



Mackenzie Valley Land and Water Board
7th Floor - 4922 48th Street
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

Staff Report

Applicant: De Beers Canada Inc.	
Location: Snap Lake, NT	File Number: MV2017D0032 and MV2019L2-0004
Date Prepared: May 31, 2019	Date of Board Meeting: June 6, 2019
Subject: Preliminary Screening Determination – April 2019 Renewal Application for Water Licence MV2019L2-0004 and the May 2019 Amendment Application for Land Use Permit MV2017D0032	

1. Purpose

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) an amended preliminary screening conducted to include the April 2019 Renewal Application for Water Licence (Licence) MV2019L2-0004 and the May 2019 Amendment Application for Land Use Permit (Permit) MV2017D0032, as submitted by De Beers Canada Inc. (De Beers) for the Snap Lake Project (Project).

2. Background

- February 2, 2001 – De Beers submitted Permit MV2001C0012 and Licence MV2001L2-0002 to the Board;
- May 14, 2001 – The Board met and determined that the proposed Project might be a cause for public concern and might have a significant adverse impact on the environment (as indicated in the Preliminary Screening);
- May 23, 2001 – The Board referred the Project to the Mackenzie Valley Environmental Impact Review Board (Review Board);
- July 24, 2003 – Review Board sent the Report of Environmental Assessment (EA01-004) to the Minister of Indian and Northern Affairs Canada (INAC);
- October 10, 2003 – Report of Environmental Assessment (EA01-004) signed by the Minister of INAC;
- November 24, 2003 – De Beers submits the consolidated project description for Permit MV2001C0012 and Licence MV2001L2-0002;
- December 23, 2003 – De Beers submits supplemental information for Permit MV2001C0012 and Licence MV2001L2-0002;
- April 27, 2004 – The Board submits a recommendation for approval of Licence MV2001L2-0002 to the Minister of INAC;
- May 5, 2004 – Permit MV2001C0012 issued by the Board;
- June 2, 2004 – Minister of INAC approves Licence MV2001L2-0002;
- June 4, 2004 – The Board issues Licence MV2001L2-0002;
- April 23, 2009 – The Board grants a two-year extension to Permit MV2001C0012;

- November 5, 2010 – De Beers submitted a new application; Permit MV2010D0053 (replaces Permit MV2001C0012);
- February 16, 2011 – The Board issues Permit MV2010D0053;
- June 8, 2011 – De Beers submits a renewal application; Licence MV2011L2-0004 (replaces Licence MV2001L2-0002);
- April 13, 2012 – The Board submits a recommendation for approval of Licence MV2011L2-0004 to the Minister of Aboriginal Affairs and Northern Development Canada (AANDC);
- May 23, 2012 – Minister of AANDC approves Licence MV2011L2-0004;
- May 25, 2012 – The Board issues Licence MV2011L2-0004;
- December 20, 2013 – De Beers submitted an amendment application to Licence MV2011L2-0004;
- January 22, 2014 – The Board refers the amendment application to Licence MV2011L2-0004 to the Review Board for an Environmental Assessment;
- April 15, 2014 – De Beers submits a new application; Permit MV2014D0010 (allow for an increase of fuel storage capacity);
- September 5, 2014 – Review Board sent the Report of Environmental Assessment (EA1314-02) to the Government of the Northwest Territories - Minister of Lands;
- October 31, 2014 – Report of Environmental Assessment (EA1314-02) signed by the Minister of Lands
- June 19, 2014 – The Board issues Permit MV2014D0010;
- January 21, 2016 – The Board grants a two-year extension to Permit MV2010D0053;
- August 25, 2017 – De Beers submits a new application; Permit MV2017D0032 (replaces Permits MV2010D0053 and MV2014D0010);
- October 12, 2017 – The Board issues Permit MV2017D0032;
- April 1, 2019 – De Beers submits a renewal application; Licence MV2019L2-0004 (replaces Licence MV2011L2-0004) and requested an exemption from preliminary screening, as per Section 1, Part 1, paragraph 2.1 of the *Mackenzie Valley Resource Management Act Exemption List Regulations*;
- April 12, 2019 – Review commenced of renewal application for Licence MV2019L2-0004;
- April 29, 2019 – De Beers submits an amendment application for Permit MV2017D0032 and requested an exemption from preliminary screening, as per Section 1, Part 1, paragraph 2.1 of the *Mackenzie Valley Resource Management Act Exemption List Regulations*;
- May 6, 2019 – De Beers submitted an updated amendment application for Permit MV2017D0032;
- May 8, 2019 – Review commenced of amendment application for Permit MV2017D0032;
- May 17, 2019 – Reviewer comments and recommendations due and received;
- May 30, 2019 – Responses to the preliminary screening due and received;
- **June 6, 2019 – Amended Preliminary Screening presented to the Board for decision;**
- June 13, 2020 – Expiry of Licence MV2011L2-0004; and
- October 11, 2022 – Expiry of Permit MV2017D0032.

3. Discussion

Project History

On February 2, 2001, De Beers submitted applications to the Board for a Type A Permit MV2001C0012 and Type A Licence MV2001L2-0002. The applications were to support the development of a 3,000 tonne per day underground diamond mine with an operating life of 22 years. The Project is approximately 220 kilometres northeast of Yellowknife, NT and situated on Snap Lake at the headwaters of the Lockhart River drainage system. Infrastructure included a camp complex (for up to 350 people), mining related buildings such as a process plant, a paste plant, an explosives factory, various storage buildings, a water treatment plant, waste disposal systems, a power plant, and an airstrip. Outside of the mine footprint, winter roads

would be constructed for access to the site, and an esker to be used for quarrying purposes. The Board conducted a Preliminary Screening (attached) and referred the Project to the Review Board on May 23, 2001.

On July 24, 2003, the Review Board sent the Report of Environmental Assessment (EA01-004) to the Minister of INAC recommending that the development proceed to the regulatory phase of approvals. On October 10, 2003 the Report of Environmental Assessment was signed by the Minister of INAC. Further discussion on the Review Boards Report of Environmental Assessment is discussed under the header of Environmental Assessment (EA01-004) below.

On November 24, 2003, De Beers submitted the consolidated project description for Permit MV2001C0012 and Licence MV2001L2-0002 to the Board. Additional supplemental information was submitted on December 23, 2003. The Board submits a recommendation for approval of Licence MV2001L2-0002 to the Minister of INAC on April 27, 2004 (approved on June 2, 2004 for a period of eight years) and issued Permit MV2001C0012 on May 5, 2004 (a two-year extension to Permit MV2001C0012 was granted by the Board on April 23, 2009).

De Beers submitted a new application, Permit MV2010D0053, to replace Permit MV2001C0012 which was issued by the Board on February 16, 2011 (a two-year extension to Permit MV2010D0053 was granted by the Board on January 21, 2016). It was determined that the application for Permit MV2010D0053 was [exempt from preliminary screening](#) as the scope of the proposed application was consistent with what was assessed under EA01-004.

