LUPIN MINES INCORPORATED

2020 Updated Final Closure and Reclamation Plan

Technical Comment Responses

Submitted to:

Nunavut Water Board
PO Box 119
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Submitted by:

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On behalf of:
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Contents

1.0 INTRODUCTION

On February 28, 2020, the Nunavut Water Board (NWB or Board) issued the Type A Water Licence 2AM-LUP2032 (Licence), with approval of the Licence from the Minister of Crown Indigenous Relations and Northern Affairs on 9 April 2020. The Licence requires Lupin Mines Incorporated (LMI) in accordance with Part I, Item 2, to submit to the Board for review within ninety (90) days of approval of the Licence, an updated Final Closure and Reclamation Plan (FCRP, Ver1), to address relevant comments and recommendations provided by intervening parties and the Board during the review process for the Application.

Technical review submissions were received from Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) and Environment and Climate Change Canada (ECCC), SteveJan Consultants Inc on behalf of the Kitikmeot Inuit Association (KIA) and Blue Star Gold Corp. (Blue Star) on or before November 18, 2020.

In response to the submissions, LMI has provided this document, which includes the response from LMI to each of the comments as presented including references and attachments where necessary.

2.0 BLUE STAR CORP. (BLUE STAR)

Interested Party:	Blue Star	**Technical Comment No:**	1
Subject/Topic:	Correction Reference to Ulu Gold Project		

Reference:

- n/a

Detailed Review Comment by Party:

In response to a submission made to the Nunavut Water Board pertaining to 2BM-LUP2032, being Lupin Mines Incorporated's *Final Closure and Reclamation Plan Rev.1, August 2020*. This document incorrectly refers to the ownership, management and use of assets associated with the Ulu Gold Project (Ulu).

On December 24, 2019, following execution of an agreement between Blue Star and Bonito Capital Corp., Blue Star acquired Ulu, and the assignment of water licence 2BM-ULU21520 to Blue Star came into effect. Blue Star (including its wholly owned subsidiaries) continue to be the owner, manager and licensee of Ulu under 2BM-ULU2030. Assets acquired through this transaction, including mobile equipment located at Ulu, are the property of Blue Star for use on its projects at its sole discretion.

Request or Recommendation by Party:

Correction to the Plan

LMI Response:

LMI acknowledges and apologizes for the error and confirms the *Final Closure and Reclamation Plan Rev.1, August 2020* submitted on September 28, 2020, will be updated to remove reference to the Ulu Gold project.

LMI will submit an updated FCRP Rev.2 with the 2020 Annual Report due to NWB on 31 March 2021.

Reference(s): n/a

Attachment: n/a

3.0 ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC)

Interested Party:	ECCC	**Technical Comment No:**	1
Subject/Topic:	Tailings Containment Area		

Reference:

- Section 3.3.1 and App H-9

Detailed Review Comment by Party:

The Proponent stated, cover active layer (thaw depth) ranged from 1.0 m to 1.5 m, and varied between reporting years and TCA locations. Furthermore, the Proponent stated, as of 2017, there remained approximately 123,500 m2 to cover in Cell 5 and 86,000 m2 to cover in Cell 3. Covering of Cell 5 resumed in 2018. Approximately 19,136 m3 of esker material was placed in Cell 5 during 2018 to cover exposed tailings. An area of approximately 104,500 m2 remains to be covered in Cell 5 and approximately 86,000 m2remains to be covered in Cell 3, for a total area of approximately 190,500 m2 remaining to be covered within the Tailings Containment Area.

Based on the above statements, ECCC is of the view that the active layer (thaw depth) is thicker or deeper than the cover thickness of 1 m, implying that the thaw depth will penetrate beyond the cover into the tailings, which may thaw causing potential oxidation of sulphide content that will result in Acid Rock Drainage (ARD)/Metal Leaching (ML). Although the Stantec Technical Memo (Appendix H-9) concluded, Oxidized tailings were not observed within the test pits. In general, the water quality results from 2002 and 2019 are comparable. Based on these observations and measurements, the cover appears to be functioning as permitted, test pit 1 photograph shows frozen tailings at 1.3m depth (August 24-25, 2019), and test Pit 2 photograph shows water seeping into the test pit at 1.3m depth. These photographs show that the thaw penetrated beyond the cover into the tailings. Therefore, ECCC recommends that the proponent implement a monitoring and mitigation program to detect and remediate any ARD/ML issues should that occur.

Request or Recommendation by Party:

ECCC recommends that the proponent have a mitigation plan to address acidic leachates that may occur should the tailings begin to thaw and produce acidic leachate.

LMI Response:

The active layer at Lupin is deeper than 1 m, which is why Lupin moved away from a permafrost encapsulation tailings closure technology and towards a store-and-release tailings cover technology, as explained in the approved FCRP (LMI, 2017). The store-and-release cover limits oxygen ingress into the tailings and any associated ARD generation.

Reference(s): n/a

Attachment: n/a

4.0 CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Interested Party:	CIRNAC	**Technical Comment No:**	1
Subject/Topic:	Integration of comments responses to the FCRP		

Reference:

- n/a

Detailed Review Comment by Party:

The R1 version of the FCRP has had editorial updates made throughout the document. In addition, various sections have been updated to provide comments and specific references and responses to questions from CIRNAC and other parties, as per commitments made to the NWB at the technical meeting and/or the public hearing.

The material R1 additions to the FCRP relate to references made to, and the inclusion of the Technical Memoranda provided by LMI in its various responses and commitments. CIRNAC has reviewed these documents previously and provided comments on them. While in some cases, LMl's responses have addressed CIRNAC's concerns, in other cases additional information was (is required) to address issues raised by CIRNAC with respect to these Technical Memoranda. CIRNAC also notes that the R1 FCRP does not include any references to the NWB Conditions 25, 26, 27 that resulted from the Public Hearing of January 2020 Type A 2AM-LUP2032 issued on 28 February 2020 and approved on 9 April 2020.

Request or Recommendation by Party:

CIRNAC recommends that:

i) LMI create a disposition table listing all issues raised by the lntervenors at the technical and management meetings, along with LMI commitments, responses and technical memos, plus intervenor review comments on LMI's submission and remaining concerns raised by lntervenors with respect to the LMI responses provided to date.

ii) LMI update the R1 FCRP to include information related to Conditions 25, 26, and 27 of the approved Water Licence 2AM-LUP2032.

LMI Response:

i) The Type A Water Licence Part J, Item 2 required LMI to incorporate commitment, responses and associated technical memos into an updated FCRP as provided by LMI through submission of FCRP Rev1, submitted on September 28, 2020. Technical Memorandum were submitted to the NWB in compliance with specific terms and conditions (i.e., Part E) are already a part of the NWB registry. LMI would refer CIRNAC to the NWB Reasons for Decision that provides a list of submissions and correspondence in Appendix D.

iii) LMI notes the technical review of information related to Water Licence 2AM-LUP2032 Part E, Item 25, 26 & 27 was only concluded by the NWB on 2 November 2020. LMI will provide an updated Rev2 of the FCRP in the 2020 Annual Report due 31 March 2021.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	**Technical Comment No:**	2
Subject/Topic:	Schedule Updates		

Reference:

- n/a

Detailed Review Comment by Party:

The FCRP Rev 1 (August 2020) includes Table 14 which provides a schedule that was prepared on March 2019. This schedule needs to be updated to remove items that are no longer valid (e.g., includes line items that refer to work to be done under Care and Maintenance) and include all activities agreed to by LMI including such items/activities as follows:

•Construction of water management structures related to "dome";

•Stabilization and erosion protection of tailings dams (M, K, etc.);

•Removal for placement in tailings cells, or cover in place, existing or future exposed tailings (after dewatering); and,

•Construction of water management features (drainage swales and discharge structures) in tailings cells.

In addition to the above, the March 2019 schedule does not reflect the actual works carried out in 2019 or 2020. It would be helpful if LMI can provide a more detailed and updated schedule that includes all actions to be undertaken, links with LMI's RECLAIM estimate and milestones, and illustrates actual verses planned progress as well as any proposed future schedule revisions. This update to the FCRP will provide a better understanding of the state of the closure works and scheduled revisions/adjustments LMI may be proposing going forward.

Request or Recommendation by Party:

CIRNAC recommends that LMI provide a more detailed and updated schedule for the reclamation works consistent with the work completed as reflected in the Security Reduction requests of 2020. The updated schedule should include the original 2019 proposed project schedule timelines as shown in the R1 FCRP, the actual work carried out to the end of 2020, and any proposed revisions to the schedule going forward. The schedule should be updated to include line items for all activities committed to by LMI.

LMI Response:

LMI is committed to compliance and submission of the Annual Report on March 31, 2021 to reflect works completed in 2020 and will include in accordance with Schedule B, Item 1, Part m) a summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	**Technical Comment No:**	3
Subject/Topic:	Removal of contaminated Materials from Mill Site Area Prior to Consolidating Waste Rock and Construction Dome Cover		

Reference:

- n/a

Detailed Review Comment by Party:

The R1 FCRP states that approximately 16,000 m3 heavily arsenic impacted soils and 35,200 m3 of PHC impacted soils (S4.3.2.3, p 4-6) exist on site that will require active management and disposal.

On page 4-9 in regard to arsenic impacted soils LMI states; *"The heavily arsenic impacted shallow material will be ex-situ remediated using conventional techniques (i.e., excavators, haul trucks, and dozers) and will be excavated and disposed of within the shafts or open crown pillars for isolation."*

On the same page in regard to the PHC impacted soils LMI states that; *"35,200 m3 of PHC impacted soil has been identified at 13 historical maintenance, fueling, and fuel storage locations across the Site (Golder 2017a). These locations include: the STF and Powerhouse, the Mill and Office Emergency Tanks, the Main Tank Farm Loaders, the Main Tank Farm Bedding Sand, the Emergency Powerhouse, the South Burn Pit, the Landfill, the RTL Shop, the North Burn Pit, the Incinerator, Cold Storage #1, the Former Airstrip Fuelling Area, and the former Ball Field. This material will be ex-situ remediated using conventional techniques (i.e., excavators, haul trucks, and dozers) and disposed of in the shafts or open crown pillars."*

No drawings were provided in the R1 FCRP document identifying the location and extent of the areas with heavily impacted arsenic or PHCs requiring excavation. In the absence of a drawing providing this information it is difficult to confirm that all of these impacted materials have been removed from these locations before consolidating the waste rock at the mill site.

Request or Recommendation by Party:

CIRNAC recommends that LMI provide a detailed site plan that identifies the location and estimated extent of heavily impacted arsenic soils, and PHC impacted soils that are expected to be excavated and placed underground. CIRNAC also requests that LMI clarify how it will confirm that these materials have been removed prior to waste rock re- grading and cover placement.

LMI Response:

Further to the ESA completed in 2006 and updated in the 2017 Updated Phase 1 & II Environmental Site Assessment completed by Golder, a detailed site plan indicating the locations of heavily impacted arsenic soils and PHC impacted soils that will be excavated and disposed underground is attached (Figure 1). The extents of the excavations will be determined in the field through the completion of field screening and confirmatory soil sampling. LMI will confirm the removal of these materials through the implementation of the contaminated soils quality assurance / quality control (QA/QC) plan outlined in Appendix C2 of the Post Closure Monitoring Plan due to the NWB on 9 April 2021 in accordance with Part J, Item 13 of the Licence.

Reference(s): n/a

Attachment:

Figure 1 – Locations of Contaminated Soils to be Excavated (19136158-0005-CM-0001-B-SIZE)

Interested Party:	CIRNAC	**Technical Comment No:**	4
Subject/Topic:	Crown Pillar Stabilization and Disposal of Materials Underground		

Reference:

- n/a

Detailed Review Comment by Party:

Discussion of closure of the underground and placement of material into the underground is found in the Executive Summary 5a) and Section 4.3.2.4 Underground Workings, and in Figures 6, 13, and 14. Review of these sections notes that on page 4- 14 LMI states the Preferred Reclamation activities will; *"modify the previous plan for the West Zone disposal as shown on Figure 14. The modified plan would address the void areas and increase the storage capacity. Instead of developing additional drop raises in the remaining crown pillar for disposal, the new plan would be to blast down the remaining crown pillar, creating an open slope trench approximately 260 m in length and approximately 72 m deep".*

Consistent with these statements, on page 4-15 Synthesis of Preferred Activities into a Reclamation Plan, LMI states that *"The remaining West Zone crown pillar will be collapsed to provide additional disposal capacity and to prevent future post-closure stability problems. The main haulage shaft, fresh air raise, and the exhaust raise will be completely backfilled to prevent access. Site materials and equipment, waste rock, and hydrocarbon contaminated soils will be disposed of in these areas".*

Upon review of the R1 FCRP Figures 6, 13, and 14, CIRNAC identified the following:

•Figure 6 notes that it provides a Site Plan showing the West Zone and provides some notes on open depths and a "ramp" in the areas referred to as WZ Crown Pillar Pit and WZ Underground Disposal Key Cross Section Locations (5).

