LUPIN MINES INCORPORATED

March 31, 2017

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

By email karen.kharatyan@nwb-oen.ca

Re: 2016 Annual Report: Lupin Mine Type A Water Licence (2AM-LUP1520).

Dear Ms. Kharatyan,

Lupin Mines Incorporated (LMI) is pleased to submit the attached 2016 Annual Report for the Lupin Mine in accordance with Type A water licence 2AM-LUP1520 Part B, Item 2.

Inuktitut and Inuinnaqtun translations are being prepared and will be forwarded to the Nunavut Water Board in the next few weeks.

Should you have any questions please contact the undersigned.

Yours truly,

"Karyn Lewis"

Karyn Lewis

76 Richmond Street East, Suite 330
Toronto, ON, M5C 1P1, Canada
Tel: 778-386-7340

Lupin Mine 2016 Summary of Activities

The Lupin Mine site was in a state of care and maintenance throughout the 2016 reporting period. The mine was occupied between May and October with camp occupancy numbers ranging from 2 to 17 people on site.

A total of 371.33 m^3 of water was used for domestic purposes in 2016. Approximately 517,734 m^3 was discharged from the Lower Sewage Pond to the receiving environment in 2016.

Care and maintenance activities carried out in 2016 included routine inspection of facilities, water sampling, site water management, sewage lagoon discharge and maintenance, constructing of a landfarm, large amount of waste backhauls, dam remediation, tailings pond remediation cover and annual geotechnical inspection.

Representatives from INAC and NWB attended site on October 6-7, 2016 to tour the mine property and participate in meetings regarding the third party cost estimate review. Participating in this tour and discussion were: Dave Hohnstein (NWB), Ian Parsons (INAC), Eva Paul (INAC) (part-time), Charles Gravelle (Arcadia- NWB), Regan McIssac (Knight Piesold- INAC), Amber Blackwell (Knight Piesold- INAC), Ken Booking (Golder- LMI), Patrick Downey (LMI), Karyn Lewis (LMI), and Dave Vokey (LMI).

An Environmental Effects Monitoring (EEM) program Phases 4 & 5 was undertaken on site by Golder and Associates during the period August 24 – September 08, 2016 as a requirement of the MMER.

Sampling of fuel within the MTF was undertaken during the first week of September 2016 to determine the condition and quality. Lab results obtained from an accredited testing facility confirmed the fuel meets acceptable standards. The results of these tests are located on the NWB ftp site.

2AM-LUP1520 - 2016 LMI Annual Reporting Requirements - Part B, Item 2

a) The monthly and annual quantities in cubic metres of water pumped from Contwoyto Lake at Station Number LUP-01:

The following quantities of water were withdrawn from Contwoyto Lake in 2016 for domestic purposes:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Water use (m^3)	-	-	-	-	12.00	72.00	78.18	74.83	70.10	64.22	-	-	371.33

Domestic water came from Contwoyto Lake.

b) The monthly and annual quantities in cubic metres of treated Tailings effluent discharged at Station Number LUP-10:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Pond 2 Discharge at Dam (m^3)	-	-	-	-	-	-	-	-	-	-	-	-	-

Not applicable as there was no tailing effluent discharge during 2016.

c) The monthly and annual quantities in cubic metres of Minewater discharged at Station Number LUP-11:

Not applicable given the care and maintenance status in 2016.

d) The monthly and annual quantities in cubic metres of treated Sewage effluent discharged at Station Number LUP-14:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sewage Effluent Discharge (m^3)	-	-	-	-	-	457,519	59,819	-	-	-	-	-	517,734

*estimate of spring overflow

There was approx. 517,734 m^3 discharged from the Lower Sewage Lake in June and July 2016.

e) Details on the types and quantities of Hazardous Waste and chemicals stored on site :

As of December 31, 2016 there was approximately 1,649,607 litres of diesel fuel and approximately 110,870 litres of jet fuel in storage within the MTF. Within the Third Party Berm (in 205 litre drums), there is approximately 410 litres of gasoline, 11,480 litres of diesel fuel, and approximately 22,345 litres of jet-A and/or Av-gas, along with

approximately 450 litres of lubricants and/or glycol in 205 litre and/or 20 litre pails. Additionally; there is approximately 40,795 litres of fuel contaminated water (in 205 litre drums) stored within the Third Party Berm awaiting treatment and/or disposal. Approximately 100ea empty 205 litre drums and 12ea empty 1300 litre oil cubes are maintained for spill contingency and/or temporary storage of hydrocarbons or hydrocarbon contaminated water. There are approximately 450 ea 25 kg bags of hydrated lime stored within Cold Storage Building 2.