De Beers submitted a renewal application, Licence MV2011L2-0004, to replace Licence MV2001L2-0002 which was issued by the Board on May 25, 2012 (after receiving approval from the minister) for a period of eight years. It was determined that the application for Licence MV2011L2-0004 was [exempt from preliminary screening](#) as the development was assessed under EA01-004 and the proposed application had not been modified.

On December 20, 2013, De Beers submitted an amendment application which proposed changes to the Effluent Quality Criteria, which were set as conditions in Licence MV2011L2-0004, for several parameters. On [January 22, 2014](#), the Board referred the amendment application to the Review Board for an environmental assessment.

On September 5, 2014, the Review Board sent the Report of Environmental Assessment (EA1314-02) to the Government of the Northwest Territories - Minister of Lands recommending that the development proceed to the regulatory phase of approvals. On October 31, 2014 the Report of Environmental Assessment was signed by the Minister of Lands. Further discussion on the Review Boards Report of Environmental Assessment is discussed under the header of Environmental Assessment (EA1314-02) below.

De Beers submitted a new application, Permit MV2014D0010, to allow for an increase of fuel storage capacity, which was issued by the Board on June 19, 2014 (a two-year extension to Permit MV2014D0010 was granted by the Board on January 21, 2016). It was determined that the application for Permit MV2014D0010 required a preliminary screening to address the increase in diesel fuel storage capacity and was subsequently [screened on June 19, 2014](#).

On August 25, 2017, De Beers submitted a new Permit MV2017D0032, to replace Permits MV2010D0053 and MV2014D0010 which was issued by the Board on October 12, 2017. It was determined that the application for Permit MV2017D0032 was [exempt from preliminary screening](#) as the development was assessed under EA01-004 (for Permit MV2010D0053) or was previously screened (for Permit MV2014D0010) and the proposed application had not been modified.

Table 1 lists the issuance dates, expiration dates, and Boards determination on preliminary screenings as a quick reference to the Projects history.

Table 1: Licence and Permit issuance dates, expiration dates, and preliminary screening determinations

Permit or Licence	Issuance Date	Expiry Date	Preliminary Screening Decisions
MV2001C0012	May 5, 2004	May 4, 2011 (2-year extension was granted)	May 2001 Screened
MV2001L2-0002	April 15, 2004	June 13, 2012 (60 day renewal was granted)	May 2001 Screened
Environmental Assessment (EA01-004) for MV2001C0012 and MV2001L2-0002 New Applications			
MV2010D0053 (replaces MV2001C0012)	February 16, 2011	February 15, 2018 (2-year extension was granted)	Application determined to be exempt from preliminary screening
MV2011L2-0004 (replaces MV2001L2-0002)	June 14, 2012	June 13, 2020	Application determined to be exempt from preliminary screening
Environmental Assessment (EA1314-02) for MV2011L2-0004 Amendment Application			
MV2014D0010	June 19, 2014	February 15, 2018 (2-year extension was granted)	June 19, 2014 Screened
MV2017D0032 (replaces MV2010D0053 and MV2014D0010)	October 12, 2017	October 11, 2022	Application determined to be exempt from preliminary screening

Project Closure

Snap Lake is no longer in Operations. Diamond mining ceased at the mine on December 4, 2015 when De Beers announced that the mine would be placed in temporary closure, also referred to as care and maintenance. Since that time, the mine has been managed in Extended Care and Maintenance. During Extended Care and Maintenance, De Beers evaluated options for the future of the mine, including:

- a) selling the mine to a competent buyer,
- b) continuing to manage the site in extended care and maintenance,
- c) re-opening the mine, or
- d) closing the mine.

While options were under consideration, De Beers continued to progressively reclaim and maintain the site, as per the Interim Closure and Reclamation plan and associated Extended Care and Maintenance Plan. Progressive reclamation activities undertaken included contouring and capping of portions of the North Pile, removal of equipment, temporary closure of the portals to the underground, decommissioning of the process plant and other activities. Once it was determined that De Beers would not be selling the mine and they would not be re-opening it, the underground was allowed to flood with groundwater. This allowed for the cessation of pumping of mine water to the surface for treatment and discharge to Snap Lake. In December of 2017, notification was given that De Beers intended to transition the mine from

Extended Care and Maintenance to closure, and that a Final Closure and Reclamation Plan would be prepared.

Description of Applications

The April 2019 Renewal Application for Licence MV2019L2-0004 and the May 2019 Amendment Application for Permit MV2017D0032 are to support the closure and post-closure phases of the Project. Various plans, programs, and reports were updated to account for the closure and post-closure phases including:

- i) Final Closure and Reclamation Plan
- ii) Aquatic Effects and Monitoring Program Re-evaluation Report
- iii) Aquatic Effects and Monitoring Program Design Plan
- iv) Water Quality Model Reports (Site and Downstream Lakes)
- v) Water Quantity Model Report (Site, Snap Lake, and Downstream Lakes)
- vi) Hydrodynamic and Water Quality Model Report
- vii) Effluent Quality Criteria Report
- viii) Engagement Plan
- ix) Spill Contingency Plan
- x) Emergency Response Plan
- xi) Waste Management Plan
- xii) Water Management Plan
- xiii) North Pile Management Plan
- xiv) Quality Assurance and Quality Control Plan

Closure activities will be focused to meet the closure objectives of the Interim Closure and Reclamation Plan and include the following highlights:

- The North Pile will be capped and contoured to channel water toward two constructed ponds.
- The collection sumps currently located around the North Pile will be modified to become drainage ditches to passively convey seepage and runoff water to the two influent storage ponds.
- Two wetlands will be constructed to passively treat the water from the influent storage ponds prior to discharge to Snap Lake.
- The existing infrastructure, including all buildings, will be demolished.
- Non-hazardous waste materials will be deposited in the landfill.
- Hazardous wastes will be shipped off-site.
- Roads and pads will be scarified, and priority areas will be revegetated.

Post-Closure will begin when closure activities are complete and active management of waste or water is no longer required. Post-closure activities will focus on monitoring and reporting. During the Post-Closure period, De Beers will respond to any issues detected with appropriate mitigation/maintenance activities.

Interim Closure and Reclamation Plan (ICRP)

On June 8, 2011 De Beers submitted the ICRP (Version 3.1) as part of their renewal application to Licence MV2011L2-0004 which was rejected by the Board on July 5, 2012. A work plan was created that outlined the process for the finalization of the closure objectives and ultimately the submission of an updated version of the ICRP (Version 3.2).

De Beers submitted their proposed closure objectives on August 5, 2012. Through the regulatory process, these objectives were revised and ultimately approved by the Board on November 22, 2012.

Table 2 lists the closure objectives for Site Wide (SW), North Pile (NP), Underground Mine (UG) and Infrastructure (I) mine components and as approved by the Board on November 22, 2012.