Request or Recommendation by Party:

CIRNAC recommends that LMI provide more detailed discussions and plans related to the following:

•How surface openings and the open stope will be filled.

•How long-term subsidence of fill materials will be avoided.

•The information provided to the Mines Inspector with respect to final closure of surface openings.

LMI Response:

i) The updated FCRP Rev1 submitted on September 28, 2020, confirms that the surface openings and the open stope will be completely filled. Waste materials will be dumped beside the openings and then progressively dozed into the openings.

ii) As shown on Figure 10, the entire west zone crown pillar area will fall within the footprint of the waste rock "dome". As shown on Figure 6, the ground surface elevation along the open crown pillar generally varies between Elev. 502 and 501 m, with lower elevations on the north end. Comparing this to the dome grading plan (TM of June 8, 2020 in response to condition E-25) shows that the total cover over the crown pillar (including the 1 m esker cover) will generally be about 4 m. It is expected that most of the fill subsidence will occur while the dome is being constructed and so it will be accommodated in the final grading. Any long-term subsidence can be corrected by placing additional esker material in the subsidence area to bring it back up to grade. A small volume of esker material will be stockpiled on the dome for this purpose.

iii) The information provided to the Mines Inspector on June 29 was confirmed and provided to the NWB in response to CIRNAC similar question related to the technical review of term and condition Part E, Item 25.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	**Technical Comment No:**	5
Subject/Topic:	Long Term Stability of Dome Cover and Erosion Stopes		

Reference:

- n/a

Detailed Review Comment by Party:

Since the development of the draft FCRP, CIRNAC has expressed concerns regarding the long-term effectiveness and erosion stability of the proposed dome cover and water management systems. Prior to the Public Hearing of January 2020, LMI replied through a series of discussions and the Technical Memos included in Appendix H-8 (Technical Memorandum in Appendix H-8 regarding Conceptual Design for the Waste Rock "Dome" at Lupin Mine for response to TM/PHC Commitment No.5 (Golder, 2019d).

Pursuant to the Public Hearing, in response to Condition 25 of the Water Licence, Golder provided a Technical Memorandum dated 8 June 2020 that included a brief discussion on the "Dome" Design Objective and two "Not for Construction" drawings; one provided a Plan View drawing of the proposed dome, and the other provided two cross sections through the proposed "dome" along with typical details of the proposed drainage chutes, and the crest perimeter berm.

CIRNAC appreciated LMI's submission of the additional information in the Technical Memorandum and subsequently provided review comments to the NWB for LMI consideration. CIRNAC notes that the 8 June 2020 memo and drawings from LMI were not included in the R1 FCRP document.

Request or Recommendation by Party:

CIRNAC recommends that the R1 FCRP be updated to include:

•The contents of the 8 June 2020 Golder Technical Memorandum responding to Condition 25 requirements.

•CIRNAC concerns on the "dome" design related to long term erosion, as expressed in CIRNAC comments on the Condition 25 Submissions as dated 25 August 2020.

•Any further design details that LMI may have generated since June 2020 with respect to the "dome" design.

LMI Response:

LMI notes the technical review of information related to Water Licence 2AM-LUP2032 Part E, Item 25, 26 & 27 was only concluded by the NWB on 2 November 2020 wherein, NWB confirms that it has completed its review of the above mentioned Technical Memorandums and related submissions, and finds the information functional and generally satisfying Part E, Items 25, 26, and 27 of Water Licence 2AM-LUP2032. Refer to document titled 201102 2AM0LUP2032 Part E, Item 25, 26, 27-ODDE.pdf at ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/3%20TECH/E%20WASTE%20DISP/

LMI will provide an updated Rev2 of the FCRP in the 2020 Annual Report due 31 March 2021. The updated FCRP Rev1 was submitted to the NWB on September 28, 2020.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	Technical Comment No:	6
Subject/Topic:	TCA - Embankment Stabilization and Erosion		

Reference:

- n/a

Detailed Review Comment by Party:

Condition 26 is a Licence condition generated with respect to addressing the concerns expressed and the request for additional information by Intervenors to clarify the nature and extent of long term stabilization and closure works at the TCA, and in particular as related to K and M dam repairs and long term stability and erosion control.

By way of a Technical Memorandum from Stantec dated 8 June 2020, LMI provided a substantial information package that included design notes, specifications, and a series of drawings (plans, sections, profiles, and details) related to the proposed closure works for the TCA area. Specifically, the package included 15 drawings: 1 Design Specification drawing, 4 Cell 5 drawings; 4 Cell 3 drawings; 3M Dam drawings; and 3 K Dam drawings.

CIRNAC notes that the 8 June 2020 memo and drawings were not included in the R1 FCRP document.

Request or Recommendation by Party:

CIRNAC recommends that the R1 FCRP be updated to include:

•The contents of the 8 June 2020 Stantec Technical Memorandum responding to Condition 26 requirements.

•Any further revisions or details that LMI may have generated since June 2020 with respect to the closure works at the TCA.

LMI Response:

LMI notes the technical review of information related to Water Licence 2AM-LUP2032 Part E, Item 25, 26 & 27 was only concluded by the NWB on 2 November 2020. LMI will provide an updated Rev2 of the FCRP in the 2020 Annual Report due 31 March 2021. The updated FCRP Rev1 was submitted to the NWB on September 28, 2020.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	Technical Comment No:	7
Subject/Topic:	TCA - N Dam and Potentially Exposed Tailings		

Reference:

- n/a

Detailed Review Comment by Party:

Figure 11 of the R1 FCRP shows that a tailings cover is to be placed in the area contained by the N Dam. No other reference is made to work at the N Dam or covering of the N Dam tailings in the R1 FCRP document.

Appendix H-03 TCA Dam Stability Review Rev 0 dated 14 November 2020, includes modeled cross sections of the N Dam (Fig 30, 31, and 32) as part of the geotechnical stability analysis. Given that the downstream embankment of the N Dam was mostly underwater in 2019 it is unclear how the profile was generated.

LMI's provision of additional TCA details in the 8 June 2020 Stantec Technical Memorandum and drawing package addresses the N Dam tailings cover in Drawing 002 Cell 5 Closure, Plan View - in which Note 3 states that topographic and bathymetric surveys were not available due to ponded water, that dewatering is required before cover placement, and that the contractor is to adjust cover placement to ensure a 1 m cover thickness. The drawings do not clearly indicate water flow management in this area, e.g., will there be an outlet from this area, and if so where and how it will be constructed.

Request or Recommendation by Party:

CIRNAC recommends that LMI provide additional information with respect to the contour information used in the N Dam Safety analysis as well as on the final contour elevations and associated water management for the N Dam containment area.

LMI Response:

Dam N profiles were generated using the bathymetric survey information as outlined in the FCRP Technical Memorandum: 2AM-LUP2032 related Technical Meeting Commitment No.6 Response – Geotechnical Review on the long-term stability of the TCA Dams (Refer to Updated FCRP, Appendix H_03). Based on currently available information, Cell N cover will be shaped to shed water and does not require an outlet.

Reference(s): n/a

Attachment: n/a

Interested Party:	CIRNAC	**Technical Comment No:**	8
Subject/Topic:	Financial Security - Section 7		

Reference:

- n/a

Detailed Review Comment by Party:

In regard to Financial Security, Section 7 has been significantly altered to remove discussion of fonner liability estimate and other related information. The R1 FCRP makes reference to LMl's January 2020 RECLAIM estimate of $23,463,049; the release framework and milestones; states that $6,549,072 was released to LMI in April 2020, and that the new letter of credit approved 9 June 2020 is in the amount of $19,558,231. CIRNAC appreciates inclusion of this current detail, and observed no discussion on the difference in security held and LMl's RECLAIM estimate value less the released amount ($2,644,254). This may lead to confusion when parties review the RECLAIM model to evaluate reduction of security and the amount of security still being held.

Request or Recommendation by Party:

CIRNAC recommends that LMI provide a brief discussion on the difference in security held and LMl's RECLAIM estimate value less the released amount.

LMI Response:

In January of 2020, the security for 2AM-LUP1520 was $26,107,303. LMI's revised RECLAIM estimate submitted in January 2020 was in the amount of $23,463,049. The NWB decision when approving the renewed/FRCP water licence 2AM-LUP2032 was to keep the security the same, being $26,107,303. In April of 2020 LMI obtained a release in the amount of $6,549,072 leaving the total security at $19,558,231. In October of 2020 LMI obtaining another release in the amount of $4,984,477 leaving the total security of January 2021 at $14,573.754.

Reference(s): n/a

Attachment: n/a

5.0 KITIKMEOT INUIT ASSOCIATION (KIA)

Interested Party:	KIA	**Technical Comment No:**	1
Subject/Topic:	Previous KIA Comments on New Water License Conditions		

Reference:
Item 25

Detailed Review Comment by Party:

To reduce the risk of generating ML/ARD seepage, selective placement of PAG waste rock with the "worse" material (i.e., with lower NP/AP ratios) to be placed deeper within openings and "cleaner" material (i.e., with higher NP/AP ratios) being placed closer to the top or perimeter of any waste rock impoundments. Instead LMI is considering all surface waste rock to be PAG, and it will be used wherever plans are for its disposal, without preference to getting the "worse" material further away from possible water and air intrusion as was suggested. Separation and isolated impoundment of the highest As-contaminated soils is planned to be undertaken, but not for the PAG waste rock. This could present a long-term issue for the site and LMI and/or the regulator responsible for the site; Although the LMI provided a response, stating that "...the PAG samples were distributed throughout the site...", selective excavation and placement of these material could be achieved. It would be in LMI's best interest to do whatever it can in this regard, as it will help minimize ML/ARD seepage potential in the future. The proposed waste rock dome is intended to be sloped to drain surface wasters to the perimeter and then to flow to a number of discharge points. The Water License required a Technical Memorandum to be submitted within 60 days of License approval that was to include, among other items, details on drainage systems and conceptual water features and erosion control measures. These have not been provided.

Request or Recommendation by Party:

LMI should provide details of proposed water, drainage and erosion control structures being proposed for the waste rock "dome".

LMI Response:

Refer to the Technical Memo dated 8 June 2020 in response to Part E, Item 25 (Refer to NWB Registry at ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/3%20TECH/E%20WASTE%20DISP/) Geochemical studies indicated that PAG rock was dispersed across the site; therefore, there is no practicable way of segregating PAG and NPAG rock during relocation. Furthermore, the HHERA (Refer to Attachment 1 to 4 related to the HHERA on the NWB Registry at ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/2%20ADMIN/4%20HEARINGS/2%20HEARING/2019%20Amendment%20Renewal/ indicated that the proposed approach of relocating and covering unclassified waste rock would achieve seepage quality and quantity that would have an acceptable impact on the environment. The technical memo in response to water licence Part E, Item 25 showed the location and the conceptual design of the drainage chutes (Refer to link provided above regarding Part E, Item 25). LMI's memo of September 30th in response to CIRNAC comments provides additional discussion of the dome drainage design.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	2
Subject/Topic:	Previous KIA Comments on New Water License Conditions		

Reference:

- Item 26

Detailed Review Comment by Party:

A specification is still missing for the cover fill, also referred to as compacted fill, and esker. No substantive changes were made to the drawings specifically concerning recognition of changed TCA pond levels during the post-closure phase and the need for outflow spillways, especially from Cells 5 to extend into the new lower water ponds and a request that show design flood event / design storm water flow volume. velocity estimates and water levels through/over all the structures.

The author's previous comment still stands about the long list of work details being left to be resolved in-field by the site engineer that could have been significantly dealt with in advance with more extensive field investigations and more information being provided in the drawings. This makes a review of the methodologies by stakeholders such as the KIA impossible, as decisions concerning methodologies will be made in the field during active reclamation work without stakeholder review in advance. The design of the drainage channel for Cell 3 closure (Dwg. 8) does not look durable enough as the erosive forces that will take place with over-steepened side walls cut into the esker cover material (with no lining) and a design storm event water level which is shown to be up to the full 0.5m height of the channel could quickly degrade the channel.

