July 16, 2019

Dear Sean Sinclair,

Waste Rock Management Plan, Version 9

The Wek’eezhii Land and Water Board (WLWB or the Board) met on June 28, 2019 and considered Diavik Diamond Mines (2012) Inc.’s (DDMI’s) Waste Rock Management Plan (WRMP), Version 9.\(^1\)

As described in the attached Reasons for Decision, the Board has approved Version 9.0 of the WRMP and has provided direction for the next version of the WRMP. The Board has also provided direction regarding Version 4.1 of the interim Closure and Reclamation Plan, the Annual Report, and the security deposit.

Sincerely,

Joe Mackenzie
Chair, Wek’eezhii Land and Water Board

Copied: Diavik Distribution List

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\(^1\) See WLWB Online Registry (www.wlwb.ca) for Diavik - WRMP - Version 9 - Apr 3_19.pdf.
Reasons for Decision

<table>
<thead>
<tr>
<th>Reference/File Number:</th>
<th>W2015L2-0001 (Type “A” Water Licence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensee:</td>
<td>Diavik Diamond Mines (2012) Inc. (DDMI)</td>
</tr>
<tr>
<td>Subject:</td>
<td>Waste Rock Management Plan, Version 9</td>
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Decision from the Wek’èezhii Land and Water Board
Meeting of June 28, 2019

1.0 Decision

The Wek’èezhii Land and Water Board (WLWB or the Board) met on June 28, 2019 and considered Diavik Diamond Mines (2012) Inc.’s (DDMI’s) Waste Rock Management Plan (WRMP). After reviewing the submission, reviewer comments, and proponent responses, the Board:

1. Approved WRMP Version 9.0;

2. Requires DDMI to add the following objective for designing and selecting ore storage areas: “Ensure that seepage and/or run-off from the temporary ore storage areas is collected and does not reach the receiving environment” in the next version of the WRMP;

3. Requires DDMI to include a statement in the next version of the WRMP that the footprint of ore storage areas will be minimized and kept within the footprint of the mine;

4. Requires DDMI to address ore stockpiling in Schedule 6, Conditions 5.a.v, 5.a.xiii, 5.b.iii, and 5.b.vi in the next version of the WRMP and in Schedule 1, Condition 1.j in future Annual Reports;

5. Requires DDMI to ensure that the closure plans in interim Closure and Reclamation Plan (CRP) Version 4.1 for ore stockpiles are consistent with the approved WRMP;

6. Requires DDMI to include the cost associated with removal of stockpiled ore in the security deposit that will be submitted with interim CRP Version 4.1;

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2 See WLWB Online Registry for Diavik - WRMP - Version 9 - Apr 3_19.pdf
7. Requires DDMI to submit an update of Figure 4 in Appendix F of the WRMP annually, with an explanation of proposed monitoring zones. In the next version of the WRMP, DDMI must indicate (in the cover letter or the body of the WRMP) how it proposes to report this information;

8. Requires DDMI to remove the statement that “DDMI has no evidence to indicate the presence of biotite schist xenoliths within the A21 host rock” in the next version of the WRMP, and indicate that metasediment has been discovered in the A21 pit;

9. Requires DDMI to remove the statement that “A pit wall map showing exposed Type III material will be included in the Annual Water License Report” and in the next version of the WRMP include the following statement: “If Type III material remains in the active pit wall, a pit wall map showing exposed Type III material will be included in the Annual Water Licence Report."

2.0 Background

Part H, Condition 7 of DDMI’s Water Licence (W2015L2-0001) requires DDMI to “operate in accordance with the approved Waste Rock Management Plan.” Schedule 6, Condition 5 requires that the Plan address the “management of all rock and till that is disturbed, moved, stored, or otherwise affected by mining-related activity on the property, over the term of the Project” and sets out the detailed requirements for the Plan.

DDMI submitted WRMP Version 9 on April 3, 2019. The revisions in WRMP Version 9 relate to waste rock and ore removed from the A21 open pit, as described in Section 3 of this Reasons for Decision.