Table 2: Closure objectives for Site Wide (SW), North Pile (NP), Underground Mine (UG) and Infrastructure (I) mine components

Closure Objective
Site Wide
SW1 – Dust levels safe for people, vegetation, aquatic life and wildlife.
SW2 – Drainage pathways for surface runoff are physically stable.
SW3 – Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.
SW4 – Mine areas are physically stable and safe for use by people and wildlife.
SW5 – Landscape features (shape and vegetation) match aesthetics of the surrounding natural area.
SW6 – Safe passage and use for Caribou and other wildlife.
SW7 – Re-vegetation targeted to priority areas.
North Pile
NP1 – Prevent PK from entering the surrounding terrestrial and aquatic environment.
NP2 – Physically stable PK containment area to limit risk of failure that would affect safety of people or wildlife.
Underground Mine
UG1 – Flooding of the underground mine will have no impacts to aquatic habitat and community in source lakes.
UG2 – Underground mine should not contribute to the contamination of ground or surface water.
UG3 – Underground mine workings are physically stable.
Infrastructure
I1 – Prevent remaining infrastructure from contaminating land or water.
I2 – On-site disposal areas are safe for people, wildlife, and vegetation.
I3 – Contaminated soils and waste disposal areas that cannot contaminate land and water.

On July 29, 2013 De Beers submitted ICRP (Version 3.2) for Board approval. This version included the previously approved closure objectives, as well as proposed options and a reclamation research plan based on information gathered from reviewer’s comments, community meetings and a technical workshop. Preliminary closure criteria were also included for future review and refinement, incorporating input gathered from meetings. The Board approved the ICRP (Version 3.2), on January 30, 2014, as it incorporated the approved objectives, input gathered from community meetings, and the Closure Options Workshop. It was also noted that the ICRP (Version 4) would address closure options, criteria, and research plans as part of the next reiteration, which was due three years after the date of approval (January 30, 2017), as required by Part I, condition 1 of Licence MV2011L2-0004.

On September 23, 2016, the Board approved a one-year extension for the submission of the ICRP (Version 4), with a due date of January 30, 2018.

On December 14, 2017, De Beers submitted a letter notifying the Board they were preparing for the final closure of the Snap Lake Mine and requested they not file the ICRP (Version 4) but proposed to submit a Final Closure and Reclamation Plan (FCRP) in 2019 instead. On February 22, 2018, the Board deferred its decision on De Beers’ request to not file the ICRP (Version 4) until De Beers applied to amend Permit MV2017D0032. The Board amended Permit MV2017D0032 on June 20, 2018 and concurrently approved the FCRP submission deadline for January 30, 2019.

On December 21, 2018, De Beers submitted an extension request to the deadline of the FCRP to allow the internal review required to ensure proposed expenditures in the FCRP are approved. This internal review of the FCRP was scheduled for January – February 2019. As such De Beers requested an extension on the

submission deadline for the FCRP until March 29, 2019 to accommodate this internal review. On January 17, 2019, the Board approved the extension request.

Environmental Assessment (EA01-004)

On July 24, 2003, the Review Board released its Report of Environmental Assessment (EA01-004) which provided a brief description of the proposed development, for the development of the Snap Lake Mine, and an impact analysis that considered each of the environmental components (biophysical and socio-economic) that required to be examined.

The Review Board relied upon all of the information filed on the public record for the preparation of the Report of Environmental Assessment and Reasons for Decision, including the Preliminary Mine Closure and Reclamation Plan document submitted by De Beers (attached).

Environmental Assessment (EA1314-02)

On September 5, 2014, the Review Board released its Report of Environmental Assessment (EA1314-02) outlining the limited scope of development (to address an amendment to the water licence for the operation of an existing mine which is already fully regulated and which was the subject of an extensive EA process from 2001 to 2003), which included changes to Snap Lake and the downstream environment as a result of increasing amounts of Total Dissolved Solids and its constituent ions in the water and any effects of the associated activities, and amended measures (5 and 10) from the previous Report of Environmental Assessment (EA01-004).

Preliminary Screening

The Board conducted the most recent Preliminary Screening of the Project on June 19, 2014 (attached). Table 3 below outlines the scope of development, as it relates to closure, in EA01-004 (including the Preliminary Mine Closure and Reclamation Plan document), EA1314-02, the ICRP (Version 3.2), and the April 2019 Renewal Application and the May 2019 Amendment Application. Board staff have highlighted in green the components that have changed as a result of the April 2019 Renewal Application and the May 2019 Amendment Application; these are the components that require preliminary screening.

Table 3: Comparison of the Scope of Development, related to closure, in EA01-004, EA1314-02, the ICRP (Version 3.2), and the April 2019 Renewal Application and the May 2019 Amendment Application

Project Description				
Characteristic (closure activities)	EA01-004 Scope of Development	EA1314-02 Scope of Development	ICRP (Version 3.2)	April 2019 Renewal Application and May 2019 Amendment Application
North Pile	The final contours for the materials remaining in the North Pile after mine operations cease, were selected in order to minimize the visual intrusion of the facility. Page 210 of EA The final surface will be graded to produce	N/A	Will be progressively reclaimed during mine operations; the final condition of the North Pile will be covered with rock cover and a final elevation sloping southwest to northeast to promote runoff. Page 71 of ICRP Version 3.2	Will be capped and contoured to channel water toward two constructed ponds.

	<p>localized mounds consistent with the surrounding topography and to ensure that precipitation runoff water drains freely off the pile. Any material not required for maintenance will be contoured into the surrounding topography at the end of the closure phase.</p> <p>Page 5-8 of Preliminary Mine Closure and Reclamation Plan</p>			
Water Management Facilities	<p><i>Sediment Ponds, sumps, and ditches:</i></p> <p>Water from the North Pile will be collected in sumps and drainage ditches and will then be directed to settling ponds.</p> <p>Page 31 of EA</p> <p>Once the quality of surface runoff and seepage from the facility reaches acceptable discharge standards, the sump pumps, associated piping and infrastructure will be removed from the perimeter of the pile.</p> <p>Page 5-8 of Preliminary Mine Closure and Reclamation Plan</p> <p>Once North Pile has been successfully reclaimed and runoff water quality has reached acceptable discharge standards, ditches, sumps, and sedimentation ponds no longer required will be decommissioned and reclaimed. A cover non-PAG rock will be placed over the bottom of the</p>	N/A	<p>Once the North Pile has been successfully reclaimed and runoff water quality has reached acceptable discharge standards, ditches and sumps no longer required will be decommissioned and reclaimed. Non-PAG rock will then be used to refill the depressions. Recontouring will be done to re-establish natural drainage patterns and minimize the potential for erosion.</p> <p>Page 96 of ICRP Version 3.2</p>	<p>Currently located around the North Pile will be modified to become drainage ditches to passively convey seepage and runoff water to the two influent storage ponds.</p>

