



Staff Report

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| Applicant: De Beers Canada Inc. - Gahcho Kué Mine | |
| Location: Kennady Lake, NT | Application: MV2005L2-0015 |
| Date Prepared: April 12, 2017 | Meeting Date: April 20, 2017 |
| Subject: Standard Operating Procedure (Version 2) | |

1. Purpose/Report Summary

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) the Standard Operating Procedure (Version 2) (SOP) as submitted by De Beers Canada Inc. (De Beers) for the Gahcho Kué Mine, to fulfill Part E, item 8 of Water Licence (Licence) MV2005L2-0015.

2. Background

- October 16, 2014 – Board approves the SOP (Version 1);
- April 25, 2016 – De Beers submits the Rock Placement Verification Program Report (Report);
- November 3, 2016 – Board approves the Report on an interim basis and required an updated SOP for Board approval by November 17, 2016;
- November 16, 2016 – De Beers requests an extension to the submission date of the SOP from November 17, 2016 to April 15, 2017;
- December 5, 2016 – Board approves the extension request to April 13, 2017;
- March 13, 2017 – De Beers submits the SOP (Version 2);
- April 4, 2017 – Review comments and recommendations due and received;
- April 7, 2017 – De Beers’ responses submitted; and
- **April 20, 2017 – Board package presented to the Board.**

3. Discussion

Standard Operating Procedure (SOP) – Background

The SOP is required by Part E, item 6 of Licence MV2005L2-0015 and was first approved by the Board on October 16, 2014, following issuance of Licence MV2005L2-0015 (September 24, 2014). Updates are required by Part E, item 8 of the Licence. The intent of requiring a SOP document was to ensure that De Beers presented the sampling and analysis program, the criteria for potential acid generation (PAG), the manner in which the samples are used to delineate areas of PAG rock, and the placement of rock to the Board prior to commencing construction. This document was then intended to be considered in conjunction with the overarching Geochemical Characterization and Management Plan, with the latter detailing

any additional specific aspects regarding the management of Acid Rock Drainage (ARD) at the Mine. The Geochemical Characterization and Management Plan was first approved by the Board on February 10, 2015 following Licence issuance.

Rock Placement Verification Program and Rock Placement Verification Program Report (Report)

Part E, item 7 of Licence MV2005L2-0015 states:

*Upon commencement of Construction, the Licensee shall initiate a **Rock Placement Verification Program** in accordance with the requirements set out in Schedule 4, item 1, to assess the effectiveness of the SOP referred to in Part E, item 6. Within eighteen (18) months following issuance of this Licence, the Licensee shall submit a **Rock Placement Verification Program Report** that describes the results of the Program to the Board for approval.*

The results of this Report will inform the Board of the accuracy of predictions made and the success of rock segregation practices detailed in the SOP. De Beers submitted the Report on April 25, 2016.

During the review of the Report, Board staff requested further information as to what grain size was sampled and tested from the blasted rock. De Beers responded that no specific particle size fraction was selected. Sample rock was selected by rock fragment characteristics and by selecting a sample representative of the dominant rock type at the location. The Board requested De Beers update the SOP, for Board approval by November 17, 2016, providing further details of protocols and recommended that the 2009 MEND (Mine Environment Neutral Drainage) Report be reviewed for guidance.

On November 16, 2016, De Beers submitted an extension request, including rationale, for the submission of the revised SOP from November 17, 2016 to April 15, 2017. The Board approved the extension request to April 13, 2017. On March 13, 2017 De Beers submitted the SOP (Version 2) (attached).

Submission Description

The SOP (Version 2) has been revised to include updates on the following:

1. Frequency of field sampling in the open pits;
2. Clarification on sampling techniques and analysis of pit rock samples; and
3. Clarification of the locations of PAG material.

4. Comments

The SOP (Version 2) was forwarded to the Board's consultant, who provided the initial comments on the Report. On April 4, 2017, the consultant noted that De Beers' updated SOP did not address the issue related to sampling different grain size fractions in bi-annual sampling. This recommendation was previously made during the review of the Rock Placement Verification Program Report (MVLWB 11: "It would be recommended that additional analyses of specific particle size fractions should be conducted such that there can be an evaluation of whether there is partitioning of sulphides and/or carbonates into any one particle size").

5. Reviewer Comments

By April 4, 2017, comments and recommendations on the SOP were received from 3 reviewers:

- Environment and Climate Change Canada;
- Fisheries and Oceans Canada; and
- Government of the Northwest Territories (GNWT) – Environment and Natural Resources (ENR);

De Beers responded on April 7, 2017. The Review Summary (attached) presents the concerns identified through this review.

6. Security

The GNWT currently holds reclamation security in the amounts of \$23,776,270.00 under Licence MV2005L2-0015 for the Gahcho Kué project. De Beers' next deposit of security (in the amount of \$40,713,234 under Licence MV2005L2-0015) is due prior to year 4 of Operations (the end of mining of the Hearne Pit).

7. Conclusion

Board staff conclude that the SOP (Version 2) does not respond to the previously raised recommendation related to bi-annual sampling of different grain size fractions (MVLWB 11). Standard guidelines include sampling different size fractions to distinguish PAG and NAG (non-acid generating) materials. This approach would provide certainty as to whether or not there is partitioning of sulphides preferentially in the reactive fines fraction after blasting and depositing rock. Particle size distribution of sulphidic geologic materials can play an important role in drainage chemistry prediction because of its effects on mineral reactivity and the movement of water and gases.