The WRMP was distributed for public review on April 18, 2019 on the WLWB Online Review System (ORS). The Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR) and Environment and Climate Change Canada (ECCC) submitted comments by the deadline of May 16, 2019. Board staff also submitted questions. DDMI submitted responses by the deadline of May 23, 2019. Parties’ comments and recommendations and DDMI’s responses are available on the WLWB Online Registry.

A geochemical specialist from SRK Consulting (Canada) Inc. assisted the Board with evaluating WRMP Version 9.

3.0 Reasons for Decision

In WRMP Version 9, the company sought approval of proposed revisions related to two topics:

1. Proposed changes to ore stockpiling; see Section 3.1 of this Reasons for Decision.
2. Proposed changes to how the company verifies that A21 waste rock is Type I rock, i.e., non-potentially acid-generating (non-PAG); see Section 3.2 of this Reasons for Decision.

➢ Decision #1. The Board approved WRMP Version 9.0.

The reasons the Board approved the WRMP and required additional revisions are described below for each of the two topics.

3.1 Ore Stockpiling

DDMI’s proposed language in WRMP Version 9 and the approved language in WRMP Version 8.1 are compared in Table 1.

Table 1. Approved Ore Storage Language vs Proposed Language

<table>
<thead>
<tr>
<th>Approved Language (WRMP Version 8)</th>
<th>DDMI’s Proposed Language (WRMP Version 9)</th>
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<tbody>
<tr>
<td>Ore is temporarily stored at mine portals and at the crusher/ROM* of the processing plant. There is no long-term ore stockpiling currently planned.</td>
<td>Temporary stockpiling of ore is planned until the end of Operations at areas on site, including at the mine portals and near the crusher, where potential drainage (surface runoff and seepage) can be captured by the current water management system. Seepage will be monitored as per Part H Item 15 of the license.</td>
</tr>
</tbody>
</table>
| Temporary ore stockpiling areas will be designed and selected to achieve the following objectives:  
  • minimize the number of catchments potentially affected by drainage from the ore stockpiles;  
  • provide designed storage capacity with a contingency capacity; and  
  • minimize the haul distances from the pits and to the crusher. |

*ROM = Run of mine

Staff requested additional context to better understand the proposed revision (WLWB staff comments 1 and 2). In its responses, DDMI clarified that it is proposing temporary storage of ore outside of the two locations identified in the approved WRMP, namely the mine portals and the run-of-mine (ROM) areas. DDMI cited the A21 Pit as a potential storage location. DDMI noted that the aim is to improve operational flexibility and explained that “due to distances between the mining areas and the processing plant and the need to ensure appropriate ore blends are fed to the processing plant, flexibility in siting of temporary ore storage areas as staging/transit areas is required throughout operations.” DDMI clarified that temporary means the stockpiles will not exist following operations, i.e., they are not permanent structures. A potential risk with this approach is that ore could be left in place if there is a temporary shut-down and/or early closure. However, the approved WRMP already addresses this possibility: “If mining operations are suspended (e.g. an extended shut down), Type III waste rock and ore in the temporary storage areas will be moved to an appropriate permanent storage area” (page 29).

To improve flexibility, DDMI has proposed that the company be authorized to store ore in any location as long as it meets three objectives regarding catchments, contingency capacity, and haulage distances (see Table 1). Staff noted that there was no objective that would ensure that runoff and seepage would be
DDMI confirms that there should have been a 4th objective in section 2.6.2 of the WRMP [Version 9] explicitly expressing its commitment to ensuring that no seepage and/or run-off from the temporary ore storage areas would reach the external receiving environment. The surface runoff and/or seepage water from these facilities will be collected in the water management system as part of the site water management strategy. Water collected in the water management system is directed to the North Inlet Water Treatment Plant and treated prior to being released to the external receiving environment.

Similarly, in response to WLWB staff comment 1, DDMI explained that “if a temporary storage area cannot be located within the current water management system a temporary seepage and run-off collection system will be established downstream of the temporary ore storage area as a contingency against seepage and run-off.”