	<p>ponds to prevent erosion of any deposited sediment. Recontouring will be done to re-establish natural drainage patterns and minimize the potential for erosion.</p> <p>Page 5-9 of Preliminary Mine Closure and Reclamation Plan</p>			
	<p><i>Water Management Pond (WMP):</i></p> <p>Located next to the water treatment plant and will store excess water in case inflows exceed the water treatment facility's capacity or the treatment facility shuts down.</p> <p>Page 32 of EA</p> <p>After the water quality has been shown to meet discharge criteria, the two dams will be breached. Dam fill materials will be recontoured to blend with the natural topography and minimize the potential for erosion. The edges of the pond will be contoured to provide for the re-establishment of riparian vegetation.</p> <p>Page 5-9 of Preliminary Mine Closure and Reclamation Plan</p>	N/A	<p>The WMP will be drained and a layer of non-PAG rock placed over the bottom to prevent erosion of any fine sediment accumulated during operations. The two dams will be breached, and the fill materials will be recontoured to blend with the natural topography and minimize the potential for erosion. The edges of the pond will be contoured to provide for the re-establishment of riparian vegetation.</p> <p>Page 97 of ICRP Version 3.2</p>	<p>Two wetlands will be constructed to passively treat the water from the influent storage ponds prior to discharge to Snap Lake.</p>
Infrastructure	<p>The program included the construction of an on-site processing plant, a processed kimberlite containment facility, a power generating plant, a camp, an explosive storage facility, a freshwater intake system, and fuel storage and distribution facilities.</p>	N/A	<p>At closure no foreign materials (e.g., buildings, equipment, construction materials, etc.) will be visible at surface of the Project site.</p> <p>Page 7 of ICRP Version 3.2</p>	<p>A temporary camp to be used during demolition.</p> <p>All buildings and facilities will be removed from the site.</p>

	<p>Page 25 of EA</p> <p>Facilities to be dismantled and materials deposited to either the North Pile or shipped off-site.</p> <p>Pages 5-2 – 5-6 of Preliminary Mine Closure and Reclamation Plan</p>			
Non-hazardous waste	<p>The general disposal method for reclaimed materials is burial of all non-salvageable and inert solids in the North Pile.</p> <p>Page 215 of EA</p>	N/A	<p>Will be disposed in the local solid waste disposal area.</p> <p>Page 72 of ICRP Version 3.2</p>	Deposited in the landfill.
Hazardous wastes	<p>The general disposal method for salvageable and hazardous materials is off-site.</p> <p>Page 215 of EA</p>	N/A	<p>Removed off-site for disposal.</p> <p>Page 72 of ICRP Version 3.2</p>	Shipped off-site.
Roads, pads, and airstrip	<p>Roadway and the airstrip infrastructure would be dismantled, and the sites regraded to establish natural drainage patterns.</p> <p>Page 209 of EA</p>	N/A	<p>All earthen structures (e.g., roads, airstrip, pads, laydown areas and water control structures) will be regraded to re-establish natural drainage pathways and wildlife/human travel routes where possible. Revegetation activities will be completed at priority areas.</p> <p>Page 7 of ICRP Version 3.2</p>	Will be scarified, and priority areas will be revegetated.

North Pile Water Management System – Previous Closure Activities

The North Pile perimeter water control structures, comprised of ditches and sumps, intercept and collect runoff and seepage from the North Pile and contact water runoff from the surrounding area for pumping to the water management pond. The ditches were constructed to provide gravity flow to the sumps. The sumps have pumps that move the water to the water management pond and are dewatered on an as-needed basis during the open water season to maintain minimum practicable water levels. During the extended care and maintenance phase, the pumps in the sumps were removed just prior to the winter and will be reinstalled in April/May, prior to the spring freshet. All water from the North Pile is diverted to the water management pond and then treated, if required, at the water treatment plant and subsequent discharge into Snap Lake.

Final closure of the water management system was previously proposed to have all areas decommissioned, reclaimed, and recontoured to minimize the potential for erosion.

North Pile Water Management System – Proposed Closure Activities

The existing North Pile perimeter sumps will be re-graded to allow gravity drainage (Sump 1 → Sump 2 → Sump 3; and Sump 4 → Sump 5). Sump 3 and Sump 5 will then be substantially modified as they will form the influent storage ponds for the constructed wetlands (the water management pond will be repurposed and be integrated into one of the constructed wetlands). The influent storage ponds will discharge passively at a controlled rate to the wetlands, which will then discharge to Snap Lake.

In order to achieve the physical and chemical stability closure objectives and criteria, the final closure of the water management system is now being proposed to represent a permanent feature on the post closure landscape.

Board staff have updated the draft Preliminary Screening (attached) to reflect changes proposed in the April 2019 Renewal Application and the May 2019 Amendment Application and review comments regarding environmental and socio-economic concerns, along with mitigations, and is for the Board's consideration.

Engagement

An Engagement Record and Engagement Plan were included in with the April 2019 Renewal Application for Licence MV2019L2-0004 and the May 2019 Amendment Application for Permit MV2017D0032. De Beers noted they engaged with the following parties:

- Deninu Kue First Nation
- Lutsel K'e Dene First Nation
- North Slave Métis Alliance
- Yellowknives Dene First Nation
- Northwest Territory Métis Nation
- Tlicho Government
- Snap Lake Environmental Monitoring Agency

4. Comments

Not applicable.

5. Public Review

By May 17, 2019, comments and recommendations on the April 2019 Renewal Application for Licence MV2019L2-0004 and the May 2019 Amendment Application for Permit MV2017D0032 from nine reviewers:

- Environment and Climate Change Canada
- Fisheries and Oceans Canada
- Government of Northwest Territories (GNWT) – Environment and Natural Resources (ENR)
- GNWT – Lands, North Slave Region – Regional Superintendent
- GNWT – Lands, North Slave Region – Inspector
- GNWT – Lands, Securities and Project Assessment Division
- GNWT – Lands

- Snap Lake Environmental Monitoring Agency
- Board staff

Board staff indicated in the instructions for the public review that De Beers believed the April 2019 Renewal Application for Licence MV2019L2-0004 and the May 2019 Amendment Application for Permit MV2017D0032 were exempt from preliminary screening, as per Section 1, Part 1, paragraph 2.1 of the *Mackenzie Valley Resource Management Act Exemption List Regulations*. De Beers believed that the closure and post-closure were planned phases in the life of the Project that were included in the original Environmental Assessment. Board staff indicated that if reviewers had comments or recommendations on the possible exemption, to include them in their submission (including rationale) and that the Board would make a determination on June 6, 2019.

Specific comments and recommendations on the exemption from screening were submitted by GNWT – Lands, Securities and Project Assessment Division and Snap Lake Environmental Monitoring Agency. The Review Summary and Attachments (attached) presents the concerns identified through this review.

The following summarizes the comments received during the review:

The GNWT – Lands, Securities and Project Assessment Division was of the opinion that the proposed constructed wetlands system was new and its potential effects on the environment and effectiveness at treating contaminated water have not been assessed in either the original (EA01-004) or subsequent (EA1314-02) environmental assessments, nor was a part of any approved document related to closure and post-closure (e.g. the ICRP Version 3.2). As such, it was recommended that the MVLWB conduct a preliminary screening of the wetlands system proposed.