8. Recommendation

Board staff recommend that the Board deny the SOP (Version 2) and request De Beers submit a revised SOP which addresses MVLWB comment 11, as was submitted during the review of the Rock Placement Verification Program Report, and as outlined by the Board in their November 3, 2016 decision letter and associated Reasons for Decision.

9. Attachments

- [Standard Operating Procedure \(Version 2\)](#)
- Review Comment Summary Table
- [Rock Placement Verification Program Report – Decision Package](#)
- Draft Reasons for Decision
- Draft Decision Letter from the Board

Respectfully submitted,



Angela Love
Regulatory Specialist

Review Comment Table

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| Board: | MVLWB |
| Review Item: | De Beers Gahcho Kué - Standard Operating Procedure - V.2 (MV2005L2-0015) |
| File(s): | MV2005L2-0015 |
| Proponent: | De Beers Canada Inc - Gahcho Kué |
| Document(s): | Standard Operating Procedure - V.2 (389.3 KB) |
| Item For Review Distributed On: | Mar 15 at 15:40 Distribution List |
| Reviewer Comments Due By: | Apr 4, 2017 |
| Proponent Responses Due By: | Apr 7, 2017 |
| Item Description: | <p>De Beers Canada Inc. (De Beers) has submitted Version 2 of its Standard Operating Procedure (SOP), for Board approval, on March 13, 2017. The SOP is required by Part E, item 8 of Licence MV2005L2-0015.</p> <p>PROPOSED CHANGES TO THE PLAN</p> <p>The Board requests input from parties on the proposed changes to the SOP (Sections A2 and A3 - as outlined in the letter attached to the SOP).</p> <p>Reviewers are invited to submit questions, comments, and recommendations on this submission using the Online Review System (ORS) by the review comment deadline specified below.</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> |
| General Reviewer Information: | <p>In addition to the email distribution list, the following organizations received review materials by fax:</p> <p>Fort Resolution Métis Council - Trudy King (867)394-3322 Hay River Metis Council - Trevor Beck, President (867)874-4472 NWT Metis Nation - Tim Heron, NWTMN IMA Coordinator (867)872-3586</p> |
| Contact Information: | <p>Angela Love 867-766-7456 Jen Potten 867-766-7468 Kierney Leach 867-766-7470 Tyree Mullaney 867-766-7464</p> |

Comment Summary

| Environment and Climate Change Canada: Melissa Pinto | | | | |
|------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------|
| ID | Topic | Reviewer Comment/Recommendation | Proponent Response | Board Staff Analysis |
| 1 | None | <p>Comment Environment and Climate Change Canada has reviewed De Beers Gahcho Kue Version 2 of the Standard Operating Procedure according to its mandate and has no comments at this time.</p> <p>Recommendation N/A</p> | Apr 7: Acknowledged | Noted. |
| Fisheries and Oceans Canada: Laura Watkinson | | | | |
| ID | Topic | Reviewer Comment/Recommendation | Proponent Response | Board Staff Analysis |
| 1 | General | <p>Comment DFO has reviewed the De Beers Gahcho Kue Standard Operating Procedure V.2 in accordance with its mandate and doesn't have any comments at this time.</p> <p>Recommendation N/A</p> | Apr 7: Acknowledged | Noted. |
| GNWT - ENR: Central Email GNWT | | | | |
| ID | Topic | Reviewer Comment/Recommendation | Proponent Response | Board Staff Analysis |
| 2 | General File | <p>Comment (doc) ENR Letter with Comments and Recommendations</p> <p>Recommendation</p> | | Noted. |
| 1 | Topic 1: PAG Placement | <p>Comment There are only three revisions to the Standard Operating Procedure for Gahcho Kue, one of which is related to the approved placement locations for PAG material. There have been numerous discussions between De Beers, the Board and ENR on this issue encompassing reviews over the past several months including the 2015 Annual Report, dyke construction plans and most recently in relation to the ICRP. ENR does not wish to reiterate the specific concerns noted previously; however, it should be noted that ENR will continue to work with De Beers and the Board through operations and closure of the Gahcho Kue mine site to make sure these areas are managed adequately.</p> <p>Recommendation No recommendations.</p> | Apr 7: Acknowledged | Noted. |



April 4, 2017

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

Dear Ms. Potten,

**Re: DeBeers - Gahcho Kue
Water Licence – MV2005L2-0015
Standard Operating Procedure Version 2
Request for Comment**

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

Topic 1: PAG Placement

Comment(s):

There are only three revisions to the Standard Operating Procedure for Gahcho Kue, one of which is related to the approved placement locations for PAG material. There have been numerous discussions between De Beers, the Board and ENR on this issue encompassing reviews over the past several months including the 2015 Annual Report, dyke construction plans and most recently in relation to the ICRP.

ENR does not wish to reiterate the specific concerns noted previously; however, it should be noted that ENR will continue to work with De Beers and the Board through operations and closure of the Gahcho Kue mine site to make sure these areas are managed adequately.

Recommendation(s):

No recommendations.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and the North Slave Region 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 Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,



Patrick Clancy
Environmental Regulatory Analyst
Environmental Impact Assessment Section
Conservation, Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories