



P.O. Box 360  
Kugluktuk, NU X0B 0E0  
Telephone: (867) 982-3310  
Fax: (867) 982-3311  
[www.kitia.ca](http://www.kitia.ca)

**February 15, 2021**

Mr. Richard Dwyer, Manager of Licensing  
Nunavut Water Board  
Gjoa Haven, NU

Via Email: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

**Re: KIA Technical Comment Responses to Lupin Mines Incorporated Final Closure and Reclamation Plan Provided Under NWB Water License 2AM-LUP2032**

Dear Sir:

This is the submission of the Kitikmeot Inuit Association (“KIA”) in response to the technical comments to the updated Lupin 2020 Final Closure and Reclamation Plan (FCRP) and supporting documents for water license 2AM-LUP2032 made by Lupin Mines Inc. (LMI) on February 2, 2021.

**I. BACKGROUND:**

The KIA is the Regional Inuit Association for the Kitikmeot Region of Nunavut and the Designated Inuit Organization for Article 20 of the Nunavut Agreement for the Kitikmeot Region. The KIA is not a regulating agency with respect to this project, however we are representing Inuit interest due to the historic importance of Tahikyoak (Contwoyto Lake).

KIA has reviewed the LMI response to technical comments filed in support of the FCRP and supporting documents by LMI. We have been assisted in this review by Mr. Steve Januszewski, P.Eng., of SteveJan Consultants Inc. (SJCI).

KIA staff and advisors have reviewed the submitted materials by LMI during the preparation of this submission to the Board.

**II. KIA SUBMISSIONS:**

KIA’s resources are limited and our work reviewing LMI’s submitted materials benefitted from retaining SJCI to assist in the review. Furthermore, the SJCI technical memorandum in response to LMI’s technical comment responses under the Lupin 2020 FCRP is enclosed and forms the submission.



P.O. Box 360  
Kugluktuk, NU X0B 0E0  
Telephone: (867) 982-3310  
Fax: (867) 982-3311  
[www.kitia.ca](http://www.kitia.ca)

The KIA thanks the Board for the opportunity to address our concerns regarding this file. Should you have any questions or would like any clarification, I can be contacted at [srlands@kitia.ca](mailto:srlands@kitia.ca) or by phone at (867) 982-3310.

**ALL OF WHICH IS RESPECTFULLY SUBMITTED:  
ON BEHALF OF THE KITIKMEOT INUIT ASSOCIATION**

---

Wynter Kuliktana  
Senior Lands Officer  
Department of Lands, Environment & Resources  
Kitikmeot Inuit Association

Cc: Geoff Clark, Kitikmeot Inuit Association Director of Lands, Environment and Resources

Enclosed: SJCI Techncl Memo Review of LMI Technical Comment Responses 210215.pdf



**SteveJan Consultants Inc.**  
192 Werra Road  
Victoria, BC V9B 1N4  
CANADA  
Mobile: 250-850-9002

## **TECHNICAL MEMORANDUM**

**Date:** February 15, 2021

**Subject:** SJCI Comments on Lupin Mine Inc.'s February 2021 Technical Comment Responses to the 2020 Updated Final Closure and Reclamation Plan as Provided Under New NWB Water Licence 2AM-LUP2032

---

### **1. INTRODUCTION**

On behalf of the Kitikmeot Inuit Association (KIA), SteveJan Consultants Inc. (SJCI) has undertaken a review of the Lupin Mines Incorporated (LMI) responses to the comments on the 2020 updated Final Closure and Reclamation Plan (FCRP, Plan) submitted by the KIA to the NWB on November 17, 2020 as part of NWB's oversight of the review of closure plans for the Lupin mine site.

The Plan is a requirement of a new Water Licence (2AM-LUP2032) for the Lupin Mine as the Company begins to undertake final closure and reclamation of the site. The KIA is a stakeholder in the current Lupin closure review process. Mr. Januszewski, Principal Engineer at SJCI had been previously retained by the KIA to assist in the review of LMI documents as they pertained to several conditions in the new Water License. SJCI provided a review the most recent LMI FCRP package to the KIA in a November 15, 2020 Technical Memorandum, which then were included in KIA memorandum that was submitted to the NWB November 17, 2020. The current LMI Technical Comment Responses report was a response to those comments. This Technical Memorandum provides comments on that document.

