Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-LUP2032
Our file - Notre référence
GCdocs#94892642

June 1, 2021

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
sent via e-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's review of Lupin Mines Incorporated's Post Closure Monitoring Plan for Type A Water Licence 2AM-LUP2032 for the Lupin Mine Project

Dear Mr. Dwyer,

Thank you for your April 21, 2021 invitation to review the above referenced plan. Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact Vincent Onkonkwo at vincent.okonkwo@canada.ca or myself at sarah.forte@canada.ca.

Sincerely,

Sarah Forté

Sarah Forté
Water management specialist

Canada

Technical Review Memorandum

Date: June 1, 2021

To: Richard Dwyer, Manager of Licensing, Nunavut Water Board

From: Sarah Forté, Water management specialist, CIRNAC

Re: Crown-Indigenous Relations and Northern Affairs Canada's review of Lupin Mines Incorporated's Post Closure Monitoring Plan for Type A Water Licence 2AM-LUP2032 for the Lupin Mine Project

Region: ☒ Kitikmeot ☐ Kivalliq ☐ Qikiqtani

A. BACKGROUND

On April 19, 2021, the Nunavut Water Board provided notification of Lupin Mines Incorporated's (LMI) submission of a Post Closure Monitoring Plan (PCMP) (April 2021) for the Lupin Mine Project. The mine site is situated on Contwoyto Lake approximately 285 km southeast of Kugluktuk in the Kitikmeot region of Nunavut.

Lupin mine is currently going through progressive reclamation activities intended for closure of the former mine site under Water Licence 2AM-LUP2032, approved on April 9, 2020. In accordance with Part J, Item 13 of the type A Water Licence 2AM-LUP2032, the licensee submitted a PCMP to ensure adequate monitoring for site stability is put in place.

LMI circulated a draft PCMP in February 2021, which CIRNAC reviewed. We provided comments to LMI on March 25, 2021 and note that several of our comments have been addressed in the version that was sent to the Nunavut Water Board.

A summary of CIRNAC's recommendations can be found in Table 1. Detailed technical review comments can be found in Section B.

Table 1: Summary of Recommendations

Recommendation Number	Subject
1	Water quality in TCA
2	Geotechnical monitoring
3	Community consultation
4	Visual inspections of TCA pond perimeters

Recommendation Number	Subject
5	Schedule J items missing
6	Duration of passive monitoring
7	Demolition landfill monitoring wells
8	Activity schedule unclear
9	Inadequate figures
10	Changes to general monitoring
11	Thermistor repair

B. RESULTS OF REVIEW

CIRNAC has found the submitted PCMP to lack the level of detail necessary for a plan to be implemented presently and next year. On behalf of CIRNAC, the following comments and recommendations are provided for the Board's consideration:

1. Water quality in TCA

In section 6.2.2, LMI proposes a pH trigger to help determine when desired water quality conditions are achieved in the Tailings Containment Area (TCA) (Cell 4, Pond 1, Pond 2) that would allow for the transition from active to passive discharge and reduced TCA monitoring. It is questionable to use a pH trigger (5.5) which is lower than the acceptable Metal and Diamond Mining Effluent Regulations (MDMER) range (6.0-9.5) as a reference point. It is also not clear why the trigger is based on pH only and not any total metals that have been a concern associated with the tailings.

Recommendation:

(R-01) CIRNAC recommends that, prior to transitioning from active to passive TCA discharge, the licensee justify why the trigger for the transition does not include criteria for concentrations of metals of concern.

2. Geotechnical monitoring

Geotechnical monitoring is essential to check that structures are performing as planned and are physically stable. The executive summary speaks to "*Inspections include seepage from the dams, water levels in ponds/cells, and general surface erosion, tension cracks,*

and/or anomalies on dams", however section 6.1.1 does not specify dams other than the TCA. During phase 1, structures still classified as dams should be inspected, including:

- Verifying slope stabilization and erosion control at the former "interior dams" (K,M,N) and L Dam Spillway;
- Monitoring potential exposed and covered tailings after water level is drawn down; and
- Monitoring of thermistors in the M and N dams.

