



**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

|   |   |
|---|---|
| <b>Applicant:</b><br>De Beers Canada Inc.                           |   |
| <b>Location:</b><br>Kennady Lake, NT                                | <b>Application:</b><br>MV2005L2-0015      |
| <b>Date Prepared:</b><br>December 3, 2014                           | <b>Meeting Date:</b><br>December 11, 2014 |
| <b>Subject:</b><br>Geochemical Characterization and Management Plan |   |

### 1. Purpose/Report Summary

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB or the Board) the Geochemical Characterization and Management Plan (GCMP) for consideration for approval, as submitted by De Beers Canada Inc. (De Beers) under Water Licence (Licence) MV2005L2-0015.

### 2. Background

- August 11, 2014 – Board submits recommendation for approval of the Licence to the Minister of Environment and Natural Resources;
- September 23, 2014 – Minister of Environment and Natural Resources approves Licence;
- September 24, 2014 – Board issues Licence to De Beers;
- October 22, 2014 – GCMP sent out for review;
- November 13, 2014 – Review comments due;
- November 25, 2014 – De Beers' responses due; and
- December 11, 2014 – GCMP presented to the Board.

### 3. Discussion

#### Geochemical Characterization and Management Plan (GCMP)

On November 28, 2013 De Beers submitted a GCMP with their Updated Project Description package following the completion of their Environmental Impact Review. Throughout the licensing process, various comments and recommendations were made in relation to this plan.

Part G, item 14 states that “Within sixty (60) days following issuance of this Licence, the Licensee shall submit a **Geochemical Characterization and Management Plan** to the Board for approval. The Plan shall meet the

objectives listed in Part G, item 1 and detail how the Licensee will geochemically classify and manage Waste Rock, coarse and fine processed kimberlite, ore, and other materials in order to minimize Acid Rock Drainage and Metal Leaching. The Plan shall also satisfy the requirements of Schedule 5, item 7 and be in conformity with the approved SOP required under Part E, items 6 and 8. The Plan shall address the Construction and Operation phases of the Project.”

De Beers submitted an updated GCMP (v.2) on July 1, 2014 to reflect feedback received during the licensing process and included minor changes.

#### **4. Comments**

A three week review period for the GCMP was deemed sufficient as this Plan has under-gone various reviews throughout the licencing process, and reviewers have had several opportunities to submit comments and recommendations.

#### **5. Reviewer Comments**

On October 22, 2014 the GCMP was sent to the distribution list for review. Review comments were received from:

- Environment Canada; and
- Environment and Natural Resources.

The reviewer comment table (attached) presents the concerns identified through the review. De Beers responded to reviewers on November 25, 2014.

#### **6. Security**

Not applicable.

#### **7. Conclusion**

Board staff concludes that the Geochemical Characterization and Management Plan has some minor outstanding information.

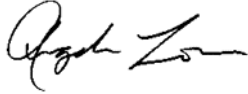
#### **8. Recommendation**

Board staff recommends that the Board conditionally approve the Geochemical Characterization and Management Plan, upon receipt of the outstanding information as identified in the attached review comment table.

## 9. Attachments

- [Geochemical Characterization and Management Plan](#)
- Reviewer Comment Summary Table
- Draft Decision Letter

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Angela Love". The signature is written in a cursive style with a large initial 'A'.