Placement of TCA dam slope armoring with compacted fill will involve placement in horizontal lifts, but there is no specification on the height of each lift when it is being constructed, nor a compaction specification apart from an over-arching "...slopes shall be track packed to limit surface erosion..." See also Drawing 11 & 18 to see how difficult this will be as the additional sloped material to be placed against the dam is not a large enough area and thus getting equipment onto the upstream buttresses will be difficult; The specifications (Dwg. 1) state the Contractor is to remove any impacted water from the tailings cells during cover material placement and it "...must be managed and discharged in such a way that will not impact the water treatment in Pond 1 and Pond 2..." However, it doesn't state that the water is not be discharged outside of the TCA facility without prior water quality analyses having been undertaken to confirm acceptability and with appropriate approvals granted.

Request or Recommendation by Party:

i) All of the cross-sectional drawings should show design flood event/design storm water flow volume water levels as well as estimates of water velocities.

ii) Designs for channels such as the one proposed for Cell 3 closure need to be confirmed as being adequately durable to withstand design storm events.

iii) The FCRP needs to specifically state to the Contractor that there is to be no discharge of TCA water to outside of the facility without prior water quality analyses having been taken to confirm acceptability and with appropriate approvals granted.

LMI Response:

i) The design flood and flow are shown on the IFC drawings. Flood event was included in drawings: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/3%20TECH/E%20WASTE%20DISP/200715%202AM-LUP2032%20-

%20LMI%20Response%20Drawings%20129500081_TCA%20Closure%20Drawings_Signed_20200706-IMLE.pdf

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/3%20TECH/E%20WASTE%20DISP/200715%202AM-LUP2032%20-%20LMI%20Response%20Drawings%20129500081_TCA%20Closure%20Drawings_Signed_20200706-IMLE.pdf

ii) The channel designs are carried out by a hydrotechnical engineer, reviewed by a qualified senior engineer, and signed off by the geotechnical Engineer of Record (EOR) to meet the design storm event outlined by the Canadian Dam Association (CDA) Guideline. A geotextile is shown on the drawings to separate the armor and the esker cover.

iii) Respectively, the updated FCRP Rev1 does not need to specifically state to the “Contractor” that there is to be no discharge from the TCA water to outside the facility without prior water quality analysis having been taken to confirm acceptability and with appropriate approvals granted. LMI as the Licensee is responsible for compliance to all permits, legislative obligation and directives. The Type A Water Licence 2AM-LUP2032 specifically states that failure to comply with this licence may be a violation of the Act, subjecting the Licensee (LMI) to the enforcement measures and penalties provided for in the Act and the current Type A Licence provides for the terms and conditions that must be met by LMI (not a Contractor) for the discharge of waters from the TCA.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	3
Subject/Topic:	Previous KIA Comments on New Water License Conditions		

Reference:

- Item 27

Detailed Review Comment by Party:

A range of methodologies are available for dealing with pockets of tailings located outside of the tailings cells, or currently below the water cover in the TCA water ponds, although the FCRP is relying on a limited selection of these, namely cover-in-place(based on Stantec Technical Memorandum dated June 8, 2020). This may not be the best long-term methodology. However, LMI states the civil works contract for this has already been awarded and thus there is no change possible. This is not correct. It would be in LMI's best interest in employing the best methods and ones which in the end will have the best long-term results.

Uncertainties: KIA had questioned the uncertainty of there being adequate volumes and quality of esker material that are being proposed to cover significant portions of the site as engineered cover. LMI provided a response stating "... LMI does confirm that there are more than adequate volumes of esker material to carry out the required closure and reclamation activities". A blanket statement does not provide adequate assurance.

Request or Recommendation by Party:

i) LMI should provide a listing of all the outlying or yet to be exposed deposits of tailings material and provide a thorough alternatives assessment for all the individual areas with the best solution for each then determined.

ii) LMI should provide an estimate of the total volume of acceptable quality esker materials required to complete the reclamation program and the timeline on the esker material being extractable(i.e., a methodology) to be employed due to the pile's frozen permafrost state.

LMI Response:

i) A technical memo, Commitment Part E Item 27 Response, outlining a conceptual cover was completed as part of the FCRP.

ii) Currently, the borrow area is approximately 422,000 m2. Assuming an annual thaw depth of at least 1.5 m, at least 633,000 m3 of esker is readily available for use and adequate for closure application. The esker landform is very extensive and there would be room to expand the borrow pit within the Lupin Surface Lease.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	4
Subject/Topic:	General Comments of FCRP		

Reference:

- n/a

Detailed Review Comment by Party:

i) Significant portions of the new FCRP have not been updated since the 2018 document. A number of tasks proposed for work to be undertaken in 2018 and 2019 after the 2018 FCRP was issued are still included in the 2020 text with the same estimated dates of when the work was to be undertaken. It does not look professional and is confusing. The 2018 Plan was prepared by Golder Associates. The 2020 Plan, although in the same format as the earlier Plan, does not show it as being a Golder product. The Plan was likely updated by LMI, who did not do as thorough an editing as would have been done by Golder.

ii) LMI considered the estimated 450,000m3 of contaminated soils, comprising 35,200 m3 PHC-contaminated & 418,000 m3 As-contaminated soils(Ref: FCRP Sec. 4.3.2.3)too large a volume for ex-situ remediation or on-site remediation using methods such as PHC-landfarming or consolidating and covering due to their volumes and time constraints (i.e., wanting to have active reclamation work completed within 2-3 years) (Ref: FCRP Sec. 4.3.2.3). Instead, a risk-based plan has been provided for removing 16,300 m3 of highly As-contaminated soils (Ref: FCRP Sec. 4.3.2.3) into the crown pillar and covering it with esker material layer and for the remainder (As-and PHC-contaminated soils) the Plan is to cover these areas in-situ with esker material covers. Also, the FCRP does not provide any conclusions on the success or failure to date of the small site landfarm that was established in 2017 with an initial volume of 500m3 of PHC-contaminated soils.

iii) The FCRP proposes a program of covering areas of contaminated soils with an esker material although the use of several different methodologies would likely provide a better long term solution and one which ultimately will require less long-term monitoring and the possible need for later interventions if acceptable long-term levels are not reached. The FCRP is basing this plan on a flow sheet decision matrix (Stantec 2020) which does not provide sufficient detail to adequately assess the numerous areas on site which need to be dealt with individually and which in the end may be best suited to one of several different remediation methodologies. (i.e., the toolbox should not consist of just one tool, as is being proposed).

iv) The FCRP relies on a significant quantity of acceptable quality esker material to be used as an engineered cover for all the required areas. The document does not provide an estimate of how much material will be required and whether there are sufficient volumes available, be it at the Fingers Lake location or from elsewhere, and if not what the back-up plan may be.

Request or Recommendation by Party:

n/a

LMI Response:

i) The FCRP Rev0 was approved by the NWB on issuance of the Type A Water Licence and subsequent approval of the Licence by the Minister. LMI was requested by the NWB to update the approved FCRP Rev0 to address relevant comments and recommendations provided by intervening parties and the Board during the review process for the Application which concluded in January 2020 not to complete a comprehensive revision of the approved Plan.

ii) The remedial strategy for contaminated soils consists of the excavation and underground disposal of the heavily arsenic impacted soils (16,300 m^3) and the petroleum hydrocarbon (PHC) impacted soils (35,200 m^3). The remainder of the arsenic contaminated soils (401,700 m^3) will be consolidated within the central mill area, graded to a dome shape, and covered with 1.0 m of esker material. There are no conclusions on the success or failure of the pilot landfarm as this remedial strategy was abandoned shortly after construction of the pilot landfarm. This strategy was abandoned due to the significant volume of PHC impacted soils and the impracticability to bio-remediate this volume of soil over a short timeframe (2 to 3 year closure period).

iii) The list of remedial alternatives considered for the contaminated soils is provided in Table 15 of the FCRP. The HHERA confirmed that the selected remedial strategy is sufficiently protective of human health and the environment (refer to Section 6.2 of the FCRP).

iv) Refer to Technical Comment Response KIA-TC-03 (iii). An estimate of the quantities required were provided to Mr. Jann (via LMI's response to the KIA on July 31, 2020 – filed on the NWB FTP site). On August 12, 2020 the KIA responded, "The LMI Response is considered acceptable."

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	**Technical Comment No:**	5
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- n/a

Detailed Review Comment by Party:

A number of references are made to the use of Discovery Mining Services (DMS) to undertake and/or to oversee others completing a number of the ongoing tasks at the site, namely site monitoring during the Active and Passive Phases of the reclamation and closure work at the site. No information is provided on how the arrangement between LMI and DMS will work. There is no information provided on whether DMS or LMI will be submitting ongoing reporting to NWB and others.

The Plan includes minimal updating of the reclamation work done at the site since the earlier 2018 DRAFT FCRP was submitted. In multiple places in the 2020 document, reclamation work that has been undertaken to the end of 2017 is mentioned, and any work for 2018 and 2019 and beyond is mentioned as work yet to done.

The text states it expects continuing licensing of the FCRP to take 10 months from the date the document was submitted; with the FCRP dated August 2020 (Ref: Executive Summary Item 8.) suggesting approvals may not be in place until mid-year 2021. The text goes on to say that concurrent with the ongoing permitting it will begin implementing the closure tasks at the site. Does this suggest active closure work has already begun at the site? Was a winter road utilized in early 2020 to mobilize heavy equipment and supplies to the site? (Note: This section refers to plans to begin implementation of reclamation activities in 2018).The previous request (above) covers this point.

Request or Recommendation by Party:

i) An overview on the arrangement between LMI and DMS should be provided.

ii) LMI should update the August 2020 FCRP to be current and updated showing work completed to the end of 2019 and proposed future work to fulfill the Plan.

LMI Response:

i) All permits, authorization and licenses are issued to LMI. LMI is responsible for compliance of all permits, authorizations, licences and/or directives under applicable legislation and regulations. The arrangement between LMI and Discovery Mining Services as with any other consultants engaged in support of remediation at the site are private contracts and not subject to public review.

ii) & iii) LMI is committed to compliance and submission of the Annual Report on March 31, 2021 to reflect works completed in 2020 and will include in accordance with Part m) a summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year, including a revised schedule.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	6
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 1.3.5

Detailed Review Comment by Party:

As stated in the FCRP Section 1.3.5, the KIA have no ongoing direct water compensation issues with the Lupin Mine.

Request or Recommendation by Party: n/a

LMI Response:

LMI can confirm in correspondence the KIA have no ongoing direct water compensation issues with the Lupin Mine site and as a matter of legislative understanding for SJCI, LMI notes that the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, S.C.2002, c.10, (*NWNSRTA*), s. 58-60 prohibits the NWB from issuing a Type A water licence if compensation issues with regards to existing or other users are unresolved.

LMI notes that the KIA confirmed at the Technical Meeting held in Kuglugtuk in June 2019 as per NWB Pre-Hearing Decision Report, “In addition, the Kitikmeot Inuit Association (KIA) indicated they would be in attendance as an observer at the Public Hearing, but would not be participating as an Intervenor.”

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	**Technical Comment No:**	7
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 2.1.2

Detailed Review Comment by Party:

Sec 2.1.2 Climate: The text references others' work in stating that the mean annual temperature at the site will increase by about 4 to5'C over the next century. It then goes on to discuss the range of climate and temperature changes that may occur. This re-affirms the need to build significant conservatism into the design of civil structures at the site (TCA dams, spillways, engineered covers, etc.) due to the uncertainty as to long-term climate at the site.

Request or Recommendation by Party: n/a

LMI Response:

A technical memorandum, 2 AM-LUP Technical Meeting Commitment Number 12 Response – Risk Assessment on Two Dams in the Lupin Tailings Containment Area, outlining the stability of the dams was provided as part of the FCRP.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	**Technical Comment No:**	8
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 4.3.2

Detailed Review Comment by Party:

Sec 4.3.2.5 Borrow/Quarry: The FCRP acknowledges that current closure costing does not include funds for the reclamation of the quarries and borrow areas. This is a deficiency.

Request or Recommendation by Party:

LMI needs to confirm borrow and quarry areas will be reclaimed upon their closure and that elements will be included in the next iteration of the RECLAIM costing.

LMI Response:

LMI submitted a revised RECLAIM estimate in January 2020 (filed on the NWB FTP site), during the renewal/FCRP approval process to correct this item and has allocated $39,600 for reclamation of the burrow area. LMI will submit an updated FCRP Rev 2. with the 2020 Annual Report due to the NWB on 31 March 2021.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	9
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 4.3.2.9

Detailed Review Comment by Party:

Sec. 4.3.2.9: The FCRP mentions the need for open mine shafts, collapsed crown pillars and the landfill to dispose of all the waste materials that will be generated during the demolition of site structures and mobile equipment that is to be disposed of on site. Has an estimate been prepared to confirm there is sufficient volume available in those repositories? This may be worsened by the additional need for space for the disposal of high As-contaminated soils and waste rock as well into those same repositories, with the volumes of waste rock requiring impoundment may also rise above initial estimates? Is removal of demolition debris to off site using a winter road a possible scenario? The text goes on to state that if there is a shortfall in available space for all the materials being disposed of, then the existing landfill can be raised, or another demolition landfill can be constructed. Plans for such modifications to the closure plan should be provided, well before they are needed, especially as there does not appear to have been an assessment undertaken of the total demolition and non-hazardous materials volumes requiring landfilling. Interestingly, the next section (Sec. 4.3.2.10) states that a new demolition landfill is to be built in the west end of the Upper Sewage Lagoon. It is unclear what the details are of the new facility.

