

Staff Report

Applicant: De Beers Canada Inc.	
Location: Snap Lake, NT	Application: MV2011L2-0004
Date Prepared: June 14, 2016	Meeting Date: June 22, 2016
Subject: Extended Care and Maintenance Plan and SNP Update Request	

1. Purpose/Report Summary

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) the De Beers Canada Inc. (De Beers) Extended Care and Maintenance Plan for the Snap Lake Mine, in accordance with Section 7 of the Interim Closure and Reclamation Plan (Version 3.2) which is required as part of Part I, item 1 of Water Licence (Licence) MV2011L2-0004. A request to update the Surveillance Network Program (SNP) relating to the Extended Care and Maintenance Plan is also presented.

2. Background

- January 30, 2015 – Board approves the Interim Closure and Reclamation Plan (version 3.2);
- December 4, 2015 – De Beers submits notification of suspension of operations;
- December 7, 2015 – Care and maintenance meeting with Government of the Northwest Territories (GNWT) - Inspectors and Board staff;
- December 8, 2015 – Care and maintenance meeting with De Beers, GNWT - Inspectors and Board staff;
- December 22, 2015 – Care and maintenance follow-up meeting with De Beers;
- January 8, 2016 – Care and Maintenance Plan submitted;
- January 14, 2016 – Care and Maintenance Plan sent out for review;
- February 15, 2016 – Working group meeting with Board staff, reviewers and De Beers;
- February 24, 2016 – Review comments due;
- March 9, 2016 – Responses due;
- March 31, 2016 – Care and Maintenance Plan approved by the Board;

- April 20, 2016 – Extended Care and Maintenance Plan (including SNP update request) submitted;
- April 20, 2016 – Extended Care and Maintenance Plan sent out for review;
- May 5, 2016 – Working group meeting with Board staff, reviewers and De Beers;
- May 26, 2016 – Review comments due for Extended Care and Maintenance Plan;
- May 31, 2016 – Review comments due for SNP request;
- June 2, 2016 – Responses on Extended Care and Maintenance Plan due;
- June 7, 2016 – Responses on SNP request due; and
- **June 22, 2016 – Extended Care and Maintenance Plan, including updates to the SNP, presented to the Board.**

3. Discussion

Interim Closure and Reclamation Plan (version 3.2)

On January 30, 2015, the Board approved the Interim Closure and Reclamation Plan (version 3.2) (ICRP) submitted to fulfill Part I, item 1 of Licence MV2014L2-0004. Section 7 of the ICRP addressed temporary closure whereby a 'specific temporary closure schedule' needs to be developed upon entering temporary closure or a care and maintenance phase.

Suspension of Operations and Care and Maintenance Plan

On December 4, 2015, De Beers provided notification of the suspension of operations at the Snap Lake Mine (attached).

On January 8, 2016, De Beers submitted a Care and Maintenance Plan to the Board, which included a temporary closure schedule. De Beers explained that the scope of activities to be undertaken during the care and maintenance phase will be in compliance with their existing authorizations.

Extended Care and Maintenance Plan

On April 20, 2016, De Beers submitted an Extended Care and Maintenance Plan, for Board approval (attached). This plan proposes the flooding of the mine workings and suspension of associated dewatering operations in order to minimize environmental impacts and reduce costs, with the goal of future re-opening. This also included updates to the SNP.

During the extended care and maintenance period De Beers will continue to assess the Snap Lake Mine for: 1) Reopening; 2) Further optimization of extended care and maintenance activities (i.e. Passive Water Treatment); 3) Sale to a qualified operator; or 4) Final closure.

Meetings

Since receiving the notice of suspension of operations, Board staff have been in discussions with De Beers regarding the care and maintenance phase of the mine, and the impact that it may have on regulatory requirements.

On May 5, 2016, Board staff hosted a working group meeting with reviewers and De Beers to foster an open discussion on the Extended Care and Maintenance Plan, prior to the review comment deadline. De Beers' presentation and Board staff's meeting summary notes are attached. Snap Lake Environmental Monitoring Agency (SLEMA) recommended that the SNP portion of the Extended Care and Maintenance Plan be reviewed separately in order for reviewers to have a specific review in which to focus their comments and recommendations.

4. Comments

Not applicable.