Angela Love  
Regulatory Officer

## Review Comment Table

|  |  |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
|--|--|-------------------------------|--|--|--|-------------------------|--------------|-----------|--|------------------|-----------|-----------------------|--|
| <b>Board:</b>                          | MVLWB  |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Review Item:</b>                    | De Beers Gahcho Kue - Geochemical Characterization and Management Plan Version 2 (MV2005L2-0015)   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>File(s):</b>                        | <a href="#">MV2005L2-0015</a>  |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Proponent:</b>                      | De Beers Canada Inc - Gahcho Kue   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Document(s):</b>                    | <a href="#">Geochemical Characterization and Management Plan</a> (10 MB)   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Item For Review Distributed On:</b> | Oct 22 at 15:36 <a href="#">Distribution List</a><br>Oct 27 at 14:02 <a href="#">Distribution List</a>   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Reviewer Comments Due By:</b>       | Nov 13, 2014   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Proponent Responses Due By:</b>     | Nov 25, 2014   |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Item Description:</b>               | <p>In accordance with the requirements of Water Licence MV2005L2-0015, De Beers Canada Inc. has submitted their Geochemical Characterization and Management Plan to the Mackenzie Valley Land and Water Board.</p> <p>Please submit comments using the Online Review System by downloading the excel comment table or using the "add comment" button.</p> <p>If you have any questions or comments regarding this Plan or using the Online Review System, please contact Angela Love at 867-766-7456 or <a href="mailto:angela.love@mvlwb.com">angela.love@mvlwb.com</a>.</p>  |                               |  |  |  |                         |              |           |  |                  |           |                       |  |
| <b>General Reviewer Information:</b>   | <p>In addition to the email distribution list, faxes were sent to the Akaitcho fax distribution list:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Fort Resolution Métis Council</td> <td style="width: 15%;">Trudy King</td> <td style="width: 25%;"></td> <td style="width: 35%;">(867)394-3322;<br/><a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a></td> </tr> <tr> <td>Hay River Metis Council</td> <td>Wally Shuman</td> <td>President</td> <td>(867)874-4472;<br/><a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a></td> </tr> <tr> <td>NWT Metis Nation</td> <td>Tim Heron</td> <td>NWTMN IMA Coordinator</td> <td>(867)872-2772;<br/><a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a></td> </tr> </table> | Fort Resolution Métis Council | Trudy King   |  | (867)394-3322;<br><a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a> | Hay River Metis Council | Wally Shuman | President | (867)874-4472;<br><a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a> | NWT Metis Nation | Tim Heron | NWTMN IMA Coordinator | (867)872-2772;<br><a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a> |
| Fort Resolution Métis Council          | Trudy King   |                               | (867)394-3322;<br><a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a> |  |  |                         |              |           |  |                  |           |                       |  |
| Hay River Metis Council                | Wally Shuman   | President                     | (867)874-4472;<br><a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a>                             |  |  |                         |              |           |  |                  |           |                       |  |
| NWT Metis Nation                       | Tim Heron  | NWTMN IMA Coordinator         | (867)872-2772;<br><a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a>                   |  |  |                         |              |           |  |                  |           |                       |  |
| <b>Contact Information:</b>            | <p>Angela Love 867-766-7456<br/>         Angela Plautz 867-766-7459<br/>         Jen Potten 867-766-7468<br/>         Tyree Mullaney 867-766-7464</p>  |                               |  |  |  |                         |              |           |  |                  |           |                       |  |