Snap Lake Environmental Monitoring Agency agreed that closure and post-closure activities were included in the original environmental assessment, but neither the wetlands nor their related infrastructure were. As such, they recommended that screening of the activities related to the construction and use of the water management structure be conducted.

In response to the comments received, De Beers submitted a letter on May 30, 2019 (attached) that provided further information and history of the site that would allow a preliminary screening to be conducted. De Beers also stated that, based on evidence submitted in the Permit Amendment and Licence Renewal Applications, and supporting documentation, the proposed activities would not have a significant adverse impact on the environment and that through their ongoing engagement activities, no public concern had been identified.

6. Security

Current security is in the amount of \$27,844,664 as per Part C, condition 1 and Schedule 1, condition 1 of Licence MV2011L2-0004 and in the amount of \$51,118,424.00 as per Condition 50 of Permit MV2017D0032.

Security will be reassessed during the Permit Amendment and Licence Renewal Applications.

7. Conclusion

Board staff conclude there are no outstanding issues or concerns with this submission.

8. Recommendation

Board staff recommend the Board **make a motion to approve the amended preliminary screening** for Land Use Permit MV2017D0032 and Water Licence MV2019L2-0004.

A draft decision letter is attached.

9. Attachments

- [May 14 2001 Preliminary Screening](#)
- [July 24, 2003 Mackenzie Valley Environmental Impact Review Board Report of Environmental Assessment \(EA01-004\)](#)
 - [Preliminary Mine Closure and Reclamation Plan](#)
- [June 19, 2014 Preliminary Screening](#)
- [September 2014 Mackenzie Valley Environmental Impact Review Board Report of Environmental Assessment \(EA13-14-02\)](#)
- [Water Licence Application Package](#)
 - [Final Closure and Reclamation Plan](#)
 - [Final Closure and Reclamation Plan - Appendix A: Glossaries](#)
 - [Final Closure and Reclamation Plan - Appendix B: Concordance Table](#)
 - [Final Closure and Reclamation Plan - Appendix C: Engagement](#)
 - [Final Closure and Reclamation Plan - Appendix D: Lessons Learned](#)
 - [Final Closure and Reclamation Plan - Appendix E: Summary of Research](#)
 - [Final Closure and Reclamation Plan - Appendix F: Financial Security](#)
 - [Final Closure and Reclamation Plan - Appendix G: Demolition Inventories and Site Closure Plans](#)
 - [Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 1](#)
 - [Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 2](#)
 - [Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 3](#)
 - [Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 4](#)
 - [Final Closure and Reclamation Plan - Appendix I: Risk Problem Formulation](#)
 - [Final Closure and Reclamation Plan - Appendix J: Revegetation Plan](#)
 - [Final Closure and Reclamation Plan - Appendix K: Geochemistry](#)
 - [Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 1](#)
 - [Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 2](#)
 - [Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 3](#)
 - [Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 4](#)
 - [AEMP Re-evaluation Report](#)
 - [AEMP Design Plan](#)
 - [Water Quality Model Report – Site](#)
 - [Water Quality Model Report - Downstream Lakes](#)
 - [Water Quantity Model Report - Site, Snap Lake, and Downstream Lakes](#)
 - [Hydrodynamic and Water Quality Model Report](#)
 - [Effluent Quality Criteria Report](#)
 - [Engagement Plan](#)
 - [Spill Contingency Plan](#)
 - [Emergency Response Plan](#)
 - [Waste Management Plan](#)
 - [North Pile Management Plan](#)

- [Quality Assurance and Quality Control Plan](#)
- [Water Management Plan - Updated](#)
- [Permit Amendment Application - Updated](#)
- Review Summary and Attachments
 - May 30, 2019 Response Letter from De Beers
- Draft Preliminary Screening
- Draft Decision Letter from the Board

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Angela Love", is enclosed in a rectangular box.

Angela Love
Regulatory Specialist

Review Comment Table

Board:	MVLWB
Review Item:	De Beers Canada Inc. - Snap Lake - Water Licence Renewal and Land Use Permit Amendment Application (MV2019L2-0004 and MV2017D0032)
File(s):	MV2017D0032 MV2019L2-0004
Proponent:	De Beers Canada Inc. - Snap Lake
Document(s):	Application Package (9121 KB) Final Closure and Reclamation Plan (11678 KB) Final Closure and Reclamation Plan - Appendix A: Glossaries (127 KB) Final Closure and Reclamation Plan - Appendix B: Concordance Table (179 KB) Final Closure and Reclamation Plan - Appendix C: Engagement (15902 KB) Final Closure and Reclamation Plan - Appendix D: Lessons Learned (271 KB) Final Closure and Reclamation Plan - Appendix E: Summary of Research (16 KB) Final Closure and Reclamation Plan - Appendix F: Financial Security (33534 KB) Final Closure and Reclamation Plan - Appendix G: Demolition Inventories and Site Closure Plans (20467 KB) Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 1 (72105 KB) Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 2 (93779 KB) Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 3 (80845 KB) Final Closure and Reclamation Plan - Appendix H: North Pile Closure Design - Part 4 (20352 KB) Final Closure and Reclamation Plan - Appendix I: Risk Problem Formulation (2034 KB) Final Closure and Reclamation Plan - Appendix J: Revegetation Plan (15406 KB) Final Closure and Reclamation Plan - Appendix K: Geochemistry (9642 KB) Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 1 (50756 KB) Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 2 (44648 KB) Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 3 (52352 KB) Final Closure and Reclamation Plan - Appendix L: Water Management Design - Part 4 (105983 KB) AEMP Re-evaluation Report (25671 KB) AEMP Design Plan (9442 KB) Water Quality Model Report - Site (71432 KB) Water Quality Model Report - Downstream Lakes (3519 KB) Water Quantity Model Report - Site, Snap Lake, and Downstream Lakes (2534 KB) Hydrodynamic and Water Quality Model Report (22327 KB) Effluent Quality Criteria Report (9054 KB) Engagment Plan (897 KB) Spill Contingency Plan (1946 KB) Emergency Response Plan (869 KB) Waste Management Plan (2216 KB) North Pile Management Plan (5905 KB) Quality Assurance and Quality Control Plan (4444 KB) DRAFT Work Plan V.1 (194 KB) Water Management Plan - Updated (1366 KB) Permit Amendment Application - Updated (3717 KB)
Item For Review Distributed On:	Apr 12 at 18:23 Distribution List
Reviewer Comments Due By:	May 17, 2019