5. Reviewer Comments

As requested by reviewers at the May 5, 2016 working group meeting, the Extended Care and Maintenance Plan and the associated update to the SNP were split into two separate reviews.

By May 26, 2016, comments and recommendations on the Extended Care and Maintenance Plan were received from the following reviewers:

- GNWT – Environment and Natural Resources;
- Snap Lake Environmental Monitoring Agency;
- Environment and Climate Change Canada; and
- Tlicho Lands Protection Department.

De Beers responded on June 2, 2016.

By May 31, 2016, comments and recommendations on the associated SNP portion of the Extended Care and Maintenance Plan were received from the following reviewers:

- GNWT – Environment and Natural Resources;
- Snap Lake Environmental Monitoring Agency; and
- GNWT Inspector.

De Beers responded on June 7, 2016.

The reviewer comment summary tables (attached) presents the concerns identified through both reviews.

6. Security

The GNWT currently holds \$39,066,247.00 in reclamation security for the Snap Lake Mine for this Licence.

7. Conclusion

The Extended Care and Maintenance Plan addresses the temporary closure information requirements set out in MVLWB/AANDC's *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. However, the Plan – as submitted, does not address all of the concerns that were raised during the review.

The SNP request, including suggestions made during the review, supports the Extended Care and Maintenance Plan activities.

8. Recommendation

Extended Care and Maintenance Plan

Board staff recommends the Board approve the Extended Care and Maintenance Plan as an interim plan, and require the submission of a revised version. This revised Plan shall include the updates identified by reviewers and identified in the attached draft decision letter. The revised Plan would be reviewed by Board staff to ensure conformance with the decision letter.

SNP update

Board staff recommends the Board approve the attached draft SNP update that reflects the request and comments submitted during the review period.

9. Attachments

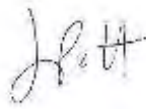
- [Current Water Licence](#), February 18, 2016
- [De Beers' Notification of Suspension of Operations, December 4, 2015](#)
- [Extended Care and Maintenance Plan, April 20, 2016](#)
- [De Beers' May 5, 2016 Working Group Presentation](#)
- [Summary notes from May 5, 2016 working group meeting](#)
- Reviewer Comment Summary Tables:
 - Extended Care and Maintenance Plan
 - SNP update request
- Draft updated Water Licence
- Draft Decision letters:
 - Extended Care and Maintenance Plan
 - SNP update request
- Draft Reasons for Decision:
 - Extended Care and Maintenance Plan
 - SNP Update

Respectfully submitted,



Kierney Leach
Regulatory Officer

Reviewed by,



Jen Potten
Regulatory and Office Manager

Reviewed by,



Rebecca Chouinard
Regulatory & Technical Director

Review Comment Table

Board:	MVLWB
Review Item:	De Beers Snap Lake - SNP requested changes Table
File(s):	MV2011L2-0004
Proponent:	De Beers Canada Inc. - Snap Lake
Document(s):	De Beers Snap Lake - SNP changes Table (96 KB)
Item For Review Distributed On:	May 9 at 12:59 Distribution List
Reviewer Comments Due By:	May 31, 2016
Proponent Responses Due By:	June 7, 2016
Item Description:	<p>It was requested during the May 5, 2016 Snap Lake Working Group Meeting, that a separate ORS item be created in order for reviewers to direct their comments on the Surveillance Network Program changes in a separate location. Thus, <i>'Table 4: De Beers Snap Lake Mine SNP- Requested Frequency Changes with Rationale'</i> has been copied from the Extended Care and Maintenance Plan review item, and made into an independent review item.</p> <p>Reviewers are invited to submit comments and recommendations relating to the Surveillance Network Program requested changes using the Online Review System by downloading the excel comment table or comment table or using the "add comment" button.</p> <p>For all other comments and recommendations relating to the Extended Care and Maintenance Plan, or any other Plans for review, please direct your comments accordingly. Other supplementary information on the Surveillance Network Program can be found in the: Extended Care and Maintenance Plan; Water Management Plan; and, AEMP Design Plan.</p> <p>If you have any questions or comments regarding this update or using the Online Review System, please contact Kierney Leach at 867-766-7470 or kleach@mvlwb.com.</p>