**Decision #2:** The Board requires DDMI to add the following objective for designing and selecting ore storage areas: “Ensure that seepage and/or run-off from the temporary ore storage areas is collected and does not reach the receiving environment” in the next Version of the WRMP.

In its responses to WLWB staff comments 2 and 3, DDMI committed to minimizing the footprint of ore storage areas and to keeping the locations within the footprint of the mine.

**Decision #3:** The Board requires DDMI to include in the next version of the WRMP a statement that the footprint of ore storage areas will be minimized and kept within the footprint of the mine.

With the addition of the fourth objective and a commitment regarding the ore storage footprint, the Board determined that the revisions regarding ore stockpiling are acceptable for the following reasons:

- No Parties objected to or expressed any concerns with the proposed revisions related to ore stockpiling;
- Decision #2 will ensure that seepage or runoff from the ore stockpiles will be captured in the drainage control and collection system and prevented from entering the Receiving Environment. In accordance with the Water Management Plan, all collected water is ultimately transferred to the North Inlet and must meet Effluent Quality Criteria (EQC) prior to discharge.
- The revisions regarding temporary storage of ore are consistent with the approved temporary storage of Type I waste rock, which allows storage up until the end of operations.
Existing Water Licence conditions will ensure DDMI monitors seepage and runoff from ore stockpiling locations and reports the monitoring results, ore stockpiling locations, and ore storage quantities (see Table 2). This information can be used by the Inspector to confirm compliance with the revised WRMP.

Regarding existing Water Licence conditions related to ore storage, DDMI correctly noted in its response to WLWB comment staff 4 that ore storage seepage monitoring (including sampling locations) will be reported in the Seepage Survey Report, as required by Part H, Condition 15. The Licence also requires DDMI to report the current annual and past annual quantities in cubic metres of ore stockpiling by destination (Schedule 1, Condition 1.j) in the Annual Water Licence Report. In the 2018 Annual Report, DDMI indicated that “Currently, there is no plan for long-term ore stockpiling. Ore material is processed, not stockpiled, and is therefore not reported in this section.” Based on the approved WRMP (Version 8.1), it is the Board’s understanding that small amounts of ore were stored for short periods of time at a limited number of locations. Whether or not this is considered “ore stockpiling” as it relates to Water Licence conditions is unclear. Regardless, DDMI’s proposed new approach qualifies as ore stockpiling, and DDMI will need to address this reporting requirement in the next Annual Report.

Similarly, there are several requirements in the WRMP Schedule that address ore stockpiling. Two of these require a map and a description of ore storage locations (Schedule 6, Condition 5.a.v and 5.b.iii, respectively). It is understood that approval of WRMP Version 9 would mean that DDMI does not need approval of each new ore storage location (provided it meets the objectives in the WRMP and is in accordance with all pertinent Water Licence conditions). Nonetheless, a record of the locations of ore stockpiles is required in Schedule 6, may be useful for the Inspector to confirm compliance with the WRMP, and could be helpful in the event of an unforeseen shutdown.

The Schedule for the WRMP also requires DDMI to include an overview of the methods used to construct ore stockpiles such that acidic drainage and/or metal leaching is limited (Schedule 6, Condition 5.a.xiii). Further, the Schedule requires that the WRMP include past and predicted quantities in cubic metres and tonnes, by destination, including source, at the time the Plan was updated (Schedule 6, Condition 5.b.vi).

Given that the four objectives for ore stockpiling set out a clear understanding of where and how ore can be stockpiled, the outstanding Schedule requirements for the WRMP are not urgent, and can be addressed in the next version of the WRMP.

Decision #4: The Board requires DDMI to address ore stockpiling in Schedule 6, Conditions 5.a.v, 5.a.xiii, 5.b.iii, and 5.b.vi in the next version of the WRMP and in Schedule 1, Condition 1.j in future Annual Reports.