Proponent Responses Due By:	June 3, 2019
Item Description:	<p>May 27 – Please note that De Beers has requested an extension to the proponent response deadline which has been granted by Board staff. The new deadline is now June 3, 2019 (with the noted exception to the responses on the preliminary screening which are still due May 30, 2019).</p> <p>May 8 – Please note that De Beers has submitted a Land Use Permit (Permit) Amendment Application for MV2017D0032 that supports the Water Licence (Licence) Renewal Application for MV2019L2-0004 received on April 1, 2019. De Beers is requesting to amend:</p> <ul style="list-style-type: none"> • Condition 1: to allow for a temporary camp to be located at a new location. <ul style="list-style-type: none"> ○ Existing Condition: <i>The Permittee shall use an existing campsite, as described in the complete application.</i> ○ Proposed Condition: <i>The Permittee shall locate all camps on Durable Land or previously cleared areas.</i> • Condition 50: to allow for an adjustment to the financial security and alignment with the planned activities associated with closure and post-closure phases of the Mine. <p>De Beers has also identified that the Licence MV2019L2-0004 Renewal Application included several updated management plans, initially distributed to reviewers on April 12, 2019, that apply to both the Licence and Permit. These include the:</p> <ul style="list-style-type: none"> • Final Closure and Reclamation Plan • Engagement Plan V.2 • Spill Contingency Plan V.4 • Waste Management Plan V.4 • North Pile Management Plan V.3 <p>De Beers has requested an exemption from preliminary screening, as per Section 1, Part 1, paragraph 2.1 of the Mackenzie Valley Resource Management Act Exemption List Regulations because the Proponent believes that the Closure and Post-closure are planned phases in the life of the Mine that were included in the original Environmental Assessment (EA1314-02) and the use of remote camps, both temporary and permanent were also included in the original Project Description and EA. If you have comments or recommendations on the possible exemption, please include them in your submission. INCLUDE RATIONALE. The Board will make a determination on the preliminary screening exemption on June 6, 2019.</p> <p>Reviewers are invited to submit comments and recommendations using the Online Review System (ORS) by the review comment deadline specified below. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the Permittee prior to submitting comments and recommendations.</p> <p>Please provide comments and recommendations on the documents listed above in the links below. Reviewers may also wish to consider providing an overarching recommendation regarding whether they are in support of the submission, to provide context for comments and recommendations and to assist the Board with its decision.</p> <p>All documents that have been uploaded to this review are also available on our public Registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.</p>

April 23 - Please note that De Beers has resubmitted the Water Management Plan V.4 to address a comment received about the legibility of the Tables in Appendix A of the Plan.

April 12 - De Beers Canada Inc. (De Beers) submitted a complete renewal application for a type A water licence. This Application is to renew De Beers' current Water Licence (Licence) MV2011L2-0004. The purpose of this Application is to support the closure and post-closure phases of the Snap Lake Mine. The Proponent has also requested an exemption from preliminary screening, as per Section 1, Part 1, paragraph 2.1 of the *Mackenzie Valley Resource Management Act Exemption List Regulations* because the Proponent believes that the Closure and Post-closure are planned phases in the life of the Mine that were included in the original Environmental Assessment (EA1314-02).

Reviewers are invited to submit comments and recommendations using the Online Review System (ORS) by the review comment deadline specified below. Notices of application for water compensation must also be submitted by the review comment deadline. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the proponent prior to submitting comments and recommendations.

Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, to provide context for the comments and recommendations and assist the Board with its decision.

Please provide comments and recommendations on the:

- Renewal Application Package:
 - Attachment 1: Record of Payment Water Licence Application Fee
 - Attachment 2: Site Plan to Scale
 - Attachment 3: Water Licence Application Form
 - Attachment 4: Draft closure water licence
 - Attachment 5: Engagement Record
- Final Closure and Reclamation Plan (included as separate documents):
 - Appendix A Glossaries
 - Appendix B Concordance Table
 - Appendix C Engagement
 - Appendix D Lessons Learned
 - Appendix E Summary of Research Program Status
 - Appendix F Financial Security Analysis Report
 - Appendix G Demolition Inventories and Site Closure Plans
 - Appendix H North Pile Closure Design
 - Appendix I Risk Problem Formulation
 - Appendix J Revegetation Plan
 - Appendix K Geochemistry Review
 - Appendix L Water Management Design
- AEMP Re-evaluation Report
- AEMP Design Plan
- Water Quality and Quantity Model Report:
 - Quality - Site
 - Quality - Downstream Lakes
 - Quantity - Site, Snap Lake and Downstream Lakes
- Hydrodynamic and Water Quality Model Report
- Effluent Quality Criteria Report
- Engagement Plan
- Spill Contingency Plan

- Emergency Response Plan
- Waste Management Plan
- Water Management Plan
- North Pile Management Plan
- QA/QC Plan
- Draft Work Plan

A draft work plan for this Application has been developed by Board staff. Board staff are requesting your comments on the draft work plan by **April 23, 2019**. Comments on the draft work plan should be submitted by email to Angela Love at angela.love@mvlwb.com.

De Beers has included a draft licence for review. The purpose of this draft Licence is to allow parties to comment on possible conditions. These draft materials are not intended to limit in any way the scope of parties' comments. The Board is not bound by the contents of the draft Licence and will make its decision at the close of the proceeding on the basis of all the evidence and arguments filed by all parties.

De Beers believes the Application is exempt from a preliminary screening in accordance with the *Preliminary Screening Exemption List Regulations and Exemption List Regulations*. If you have comments or recommendations on the possible exemption, please include them in your submission. **INCLUDE RATIONALE**. The Board will make a determination on the preliminary screening exemption on June 6, 2019.

All documents that have been uploaded to this review are also available on our public Registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.

General Reviewer Information:

In addition to the email distribution list, the following organizations received review materials by fax:

Northwest Territory Métis Nation; Tim Heron; NWTMN IMA Coordinator; (867) 872-3586; rcc.nwtmn@northwestel.net

Contact Information:

Angela Love 867-766-7456
 Jacqueline Ho 867-766-7455
 Jen Potten 867-766-7468
 Shannon Allerston 867-766-7465

Comment Summary

GNWT - Lands: Marie-Christine Belair				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
2	General File	<p>Comment (doc) Cover letter - GNWT-SPA comments</p> <p>Recommendation</p>		
1	Preliminary Screening	<p>Comment The GNWT-SPA believes the proposed constructed wetlands system described on p.5-31 of the Final Closure and Reclamation Plan (FCRP), also called water conveyance systems (p. 5-23) or passive water management alternatives (p. 5-24), has not been assessed under the original (EA01-004) or subsequent (EA1314-02) environmental assessments. Although closure and reclamation was assessed during the original Snap Lake environmental assessment (EA01-004), the proposed constructed wetland system is new and its potential effects on the environment and effectiveness at treating contaminated water have not been assessed. The proposed constructed wetland system is also not part of any approved document related to closure and post-closure (e.g., the Interim Closure and Reclamation Plan [ICRP] v.3.2). Finally, components associated with the proposed constructed wetland system that were planned to be reclaimed in approved documents related to closure and post-closure (e.g., Appendix III.11 of the Developer's Assessment Report, ICRP) are to remain in the environment indefinitely under the FCRP. For example, the water management pond (WMP) and sumps were planned to be reclaimed in approved documentation but under the FCRP, the WMP and sumps 3 and 5 would be repurposed in a wetland and influent storage ponds that would remain indefinitely in the environment. This keeping of components of the proposed wetland system on the land indefinitely was also not assessed during the original Snap Lake environmental assessment, nor has it been approved as part of any approved document related to closure and post-closure.</p> <p>Recommendation It is unclear from the FCRP if the proposed constructed wetlands system will be needed or not. The GNWT-SPA recommends that if DeBeers intends to proceed with the wetland system as a method of treating water, the Board conduct a preliminary screening of the wetlands system proposed in the FCRP.</p>		