## Comment Summary

| Environment Canada: Sarah-Lacey McMillan                     |  |  |   |  |
|--|--|--|---|--|
| ID   | Topic  | Reviewer<br>Comment/Recommendation   | Proponent Response  | Board Response   |
| 1  | General File                                       | <b>Comment</b> <a href="#">(doc)</a> EC no comment letter<br><b>Recommendation</b>   |   | N/A  |
| GNWT - Environment and Natural Resources: Central Email GNWT |  |  |   |  |
| ID   | Topic  | Reviewer<br>Comment/Recommendation   | Proponent Response  | Board Response   |
| 5  | General File                                       | <b>Comment</b> <a href="#">(doc)</a> ENR Letter with Comments and Recommendations<br><b>Recommendation</b>   |   | N/A  |
| 1  | Topic 1:<br>Section 3.3 -<br>Overburden            | <b>Comment</b> Comment(s): Section 3.3 identifies a number of potential uses for overburden, but does not include re-vegetation. ENR understands that DeBeers is evaluating whether re-vegetation of the waste rock piles will be completed as part of closure activities.<br><b>Recommendation</b><br>Recommendation(s): 1) ENR recommends that re-vegetation be included as a potential use for overburden, until such time as DeBeers has determined that this activity will not be completed as part of the closure activities.  | <b>Nov 25:</b> De Beers will address revegetation of overburden in the Interim Closure and Reclamation Plan, as required in Part J. of the Water Licence. De Beers has and will continue to engage Aboriginal Parties and Regulators in the development of this Plan. | All contemplated uses of overburden should be included as a component of the GCMP.<br><br>The proponent shall update and resubmit the GCMP to the Board.   |
| 2  | Topic 2:<br>Section 4.4 -<br>Closure<br>Conditions | <b>Comment</b> Comment(s): This section identifies closure and reclamation activities that will be conducted progressively through the operation period. While re-vegetation is not included in this list, ENR understands that DeBeers is still in the process of evaluating whether re-vegetation will be included as a closure activity.<br><b>Recommendation</b><br>Recommendation(s): 1) ENR recommends that re-vegetation be included as a potential closure activity, until such time as DeBeers has determined that this activity will not be completed as part of the closure activities. | <b>Nov 25:</b> De Beers will address revegetation of overburden in the Interim Closure and Reclamation Plan, as required in Part J. of the Water Licence. De Beers has and will continue to engage Aboriginal Parties and Regulators in the development of this Plan. | To ensure consistency through the various plans, the Board recommends that all relevant components be included in each of the plans.<br><br>The proponent shall update and resubmit the GCMP to the Board. |
| 3  | Topic 3:<br>Section 6.4 -<br>Sample                | <b>Comment</b> Comment(s): Blast hole samples will be submitted to an off-site accredited laboratory for total   | <b>Nov 25:</b> De Beers is currently undertaking a feasibility assessment of  | Acceptable response.   |

|   |   |   |   |                      |
|---|---|---|---|----------------------|
|   | Collection and Analysis                     | <p>sulphur analysis. The results of the analysis will be used to classify the material in a blast round as PAG or non-PAG. There will be a delay between collection and submission of the samples and the availability of the results. This could mean either a delay of one or two weeks between when a blast hole is drilled and the blast occurs, or a delay one or two weeks from when the blast occurs to when the mine rock is characterized and handled appropriately. ENR is not clear how this delay will be incorporated into DeBeers' production schedule.</p> <p><b>Recommendation</b><br/> Recommendation(s): 1) ENR recommends DeBeers clarify how the production schedule will incorporate the time necessary to complete the off-site sulphur analyses.</p> | <p>installing on-site facilities to undertake sulphur analysis. A factor in this assessment is the impact on the production schedule based on off-site laboratory turnaround times. As part the assessment, off-site laboratories have also been requested to provide input on how turnaround times can be improved.</p>  |                      |
| 4 | Topic 4: Section 8.1.1 - Weight of Evidence | <p><b>Comment</b> Comment(s): This section identifies that a weight of evidence approach will be used to evaluate what actions are required in response to monitoring results. Several general examples are provided. Specific triggers, measurement points and weightings that would be included in such an approach are not described.</p> <p><b>Recommendation</b><br/> Recommendation(s): 1) ENR recommends that in the event that a weight-of-evidence approach is applied, triggers, ratings and weightings are developed and applied to measurement points before the commencement of monitoring to remove the potential for the introduction of bias that may occur once sampling results have been obtained.</p>   | <p><b>Nov 25:</b> As defined to the Standard Operating Procedure, if a single sample of potentially acid generating (PAG) rock is collected from an area, a follow up sample collection program will be proposed for the area, in which samples will be collected from a number of locations in the general area as to allow for a general classification of the material. If more than 3 samples from the general sample collection area are classified as PAG, adaptive management actions may be recommended. The level of adaptive management will be a function of the location of the materials, expected destination, placement location or use of the rock, and the amount of PAG material and surrounding buffering capacity. Adaptive management could include removal of the PAG rock and replacement with non-PAG</p> | Acceptable response. |

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|  |  |  | rock, or longer-term seepage / runoff monitoring to confirm the acid generation potential of the materials in site-specific conditions. The Rock Placement Verification Program, as defined in Part E, item 7, of the Water Licence will be implemented and results reported. |  |
|--|--|--|---|--|