Sec. 4.3.2.9 Buildings and Equipment: The FCRP mentions the plan of bringing selected mobile equipment from the Ulu Mine to add to the Lupin fleet. Is this still the plan? Especially as the Ulu Mine now has a new owner and functional mobile equipment may be required for that site? This text may be a remnant from the earlier 2018 FCRP.

Request or Recommendation by Party:

i) LMI should provide estimates of wastes requiring impoundment (demolition products and other wastes) as well as the volume of space available for all these materials.

ii) LMI should provide conceptual plans for a new demolition landfill in the FCRP as a contingency.

iii) LMI should confirm plans on whether it intends to bring equipment from the Ulu site to Lupin.

LMI Response:

i) Table 17 provides the mass balance for the disposal of waste materials. The total volume of material planned to be disposed of in the blasted crown pillar and shafts is about 75,000 m3, which matches the estimated total volume of the openings as discussed in Section 4.2.3.4. The allowance for contaminated soils in Table 17 includes an allowance of 16,300 m3 for waste rock containing greater than 4,000 mg/kg as estimated from the two Environmental Site Assessments. There is no reason to backhaul demolition waste to Yellowknife when the existing landfill on site has adequate capacity to receive it and is licenced to do so.

ii) It has been determined that the existing landfill has a capacity of 106,000 m3 (including demolition waste and waste rock) and that the capacity could be further augmented by raising the final top surface. This means that there is no need for a new demolition landfill and it will not be developed.

iii) LMI acknowledges and apologizes for the error and confirms the *Final Closure and Reclamation Plan Rev.1, August 2020,* submitted to the NWB on September 28, 2020, will be updated to remove reference to the Ulu

Gold project. As indicated by Blue Star Corp. (Technical Comment Blue Star Corp No.1 above). On December 24, 2019, following execution of an agreement between Blue Star and Bonito Capital Corp., Blue Star acquired Ulu, and the assignment of water licence 2BM-ULU21520 to Blue Star came into effect. Blue Star (including its wholly owned subsidiaries) continue to be the owner, manager and licensee of Ulu under 2BM-ULU2030. Assets acquired through this transaction, including mobile equipment located at Ulu, are the property of Blue Star for use on its projects at its sole discretion. LMI will submit an updated FCRP Rev.2 with the 2020 Annual Report due to NWB on 31 March 2021.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	10
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 5

Detailed Review Comment by Party:

Section 5.0 Monitoring: The text refers to the new Water License and the commitment of submitting an updated PCMP. This Plan and the annual reporting to be submitted to NWB will include water quality monitoring results as required in the Water License Schedule J, Tables 1 and 2, but should also include interpretation of the water quality and other site monitoring data (e.g., physical, geotechnical criteria, etc.), and whether they are improving, remaining constant or worsening and why and how it and the other monitoring data are trending towards meeting final closure and monitoring program cessation requirements as well as outlining any resultant additional work being recommended to address any areas of concern.

Request or Recommendation by Party:

LMI should state that the new PCMP will provide analyses and interpretation of all site monitoring data (i.e., not limited to water quality data) and outline contingency plans (of key issues) should the results suggest the need for additional steps.

LMI Response:

LMI can confirm the Post Closure Monitoring Plan (PCMP) currently under development will provide analyses and interpretation of site monitoring data and outline contingency plan should results suggest the need for additional steps. LMI notes the Type A Water licence Schedule J requires LMI during the development of the PCMP and subsequently during post closure monitoring to consult with community members and organizations in Kugluktuk and will include in the Annual Report referred to in Part B, Item 2, and provided to the Board, a summary of these community consultations. LMI intends to begin consultation on the Draft PCMP in Q1 2020.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	11
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 6.2.2

Detailed Review Comment by Party:

Section 6.2.2 Golder HHERA: The text describes conclusions from the 2019 Golder HHERA of the site, and it proposes the use of a 1.0 m thick coarse-grained esker material to cover graded areas of low and high-arsenic levels and of PHC contamination. It is understood the goal of using an esker material cover is to minimize water ingress into these contaminated areas below. It is unclear how using a coarse-grained material will achieve this objective; would a fine-grained material be more effective in achieving isolation of the underlying materials?

Later in the same section, the text states that pockets of waste rock on surface and areas with low-level arsenic impacted soils, sometimes intermixed, will be graded and covered with esker material; but there is no mention of whether this material is to be fine or coarse-grained. Are materials being sourced at the Fingers Lake esker deposit being screened into separate fine and coarse-fractioned products? Is it only producing run-of-borrow area product?

Request or Recommendation by Party:

LMI should confirm what size distribution is required of the esker material being proposed for the engineered cover over the various contaminated areas at the site to ensure water infiltration is minimized.

LMI Response:

As discussed in the FCRP Rev1, submitted to the NWB on September 28, 2020, Appendix H-6 regarding Coupled Thermal-Seepage Modelling for Performance Evaluation of the Esker Cover for the Waste Rock “Dome” at Lupin Mine (Golder 2019b), the infiltration through the esker cover was predicted using thermal-seepage modelling using the average gradation of the Fingers Lake borrow pit. The modelling predicted that the infiltration into the waste rock would decrease from about 70% of annual precipitation for the current uncovered waste rock to between 16% and 25% (for current climate conditions and for the end of the 21st century, respectively.) The esker material used for the cover will be pit-run material. The typical gradations range from 25 to 50% gravel, 47 to 68% sand and 2 to 6% silt. Note: gradation ranges raised by CIRNAC in the Technical comments period (CIRNAC TC-13) during the regulatory review process (refer to LMI responses dated May 2019) and deemed resolved by CIRNAC as provided in their final submission to the technical meeting CIRNAC confirmed gain size distribution information had been provided June 4, 2019.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	12
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 6.2.3.1

Detailed Review Comment by Party:

Section 6.2.3.1 outlines a summary of potential risks determined through undertaking the 2019 HHERA. The text states "...the surface water quality modelling used conservative assumptions that may have overestimated transport of acidity to Boot Lake and Unnamed Lake, resulting in low predicted pH..." This may be a possibility, however, this is likely the same methodology Golder has utilized in other site assessments (as stated in the FCRP) and should therefore be relied on in its conclusions.

Request or Recommendation by Party: n/a

LMI Response:

The post-closure monitoring plan will be developed assuming that the following model predictions for pH will apply at Boot Lake and Unnamed Lake after remediation:

- Boot Lake – 5.6 to 6.6
- Unnamed Lake – 5.0 to 6.6

It is noted that, once model predictions are confirmed during post-closure monitoring, the predicted pH range at Boot lake will be comparable to recent reference values collected as part of the 2019 Phase 6 EEM at Fingers Lake (5.9 to 6.5). The lower end of the predicted pH range for Unnamed Lake will be below the reference range. Confirmatory sampling in active and post-closure periods will be used to evaluate model predictions, along with long-term trends in pH and other parameters at these lakes (e.g., stable, decreasing, or increasing).

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	13
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 6.2.3.3

Detailed Review Comment by Party:

Section 6.2.3.3 addresses areas requiring remediation or risk managing the identified areas of concern, the text states water quality monitoring of these lakes should be undertaken now and in the future (with the completed FCRP in place) to confirm satisfactory water quality and as a check on the conservatism built into the modelling. It also states that remedial measures may be required if targeted levels are not reached. This will need to be scrutinized by the appropriate agencies through the Active and Post-Closure Phases as regular monitoring reports from the Company are submitted, bolstered by regulatory site inspections.

Request or Recommendation by Party: n/a

LMI Response:

The Post Closure Monitoring Plan (PCMP) currently under development will outline remediation and associated monitoring for the Lupin Mine Site. The Type A Water licence, Schedule J requires LMI during the development of the PCMP and subsequently during post closure monitoring to consult with community members and organizations in Kugluktuk and will include in the Annual Report referred to in Part B, Item 2, and provided to the Board, a summary of these community consultations. LMI intends to begin consultation on the Draft PCMP in Q1 2020.

Of note annual reporting requirements are also stipulated in the *Nunavut Waters Regulations* (NWR), SOR/2013-69, s. 14.

Schedule J, Item 2 specifies the PCMP shall include: An updated framework for annual reporting requirements as required by Schedule B, Item 2:

a) An updated framework for annual reporting requirements as required by Schedule B, Item 2

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

c) Existing and Future Instrumentation Monitoring;

d) Monitoring Program Table 1 and 2 applicable to Post-Closure Phase;

e) Dam stability monitoring;

f) TCA monitoring;

g) Thresholds for water quality and tailings cover performance that would trigger moving to reduced monitoring frequency or intensity; and

h) Monitoring of the TCA cover and water quality over a period that is sufficient to demonstrate physical and chemical stability and acceptable quality for the long term.

All plans submitted to the NWB in compliance with water licence terms and conditions are distributed for review to a wide distribution list of interested parties.

In accordance with the NWNSRTA enforcement and inspections are conducted by Inspectors designated by the Minister of Northern Affairs on a regular basis and the current annual reporting requirements (Schedule B, Item 1J) requires LMI to provide a summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.

The Type A Water Licence also specified inspections and reporting on LMI in accordance with Part J, Item 10 and 11.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	14
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 6.2.4

Detailed Review Comment by Party:

Section 6.2.4 Regulatory Review: The text mentions the commitment to a new Post Closure Monitoring Plan and then goes on to describe the ERA and HHERAs that were conducted. These are not typical components of a Regulatory Review section in a Mine Closure Plan. This section should provide a brief overview of the mandated regulatory review process in Nunavut (but to not repeat what was detailed near the beginning of the FCRP), what was the regulatory review process utilized for this project (history to date, current status and future expectations), and what the outcomes were from the company going through the process.

Request or Recommendation by Party: n/a

LMI Response:

In Nunavut, Type A Water Licences subject to final closure (i.e., Nanisivik Mine and Polaris Mine) and subsequently Lupin under specific conditions and commitments in response to intervening parties to include within the final closure plans requirements for a Human Health and Ecological Risk Assessment.

The regulatory review process is clearly defined by the NWB Guidance documents found on the NWB ftp site at the following: ftp://ftp.nwb-oen.ca/other%20documents/NWB%20GUIDES/ and the full regulatory review process for the LMI's renewal/FCRP approval application is detailed as part of the NWB Licence Decision located on the NWB FTP site. Given these transparent processes defined by the NWB a summary of the process duplicated within the FCRP is not warranted.

A high-level summary of the project history is provided in the FCRP Rev 1 Table 12: Summary of Progressive Reclamation and Post Operation Activities. Specific to closure requirement defined in previous Type A water Licence are summarized in Appendix B. The current status and future expectation will be outlined in the annual reports to as required under Schedule B of the Type A Water Licence.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	15
Subject/Topic:	Detailed Comments of FCRP		

Reference:

- Section 7.0

Detailed Review Comment by Party:

Section 7 Financial Security: The text does not conform to the standard Financial Security sections seen in mine closure plans.

Typically this section would outline the basis of the security approach used in this cost estimation, how the estimated detailed closure costs were determined, the basis of what cost estimating model is being used and why, major and minor assumptions in the closure tasks and their costs, references back to the closure plan tasks describing costing aspects of those undertakings. Additionally, because the costing is based on the rudimentary RECLAIM Model a section needs to describe all the assumptions that went into the individual line items (i.e., the effort required, the unit cost used, etc.) that might otherwise be included directly in a more detailed model but are not with the RECLAIM model.

The text refers to Appendix G in which 3 sub-sections include the RECLAIM costing, milestones for determining when tasks are considered to have been completed in order to qualify for return of security for that item and a joint LMI/CIRNAC Security Reduction Framework document.

The focus of this section in the FCRP is on security refunds; what the milestones are to confirm specific tasks have been completed. how LMI can apply for security refunds, and ensuring the agencies release the funds in a timely manner. A discussion on how securities are to be returned is a subject that is dealt with in Appendix G-3 and should not form the basis of this section in the FCRP.