Snap Lake Environmental Monitoring Agency - SLEMA: Sonia Aredes

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
17	Preliminary Screening	<p>Comment SLEMA agrees that Closure and Post-closure activities were included in the original Environmental Assessment (EA1314-02), but wetlands and their related infrastructure (influent storage ponds and NP water management structures) that will require extensive blasting were not evaluated during the EA.</p> <p>Recommendation Recommends screening of the activities related to the construction and use of the PTS (wetlands, influent storage ponds and North Pile water management structure)</p>		



Angela Love
Regulatory Specialist
Mackenzie Valley Land and Water Board
P.O Box 2130
4922 - 48th Street
7th Floor YK Centre Mall
Yellowknife, NT X1A 2P6

MAY 14 2019

VIA ONLINE REVIEW SYSTEM (ORS)

Ms. Angela Love:

Government of the Northwest Territories - Department of Lands', Securities and Project Assessment Division's comments on De Beers Canada Inc. - Snap Lake - Water Licence Renewal Application (MV2019L2-0004)

The Government of the Northwest Territories' (GNWT) Department of Lands', Securities and Project Assessment Division (the Division) is pleased to provide comments on De Beers Canada Inc. - Snap Lake - Water Licence Renewal Application (MV2019L2-0004) in response to the Mackenzie Valley Land and Water Board's (the Board) request for comments on the need for preliminary screening.

After review and discussion with staff from the Departments of Lands and Environment and Natural Resources, the Division believes the proposed constructed wetlands system described in the Final Closure and Reclamation Plan has not been assessed under previous environmental assessments. Closure and reclamation was assessed as part of the original Snap Lake environmental assessment (EA01-004). However, the proposed constructed wetland system was not included in the original environmental assessment and its potential effects on the environment and effectiveness at treating contaminated water have not been assessed. The proposed constructed wetland system is also not included in any approved document related to closure and post-closure and was also not assessed in the Snap Lake water licence amendment environmental assessment (EA1314-02).

.../2

It is also unclear from the Final Closure and Reclamation Plan if the proposed constructed wetlands system will be needed or not. The Division recommends that if DeBeers intends to proceed with the wetland system as a method of treating water, the wetlands system proposed in the Final Closure and Reclamation Plan as part of the Water Licence Renewal Application (MV2019L2-0004) not be exempted from preliminary screening, i.e. the Board should conduct a preliminary screening of the proposed wetlands system.

I trust that this information is helpful. If the Board has any questions or concerns, please contact Marie-Christine Belair, Project Assessment Analyst, at Marie-Christine_Belair@gov.nt.ca or (867) 767-9180 ext. 24025 or me at Lorraine_Seale@gov.nt.ca or (867) 767-9180 ext. 24020.

Sincerely,



Lorraine Seale
Director
Securities and Project Assessment
Lands

Attachment: comments in ORS format

c Nathen Richea
Director - Water Resources
Environment and Natural Resources

Scott Stewart
Regional Superintendent - North Slave
Lands

DE BEERS GROUP

May 30, 2019

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor, 4922 48th St.
PO Box 2130, Yellowknife, NT
Canada | X1A 2P6

Dear Ms. Love:

Re: Water License (MV2019L2-0004) Application and Final Closure and Reclamation Plan

On 29 March 2019, De Beers Canada Inc. (De Beers) submitted for review the Final Closure and Reclamation Plan (FCRP) and an application for a renewed water license and amended land use permit to support the closure and post-closure phases of the Snap Lake Mine (the Mine). On 12 April 2019, the Mackenzie Valley Land and Water Board (MVLWB) invited reviewers to submit comments on the application. On 17 May 2019, 462 comments and recommendations were received on the application but two (GNWT-SPA ID 1 and SLEMA ID 17) were specific to screening of selected activities included in the FCRP and Type A renewal application. This letter is in response to these two recommendations.

De Beers has provided comprehensive information in the Type A Water Licence (Type A) renewal application and Final Closure and Reclamation Plan (FCRP) to support the MVLWB in completing the screening step. The purpose of a screening is "to determine and report to the Review Board whether, in its opinion, the development might have a significant adverse impact on the environment or might be a cause of public concern" (MVRMA, s. 125). De Beers provided evidence in the Type A renewal and FCRP application, which includes the constructed passive wetland treatment system, to confirm that there will not be a significant adverse impact on the environment from the final closure of Snap Lake Mine. In addition, De Beers has engaged in ongoing communications and engagement with the Public, describing the FRCR in detail, and cause for public concern has not been identified.

The Government of Northwest Territories, Department of Lands, Securities and Project Assessment Division (GNWT-SPA) and the Snap Lake Environmental Monitoring Agency (SLEMA) stated in their recommendation submission that the constructed wetland, proposed as part of the final closure and final water management for the site, was not discussed in the

De Beers Canada inc.

1601 Airport Road NE Suite 300 Calgary Alberta T2E 6Z8
Tel + 1 403 930 0991 | www.debeersgroup.com/canada | info.canada@debeersgroup.com
Incorporated in Canada | Registration number 889569596

A member of the Anglo American plc group

DE BEERS GROUP

previous environmental assessments. However, passive water treatment has been presented and discussed with the public including during previous public presentations since at least 2017 (De Beers 2017).

A constructed wetland was not part of the original conceptual design, but these engineering design details change over time. When a concept design is proposed in an environmental assessment, all efforts are to put forward as much detail as possible and to consider as many options as possible; however, at the time of the initial application, some technologies may not be developed or may not be developed to a practical technology readiness level. In addition, as a site evolves, and monitoring data becomes available, in addition to improvements in technology, different designs become the preferred option. If the newly preferred design will result in similar or less residual effects than previously assessed, a subsequent assessment is not required and only approval for a modification should be required. There is precedence for the MVLWB to approve modifications to plans. For example, the MVLWB approved the installation and use of a second permanent diffuser (MVLWB 2013) and approved the installation and use of a reverse osmosis water treatment plant (MVLWB 2018) without the need for an environmental assessment for Snap Lake Mine. The detailed designs included in the FCRP and Type A fall into the same category as the modification for a second diffuser or additional water treatment. The key aspect for consideration is that the passive wetland in the closure design is expected to improve surface water management and water quality drainage into Snap Lake.