Finally, the interim CRP states that any stockpiled kimberlite ore remaining on surface at the start of a temporary shutdown would be processed before plant operations end. This is inconsistent with the

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approved WRMP which states that ore would be moved to an appropriate permanent storage area (page 29). DDMI will be submitting ICRP Version 4.1 at the end of the year, and can fix this inconsistency at that time. Further, it is the Board’s understanding that the current security deposit does not include the potential costs of moving stockpiled ore to a permanent location in the case of early shutdown.

- **Decision #5:** The Board requires DDMI to ensure that the closure plans in interim CRP Version 4.1 for ore stockpiles are consistent with the approved WRMP.

- **Decision #6:** The Board requires DDMI to include the cost associated with removal of stockpiled ore in the security deposit that will be submitted with ICRP Version 4.1.

### 3.2 Verification Program for A21 Waste Rock

DDMI’s second proposed change to the WRMP is to reduce part of the verification program for A21 rock. DDMI’s approved WRMP includes a “Monitoring and Verification” section (i.e., Section 3) with the goal of “confirming identification and appropriate disposal of potentially acid generating waste rock as well as efforts to identify and evaluate the presence of acid drainage that may result from storage, if present”.

Initially, DDMI predicted that the A21 open pit would produce only Type I (non-PAG) rock and that there would be no Type III rock. The approved WRMP includes a verification program to confirm this. This is important because the South Waste Rock Storage Area (WRSA; where A21 rock is disposed) is designed to contain only non-PAG rock and because the A21 waste rock can be used for construction, including as cover material on the North WRSA. The verification program therefore helps to prevent long-term water quality issues at the Diavik site following closure.

The verification program for A21 waste rock has several aspects:

1. Visual classification of all blast hole cuttings;
2. Sulfur sampling of three random drill holes per blast pattern; and
3. Weekly inspection of exposed pit wall, muck piles, and dump areas for the presence of biotite schist.

In WRMP Version 9, DDMI proposed a reduction to the first aspect of the program (visual classification of all blast hole cuttings). Specifically, DDMI proposed that instead of visually classifying all blast holes, DDMI will visually classify certain rows of blast holes, depending on whether the blasted area is in Zone 1 or Zone 2. DDMI defined Zone 1 as Type I rock and Zone 2 as having a potential for biotite schist or as unknown. DDMI’s proposed sampling frequency in Zone 2 would be greater than in Zone 1. DDMI submitted a memo prepared by the company’s internal Geology department to support the proposed reduction (see Appendix F of the WRMP). The memo included a figure (Figure 4) showing where Zones 1 and 2 are in the A21 pit.

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5 See WLWB Online Registry for [Diavik - Closure and Reclamation Plan - Version 4.1 - Extension Request - Decision Letter - Apr 17_19.pdf](#).
The Board supports DDMI’s reduced program for the following reasons:

- No parties expressed any concerns with the reduced frequency of visual classifications of blast holes;
- The program is reasonable and appropriate given the limited amount and spatial distribution of biotite schist encountered to date, as identified by the monitoring program; and
- As noted by DDMI, the key step in the Type III identification is the post-blast muck pile inspections (independent of drill cutting sampling frequency). The visual classification of blast holes is a preliminary/early warning step.

The Board considered whether the revisions to the WRMP require additional reporting. In the monthly SNP reports, DDMI reports the following information from the verification program:

- a) Any occurrence of a blast hole result for a muck pile greater than 0.04 (weight %S);
- b) Quantity and disposal location of any identified Type III rock;
- c) Any exceedance of the conservative action level of 2% of Type III material mined from A21 in any given month; and
- d) The monthly percent of biotite schist xenoliths estimated in mined Type I material (tonnes) that is below the threshold for Type III rock.