The 5% continency allowance included in the RECLAIM costing (app. G-1) is significantly lower than should be accepted for a large project with a number of uncertainties and with costing based on a very rudimentary spreadsheet program. This is worsened by the Framework presented in App. G-2 for giving the company credit for completed tasks. That table does not align with typical return of securities criteria as is used in jurisdictions the author has experience with, namely BC, the Yukon and Ontario.

It would be interesting to map out the likely reduction in Financial Security being held with the currently planned work schedule and what funds will be left at various future milestone dates. A reasonable financial provision should be in place after completion of the Active Phase, due to the uncertainty of how long monitoring may need to continue until final equilibrium acceptable values and closure criteria are reached, as well as for the possible need for maintenance work, and finally for the possible need for interventions to address deficiencies. No information is provided to ensure there will be sufficient security in place towards the end of the Active Phase should a deficiency arise through the Post-Closure Monitoring and Maintenance Phase.

Request or Recommendation by Party:

The FCRP should provide rationale as to how the 5% Contingency Allowance for the Closure Plan cost estimate was determined.

LMI Response:

The NWB within guidance documentation, terms and conditions of specific water licence and decision related to the Lupin Mine site and NWB accepted guidance for mine closure in Nunavut (i.e., Nunavut Reclamation Policy

(INAC 2002)) as well a precedent for success mine closures in Nunavut (i.e., Nanisivik, Polaris) the use of Reclaim is the current accepted standard. The process for establishing security requirements has evolved over the Life of the project and is critically assessed repeatedly throughout the LOM during each Type A water licence renewal/amendment process (i.e., the process recently undertaken in 2019, concluding in Q1 2020 on issuance of the current licence) or as stipulated in the specific terms and conditions related to security of any current or previous water licence for the project.

Our reclaim estimate was 5% but based on accepted security by the NWB under 2AM-LUP2032 it is currently 29.58%. The water licence approval set the security amount at $26,107,303, which exceeds the FCRP estimate by $2,644,254, so the effective contingency is over 29% of direct capital costs.

The RECLAIM estimate in Appendix G provides an allowance of $1,139,442 for Post-Closure Monitoring and Maintenance, additional work and indirect costs, which would remain in place at the end of the Active stage.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	16
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- General

Detailed Review Comment by Party:

i) A better estimate of the total volume of waste rock requiring remediation is required (using 1M m3 without a detailed rationale or reference seems over-simplistic);

LMI should provide an estimate of the total volume of esker material required for the various reclamation tasks that are intended to use this material;

LMI should confirm the availability of adequate volumes of esker material, and it being available in a timely manner when it is required during the reclamation program (i.e., due to its permafrost state it can only be excavated in thin layers. Ref. FRCP Sec 2.3.2);

ii) Clarification as to why the RECLAIM costing show all the liabilities as being related to Water and none to the Land (ref: FRCP App. G-1)?

iii) The FCRP mentions that 131,500 m2 of tailings remain to be covered and that this work should be completed in 2019. Has this been done? It is unclear how much additional tailings beach area is to be exposed when the water levels are lowered in the ponds as part of implementing the new TCA configuration and remedial work being undertaken to the dams as required from annual geotechnical inspections; and

iv) The FCRP states that the remedial work with implementing the passive water flows across the TCA will be completed once the outflow water (over Dam 1A) meets discharge water quality guidelines. It is uncertain when this may occur (or maybe it already has?). However, any further time until this occurs may provide the opportunity for more detailed studies (engineering design, bathymetry, surveying, depth measurements of existing cover and tailings, etc.) to be undertaken to better understand and nail down more accurately the work required for the Civil Contractor to undertake the works program, as well as for the possible need for other remedial measures which may become apparent.

Request or Recommendation by Party: n/a

LMI Response:

i) Refer to Table 17 in the updated FCRP. No better estimate of the total waste rock volume is available. Any variance in the volume of waste rock stored under the central covered area will be accommodated by raising or lowering the final grade of the "dome". Mr. Jann (via the KIA submission) asked this question in a submission dated June 23, 2020 related to water licence conditions Part E, Item 25, 26, 27 and LMI responded on July 31, 2020 stating, “While this comment does not apply to conditions under Part E, Item 25 as the cover strategy was agreed upon with approval of the FCRP as stated previously, the 1 M m3 refers to an estimate of the total volume of mine rock which was brought to surface, which is cited in Morrow, 2006. Of the rock, in the mine and mill area; about 75,006 m3 of mine rock will be disposed of in the underground workings (as per column 2 in Table 17 in the FCRP); LMI estimated about 55,000 m3 of mine rock will be placed in the landfill (where it will be contoured and covered similar to the central dome (based on landfill design); and a large volume of waste rock will remain in place under cover in the central waste rock dome area (17 hectares) or in the landfill (4 hectares) or around the adit (about 1 hectare). LMI is currently

relocating waste rock from the peripheral (orange areas as per design technical memorandum submitted as per Licence Part E, Item 25). The central waste rock dome and the confirmed quantities of remediation waste rock will be reported in the annual report to the NWB." On August 12, 2020, the KIA response stated, "The LMI Response is considered acceptable." LMI considers this item resolved.

In regards to esker material being available Mr. Jann (via the KIA submission) asked this question in a submission on June 23, 2020 related to water licence conditions Part E, Item 25, 26, 27 and LMI responded on July 31, 2020 stating, "While this comment does not apply to the conditions under Part E, Item 25, LMI does confirm that there are more than adequate volumes of esker material at site to carry out the required closure and reclamation activities." On August 12, 2020, the KIA response stated, "The LMI Response does not answer that question. However, it will be up to LMI and the civil contractor to deal with this possible issue." LMI has expanded on this comment under Technical Comment 3 above. LMI considered this item resolved.

ii) Mr. Jann (via the KIA submission) asked this question in a submission on June 22, 2020 related to water licence conditions Part E, Item 25, 26, 27 and LMI responded on July 31, 2020 stating, "While this comment does not apply to the conditions under Part E, item 25, Lupin Mine is located on Crown land with 5 Crown land leases (as shown in the FCRP) and Water and Land for RECLAIM estimates are separated to differentiate between crown security (water) and Inuit owned land security (land). As the Lupin Mine is located on Crown land all security if held by CIRNAC. The RECLAIM estimate in Appendix G allows for a total of 245,500 m3 of cover at the mine site and 204,500 m3 at the TCA. The Lupin Mine site is located entirely on crown land and therefore does not make distinction between land and water related security as all security held with the Minister of CIRNAC." On August 12, 2020 the KIA response stated, "The LMI Response is considered acceptable in stating that the site is all on Crown land and thus administered and security is held by CIRNAC." LMI considers this item resolved.

iii) Mr. Jann (via the KIA submission) asked this question in a submission on June 23, 2020 related to water licence conditions Part E, Item 25, 26, 27 and LMI responded on July 31, 2020 stating, "While this comment does not apply to conditions under Part E, Item 26, LMI is unable to find the 131,500 m2 referred to above that remains to be covered – as of 2017 there was approximately 123,500 m3 of tailings remaining to be covered in Cell 5 and 86,000 m3 to be covered in Cell 3. During 2018 approximately 19,000 m3 was covered in Cell 5 with 104,500 m3 remaining to be covered. It was anticipated for Cell 5 and Cell 3 to be covered in 2019 but due to LMI's contractor not being able to obtain the winter permit in time, the 2019 program was deferred to 2020. This work is currently being carried out and we anticipate that the covers at Cell 5, Cell 3 and the exposed tailings in Cell 4 this year will be completed this year. The current amounts are reflected in the RECLAIM which is located on the NWB ftp site: - ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AMLUP2032%20LMI/2%20ADMIN/4%20HEARINGS/2%20HEARING/2019%20Amendment%20Renewal/2 00116%202AM-LUP1520%20191101_2AMLUP1520%20_Reclaim7_FCRP%20Update_15_Jan_2020_Final-IMLE.pdf. As the Ponds are currently not at closure level, there remains no indication of tailings beach areas (outside of the Cell 4 area as per the preliminary designs provided) that will be exposed when the water levels in the ponds are lowered to closure level." On August 12, 2020 the KIA responded stating, "The LMI Response is considered acceptable….". Tailings cover work has been started and will be completed in 2021. Potential exposed tailings will be assessed, delineated and covered according to the FCRP, as described in the technical memo Commitment Part E Item 27 Response. LMI considers this item resolved.

iv) Mr. Jann (via the KIA submission) asked this question in a submission on June 23, 2020 related to water licence conditions Part E, Item 25, 26, 27 and LMI responded on July 31, 2020 stating, "While this comment does not apply to conditions under Part E, Item 26, the spillways at Dam J and Dam 1A will be completed in

2024 as shown in the FCRP Table 14 – Summary of Measures for Final Closure (revised March 19, 2019) is located on the NWB ftp site: - ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AMLUP2032%20LMI/1%20APPLICATION/2019%20Renewal_Amendment/190319%202AMLUP1520%20Table%2014%20Summary%20of%20Measures%20for%20Final%20Closure_Revised_March%2019%202019-IMLE.pdf Noting that in reference to the above statement in regards to more detailed studies, these have already been carried out with the exception of the engineered designs which will be completed as per the Licence." On August 12, 2020 the KIA response stated, "The LMI Response is considered acceptable as work by the civil contractor has already begun." As tailings cover work has not been completed, the water quality monitoring period has not yet begun. LMI considers this item resolve.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	17
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-01 - Decision Matrix Memo Rev. C, Jan 2020 (App. H-01)

Detailed Review Comment by Party:

The Decision Matrix is intended to put forward the alternative methodologies to deal with the contaminated areas of the site. However, the document presents a bias from the beginning in favor of the cover-in-place methodology. A number of the arguments in favor of this methodology have similar issues as with the cover-in-place approach (e.g., having to get access to bad material for removal, it being the same as for gaining access to place a cover. Relocation and consolidation of tailings elsewhere has been done in a large number of other mines, ...}. Arguments concerning LMI having a closure work schedule and civil contractor already in place, the additional work involved in undertaking a relocation and placement elsewhere are not valid, if that approach has significant benefits.

Hydraulic methods (i.e., hydraulic monitoring) can be done with full containment of runoff waters and is likely the best method to remove shallow areas of contaminated materials, especially over uneven bedrock area. The TCA has a large area of water covered cells as well as dry cells (including several that are yet to be completely covered) that the material could be pumped to, especially as the current plan involves a period of unknown duration for allowing water quality within the TCA to come to acceptable and long-term equilibrium levels prior to switching to the long-term passive water flow-through system for the facility.

Contaminants mixed within soft lakebed sediments are more difficult to deal with. In this case, a number of options are available and should have been considered. They would probably be very local-deposit specific, but could include methods such as 1) leave in place (e.g., if already established with a natural soil cover and vegetation), 2) cover in place, 3) treat in place, 4) hydraulic removal(dredging or hydraulic monitoring), or5)through physical removal(possibly assisted by cutting in wicking channels where contained water can be drained from the area, making access onto the area with heavy machinery doable), as well as a number of other methods.

A site-wide assessment of all the areas of potential concern and alternative closure methodologies should have been provided to adequately determine the best solutions for all the areas.

With the proposed cover-in-place method, the document does not address the issue of ultimate degradation of the esker material cover over time(through freeze-thaw cycles, cracking, wicking of contaminants up into the cover, formation of erosion gullies, etc.)that will degrade the performance of the cover and may lead to downstream water quality effects as well as localized sediment transport through erosive forces across the covers.

Finally, the report suggests Active Monitoring will demonstrate that the proposed methodology will be successful. But it does not mention the possibility of failure and the need to evaluate alternative remedial measures, which would be better done now rather than in the future when a problem is realized and with more limited resources available.

Request or Recommendation by Party: n/a

LMI Response:

These topics are addressed in a technical memo, Commitment Part E Item 27 Response, providing a conceptual cover design for known exposed tailings at the northern corner of Cell 4.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	18
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-12 - Risk Assessment on 2 TCA Dams Rev. 0, Nov 2019 (App, H-12)

Detailed Review Comment by Party:

This report was issued to fulfill Technical Commitment 11. The author is not a geotechnical engineer and as a result cannot comment on the detailed engineering aspects of the arguments being put forward concerning the adequacy of the current designs and as-built configurations of Dams 3D and 4. However, several general comments include:

Concerning both dam assessments, the text makes no mention concerning the lowering of the water level on the downstream side of Dam 3D (elev. 481.0 m vs 484.6 m currently); and for Dam 4, that the upstream side of the dam has water up against it (and no tailings) and that water level is also proposed to be lowered, by 1.6 m; and

The text does not confirm that the two 2006 studies referenced in the report had the TCA in its currently proposed (i.e., 2020) final configurations of tailings and water levels and how these may impact geotechnical stability and downstream water quality(versus with the configurations as they were in 2006).