General Reviewer Information:	This information has also been distributed by fax to:
	Fort Resolution Métis Council Trudy King fax: (867)394-3322; Fieldworker.frmc53@northwestel.net
	Hay River Metis Council Karen Lafferty President fax: (867)874-4472; hrrmc@northwestel.net
Contact Information:	NWT Metis Nation Tim Heron NWTMN IMA Coordinator fax: (867)872-3586; rcc.nwtmn@northwestel.net
	Angela Love 867-766-7456 Jen Potten 867-766-7468 Kierney Leach 867-766-7470

Comment Summary

GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
2	General File	Comment (doc) ENR Comments Recommendation		
1	SNP Changes - ECM	Comment De Beers has proposed a number of changes to their SNP sampling program for their Extended Care and Maintenance period. ENR supports the majority of these changes with the exception of the proposed change to SNP02-21 Snap Lake Outlet to only a one time September sample. De Beers has proposed to remove the sample at the Snap Lake Outlet for April/May. ENR is concerned that the removal of spring sampling will result in less input into water quality modeling and result in less	June 3: The design of the proposed SNP monitoring for 02-21 was to sample and monitor in lake during the period that the mine would be actively discharging. Sampling under ice would not be reflective of a discharge scenario as no discharge would be occurring for approximately 6-8 months and the lake would be more influenced by regional flows and run off.	Acceptable response.

confidence in predictions related to the downstream, e.g. Mackay Lake. It is this sampling period that captures spring freshet and the surge of water that moves through Snap Lake into the downstream environment. In an email to the GNWT on May 16th, 2016, De Beers stated that they believe a single sample at the end of the discharge season would capture "worst case" water quality. ENR is not confident that "worst case" water quality will occur during the season as some parameters may be more concentrated during the high or low dilution periods (i.e. freshet and under ice). Should De Beers insist in the removal of this sample period, additional evidence should be provided detailing how its removal will not adversely affect confidence levels associated with downstream water quality modeling predictions.

Recommendation ENR recommends that the current sampling frequency at SNP 02-21, the outlet of Snap Lake, remain unchanged, to capture seasonal variation in water quality at this location and provide additional confidence to predictions related to water quality modeling for the downstream.

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
1	Discharge Pre-Approval	<p>Comment In a flooded underground mine scenario the Snap Lake Mine will no longer be continuously discharging effluent into the Snap Lake. After extended periods of time between pumping and sampling events during Care and Maintenance the current SNP has no provisions to ensure that the water coming from the mine will be compliant with Water Licence conditions before discharging into Snap Lake.</p> <p>Recommendation In addition to the sampling requirements proposed in the Extended Care and Maintenance SNP, the Inspector recommends that at least 2 weeks prior to mine water being discharged into Snap Lake a water sample be taken from the source and analyzed for all regulated parameters and the results be submitted to the Inspector for approval to discharge. This will allow for an examination of the results to determine compliance with discharge criteria outlined in the Water Licence. Sampling can then continue at the prescribed 6 day frequency throughout the discharge period. This approach to pre-approving water discharge is a standard condition in many water licenses in the NWT.</p>	<p>June 3: De Beers agrees with the sampling proposed by the Inspector, so long as the lake is safe to sample prior to discharge.</p>	<p>De Beers has verbally confirmed that during the proposed Plan for the Extended Care and Maintenance period, all water being pumped will first go through the Water Treatment Plant before being discharged into Snap Lake.</p> <p>De Beers also confirmed that this Plan is not requesting approval for any remote monitoring or passive treatment options, and only included that information to make readers aware of potential future plans.</p> <p>Thus, the existing sampling frequency requirements at SNP 02-17b station are sufficient.</p>

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
1	General File	Comment (doc) SLEMA Comments Recommendation		
2	In general	Comment De Beers did not propose to reduce the sampling frequency of SNP 02-18 and 02-20. Water quality of the main body in Snap Lake will be closely monitored as usual. It is justifiable to reduce the sampling frequency if there are no flows or there are no operations at the mine site, during the period of Extended Care and Maintenance. There are no concerns on De Beers' proposal except for SNP 02-01 Recommendation None	June 3: Sampling at SNP 02-18 and 02-20 would be completed only when discharge is occurring. As such sampling will be reduced at these stations as discharge would not be occurring every month and quarter.	Acceptable response.
3	SNP 02-01 Final Minewater Collection Sump, Underground	Comment During the Extended Care and Maintenance, underground workings will be flooded. De Beers proposed less frequent sampling schedule, i.e. sampling only during active pumping operations. Sampling only during active pumping operations means that minewater samples will be barely taken, thus there may be no minewater quality data for review. Minewater quality data is needed to confirm that minewater is not polluted by hydrocarbon and other contaminants. Recommendation It is recommended that De Beers take monthly samples for minewater during flooding process, and annual samples	June 3: Monthly sampling at SNP-02-01 is unnecessary during flooding as the mine water will no longer be discharged. Sampling in the underground during flooding would not constitute a safe practice. Samples will be collected if necessary to be used for modeling and/or to confirm homeostasis during the care and maintenance period.	Acceptable response.