Section 6.1.4 states "*Some perimeters dams can be declassified as dam structure in Phase 2, as they will no longer contain water when the ponds are passively managed at a much lower post closure water levels*", without specifying which dams are being referred to.

Additionally, section 6.2.1 states: "*Any evidence of surficial settlement or erosion or settlement above the crown pillar or shafts will be documented with photographs and reported.*" The absence of settlement and erosion is also noteworthy. Photographic records of inspections over the years should be kept and reported to allow monitoring of any evolution.

Recommendation:

(R-02) CIRNAC recommends that licensee include in the PCMP:

- the list of structures to be inspected in phase 1;
- specific dams which they intend to declassify for phase 2; and
- instructions to report on phase 2 site inspections regardless of the findings.

3. Community consultation

Schedule J Item 1 requires the licensee to consult with the community of Kugluktuk during both development of PCMP and post closure monitoring, and the requirement remains outstanding.

In the executive summary, LMI states that consultation occurred via online calls and presentations on March 9 & 25, 2021. On March 9 and 25 2021, LMI held technical review sessions with government representatives, the Kitikmeot Inuit Association (KIA), and various hired consultants/technical representatives. The goal was to review the comments LMI received from these organizations about the PCMP. The nature of the calls were technical. It is recommended that LMI undertake additional measures to consult with the community of Kugluktuk.

In the executive summary, LMI references consultation that occurred with community members and organizations in the community of Kugluktuk in April 8, 2021. LMI stated during a call with CIRNAC on May 26, 2021 that the consultation was not well attended. CIRNAC would like to know details about how the community was notified of the event, engagement content, and a summary of dates, times, locations, attendees, concerns brought forward.

Schedule B, Item 1l describes information on public consultation to be included in annual reports. This should be reproduced in the PCMP to ensure required information is collected during consultation.

CIRNAC notes the submitted PCMP does not include a translated executive summary in Inuktitut or Inuinnaqtun. Translated material is essential so that consultations can include all potentially interested community members. Given the limited success of first consultation attempts, a more thorough plan must be developed and described in section 8 of the PCMP.

Recommendation:
(R-03) CIRNAC recommends section 8 of the PCMP include a detailed plan for proposed community consultations including how the community will be notified, how materials understandable by the general public will be prepared, what times of year will be prioritized for maximum participation, as well as information contained in Schedule B, Item 1l.

4. Visual inspections of TCA pond perimeters

Visual inspections along TCA pond perimeters looking for signs of active oxidation or seepage are currently included for phase 1, but not explicitly for phase 2. Absence of signs of active oxidation or seepage will be necessary to demonstrate long term chemical and physical stability, so these inspections should continue throughout phase 2.

Recommendation:
(R-04) CIRNAC recommends that visual inspections for signs of active oxidation or seepage be included in the phase 2 monitoring.

5. Schedule J items missing

Schedule J, Item 2 of water licence 2AM-LUP2032 lists items that need to be included in PCMP. Certain items were not found in the plan submitted in April 2021, including:

b. A review of historical data and estimate of waste rock quantities use across the site for construction of dams and other permanent structures;

g. thresholds for tailings cover performance that would trigger moving to reduced monitoring frequency or intensity;

CIRNAC notes that Item 2g, also includes the requirement for thresholds for water quality at the TCA, and these have been provided.

Recommendation:
(R-05) CIRNAC recommends the PCMP include all items prescribed in Schedule J, Item 2 of the water licence, including an estimate of waste rock quantities used across the site from historical data and thresholds for tailings cover performance.

6. Duration of passive monitoring

Section 6.0 states that "*The Passive Closure Period (Phase 2) refers to the 5-year period following the completion of active reclamation work (i.e. 2022 to 2026). Environmental monitoring will be conducted through Phase 2 to determine the success of the reclamation measures and confirm that the closure objectives have been achieved. Phase 2 monitoring programs will be carried out during site visits under the supervision and direction of DMS* [Discovery Mining Services].