Request or Recommendation by Party: n/a

LMI Response:

The 2020 configuration is an advancement of the 2006 configuration, so the 2006 studies should be applicable.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	19
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-08 - 5.2.3 Conceptual Design for the Waste Rock Dome, Oct 2019 (App. H-08)

Detailed Review Comment by Party:

This report was issued to fulfill Technical Commitment 5. The Table 1 numbers for the Year 2019 Yearly Unit Flow Volumes were found to be illegible in the pdf document pulled off the NWB Public Registry ftp site.

Although the modelling looks to indicate improved runoff versus current infiltration numbers with the proposed waste rock dome, it also shows that the infiltration will get progressively worse over time (Annual precipitation infiltrating and reporting as toe seeps is estimated to be 25% in 2100 with the work completed and the cover in place vs. 15.8% in 2019).

Figure 2 shows the waste rock dome will be approximately 7m high (6 m of waste rock and a 1 m thick esker cover) above the surrounding ground. This height above grade will make climatic aspects a potential concern (i.e., temperature swings, rainfall, depth and duration of maintaining a frozen state, potential for wind-blown fine esker material, etc.)

The report does not include any design details for infiltration requirements of the esker material cover for the dome (or elsewhere). It is unknown what hydraulic conductivity numbers were used for the cover, be it in the winter (i.e., frozen and impervious) or summer (i.e., thawed and pervious) states.

Based on the Commitment, the report was also to estimate stormwater drainage rates. These have not been provided.

It Is noted that Water License 2AM-LUP 2032 does not specify the locations or numbers of seepage monitoring locations around the proposed dome. However, the Design Report states there are typically 13 locations of seepage water emanating from the larger, current main site area. Drawings of the proposed dome show their being significantly less discharge points from the dome.

Request or Recommendation by Party:

In the new PCMP, LMI needs to include long-term monitoring of all the new dome surface seepage water locations as well as for groundwater monitoring in the perimeter area.

LMI Response:

Regarding Technical Commitment 5, the pdf conversion failed. The correct numbers for Rainfall, Snowmelt, Runoff, Actual Evaporation, Infiltration into Waste Rock, and Percolation (% Rain + Snow) are: 0.155, 0.145, -0.175, -0.077, -0.947 and 15.8%, respectively.

With respect to annual precipitation that infiltrates 25% for the covered scenario is still much lower than the estimated 70% infiltration into the currently uncovered waste rock surface.

Figure 2 is a schematic cross-section drawn with vertical exaggeration. The dome will extend horizontally about 250 m in one direction by about 600 m in the other direction. It could be compared to a thin inverted plate placed over a natural topographic dome.

The assumed permeabilities were presented in Appendix C to the HHERA. The esker cover was assigned a hydraulic conductivity of 1.5 x 10-4 m/s in the unfrozen state. The software assigned lower values for the hydraulic conductivity in the frozen state based on defined unsaturated hydraulic conductivity functions.

Table 1 provides predicted unit area annual runoff values of 0.175 m3/m2 and 0.130 m3/m2 for 2019 and 2100, respectively. Figure 1 in the Technical Memo of June 8, 2020 in response to condition E-25, shows that there will be 6 drainage chutes. Each chute will be capable of handling a discharge in excess of 1 m3/sec.

Figure 2 was schematic only and was not intended to represent the number of sampling locations. Table 18 in the Rev 1 FCRP refers to monitoring stations LUP-SP-01 to LUP-SP-xx, which means that all active seep locations will be sampled twice yearly. This will be incorporated in the PCMP. Because of the topography of the waste rock dome and the underlying bedrock high, all leachate from the waste rock is expected to appear as seeps at the toe of the "dome" rather than flowing through groundwater in the permafrost setting.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	20
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-03 - Geotechnical Review on the Long-Term Stability of TCA Dams Rev. 0, Nov 2019 (App. H-03)

Detailed Review Comment by Party:

This report was issued in fulfill Technical Commitment 6. The author is not a geotechnical engineer and as a result cannot comment on the detailed engineering aspects of this geotechnical review on the long-term stability of the TCA dams. However, a number of general comments are presented below;

The Design Basis and Criteria section states that permafrost is assumed to remain at current levels. Is this considered adequate?

From previous documentation it is understood that neither Cells 3 nor 5 have yet been completely covered with the esker material cover. It is not known which areas of these cells are yet to be covered and whether these areas are the areas where proposed re-grading of the surfaces is proposed as shown in Figures 2 & 3 of the Appendix.

The report shows the proposed surface contouring to be undertaken across Cells 3 & 5 to have any surface water flow into the channels and then towards the outflow structures. Is the “New Tailings Cover” in these cells working with the proposed esker material and not the tailings, before a cover is placed over the areas, or does it suggest existing tailings will be excavated/re-sloped before the 1.0m esker material cover is placed?

Should the non-woven geotextile in the proposed outflow structures in Dams J & L not have bedding material placed against it rather then the 0.5m thick Boulder Armor with a D50 of 250mm?

The slope stability analyses shown in the Figures (Nos.A.1 to A.32) provide results for all the dams including the current as-built configurations and final re-sloped scenarios for Dams K & M. But all the analyses are undertaken with the current permafrost level at a depth of 2m below ground surface.

Request or Recommendation by Party:

i) Based on estimates of average annual temperature rises of 4-5’C by the year 2100 LMI should confirm that modelling only undertaken at current permafrost levels is considered sufficient.

ii) LMI should confirm whether the drainage channels being installed in the tailings cells are being cut into tailings or the cover layer.

iii) LMI should provide the basis by which using just the one depth of permafrost in the dams is considered sufficient.

LMI Response:

i) The technical risk assessment memorandum, 2AM-LUP Technical Meeting Commitment Number 12 Response – Risk Assessment on Two Dams in the Lupin Tailings Containment Area, provided in support of the FCRP considers conditions with and without permafrost.

ii) The cover extents are outlined in the construction drawings. No bedding is required as the geotextile is intended to be a separator and does not require protection.

iii) The technical risk assessment memorandum, 2AM-LUP Technical Meeting Commitment Number 12 Response – Risk Assessment on Two Dams in the Lupin Tailings Containment Area, provided in support of the FCRP considers conditions with and without permafrost.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	21
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-06 - Coupled Thermal-Seepage Modelling of the Esker Cover for the Waste Rock "Dome", Oct 2019 (App. H-06)

Detailed Review Comment by Party:

Section 3.3 -Material Properties: The text mentions that thermal and hydraulic properties of the different materials being assessed in the models (i.e., the esker material and waste rock) were unavailable and were therefore assumed or estimated by the modellers. This likely makes for a deficiency as to the validity (or accuracy) of the model outputs.

The report then states the ground was assumed to remain saturated and frozen for most of the model duration although elsewhere it is stated that it thaws in late summer.

Section 4.1 & 4.2 -Model Results for Current and Long-Term Scenarios: This section states the active layer will be subject to seasonal freeze and thaw and this zone of infiltration will move downward from a depth of 2.7-3 m currently and then down to 4 m below surface in the long-term scenario. In Section 5 –Conclusions: The text states that the infiltration through the esker layer will increase over time and that climate change considered there would be.

Field trials should have already been undertaken with the monitoring used to determine the optimal cover for the waste rock dome, prior to the facility being built. However, the opportunity for this has passed and now the proposed design needs to be constructed. To be able to predict it will meet long term closure objectives it should be built with several instrumented data collection sites from within and below the covers, supplemented by regular visual inspections

Request or Recommendation by Party:

LMI should provide a confirmation of the validity of the model results with the modellers use of typical values for similar (i.e., in-house) materials rather than actual materials from the site.

LMI should provide rationale as to why the modelling assumed the ground to be saturated and frozen through the entire length of the modelling runs.

"...an increase in percolation rates at the base of the esker [layer] from 16% to between 22 and 25%...It is recommended that supplemental thermistor strings and, if possible, construction and monitoring of field trials be implemented before the final cover is constructed. The use of field trials typically brings several technical and financial advantages and provides valuable information to refine the cover design and optimize performance..."

LMI Response:

As described, the thermal properties were estimated using referenced state-of-practice methods that are incorporated in the TEMP/W software package. Likewise, the hydraulic properties of the esker (k and SWCC) were estimated from the average grain size using referenced standard practice methods.

The thermal modelling shows that thawing of the natural ground is slight and occurs only at the end of the summer for the Year 2100 case. This simplifying assumption simply means that all of the infiltration is assumed to flow through the waste rock layer.

The commitment has been made to install 4 thermistor strings into the waste rock dome and to monitor them as per the PCMP. The esker cover will be constructed in 2021, so there will not be any opportunity to carry out field trials in advance; however, the thermistor strings will document the thermal performance.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	22
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-07 - TCA Waste Rock Review, Aug 2019 (App. H-07)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments Nos.3 & 4, as requested by CIRNAC. The report refers significantly on a 2005 URS assessment of waste rock at the site.

It is unknown why Dam3 was not sampled for ABA parameters in the 2005 program. It is a perimeter dam containing Cells 1 & 2 of tailings within the TCA. The one dam flagged as a potential concern in Table 1 is Dam 5 which is also a perimeter dam. But both of these dams have not had, nor are planned to have any new exposures of their dam slopes and thus are unlikely to have any new generation of ML/ARD seepages. Most of the other samples shown in Table 1 returned acceptable NP/MPA numbers. One of possible concern is Dam 2 with a NP/MPA of 1.03, as it is a perimeter dam and it will have its upstream face freshly exposed as the water level against it is to be dropped from elev. 483.0 to 480.0 m, as part of the closure plan. Depending on the type of rock that comprises the upstream face of the dam, ML/ARD generation from the dam material could become a long-term issue for consideration.

Commitment No. 3 also asked for a review of other waste rock areas on the site (roadways, etc.). The report provides very little assessment of any other work undertaken in these areas including it using 2017 Golder ESA results, except for a mention in the Conclusions and referring back to the TCA but not the other areas of concern across the site.

Otherwise, based on Stantec's assessment and the dams all being in the order of 25 years in age and by all apparent indications (by others), the dams are functioning without ML/ARD issues and the report significantly addresses this issue.

Request or Recommendation by Party: n/a

LMI Response:

Thank you for your comment.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	23
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-04.5 - Current ARD Sample Locations 2017 (App. H-04.5)

Detailed Review Comment by Party:

This one-page map of the site is titled Current Acid Rock Drainage Sample Locations and is dated Oct. 17, 2017. The drawing makes no reference to an accompanying report where results of all the sampling locations are presented, which is presumably the 2017 Phase 1 & 2 Environmental Site Assessment report. It is unknown why this figure is a part of the supporting documents for the 2020 FCRP but the ESA report itself is not.

Request or Recommendation by Party: n/a

LMI Response:

The Type A Water Licence 2AM-LUP2032, Part I, Item 2, specifically required LMI to update the FCRP "to address relevant comments and recommendations provided by intervening parties and the Board during the review process for the Application". In response to regulatory review technical comments (CIRNAC TC No. 10), as outlined in Section 2.1.8 of the FCRP Rev1, the excerpts are taken from the appropriately referenced: Golder. 2017a. Updated Phase I and II Environmental Site Assessment, Lupin Mine, Nunavut; October 2017.

The 2017 updated Phase 1 & 2 ESA is already part of the NWB public record for the Lupin Mine Project and is available on the NWB registry at the following link: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/3%20TECH/C%20SECURITY/2017/.

Of note, in 2018, LMI filed with the Application for amendment/renewal for closure of the Lupin Mine, a comprehensive list of all documents in support of the application also available on the NWB Public Registry at refer to Table A found at ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/1%20APPLICATION/2019%20Renewal_Amendment/

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	24
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-05 - 5.2.8 Surface WQ Model Oct 2019 (App. H-05)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments Nos. 1 & 7, as requested by CIRNAC. Section 6 - Model Results: The text presents results of the modelling and the annual range of anticipated key parameters at three downstream sites.

The report goes on to say that seasonal effects such as freezing of the waste rock dome area will be controlling factors on water quality based on whether precipitation water runs off the surface or infiltrates into the waste rock and produces seepage from around the toe of the dome. Its modelling shows that in June, all contact water runs off the facility whereas in August and September it infiltrates the waste rock below and exits as seepage from the toe.

Section 7 –Conclusions: The text mentions that geochemical characterization of waste rock will continue using samples collected from the site in August 2019.

The model suggests variations (seasonally and even monthly) in downstream water quality sampling sites depending on the proportion of precipitation and snowmelt that will report as cover runoff versus infiltration, as mentioned above. It then modelled water quality in the various watersheds that the site runoff waters will flow into. It suggests Lower Sewage Lake and East Lake may see higher metal concentrations due to their smaller watersheds when compared to the larger watershed feeding Boot Lake.