		after the water level within the mine will reach homeostasis (~16-18 m from the surface openings).		
4	SNP 02-01 Final Minewater Collection Sump, Underground	<p>Comment The current location of SNP 02-01 is in the Water Treatment Plant as indicated in the Monthly SNP Monthly Reports. It is acceptable during mining operation period and dewatering period of Care and Maintenance, because minewater sample taken at the entry of WTP should be the same as the one in the underground sump. During Extended Care and Maintenance, minewater quality monitoring will be different from the current sampling practice. It is noted that the locations of minewater sampling will change as flooding proceeds.</p> <p>Recommendation As flooding proceeds, extra measures for safely sampling at SNP 02-01 should be taken.</p>	<p>June 3: Please see De Beers response to SLEMA 3.</p>	Acceptable response.



Snap Lake Environmental Monitoring Agency
Main Floor, Lahm Ridge Tower
4501 Franklin Avenue
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Website: www.slema.ca

Kierney Leach
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O.Box 2130
Yellowknife, NT X1A 2P6

File: Water Licence MV2011L2-0004

May 31, 2016

Re: SNP – Extended Care and Maintenance Plan, Requested SNP Frequency Changes

Dear Ms. Leach,

Snap Lake Environmental Monitoring Agency (SLEMA) has reviewed De Beers' request to reduce SNP frequency during Extended Care and Maintenance. Enclosed please find the comment table.

If you have any questions whatsoever please feel free to contact Philippe di Pizzo at 867-765-0961 / exec@slema.ca.

Sincerely,

Original signed by

Philippe di Pizzo
Executive Director



May 31, 2016

Kierney Leach
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O. Box 2130
Yellowknife, NT X1A 2P6

Dear Ms. Leach,

Re: De Beers Snap Lake
Surveillance Network Program (SNP) - requested changes Table
MV2011L2-0004
Request for Comment

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories, has reviewed the requested amendments based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Waters Act*, the *Forest Protection Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Topic: SNP Changes - ECM

Comment:

De Beers has proposed a number of changes to their SNP sampling program for their Extended Care and Maintenance period.

ENR supports the majority of these changes with the exception of the proposed change to SNP02-21 Snap Lake Outlet to only a one time September sample. De Beers has proposed to remove the sample at the Snap Lake Outlet for April/May. ENR is concerned that the removal of spring sampling will result in less input into water quality modeling and result in less confidence in predictions related to the downstream, e.g. Mackay Lake. It is this sampling period that captures spring freshet and the surge of water that moves through Snap Lake into the downstream environment.

In an email to the GNWT on May 16th, 2016, De Beers stated that they believe a single sample at the end of the discharge season would capture “worst case” water quality. ENR is not

confident that “worst case” water quality will occur during the season as some parameters may be more concentrated during the high or low dilution periods (i.e. freshet and under ice).

Should De Beers insist in the removal of this sample period, additional evidence should be provided detailing how its removal will not adversely affect confidence levels associated with downstream water quality modeling predictions.

Recommendation:

ENR recommends that the current sampling frequency at SNP 02-21, the outlet of Snap Lake, remain unchanged, to capture seasonal variation in water quality at this location and provide additional confidence to predictions related to water quality modeling for the downstream.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and were coordinated and collated by the Environmental Impact Assessment Section, Conservation, Assessment and Monitoring Division (CAM).

Should you have any questions or concerns, please do not hesitate to contact Marcy MacDougall at (867) 767-9233 Ext: 53099 or email Marcy_MacDougall@gov.nt.ca.

Sincerely,



for

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring
Land and Water Division
Department of Environment and Natural Resources
Government of the Northwest Territories