

# Lupin Mines Incorporated

(a subsidiary of Mandalay Resources)

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January 31, 2016

Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

To whom it may concern,

**RE: 2014 Sewage Pond Dams Geotechnical Inspection, 2014, Addendum Memo 2014 Fuel Tank Farm Inspection, and 2015 Waste Management Facility Geotechnical Inspection – Lupin Mine (LMI), Nunavut, License Number 2AM-LUP1520**

Please accept this cover letter with plan and timelines to implement the engineer's recommendations in regards to the following reports, completed by SRK Consulting. The following reports have already been submitted to the Nunavut Water Board:

- 2014 - 2014 Sewage Pond Dams Geotechnical Inspection and Addendum Memo 2014 Fuel Tank Farm Inspection
- 2015 - 2015 Waste Management Facilities Geotechnical Inspection

SRK noted in the 2015 Waste Management Facilities Geotechnical Inspection that they completed geotechnical inspections at the sewage pond dams, fuel tank farm containment systems and at the tailings containment area (TCA) in 2014. The inspections at the sewage pond dams and fuel containment are direct actions taken as per request from the July 2014 Water Licence Inspection Form. The inspection at the TCA was done as part of the annual requirement as per the Clause E.6 of the Water Licence agreement. Subsequently, the Inspector's Water Licence Inspection Form provided on July 14, 2015, section 3.3 of the document under Action Required (AANDC 2015) states that:

*"Geotechnical inspection of Waste Containment Areas – report to be received by Inspector by October 31, 2015."*

Clarification from the Inspector in 2015 indicated that the subject area is the waste oil management facility (WOMF) that is located immediately south of the main tank farm. This area was not understood to be a "water management structure", because it is not intended to hold water, hence it was not inspected in 2014. A geotechnical inspection was completed in 2015 as per requested in the July 2015 Water Licence Inspection Form.

## 2014 Sewage Pond Dams Geotechnical Inspection and followup 2015 Geotechnical Memo

SRK states that the facilities are in good geotechnical condition and makes the following maintenance and repair recommendations:

Periodical inspection should be carried out on the buried culvert to monitor its condition and seepage rate as culvert is heavily corroded and partially filled with sand and gravel

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Maintenance and monitoring are recommended to ensure the condition of the dam does not further degrade. LMI should consider backfilling the eroded upstream section of the dam with compacted granular material with the face armored with riprap.

LMI should monitor the condition of the tension cracks to determine their rate of movement. If the monitoring results indicate the cracks are lengthening or widening, LMI should consider constructing a 2 m wide buttress with a 2H:1V slope to half the height of the dam with compacted granular material, downstream of failed section of dam.

During the inspection, DMS was in the process of siphoning the Lower Sewage Lake to lower the water level. The activity log provided on September 22nd, 2014 indicated that the water level has been lowered by 0.36 m since the inspection, measured at the low area of the dam. A supporting note from George Friesen on October 9, 2014 confirmed that the current freeboard is 0.96 m as the pond is frozen for the winter. This lowering of the water level reduces the risk of overtopping.

SRK recommended that the operational freeboard of the lower pond be no less than 0.5 m at all times. Furthermore, SRK also recommended in order to achieve this minimum freeboard of 0.5 m at the time of future freshets that prior to the onset of winter, the pond level be lowered to provide a 0.8 m freeboard.

During the 2015 season SRK also provided a memo in regards to the 2015 Geotechnical Inspection advising the inspector of the following:

SRK engineer, Alvin Tong, has completed a geotechnical inspection of the Lupin Mine on 2 August, 2015. This inspection indicated that repairs have been completed in the lower dam, according to the recommendations provided in the geotechnical report (SRK 2014). It was noted during the inspection that LMI had set up syphons to drop the water level on the lower sewage pond. A technical memorandum was issued on 6 August, 2015 (SRK 2015), to confirm the "Measures to be Taken". Action item 2a) in the 22 July, 2015 Inspector's Directive has been substantially completed with minor finishing work scheduled to be completed before the end of 2015's field season.

Mr. Tong completed an additional geotechnical inspection in 19 August, 2015. It was noted in this inspection that the lower sewage pond had been lowered to provide 1.4 m of freeboard before syphoning was completed on 19 August, 2015. The upper sewage dam was noted to have 1.1 m of freeboard. The dams met the minimum freeboard to allow operation. LMI has provided photographs on 2 September, 2015 indicating all finishing work on both dams are completed.

## Addendum Memo 2014 Fuel Tank Farm Inspection

SRK stated that the facilities are in geotechnically stable condition and SRK made the following maintenance and repair recommendations:

Prior to adding new fuel in the tank farms, it is recommended that any noted damage to the liner to be repaired to ensure containment and the sand overliner be replaced over the exposed liner to provide for long-term protection. In addition to repairs on visually identified liner damages, general earthwork maintenance repairs should be carried out on the erosion gullies in downstream slopes of the containment berms.

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LMI will ensure prior to adding new fuel to the tank farms that they will be completed as recommended by SRK.

## 2015 Waste Management Facilities Geotechnical Inspection

The report summarized SRK's observation of the sewage pond dams and waste oil management area.

SRK stated that the facilities are in stable condition with no geotechnical concerns.

The reports stated that both the sewage dams were repaired according to the 2014 recommendations. The current condition of the Upper Sewage Dam is in good geotechnical condition after the 2015 repairs. Periodic inspections are recommended on the buried culvert to monitor its condition and seepage rate. It appears that this culvert controls the upper lake level. If the seepage stops or further reduces, then the lake level could increase as a result. If the culvert is found to be fully collapsed or blocked and the seepage stops, then it would be recommended that the siphon pipes be reinstalled to transfer water to the lower lake. The upper pond levels is recommended to have minimum 1 m freeboard prior to operations and winterization.

The Lower Sewage Dam is in good geotechnical condition after the 2015 repairs. Visual checks are recommended in the upstream face when practicable during summer seasons for potential major erosion. Repairs should be considered if major erosion damages are found. The lower pond level is recommended to have a minimum 1 m freeboard prior to operations and winterization.

The waste oil management facility is in good geotechnical conditions. Visual checks should be done in the downstream face of the facility for erosion and within the facility for any exposed liner. Monitoring should also be done during freshet to ensure the runoff is contained within the berm and ditches.

There are no issues requiring immediate attention identified in the reports. Visual checks and pond levels as identified in the report will be addressed in the 2016 season.

If you have any questions regarding the above, please do not hesitate to contact me.

Sincerely,

**Lupin Mines Incorporated.**

*"Karyn Lewis"*

Karyn Lewis