Environment Canada Environnement Canada

Environmental Protection Operations Directorate (EPOD)  
Prairie and Northern Region  
5019 52<sup>nd</sup> Street, 4<sup>th</sup> Floor  
P.O. Box 2310  
Yellowknife NT X1A 2P7

November 13, 2014

EC file: 5100 000 013 /007  
MVLWB file: MV2005L2-0015

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

Via Online Registry

**RE: MV2005L2-0015 – De Beers Canada Inc, Gahcho Kue Mine Project –  
Geochemical Characterization Management Plan Version 2**

Environment Canada (EC) has received the above-mentioned Management Plan submitted by De Beers Canada Inc. EC was unable to review the Plan and therefore will not be submitting any comments at this time.

Should you have any questions or wish clarification on any aspect of this letter, please contact me at (867) 669-4724 or [sarah-lacey.mcmillan@ec.gc.ca](mailto:sarah-lacey.mcmillan@ec.gc.ca).

Sincerely,

Sarah-Lacey McMillan  
Senior Environmental Assessment Coordinator

cc: Loretta Ransom A/Head Environmental Assessment North (NT & NU), EPOD  
EC Review Team



November 13, 2014

Angela Love  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor – 4910 50<sup>th</sup> Avenue  
P.O. Box 2130  
Yellowknife, NT  
X1A 2P6

Dear Ms. Love,

**Re: DeBeers Canada Inc.  
Water Licence – MV2005L2-0015  
Geochemical Characterization and Management Plan Ver. 2  
Request for Comments**

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

**Topic 1: Section 3.3 – Overburden**

**Comment(s):**

Section 3.3 identifies a number of potential uses for overburden, but does not include re-vegetation. ENR understands that DeBeers is evaluating whether re-vegetation of the waste rock piles will be completed as part of closure activities.

**Recommendation(s):**

- 1) ENR recommends that re-vegetation be included as a potential use for overburden, until such time as DeBeers has determined that this activity will not be completed as part of the closure activities.

**Topic 2: Section 4.4 – Closure Conditions**

**Comment(s):**

This section identifies closure and reclamation activities that will be conducted progressively through the operation period. While re-vegetation is not included in this list, ENR understands that DeBeers is still in the process of evaluating whether re-vegetation will be included as a closure activity.

**Recommendation(s):**

- 1) ENR recommends that re-vegetation be included as a potential closure activity, until such time as DeBeers has determined that this activity will not be completed as part of the closure activities.

**Topic 3: Section 6.4 – Sample Collection and Analysis**

**Comment(s):**

Blast hole samples will be submitted to an off-site accredited laboratory for total sulphur analysis. The results of the analysis will be used to classify the material in a blast round as PAG or non-PAG. There will be a delay between collection and submission of the samples and the availability of the results. This could mean either a delay of one or two weeks between when a blast hole is drilled and the blast occurs, or a delay one or two weeks from when the blast occurs to when the mine rock is characterized and handled appropriately. ENR is not clear how this delay will be incorporated into DeBeers' production schedule.

**Recommendation(s):**

- 1) ENR recommends DeBeers clarify how the production schedule will incorporate the time necessary to complete the off-site sulphur analyses.

**Topic 4: Section 8.1.1 – Weight of Evidence**

**Comment(s):**

This section identifies that a weight of evidence approach will be used to evaluate what actions are required in response to monitoring results. Several general

examples are provided. Specific triggers, measurement points and weightings that would be included in such an approach are not described.

**Recommendation(s):**

- 1) ENR recommends that in the event that a weight-of-evidence approach is applied, triggers, ratings and weightings are developed and applied to measurement points before the commencement of monitoring to remove the potential for the introduction of bias that may occur once sampling results have been obtained.

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 Assessment and Monitoring Section (EAM).

Should you have any questions or concerns please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst, at (867) 920-6118 or email at [patrick.clancy@gov.nt.ca](mailto: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