The temporal scope of the previous environmental assessments for Snap Lake Mine (EA01-004 and EA1314-02) included operations, closure, and post-closure. The first environmental assessment for Snap Lake Mine (EA01-004) considered re-contouring of the landscape with ponds to encourage riparian vegetation for closure. De Beers specifically considered and included re-contouring of the landscape and establishment of ponds to promote terrain stability and to approximate a pre-disturbance profile, including contouring the edges of ponds to provide the re-establishment of riparian vegetation. Ponds with surrounding riparian vegetation are a form of wetland (also known as shallow water wetlands). The subsequent environmental assessment (EA1314-02) focussed specifically on modifications to measures from the first environmental assessment and specifically to revised effluent discharge criteria and in-lake site-specific water quality objectives but to levels that would not result in significant adverse effects to the aquatic environment.

The first assessment (EA01-004) considered but discounted options for disposal of treated sewage to the adjacent wetlands and alternative secondary treatments of effluent by reverse osmosis (De Beers 2002, Section 2.5). As part of construction and early operations, treated sewage was discharged to a wetland near the north arm of Snap Lake (former SNP1735-11; De Beers 2006); this continued until the water treatment plant was operational.

DE BEERS GROUP

Since completion of the environmental assessments, specific engineering designs for closure have been developed based on site conditions and advances in closure planning. As a result, De Beers has included a refinement on the re-contouring activities for the site (as described in the 2002 environmental assessment) in the FCRP. This refinement includes the proposed constructed wetland, which provides the added benefit of ongoing passive treatment of surface drainage from the reclaimed site to meet the closure goal of “returning the mine site and affected areas to viable, and where practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities” (FCRP, Section 5.2). The constructed wetlands, in conjunction with the other facilities for closure, will reduce the influence of the former Snap Lake Mine on the environment to allow a self-sustaining ecosystem on the affected footprint area to return.

De Beers would like to emphasize that a larger North Pile, longer life of mine, and greater volumes of mine water, as well as the closure of the mine were assessed in previous Environmental Assessments. The earlier assessments assumed operations would extend for 22 years. The Snap Lake Mine was in operations for eight years (2008 to 2015) and then went into an extended care and maintenance phase starting in December 2015 to present. Both of the completed assessments considered a much longer life of mine, with much larger volumes of deposited waste, increased nitrate loadings, and overall a worse-case scenario than what actually occurred.

De Beers is not requesting to extend the disturbance footprint through closure or requesting to deposit waste in a different location. The environmental assessment of the Snap Lake Mine was conducted on a local study area of 1,407 ha (including a 500 m buffer). It was assumed that an area of 559.5 ha of the LSA would be lost or altered as a result of the Project (MVEIRB, 2003). Construction and operation of the Snap Lake Mine has disturbed about 188 hectares of vegetation (FCRP, Section 1.2).

Closure activities such as quarrying, shaping, capping, revegetating, re-contouring of sumps, ponds and ditches, demolition and revegetation were all included as part of the Environmental Assessment. Even with the construction of the wetland, the overall footprint will remain below the original predictions and within the bounds of the assessed effects. Potential impacts related to construction of the wetland can be mitigated, and the addition of the wetland are predicted to result in environmental net benefits.

The FCRP describes closure measures selected to take place during the Closure phase, such as decommissioning, demolition, land forming and revegetation activities, which will transition the site from active management to passive long term care. Residual effects from the operation of the Mine are expected as closure activities are being completed; a detailed assessment of the potential residual effects during closure was completed as part of the EAR (De Beers 2002). A summary of these predicted residual effects is provided in Section 5.4 of the FCRP. To minimize

DE BEERS GROUP

the predicted residual effects, closure criteria and objectives, along with monitoring plans and associated action levels and adaptive management were developed as part of the closure and reclamation planning process.

In 2018, water quality concentrations in and downstream of Snap Lake were less than site-specific water quality objectives, established by the MVLWB to make sure that Snap Lake Mine achieved two Measures from EA1314-02: to mitigate significant adverse effects to the environment and to traditional land use. Through consistently meeting these SSWQO and monitoring the aquatic communities in Snap Lake, the aquatic ecosystem function in Snap Lake has not been adversely affected by the Mine, the fish are safe to eat, and the water is safe to drink (De Beers 2019). The FCRP and Type A application included updated water quality predictions that demonstrated water quality will only improve with the implementation of the planned closure activities, which includes the constructed wetland.

Further, the FCRP, included a detailed characterization of the Mine site, identification of constituents of potential concern (COPCs), identification of relevant biological receptors, and identification of exposure pathways (e.g., air, soil, water) between the COPCs and receptors (Appendix I). This assessment comprised a problem formulation process, the first step in a human health and ecological risk assessment. It concluded that in closure the risk of ecological receptors being exposed to a level of contaminant that could adversely affect aquatic and terrestrial life is low. Overall, the impact of the activities outlined in the FCRP, which includes the constructed wetlands, will remain positive for the environment and traditional use.

As described above, De Beers has provided sufficient information for the MVLWB to conduct their preliminary screening. De Beers provided evidence in the Type A renewal and FCRP application, which includes the constructed passive wetland treatment system, to confirm that there will not be a significant adverse impact on the environment from the final closure of Snap Lake Mine.

We trust this information will meet the needs, but should you require further information or have any questions or concerns, please feel free to contact me by phone at (403)-464-2596 or by email at colleen.prather@debeersgroup.com.

Sincerely,



Colleen Prather, Ph.D., P.Biol.
Regulatory Specialist

cc: Sarah McLean

DE BEERS GROUP

Michelle Peters
Sean Whitaker

References:

De Beers (De Beers Canada Inc.) 2002. Developer's Environmental Assessment Report, Snap Lake Diamond Project. Submitted to the Mackenzie Valley Environmental Impact Review Board. February 2002.

De Beers 2006. 2005 Annual Report in Support of the Aquatic Effects Monitoring Program. Snap Lake Project. March 2006.

De Beers 2014. Type A Water Licence (MV2011L2-0004/EA1314-002) Amendment Application, Supplemental Filings. April 2014.

De Beers 2017. Snap Lake Mine, 2017 Community Update. May 2017.

<http://registry.mvlwb.ca/Documents/MV2011L2-0004/MV2011L2-0004%20-%20De%20Beers%20Snap%20Lake%20-%20Closure%20Workshop%20Presentation%20-%20Working%20Group%207%20-%20May29-17.pdf>

De Beers 2019. Snap Lake Mine, Aquatic Effects Monitoring Program, 2018 Annual Report. Type A Water Licence MV2011L2-0004. May 2019.

MVEIRB (Mackenzie Valley Environmental Impact Review Board) 2003. EA01-004 Report of the Environmental Assessment and Reasons for Decision on the De Beers Snap Lake Diamond Project

MVLWB (Mackenzie Valley Land and Water Board) 2013. Staff Report for Installation of Second Permanent Diffuser. August 29, 2013.

MVLWB 2018. Modification to Main Water Treatment Plan – Accepted. February 13, 2018.