It is hoped that LMI can consider the comments made in this report as well as those likely to be provided by the other commentors of the FCRP (namely BlueStar, CIRNAC and ECCC) in their preparation of the updated FCRP, including a new Post-Closure Monitoring Plan, and the Annual Report of site activities which are all due for submission to the NWB by March 31, 2021.

#### **Layout of Report**

This report will address the 36 comments provided by LMI on the KIA (SJCI) review of the FCRP. Comments also include items considered unresolved to previous KIA comments on the LMI responses to Conditions included in Part E, Items 25, 26 & 27 of the new Water License (2AM-LUP2032) as well as the text from the Conclusions and Recommendations sections of the latest (Nov.15, 2020) SJCI report.

## **2. COMMENTS ON LMI TECHNICAL COMMENT RESPONSES**

### **2.1 Summary**

The LMI report contains their responses on the Technical Comments (T.C.'s) provided by BlueStar (1), ECCC (1), CIRNAC (8) and the KIA (36). This report will provide a review of the LMI responses to the 36 KIA T.C.'s.

For the sake of brevity, neither the 1) specific FCRP package text of concern, 2) KIA's T.C.'s, nor 3) the LMI response are provided below. This report should be read in combination with the LMI T.C. Responses report which includes those materials.

### **2.2 Detailed Comments**

#### **2.2.1 Technical Comment No. 1 (W.L. Condition E-25) – Waste Rock Dome – Segregation of Wastes Being Impounded and Design of Water Drainage and Discharge System**

Thank you for your clarification.

#### **2.2.2 Technical Comment No. 2 (W.L. Condition E-26) - TCA – Design Details & Need to Ensure No Un-Approved Discharges**

Thank you for your clarification.

#### **2.2.3 Technical Comment No. 3 (W.L. Condition E-27) – Exposed Tailings Plans, Available Esker Material**

The first point has not been answered; specifically a full inventory of outlying and yet to be exposed tailings and best remediation plans have not been provided. The second point concerning the timely availability of sufficient esker material has been answered.

#### **2.2.4 Technical Comment No. 4 – Four Areas of Concern**

The first point was not answered; it dealt with the lack of updating the FCRP to reflect work done at the site over the past 2 years (i.e., 2018 and 2019) prior to issuance of the 2020 FCRP. It is understood that a comprehensive revision, with new or revised plans was not requested but the updated document should acknowledge work undertaken since the previous FCRP was issued.

Thank you for your information concerning the small pilot-scale landfarm being abandoned as well as acknowledging that method will no longer being a remediation strategy for the PHC contaminated soils on site.

Table 15 and Section 6.2 of the FCRP do not provide an itemized evaluation of the various remediation options for all the areas of contaminated soils on site.

Thank you for your clarification concerning the adequate volume of esker materials being available for the reclamation program. However, it is unclear who "Mr. Jann" is. This may be the author Mr. Steve

Januszewski of SteveJan Consultants Inc. on behalf of the KIA, although the use of the author's abbreviated (?) name "Mr. Jann" (repeated a number of times later in the LMI memo) is unconventional.

#### **2.2.5 Technical Comment No. 5 – DMS's Role in Overseeing Work on Site, Updating of FCRP**

Thank you for your clarification concerning LMI being responsible for all work on site.

The comment remains that during preparation the new FCRP should be checked for accuracy concerning dates and updating what dates are considered to be in the past and what is in the future (similar to KIA T.C. No. 4, referenced above).

#### **2.2.6 Technical Comment No. 6 (FCRP Sec 1.3.5) – KIA and Possible Water Compensation Issues**

Thank you for your clarification.