The Federal Contaminated Sites Action Plan Long-Term Monitoring Planning Guidance recommends 25 years of monitoring to verify equilibrium conditions at landfills in northern regions. This matches the post closure monitoring period used to generate the reclamation estimate used for site is 25 years.

Recommendation:
(R-06) CIRNAC recommends the PCMP support the proposed shorter passive monitoring period with evidence that permanent physical and chemical stability of the site could be determined in this timeframe.

7. Demolition landfill monitoring wells

Schedule J, Table 1 of the water licence prescribes three monitoring wells at the demolition landfill facility; one up gradient (LUP-36) and two down gradient (LUP-37a & LUP-37b).

The licensee's comments on these stations in Table 9 are: "*Demolition landfill is not planned for construction*".

CIRNAC agrees that there no longer is a demolition landfill planned. The material that was originally planned to placed in this landfill will instead be buried in the Waste Rock Dome.

In order to monitor possible leachate, wells originally planned for the demolition landfill should be moved to up gradient and down gradient of the Dome.

Recommendation:
(R-07) CIRNAC recommends the licensee install monitoring wells upstream and downstream of the waste rock dome and include their monitoring in Table 9 of the PCMP.

8. Activity schedule unclear

Much of the content of the document is dated, and in some instances, unclear. The document contains references made to events/activities to be done in future that have already been undertaken. In various cases, the document provides detailed descriptions of what has occurred in the past, without inclusion in discussions of what has happened to the end of 2020, and what if anything remains to be done. For example section 4.7.8 Fuel Storage, refers to 14 diesel tanks, 1 jet A tank and 9 individual tank, without mentioning that some have been removed and others are still standing.

The PCMP covers 2021, during which time it is important to have a clear schedule that illustrates the activities proposed to be carried out during the "active period" and the expected completion date for these activities. The schedule should include when the J and 1A dams will be breached and when final pond water elevations of 480 m for Pond 2 and 481 m for Pond 1 will be established.

Recommendation:
(R-08) CIRNAC recommends the PCMP be modified to include a schedule of activities with expected completion dates.

9. Inadequate figures

Figures presented in Appendix A do not illustrate the site as it is in 2021, or as it will be once closure activities are completed. As such, it is difficult to evaluate the location of sampling sites or to put the proposed monitoring in context. For example, Figure 4 shows the TCA pre-2020, but there is no illustration for after closure and no indication of where the spillway will be built and what the water levels will be.

Figure 8 shows 13 seepage surface water sampling locations, but it is not clear if these are LUP-SP-01 to LUP-SP-XX referred to in Table 9. There is also no figure for seeps from the TCA, identified as LUP-TCA-01 to LUP-TCA-XX in Table 9.

Recommendation:
(R-09) CIRNAC recommends the PCMP include figures that show site conditions after planned closure works are completed, and include all the sampling stations.

10. Changes to general monitoring

Section 1.4 of the PCMP states "*General monitoring is subject to change, as directed by an Inspector or by the Licensee, and is also subject to approval by the NWB*[Nunavut Water Board]."

CIRNAC would like to clarify that an Inspector has the authority to request additional monitoring or changes to monitoring without approval by the Board. Should the licensee want to change general monitoring conditions, approval from the Nunavut Water Board would have to be sought beforehand.

Recommendation:

(R-09) CIRNAC recommends the licensee clarify the text regarding changes to general monitoring in the next revision of the PCMP.

11. Thermistor repair

Table 13 reports one thermistor in Dam 1A and one thermistor in Dam 4 were damaged in 2020 and there will be an attempt to repair them. No plans or information on what the attempts will entail are provided.

Recommendation:

(R-09) CIRNAC recommends the licensee replace damaged thermistors at Station D1A-00-01S at location Dam 1A, D4-3 at Dam 4 in 2021, if repairs are not possible.

C. REFERENCES

Federal Contaminated Sites Action Plan Long-Term Monitoring Guidance, Fisheries and Oceans Canada and Environment Canada, March 2013.

Water Licence 2AM-LUP2032, Nunavut Water Board, February 28, 2020.