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

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-LUP2032
Our file - Notre référence
GCdocs # 96904593

August 10, 2021

Mr. 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 reply to Lupin Mines Incorporated's 3rd response to comments on the Post Closure Monitoring Plan for water licence No. 2AM-LUP2032 – Lupin Mine Project

Dear Mr. Dwyer,

Thank you for your July 29, 2021 invitation for reply to Lupin Mines Incorporated's (LMI) July 29, 2021 response to Crown-Indigenous Relations and Northern Affairs Canada's (CIRNAC) July 16, 2021 comments on the Post Closure Monitoring Plan (PCMP).

CIRNAC examined LMI responses in 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.*

In our July 16, 2021 reply letter to LMI's 2nd responses, CIRNAC confirmed that comments 3 and 8 were addressed and CIRNAC was satisfied with the response to comment 1 but recommended that LMI modify section 6.2.2 of the PCMP to remove reference to discharging from the TCA at a PH of 5.5, since this would not meet water licence requirements. Comment 6 still remained an outstanding concern.

LMI's July 29, 2021 response resolved comment 1 with a commitment to make changes to section 6.2.2 of the PCMP to address CIRNAC concerns. LMI in response to comment 6, stated that they will carry out 2.5 years of active monitoring and 5 years of passive monitoring after closure with a possibility of extension if closure objectives of physical stability and chemical stability are not met by the end of the closure period in 2026. CIRNAC is of the opinion that 2.5 years of active monitoring and 5 years passive monitoring are not adequate to confirm the site physical and chemical stability or to determine if an extended monitoring is required.

Below are CIRNAC's reply to LMI's response to CIRNAC comments:

1. **Water Quality in Tailings Containment Area (TCA) –** In their July 6, 2021 response, LMI clarified that any discharge from TCA will meet water licence requirements. CIRNAC is satisfied with the response but recommended that section 6.2.2 of the PCMP be modified to remove reference to discharging from TCA at a PH of 5.5, since this would not meet water licence requirements. LMI in its response, committed to make changes to section 6.2.2 of the PCMP to address CIRNAC's concerns. CIRNAC's concerns were addressed.

2. **Duration of Passive Monitoring -** CIRNAC recommended that the PCMP support the proposed 5 years passive monitoring period with the evidence that permanent physical and chemical stability of the site could be achieved in this time frame.

   LMI in its response stated that "5 years is adequate to provide the evidence of chemical stability or provide evidence that longer monitoring is required."

   It went further to state that "As stated in the approved Closure Plan for TCA (Holubec 2005): Lupin started to cover exposed tailings in the completed cells in 1988, and to monitor the covered tailings to assess the effectiveness of the covers. As a result, Lupin has collected the most extensive and longest observed performance records of the covered cells in permafrost areas" "LMI has continued to monitor these covers since 2005 so there is currently 23 years of monitoring to date in this area."

   LMI also in its June 23, 2021 response stated that: *"Historical testing of the Lupin tailings (Klohn Leanoff, 1992) concluded that exposed tailings could become acid-generating within 5-10 years of exposure to weathering."*

   The TCA has been on care and maintenance for up to 15 years and as such, LMI's opinion is that the impact of the site on the receiving environment is known. CIRNAC partially agree with LMI's assessment as the releases from TCA have been collected and treated in the tailings ponds prior to discharge during those years of care and maintenance. At the mill site, surface waste rock was oxidized and flushed into the environment during operations and in the early days of care and maintenance leaving only residual stored oxidation products to be flushed in the more recent time periods. This water quality was used by LMI in the assessment of the dome impact on the environment after closure. In this regard, it is noted that excavation and reshaping of the dome will expose fresh waste rock for oxidation and seepage quality and loadings to the receiver may be different than predicted. An adequate time period is required to confirm LMI's geochemical assessment and that performance predictions are keeping with actual site geochemical status. These conditions are consistent with LMI's reference to Klohn statement that Acid Rock Drainage (ARD) could occur 5 to 10 years. However, geochemical status of the site do not support a reduction in the timeframe for long term post closure monitoring of geochemical behaviour and stability.

Furthermore,CIRNAC is not convinced with LMI's assertion that 5 years post closure monitoring is enough to confirm the long term physical stability and ensure that all constructed features are capable of long term performance to ensure stability.

Significant construction works will be undertaken at the K and M dams, cover placement at cell 3, 5 and behind the N dam, all of which will be new construction that should be monitored for more than 5 years to confirm performance. The timeframe should be long enough to allow for meaningful performance monitoring of engineered structure components at the dome and the TCA with respect to the impacts of climate change in general and severe events, to provide confidence in long term performance and stability.

The current Final Closure and Reclamation Plan security includes for an extended period of monitoring up to 25 years. CIRNAC concern still outstanding.

CIRNAC recommends a period of ten (10) years active monitoring, followed by fifteen (15) years passive monitoring. However , until a minimum of five (5) years sampling results are available no reduction in the overall period of monitoring should be contemplated.

CIRNAC appreciates the opportunity to participate in this review. If there are any questions, please contact me at (867) 975-4738 or vincent.okonkwo@canada.ca

Sincerely,

Vincent Okonkwo
Environment Assessment Coordinator