Section 8 –Limitations: The text discusses the nature of uncertainties with the type of modelling undertaken. It states;

Request or Recommendation by Party:

LMI should confirm that geochemical characterization of the waste rock is ongoing or if already completed, make this information available.

"... the model could potentially overestimate the predicted concentrations in the modelled catchments...The model results are based on the input data collected during site characterization studies and environmental effects monitoring (EEM) studies conducted by Golder and other consultants. Known processes (e.g., metal leaching from waste rock and cover materials) were incorporated based on data as provided. Changes in the Site conditions, input data, or assumptions regarding the site conditions will necessarily result in changes to water quality model predictions." This information should be considered by LMI in preparing the updated Post-Closure Monitoring Program.

LMI Response:

Geochemical characterization of the waste rock was taken into consideration as part of the HHERA and these results will be considered in the Post-Closure Monitoring Program.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	**Technical Comment No:**	25
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-09 - TCA Cover Rev. 0, Oct 2019(App. H-09)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments No. 10, as requested by CIRNAC. Test pits were excavated at two locations within the TCA, in Cells 1 and 2. A location map of the 2 cells within the TCA should have been provided showing where the test pits were excavated and where the 7 standpipes are located. The report compares water levels and water quality in 7 standpipes in Cell 1 collected in 2002 and 2019. No mention is made of why water quality from only 5 of the 7 standpipes is provided. The report concludes that there was a saturated layer of cover material above the tailings and that there was no evidence of oxidized tailings in the two test pits and that the water quality results in 2002 and 2019 are comparable. No mention is made why there wasn't comparable data (i.e., 2002 & 2019 water levels and water quality comparison) provided for Cell 2.

Request or Recommendation by Party:

LMI Response:

The 5 standpipes that were sampled in 2019 were the same 5 that were sampled in 2002. There are no standpipes in Cell 2.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	26
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-04.4 - APEC 2017 (App. H-04.4)

Detailed Review Comment by Party:

This one-page map of the site is titled Areas of Potential Environmental Concern and is dated Oct. 17, 2017. As was the case with the earlier Golder drawing (see 5.2.7, above) this drawing makes no reference to an accompanying report where results of all the sampling locations are presented, which is presumably the 2017 Phase 1 & 2 Environmental Site Assessment report. It is unknown why this figure is a part of the supporting documents for this 2020 review of the FCRP but the ESA report is not.

Request or Recommendation by Party: n/a

LMI Response:

Refer to LMI response herein to KIA-TC-23

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	27
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-02 - Climate Model Rev. 0, Oct 2019 (App. H-02)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments No. 13, as requested by CIRNAC. The purpose of the modelling was to assess the potential for long-term permafrost thaw of frozen tailings dams under three climate warming scenarios, these simulating three emission scenarios (Low (LES), medium (AES) and high (HES)).The report concluded that the LES and AES did not result in long-term progressive permafrost thaw in the TCA dams. The LES and AES were considered to be more realistic climate models than the HES, based on data from the second half of the 20thcentury in Canada. The HES predicted that there would be long-term progressive permafrost thawing which would result in a permafrost thaw depth of 14 m below ground surface by the year 2100. It states long-term progressive permafrost thaw is expected to begin in the latter quarter of the 21st century. However, it did not provide any numerical estimates for the permafrost thaw depth for the "more realistic" AES and LES methods for the year 2100.

Request or Recommendation by Party:

LMI should provide the AES and LES numerical estimates of the permafrost thaw depth for the year 2100.

LMI Response:

Numerical estimates for the permafrost thaw depths for the AES and LES were provided in the 2AM-LUP Technical Meeting Commitment Number 13 Response - Lupin Mine Tailings Containment Area Dams Thermal Modelling Results document.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	28
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-11 - Geophysics Rev. 0, Oct 2019(App. H-11)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments No. 11, as requested by ECCC. The request was for geophysical surveys to be undertaken of two selected dams. However, it is unclear which dams were being requested for surveying. LMI selected Dams 3D and 4 and stated the reasons they were selected was because they had thermistors already installed in them and that they represented one internal and one external dam.

The purpose was to assess whether there were any thawed ice core sections in the dams that could lead to seepages through the dams. The Stantec cover letter introduced the commitment and outlines the subcontractor's task. The cover letter does not provide conclusions on the work undertaken by Aurora Geosciences Ltd. The Aurora report also makes no specific conclusions but rather provides results and interpretations that seem to suggest both dams have continuous ice cores, as per design.

Request or Recommendation by Party:

Stantec should clarify the results and especially the conclusions of the Aurora work to confirm the acceptable conditions of the frozen dam cores, as they were the party that made the commitment and they commissioned the work.

LMI Response:

ECCC allowed LMI to select which dams to survey. The Aurora Geoscience report concluded that permafrost was encountered at a similar depth as indicated by the nearby thermistor data.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	**Technical Comment No:**	29
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-10 - Decision Matrix Rev. 0, (App. H-10)

Detailed Review Comment by Party:

The report was commissioned to fulfill Technical Commitments No. 8, as requested by CIRNAC. The purpose of the document was to provide proposed plans on how to deal with tailings or other contaminants which become exposed as a result of lowering the water levels in the TCA tailings ponds. A single flowsheet decision matrix was presented in the document. The flowsheet oversimplified the options review in that it suggested either covering contaminated areas or relocating all of the contaminated materials into Cell 3 and/or 5. It presented a bias towards cover-in-place, and not excavating and relocation, nor any other commonly used methods. In fact, a number of different methods may be most effective for the overall TCA, as each contaminated area should be evaluated separately and the methods that work best for each situation should be employed across the entire TCA facility (and the site).

Request or Recommendation by Party: n/a

LMI Response:

As noted in Commitment Part E Item 27 Response, the Decision Matrix is no longer being used.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	30
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-04.3 - APEC Tables 2006 (App. H-04.3)

Detailed Review Comment by Party:

This group of tables was meant to accompany the site map titled “Areas of Potential Environmental Concern” (in App. H-04.1) both of which are presumably part of a larger complete report, all prepared by Morrow Environmental in 2006, which followed up Morrow’s earlier 2004 Ecological Risk Assessment. The main report, the 2006 Phase One and Two Environmental Site Assessment report is not a part of the supporting documents included in the NWB ftp site with the 2020 FCRP and supporting documents. The tables presented a comprehensive listing of the areas of potential environmental concern, what the contaminants of concern were, what photos were taken, numbers of any test pits dug and sampled and then the specific soil or water quality analyses that should be undertaken. However, it didn’t list the specific sample designations of samples that were taken and presumably analyzed. The 2006 report was issued shortly after the mine ceased production and shut down at the beginning of 2006.

Ongoing assessment work has been undertaken since that time, with the issuance of reports such as Golder’s 2017 Updated Phase 1 & II Environmental Site Assessment and their 2019 Human Health and Ecological Risk Assessment report (interestingly neither of which are part of the FCRP package of supporting documents). All of the reports have been utilized in the preparation of the FCRP

Request or Recommendation by Party: n/a

LMI Response:

Refer to LMI response herein to KIA-TC-23. KIA is correct all reports filed on the NWB registry have been utilized in the preparation of the FCRP Rev1 (August 2020) submitted 28 September 2020.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	31
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-04.1 - APEC Locations Map 2006 (App. H-04.1)

Detailed Review Comment by Party:

This consists of a site map overlaid by numbered areas of potential environmental concern that are described in Morrow's tables and report, as discussed in 5.2.14, above.

Request or Recommendation by Party: n/a

LMI Response:

Refer to LMI response herein to KIA-TC-23 and KIA-TC-32.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	32
Subject/Topic:	Detailed Comments of FCRP Supporting Documents		

Reference:

- Appendix H-04.2 - Investigation Locations 2006 (App. H-04.2)

Detailed Review Comment by Party:

This one-page site map shows location of where detailed investigations were undertaken during the 2005 field program by Morrow Environmental. Similar to the other 2 documents from the 2006 Morrow ESA included above (in 5.2.14 & 5.2.15) these three items were part of the Morrow ESA report. This program has been subsequently built upon in more recent studies, most of which were listed in the FCRP References and/or in the Technical Memo provided in Appendix H (which this section of the report provides comments on).

Request or Recommendation by Party: n/a

LMI Response:

Thank you for your comment.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	33
Subject/Topic:	LMI Commitments to undertake Future Work		

Reference:

- n/a

Detailed Review Comment by Party:

i) Due date unknown: The Conclusions section of FCRP supporting document Appendix H-5 (Golder 2019) mentions that additional geochemical characterization of waste rock will continue using samples collected from the site in August 2019. It is unknown whether the results of this additional sampling have been published and if so, has it already been considered in follow-up water quality modelling and what were its results, or whether it recommended that any additional work is warranted?

ii) Due date Feb 28, 2021:-An updated and expanded Post-Closure Monitoring Plan (PCMP) to be provided within one year of new Water License issuance. This Plan is to incorporate regulatory review comments, where applicable, results of other inputs such as the HHERA and the new Water License 2AM-LUP2032 (Ref: FCRP Sec. 3.2.1).

iii) Due date unknown: A QA/QC program for remediation of contaminated soils on the site is to be issued out for comments before the remedial activities commence (Ref: FCRP Sec. 4.3.2.3).The text mentions several aspects of such a program and states that additional details will be provided in the new PCMP.

iv) Due date unknown: Engineering drawings and specifications are to be provided to contractors handling the relocation and isolation of the waste rock and a QA/QC program will be developed that will ensure the program is undertaken satisfactorily (Ref: Sec.4.3.2.7).

v) Due date unknown: An intrusive hazardous materials assessment (including building materials) is to be completed prior to any demolition activities (Ref: Sec. 4.3.2.9).

vi) Due date -During final reclamation and closure planning: Sec. 4.3.2.10 of the FCRP states that a risk assessment will be undertaken to evaluate the likelihood of adverse ecological or environmental effects from the future use of the property.

vii) Due date unknown: Sec 4.3.2.13 of the FCRP states that engineering drawings and technical specifications will be prepared for the two spillway types required for the TCA, one being the internal dam spillways required immediately and the other being the two final spillways over dam Nos.J & 1A required for the post-closure passive water system envisioned for the TCA.

viii) 2021: FCRP Table 20 includes a number of locations where new geotechnical instrumentation will be installed, and a number of locations where existing non-functioning instrumentation is to be replaced.

Request or Recommendation by Party: n/a

LMI Response:

i) The measured geochemistry of the various seepage samples were used as the source term for the water quality model. (Refer to Appendix C of the HHERA submitted in response to Commitment No. 1 from the Technical Meeting/Pre-Hearing Conference).

ii) Under water licence 2AM-LUP2032 condition Part J, Item 13 states, “The Licensee shall, within one (1) year following the **approval** of the Licence, submit to the Board for approval a Post Closure Monitoring Plan in

accordance with requirements in Schedule J." The water licence was approved by the Minister on April 9, 2020 and therefore the due date is April 9, 2021 not February 28, 2021, as this was the date of issuance not approval. LMI can confirm the Post Closure Monitoring Plan (PCMP) currently under development will provide analyses and interpretation of site monitoring data and outline contingency plan should results suggest the need for additional steps. LMI notes the Type A Water licence Schedule J requires LMI during the development of the PCMP and subsequently during post closure monitoring to consult with community members and organizations in Kugluktuk and will include in the Annual Report referred to in Part B, Item 2, and provided to the Board, a summary of these community consultations. LMI intends to begin consultation on the Draft PCMP in Q1 2020.

iii) LMI confirms a QA/QC program for remediation of contaminated soils on the site is included in the PCMP. Refer to item (ii) above. A QA/QC program was prepared before soils remediation began in August 2020.

iv) LMI confirms a QA/QC program, engineering drawings will be provided as needed for handling, relocation, and management of waste rock.

v) An assessment for hazardous materials was carried out by Arctic Response in 2012. A more detailed intrusive assessment for asbestos was carried out by Golder Associates in 2017 and removed from the security estimate in 2018. Hazardous waste is being dealt with in accordance with the licence and GN requirements.

vi) This section will be updated to confirm as per Section 6.2 of the FCRP Rev 1 (August 2020) that LMI has completed an HHERA for the Lupin Mine/mill site (Golder, 2019c). The HHERA was submitted and reviewed by interested parties prior to issuance and approval of the Licence is on the NWB Registry for the Project at the following link: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP2032%20LMI/2%20ADMIN/4%20HEARINGS/2%20HEARING/2019%20Amendment%20Renewal/

vii) Assuming that monitoring within the TCA indicates that water quality objectives are met, the engineering drawings and specifications will be provided at least 60 days prior to construction in accordance with the Licence.

viii) Clarification of on-site monitoring including geotechnical instrumentation will be provided in the PCMP. Refer to item (ii) above.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	34
Subject/Topic:	Continuing Uncertainties		

Reference:

- n/a

Detailed Review Comment by Party:

i) The final, total quantity of contaminated soils (PHC, As, PAG) requiring remediation as is identified as an uncertainty in the FCRP text (Ref: FCRP Sec. 4.3.2.3);

ii) The rate of mine water filling the underground mine workings and the possibility of the mine flooding to the collar, or to another lower elevation location where it can flow out onto the surface or into the local groundwater and eventually reach and potentially affect the water quality in one (or more)of the downstream lakes (Ref: Sec. 4.3.2.4 –Contingency Program);

iii) The quantity of acceptable quality esker material available for identified reclamation tasks (i.e., is there enough?);

iv) The duration of the new post-closure monitoring (and maintenance) plan. Five years is being proposed; however due to short summer seasons and significant quantities of 1) covered PAG waste rock, 2) soils contaminated with PHC and/or As, and 3) the unknown duration until the re-configuration of the TCA can be made into its final post-closure passive water flow setup and then achieving long-term equilibrium water quality values from the facility, a significantly longer duration of monitoring and/or further remediation plan may be required to ensure seepage and runoff from these areas and downgradient receptors is stable and adequately protective of receiving environments.

