reached	MVLWB #11, 13	Review	No
4.	Reconsider the August normal range estimated for zooplankton biomass and recalculate seasonal normal range.	MVLWB #29	Review	No
5.	Consider revising Closure Criteria 2B to remove the spatial component and ensure that investigation and monitoring of potential localized trends in water quality is possible	MVLWB #43 SLEMA #4	Review	Yes
6.	Discuss the data analysis plans for the assessment of internal loading including the use of planned bottom water quality samples.	ECCC #2	Review	No
7.	Reflect De Beers’ responses in an updated AEMP Design Plan (V 1.2) that De Beers must ensure that annual SNP sampling is linked to AEMP follow up if a) Low Action Level is exceeded at an AEMP site; and	MVLWB # 6, 8	Conformity	No

Item	Commitment	Review Comment Reference	Resubmission Requirement	Workshop Topic
	b) an increasing trend is documented in the annual SNP samples.			
8.	Revise the sediment component to include a contingency such as “sediment quality is proposed to be reduced to once during Closure (i.e., 2024) and once during early Post-closure (i.e., 2027) but is not anticipated to be monitored past 2027, unless closure criteria have not been met during the first Post-closure biological sampling program OR sediment quality has significantly declined between Closure and early Post -Closure”	MVLWB # 7	Conformity	No
9.	Provide information to support that assessment of temporal trends in water quality will not be impacted with a reduced sampling frequency and assess the power of the proposed monitoring program to assess the percentage of change that can be detected at a reduced sample frequency	SLEMA # 5, 6, 7	Review	Yes
10.	Request a reduction in screening stations for monitoring underground water once supporting data during closure and rationale are provided. This reduction could be discussed further at the closure workshop.	SLEMA #11	Review	Yes
11.	Control and monitoring of runoff during implementation of closure activities should be completed in accordance with the approved Erosion and Sediment Control Plan for site-wide activities, and with the North Pile Management Plan (currently under review), which applies to the North Pile and water management system. De Beers to update the AEMP Design Plan to include correct and complete cross-references to other relevant plans associated with monitoring if these results may be used as supporting information to the AEMP results.	ENR #10	Conformity	No
12.	Consider a more conservative moderate action level for large-bodied fish, which	ENR # 16 MVLWB # 3	Review	Yes

Item	Commitment	Review Comment Reference	Resubmission Requirement	Workshop Topic
	does not link fish health or tissue chemistry to other AEMP components			
13.	Provide explicit wording for the revised Action Level Trigger, correct the possibility of missing relevant adaptive management triggers due to out-of-cycle results between toxicity and fish health, deleted “Toxicity— Ecological Function Maintained”: “... AND Confirmed Action Level trigger for fish health” from the Moderate Action Level definition.	MVLWB # 9	Review	Yes
14.	Update text in Section 16.3.3 to indicate “either increases or decreases relative to the reference lakes” (as it is in reference to the Low Action Level).	MVWLB # 12	Conformity	No
15.	Discuss the proposed the Moderate Action Level for “Fish Safe to Eat”: “The Moderate Action Level will be triggered if concentrations in edible fish tissue are above 75% of a fish consumption guideline and indicative of a risk to humans from consumption AND there are effects in Fish Tissue Chemistry” (i.e., the same metal[s] is/are elevated in small-bodied fish tissue chemistry)”	MVLWB # 15	Review	Yes
16.	Discuss the proposed update to the text in the AEMP Design Plan to be consistent with this footnote and clarify that Action Levels related to toxicological impairment for water quality are based on average concentrations calculated separately from each of the mixing zones.	MVLWB # 16	Review	Yes
17.	Clarify the interpretation of “programs” for the Water Quality component as discussed in response to MVLWB Comment #19 in the next AEMP Design Plan Version 1.2 and discuss the moderate action level for toxicological impairment at the closure workshop.	MVLWB # 19	Review	Yes

Item	Commitment	Review Comment Reference	Resubmission Requirement	Workshop Topic
18.	Correct the footnote reference from (e) to (a) in Table 16-4.2 for Moderate Action Level and high action level for “Toxicity – Ecological Function Maintained” as per the response to comment.	MVLWB #25	Conformity	No
19.	Discuss the proposed changes to management response as “The response to the Moderate Action Level trigger may be to conduct a special study where sediment toxicity testing is undertaken at sites with the maximum concentrations, at selected stations farther away from the sites of maximum concentrations, and at selected stations in the reference lake”.	MVLWB # 27	Review	Yes
20.	Discuss the proposed change to the High Action Level Criteria for “Biological Components – Nutrient Response for the microcystin criteria to one or more rather than two or more as follows: “detectable microcystin concentrations at one or more stations in Snap Lake.”	MVLWB # 38	Review	Yes