#### **2.2.7 Technical Comment No. 7 (FCRP sec. 2.1.2) – Effects of Climate Change**

A general comment was made in the SJCI T.C. concerning the conservatism in the reclamation plans being required due to the risk of temperature rises due to climate change. This topic is also covered in KIA T.C. No. 27 and is still considered valid.

#### **2.2.8 Technical Comment No. 8 (FCRP Sec. 4.3.2.5) – Cost Provision for Reclamation of Borrow and Quarry Areas**

Thank you for confirming the costing for this will be included in the updated FCRP.

#### **2.2.9 Technical Comment No. 9 (FCRP Sec. 4.3.2.9) – Volume of Waste Materials to be Impounded**

Thank you for your clarification.

#### **2.2.10 Technical Comment No. 10 (FCRP Sec. 5) – Interpretation of Monitoring Data**

Thank you for your clarification. The upcoming PCMP should provide additional details on the information being sought.

#### **2.2.11 Technical Comment No. 11 (FCRP Sec. 6.2.2) – Size Distribution of Esker Material Being Used for Covers**

Thank you for your clarification. It is understood CIRNAC has previously agreed to the size distribution of the un-screened (run-of-deposit) Fingers Lake esker material for the reclamation work.

#### **2.2.12 – Technical Comment No. 12 (FCRP Sec. 6.2.3.1) – Conservatism of Golder HHERA Water Quality Modelling of Downstream Lakes**

Thank you for your clarification.

#### **2.2.13 – Technical Comment No. 13 (FCRP sec. 6.2.3.3) – Confirmation of Downstream Lakes' Water Quality**

Thank you for your clarification.

**2.2.14 – Technical Comment No. 14 (FCRP Sec. 6.2.4) – Contents of Regulatory Review Section of FCRP**

The LMI response discusses the significance of the HHERA and mentions where the Regulatory Review process has been discussed in the NWB Guidance document and that it is outlined elsewhere within the FCRP. That is all acceptable, however the reasoning as to why this section of the FCRP goes into the details of responding to several CIRNAC comments about the ERA and later the HHERA is unclear, and as stated in the KIA T.C. is not typical of what would be in such a section of a mine closure plan. The section would typically discuss the regulatory review process.

**2.2.15 – Technical Comment No. 15 (FCRP Sec. 7) – Adequacy of Contingency on Current Financial Security**

The LMI response mentions that the financial security in place is currently ~29% of the latest cost estimate and not the 5% stated in the RECLAIM cost estimate and referred to in the SJCI Technical Comment. The original comment still applies.

The 5% contingency shown on the RECLAIM summary page is only on the Direct Costs and does not include the Indirect Costs which amount to a slightly higher total cost than the Direct Costs, being ~\$10.8M and ~\$12.2M for the Direct and Indirect costs. The 29% number LMI is referring in their response has more to do with the stepped reduction of security being held as the closure plan continues to evolve and reclamation work on site is being completed and refunds are being awarded back to LMI, rather than the overall contingency allowance being placed on implementing the entire closure plan. The Summary Sheet also states the contingency is lower due to having a firm bid for the civil works component of the closure plan. However, a number of the required closure components and their costs will likely be beyond the scope of the current civil works contract (although the author has no knowledge of the contract's full scope of work) including the various add-ons such as project management, permitting, taxes, insurances, bonding, engineering, as well as active phase and later post-closure monitoring programs, etc.

The comment about the claimed 5% figure (actually \$538K on a Total Direct and Indirect Costs Estimate of \$22.9M, i.e., 2.3%) being insufficient is still considered valid.

And it is likely the cost estimate for the Post Closure Monitoring Program (now at \$1.139M) will need to be adjusted after the updated PCMP is issued and then following review and incorporation of comments, approved.

**2.2.16 Technical Comment No. 16 (FCRP Supporting Documents) – Several Comments**

Thank you for your clarifications.

**2.2.17 Technical Comment No. 17 (FCRP App. H-01) – Decision Process for Remediation of Scattered Deposits of Tailings Materials**

The author stands by the comments presented in the text of the submitted T.C. There are a number of methodologies that should have been considered for each of the areas being evaluated (i.e., more than just the two mentioned in the Stantec report, or the one selected (i.e., cover in place) as the one to use throughout).