Request or Recommendation by Party:

LMI Response:

i) Correct. The final volume of contaminated soils requiring remediation will be unknown until the remediation work is complete.

ii) It was observed in 2019 that the water level in the underground workings was at least 50 m below the water level in Contwoyto Lake. Given that pumping ended about 14 years ago, this indicates that there is not a strong hydraulic connection between the mine workings and the deep groundwater flow system.

iii) Refer to LMI response to KIA -TC No. 3.

ix) LMI can confirm the Post Closure Monitoring Plan (PCMP) currently under development will provide analyses and interpretation of site monitoring data and outline contingency plan should results suggest the need for additional steps. LMI notes the Type A Water licence Schedule J requires LMI during the development of the PCMP and subsequently during post closure monitoring to consult with community members and organizations in Kugluktuk and will include in the Annual Report referred to in Part B, Item 2, and provided to the Board, a summary of these community consultations. LMI intends to begin consultation on the Draft PCMP in Q1 2020. The duration of monitoring will be based on the overall objectives for remediation of the site.

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	35
Subject/Topic:	Conclusions and Recommendations		

Reference:

- n/a

Detailed Review Comment by Party:

i) The FCRP package (FCRP and supporting documents) provides an updated closure plan for the site and provides adequate supporting documents and references to enable approval of the Plan.

ii) Although the KIA are a secondary stakeholder in the project and in the review process, it is in their best long-term interest that the site be properly remediated and closed. The site is located in the Kitikmeot Region of western Nunavut. Section 1.3.5 of the FCRP states "...The KIA is the entity responsible for defending, preserving and promoting social, cultural and economic benefit to Inuit in the Kitikmeot Region..."CIRNAC is the lead regulatory agency (as the site is located entirely on crownlands) overseeing the closure plan and as such are responsible for the Lupin Mine's ultimate and final closure that meet all the closure requirements and objectives.

Request or Recommendation by Party:

LMI Response:

Approval of the FCRP was granted by the NWB on issuance of the licence and confirmed upon approval of the licence by the Minister in accordance with Part B, Item 13(i). In accordance with Part I, Item 2 of the Type A Licence, the updated FCRP Rev2 is subject to "review" not approval of the Board.

LMI agrees it is in the "best long term interest that the site be properly remediated and closed".

Reference(s): n/a

Attachment: n/a

Interested Party:	KIA	Technical Comment No:	36
Subject/Topic:	Recommendations		

Reference:

- n/a

Detailed Review Comment by Party:

LMI and the various regulatory agencies and stakeholders should all consider the items mentioned in this report as it is in everyone's best interest that the site be closed and prepared for the long-term to the best extent possible.

Relevant regulatory agencies will need to carefully monitor progress in implementing the closure tasks, to ensure they are undertaken safely and as per the Plan. This should involve timely reviews of submitted specific progress reports, monitoring data reports, regular annual reporting, specified commitments, etc. These need to be supplemented by regular site inspections, especially during the Active Phase when a significant amount of work towards properly and permanently remediating the site will be undertaken.

<Original signed by>Steve Januszewski, P. Eng. (BC) Principal Engineer Steve Jan Consultants Inc. Mobile: 1-250-850-9002

Request or Recommendation by Party: n/a

LMI Response:

The Lupin Mine as a project has a long-standing history in the region and has made a full commitment to implement and achieve closure objectives for complete site remediation. LMI has been working very closely and in compliance with the regulatory authorities to ensure the environmental and regulatory requirements are to their satisfaction, which includes regular inspections, reporting etc. LMI appreciates the time and cooperation the regulatory authorities have taken to engage with LMI to ensure that the mine site is successfully closed.

LMI notes, as stated by Mr. Januszewski in Section 1.0 Introduction to his submission he "*is not a geotechnical, geophysical, hydrogeological or other specialized engineer or scientist in his training. However, he has significant experience in general mine closure work, notably with northern sites. As a result, this report is a general high-level review of the FCRP documents and not a specialized detailed engineering or scientific review*", further LMI notes, it does not appear that Mr. Steve Januszewski, P. Eng., is registered to practice in Nunavut as an Engineer nor is Steve Jan Consultants Inc permitted to practice in Nunavut with NAPEG.

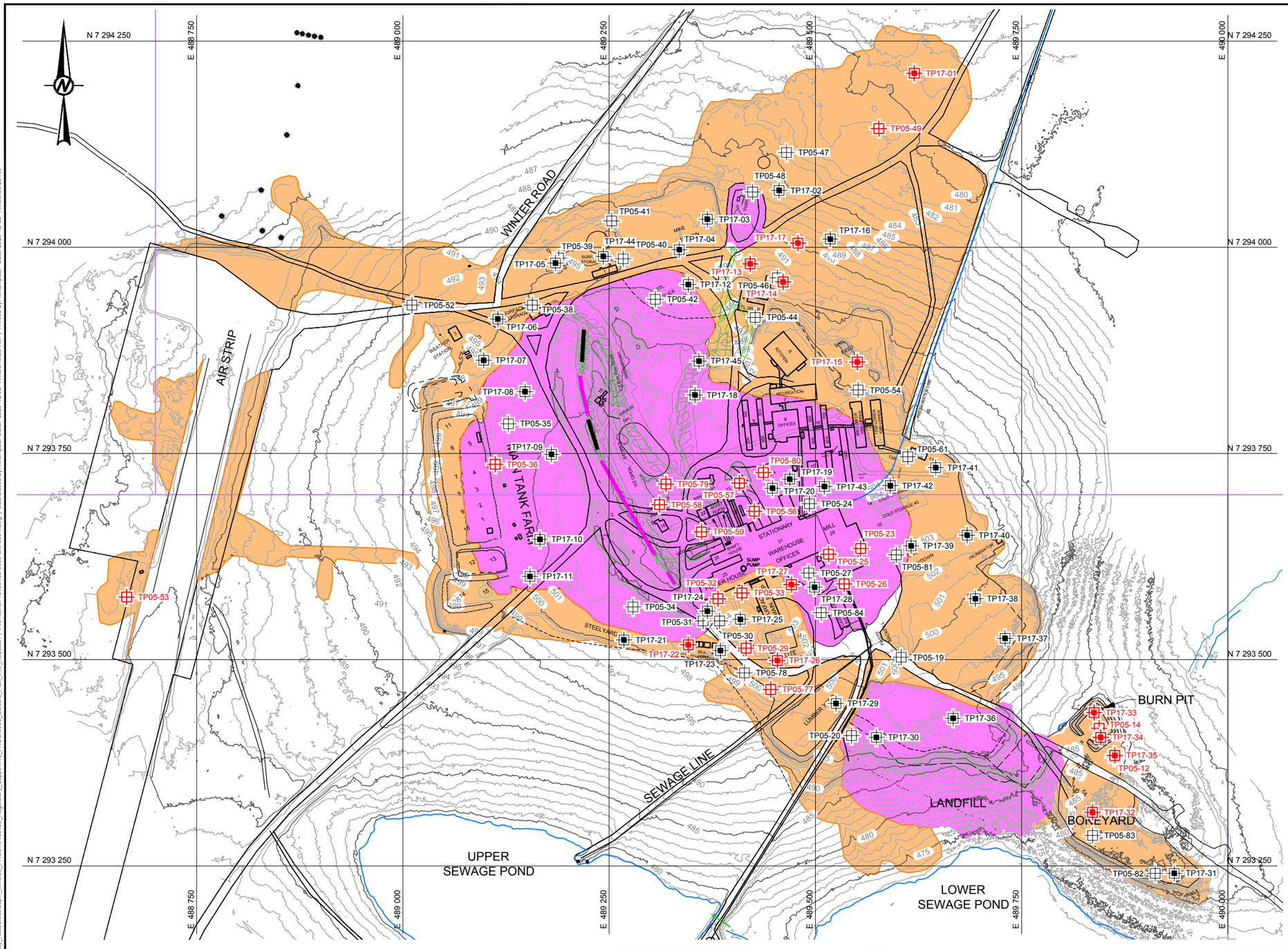
Reference(s): n/a

Attachment: n/a

6.0 ATTACHMENTS

Figure 1 – Locations of Contaminated Soils to be excavated. Issued 2020-11-30

E-file:201130 2AM-LUP2032 LMI Figure 1 Response to CIRNAC TC No.3



LEGEND

- EXISTING GROUND SURFACE CONTOUR (1 m INTERVAL)
- PROPOSED WASTE ROCK REMOVAL AREA
- PROPOSED WASTE ROCK PLACEMENT AND COVER AREA
- TP17-02 — 2017 ESA TEST PIT LOCATION
- TP17-32 — 2017 ESA TEST PIT WITH EXCEEDANCE
- TP05-83 — 2005 ESA TEST PIT LOCATION
- TP05-36 — 2005 ESA TEST PIT WITH EXCEEDANCE

NOTE(S)

1. THE FOLLOWING MATERIALS SHALL BE REMOVED FROM THE EXISTING SUBGRADE AND PLACED IN THE CROWN PILLAR OR SHAFTS BEFORE THE WASTE ROCK IS RELOCATED OR COVERED: PETROLEUM HYDROCARBON CONTAMINATED SOILS, ARSENIC "HOT SPOTS", SOIL OR WASTE ROCK MATERIALS IMPACTED BY CYANIDE OR LEAD NITRATE, OR ANY HAZARDOUS WASTE. SUCH REMOVAL SHALL BE APPROVED BY THE OWNER/ENGINEER BEFORE WASTE ROCK RELOCATION OR COVERING PROCEEDS.

REFERENCE(S)

1. EXISTING GROUND SURFACE TOPOGRAPHY FROM STANTEC, SURVEYED AUGUST 23 TO 25, 2019.
2. BASE PLAN DATA PROVIDED BY NORTHWEST CORP., FILE NO. 180125 draft_Figure 6 Surface Projection of Underground Mine Workings.dwg, RECEIVED JANUARY 1, 2018.
3. COORDINATES ARE IN METRES TO UTM NAD83, NRCS ZONE 12N.
4. FOR PLAN VIEW OF EXPANDED LANDFILL REFER TO DRAWING 19136158-0001-1.
5. FOR PLAN VIEW OF PROPOSED WASTE ROCK DOME REFER TO DRAWING 19136158-0002-1.

0 100 200
1:5,000 METRES

FINAL

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2020-11-30	ISSUED FOR FINAL	KAB	MR	SF	KAB

SEAL

CLIENT
LUPIN MINES INCORPORATED

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PROJECT
LUPIN MINE CLOSURE
NUNAVUT, CANADA

TITLE
LOCATIONS OF CONTAMINATED SOILS TO BE EXCAVATED

PROJECT NO.	CONTROL	REV.		DRAWING
19136158	0005	A	1 of 1	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 25 mm

Path: \\golder.gds\gal\Mississauga\SIM\Clients\Mandalay_Resources\Lupin_Mine\99_PRO_A\19136158_Regulatory_Support\40_PROD\0005_Closure_Plan_Info_Request\ | File Name: 19136158-0005-CM-0001.dwg | Last Edited By: mrampaul Date: 2020-12-02 Time:9:49:23 AM | Printed By: MRampaul Date: 2020-12-02 Time:9:50:28 AM