While the basis for defining Zones 1 and 2 was reasonable and appropriate, as additional information on the presence of biotite schist is obtained, it may be possible to reclassify some areas currently classified as Zone 2 as Zone 1. Additionally, as mining advances, other areas may need to be classified as Zone 2 (unknown) until sufficient information is available to define further monitoring requirements. Because the location of Zones 1 and 2 are a central feature of the A21 verification program, DDMI should submit an updated version of Figure 4 annually. In the Annual Report (Schedule 1, Condition 1.y), DDMI is required to report results and interpretation of any geochemical sampling or testing produced during the preceding year, including whether the results affect waste rock management. An update to Figure 4 and an explanation of the monitoring zones would be a reasonable addition to this section of the Annual Report, or DDMI could provide this information in updates to the WRMP or another Water Licence submission. The Board would like to give DDMI the opportunity to propose where the information should be reported.

- **Decision #7:** The Board requires DDMI to submit an update of Figure 4 of Appendix F of the WRMP annually, with an explanation of proposed monitoring zones. In the next version of the WRMP, DDMI must indicate (in the cover letter or the body of the WRMP) how it proposes to report this information.

Through the verification program, DDMI has identified small amounts of PAG rock, which the company has disposed in the North WRSA where it will be covered at closure to prevent ARD and metal leaching. As noted by staff (WLWB staff comment 6) the approved WRMP states that “DDMI has no evidence to indicate the presence of biotite schist xenoliths within the A21 host rock”. In their response to staff’s question about this statement, DDMI agreed to update the WRMP to reflect the presence of metasediments in the A21 pit.
Decision #8: The Board requires DDMI to remove the statement that “DDMI has no evidence to indicate the presence of biotite schist xenoliths within the A21 host rock” in the next version of the WRMP, and indicate that metasediment has been discovered in the A21 pit.

The approved WRMP states "A pit wall map showing exposed Type III material will be included in the Annual Water License Report". In WLWB staff comment 7, staff noted that this map is not in the 2018 Annual Report. In its response, DDMI explained that a map was not included in the Annual Report because there was no exposed metasediments in the pit. DDMI proposed that the requirement in WRMP Version 8.1 to submit a pit wall map be removed, and that “if ongoing monitoring of A21 rock indicates an increase in Type III material, the requirement for a map showing Type III material may be justified.” DDMI proposed that “evaluating the benefit of including a pit wall map” be a response action that would be triggered by the approved action level in WRMP Version 8.1. The action level is triggered if 2% of the total material mined from A21 is Type III rock in any given month. The Board agrees that there is no need for a map of the pit wall if there is no exposed Type III rock, but believes that the most simple solution is to revise the statement in the WRMP to say "If Type III material remains in the active pit wall, a pit wall map showing exposed Type III material will be included in the Annual Water License Report." This information will contribute to the overall understanding of where metasediment is located in the A21 pit, is less complicated than tying the requirement for a map to the action level, and is not unduly burdensome.

Decision #9: The Board requires DDMI to remove the statement that “A pit wall map showing exposed Type III material will be included in the Annual Water License Report” and in the next version of the WRMP, include the following statement: “If Type III material remains in the active pit wall, a pit wall map showing exposed Type III material will be included in the Annual Water Licence Report.”

Finally, although the GNWT-ENR did not comment on the reduced frequency of visual classifications of blast holes, it requested clarification about the blast hole sulfur sampling. In response, DDM provided a thorough and informative response and the Board did not identify any issues related to this aspect of the verification program. The Board notes that the key point is that DDMI is not relying on the sulfur data for segregation, but relies on the visual assessment of biotite schist. Similarly, DDMI provided informative and thorough responses to ECCC’s questions regarding aspects of the WRMP unrelated to the proposed revisions. However, in its response to ECCC comment 1, DDMI stated that “Technically, Type I and Type II material is considered non-PAG whereas Type III is PAG”. In fact, Type II rock is characterized in the approved WRMP as “intermediate or mixed rock with low acid-generating potential”. The Board reminds DDMI that Type II rock is considered intermediate or mixed rock with low acid-generating potential, and should not be considered non-PAG.
Signed the 16th day of July 2019, on behalf of the Wek’èezhii Land and Water Board.

Witness

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Joe Mackenzie
Chair, Wek’èezhii Land and Water Board