#### **2.2.18 Technical Comment No. 18 (FCRP App. H-12) – Risk Assessment of 2 TCA Dams**

Thank you for your clarification.

#### **2.2.19 Technical Comment No. 19 (FCRP App. H-08) – Conceptual Design for Waste Rock “Dome”**

Thank you for the additional information provided in your response.

#### **2.2.20 Technical Comment No. 20 (FCRP App. H-03) – Geotechnical Review of the Long-Term Stability of TCA Dams**

The text of App. H-03 – Design Basis and Criteria states “...Permafrost was assumed to remain at its current level...” The question remains as to why the long-term stability analyses undertaken herein did not consider lowered top of permafrost levels in the dams in the long-term (up to year 2100) as was determined in the Climate Model (App. H-02) in all the scenarios modelled.

#### **2.2.21 Technical Comment No. 21 (FCRP App. H-06) – Coupled Thermal-Seepage Modelling of the Esker Cover for the Waste Rock “Dome”**

The Technical Comments still apply. The report text states “... thermal and hydraulic properties of the different materials in the models were not available and were therefore assumed or estimated...” The output of the modelling using “state-of-practice methods” can only be as good as the inputs.

Section 4.2 of the Golder report states that the model results suggest the depth of seasonal freeze and thaw would deepen from 2.7 m under current conditions to about 4m at the end of the century. It is not as stated in the LMI response “...thawing of the natural ground is slight and occurs only at the end of the summer for the Year 2100 case...” It is not natural ground that is of concern in this case but rather the “dome”.

The report authors Golder Associates recommended the benefit of using field trials before the final cover is constructed, if possible. Realizing construction of the esker cover (over the filled waste rock “dome”) is due for construction in 2021 as stated in the LMI response, field trials are not warranted.

#### **2.2.22 Technical Comment No. 22 (FCRP App. H-07) – TCA Waste Rock Review**

The Technical Comment still stands concerning the potential of long-term ML/ARD from the upstream face of Dam 2 (depending on the type of rock that comprises the upstream (i.e., soon to be unsaturated zone of the dam) as the water level is lowered by 3 m (and the permafrost level drops) for closure of the TCA and that this dam should have been included in the assessment as an example of a dam whose state may change with closure being implemented.

#### **2.2.23 Technical Comment No. 23 (FCRP App. H-04.5) – 2017 ARD Sample Locations**

Thank you for your clarifications. Yes, the site map is referenced in Section 2.1.8 of the FCRP and is a part of the listing of historical site geochemistry work undertaken.

#### **2.2.24 Technical Comment No. 24 (FCRP App. H-05) – Decision Process for Remediation of Scattered Deposits of Tailings Materials**

The LMI Response has not transcribed the referenced KIA T.C. and quoted text from the WQ Model report correctly.

The last statement in the KIA T.C. requests that the information in the comment and the quote from the referenced Golder Technical Memorandum be considered in preparation of the PCMP. The LMI response reiterates that point. No further comment is required.

#### **2.2.25 Technical Comment No. 25 (FCRP App. H-09) – TCA Test Pitting and Standpipe Sampling Results**

Although the referenced Stantec report provides some interesting results, the issues raised in the KIA T.C. have not been addressed in the LMI response; specifically why were only 5 of 7 standpipes sampled from Cell 1 and why was a test pit dug in Cell 2 if there were no adjacent standpipes.

#### **2.2.26 Technical Comment No. 26 (FCRP App. H-04.4) – Stand-Alone APEC Site Map**

This is another example of where a one-page site map has been extracted from a significant supporting document without the accompanying relevant information. It is unfortunate that LMI includes these drawings without support (even a full listing of what is on the map and possibly the associated interpretation from the report), and that the onus is on the reader to find the full report to enable a proper evaluation of the drawing details and its significance.

#### **2.2.27 Technical Comment No. 27 (FCRP App. H-02) – Incomplete Climate Model Results**

The report suggests that the AES and LES scenarios are the “more realistic” ones of the three (for predicting the potential for long-term permafrost thawing in the frozen tailings dams), but the Conclusions section of the report only specify what the depth would be with the HES scenario. It should have included the predicted depths from the other two scenarios to enable a comparison. The LMI response suggests the information can be found in another follow-up document or in their response to the KIA request. This information should have been provided in the original report.

Graphical results shown in the report indicate increasing depths of permafrost thaw for all three scenarios over the years 1995 to 2100 time frame (i.e., -2.3 m to -4.0 m for AES, -2.3 m to -2.8 m for LES, and -2.3 m to -14.0 m for HES).

#### **2.2.28 Technical Comment No. 28 (FCRP App. H-11) – Ice Core Sections in Two TCA Dams**

The KIA T.C. is still valid as neither the Aurora detailed report or the Stantec cover letter make any specific conclusions to answer the initial goal of the ECCC request of confirming the condition of the



frozen cores. The LMI response states that the Aurora report found the levels of the permafrost to be similar to that of the nearby thermistors. The Aurora report does not include a “Conclusions” section but rather has an “Interpretation and Results” section which amongst other findings indicated a 120 m long depressed zone in Dam 3D. No anomalies were found for Dam 4. The Aurora report does not compare the levels from their testing to that of the thermistors.

#### **2.2.29 Technical Comment No. 29 (FCRP App. H-10) – Decision Matrix for Remediation of Areas with Contamination**

The KIA T.C. concerning the overly simplified flowsheet that was the decision matrix for selecting the optimal remediation plans for exposed contaminants above TCA closure water levels still applies. However, it is reassuring to see that the LMI Response states the Decision Matrix is no longer being used. However, a reference to that being stated in Commitment Part E Item 27 Response (LMI letter to NWB dated July 9, 2020) could not be found as the LMI Response states.

#### **2.2.30 Technical Comment No. 30 (FCRP App. H-04.3) – APEC Tables 2005**

Thank you for your clarifications.

#### **2.2.31 Technical Comment No. 31 (FCRP App. H-04.1) – 2005 APEC Locations Map**

Thank you for your clarification.

#### **2.2.32 Technical Comment No. 32 (FCRP App. H-04.2) – 2005 Site Investigation Locations Map from 2006 Morrow ESA**

No comment is considered to be required.

#### **2.2.33 Technical Comment No. 33 – LMI Commitments to Undertake Future Work**

Item iii) The text states the QA/QC program was to have been issued out for comments prior to commencement of the remedial activities. The LMI response agrees that it will be included in the updated PCMP but then goes on to say that these activities were started in August 2020. Was the program issued out for comments before it was initiated?

Item v) The KIA T.C. was referring to text in the 2020 FCRP (i.e., Sec 4.3.2.,9 Hazardous Building Materials) with LMI stating “...An intrusive building materials assessment will be completed prior to any demolition activities...” (i.e., after the two reported assessments of 2012 and 2017). Thus, the T.C. has not been answered. And it is likely this item (or a more limited version of it) should be added back into the security estimate, as the LMI response states that costing for undertaking a hazardous materials assessment was removed in 2018.

Item vii) It is understood that the internal spillways/swales will be required immediately to move water between the cells and avoid uncontrolled overtoppings (see text in Sec. 4.3.2.13 – Synthesis of Preferred Activities into a Reclamation Plan) of the internal dams. And yes, no water can be released from the TCA

facility until it meets specified water quality guidelines and that is when spillways in Dams J and especially Dam 1A will need to be constructed.

For the other items, thank you for your clarifications.

**2.2.34 Technical Comment No. 34 – Continuing Uncertainties**

Thank you for your clarifications.

**2.2.35 Technical Comment No. 35 – KIA T.C. Memo - Conclusions**

No comment is considered to be required.

**2.2.36 Technical Comment No. 36 – KIA T.C. Memo - Recommendations**

No comment is considered to be required.

<Original signed by>

Steve Januszewski, P. Eng. (BC)

Principal Engineer

SteveJan Consultants Inc.

Mobile: 1-250-850-9002