f) Tabular summaries of all data generated under the "Monitoring Program":

Water sampling was carried out in 2016 and the sampling results are reported in Appendix A.

g) A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector:

Water Resource Inspector, Land Inspector and Environment Canada were at site on June 14, 2016 to complete site inspections. The Inspection Report and LMI response to the inspection report from the Water Resource Inspector is included in Appendix B, attached.

A summary of the actions taken to address concerns are as follows:

Waste Disposal - Waste Water:

Inspection Report stated that *Pump intake in main tank berm (for discharge) was allowed to sit on the bottom of the berm; appears to have drawn sediment. Ensure intake is raised off sandy bottom. Ensure discharges are conducted in a manner that does not result in sediment uptake, and minimizes erosion.*

LMI confirmed, as per the discussion with the inspector at site, that during approved discharge (prior to the inspection) at the MTF there was a mesh cover in place and the pump intake was elevated. Once the discharge was completed the parts used for elevation and the mesh cover were removed and placed under and on the hose during the MTF-JF approved discharge (prior to your inspection). LMI staff have now removed the pump and hoses and placed them back in storage.

Site Conditions - Erosion/Sediment – Mitigation Measures

Inspection Report stated *General sediment/erosion seen along roads and airstrip. Pump discharge from main tank farm was discharged onto sandy berm wall, causing erosion to main tank farm berm wall. Hose should be extended to rocky area to mitigate erosion.*

LMI discussed with the Inspector that there were no specific areas of major concern by the Inspector in regards to general sediment/erosion along the roads and airstrip but LMI did take the necessary measures to repair erosion along the roads and airstrip as required.

In the future, LMI will make sure that the hose discharging to the environment is place further down the rocky embankment to minimize erosion. Photos were supplied to the Inspector within LMI's response (see attached) for confirmation of work completed.

Haz/Mat Management - Spills

Inspector Report stated *No Measures are in place to prevent migration of satellite tank farm spill (no dykes, absorbents etc.). As this will result in spread of contamination (may result), consideration should be given to preventing the spread of hydrocarbons.*

LMI, as agreed with the Inspector, built a trench to divert the water to be captured either with absorbent pads or some other form. This work has completed. With the new andfarm provisions included in the renewed water licence (2AM-LUP1520), LMI's plan is to prepare, construct and operate a landfarm 2016 – 2017 to begin treating the hydrocarbon soil at the STF.

Site Conditions – Water Management Structures

Inspectors Report stated *Even with work done last season on lower sewage berm, fast freshet has raised lower sewage lake to less than 1m freeboard and effluent is close to flowing around the south end. This should be monitored and if necessary, berm height increased. LMI is waiting for results, and if compliant, will discharge ASAP. However, there is little margin for error. If results are non-compliant, what is LMI's plan to deal with effluent?*

LMI advised that the results of the samples at the lower sewage lagoon returned within criteria and LMI has begun discharging with the Inspectors approval during 2016.

In the event that the samples had not meet criteria, as discussed with the Inspector, the effluent from the lower sewage lagoon would have been siphoned in tanks, beginning with the big blue tank located between the upper and lower sewage lagoon.

Land Inspector was on site on August 9, 2016 to complete a site inspection.

Water Resource Inspector was at site on October 5-6, 2016 to complete a site inspection.

h) A summary of modification and/or major maintenance work carried out on the water supply and the waste disposal facilities, including all associated structures:

No major work was carried out in 2016 on water supply or waste disposal facilities. Repairs to the sewage lagoon as requested by the Water Resources Inspector were completed in 2015.

A 2016 Annual Geotechnical Inspection (with cover letter) was filed with the NWB on October 31, 2016 as required. Below is the link to annual geotechnical report, due to the size of the report it is not included in the appendices. The cover letter is attached in Appendix D as it appears that the incorrect cover letter for 2016 is on the NWB ftp.

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/4%20WASTE%20DISP%20(D)%20(E)/D%206(g)%20Annual%20Geotechnical%20Inspection/2016/161101%202AM-LUP1520%202016%20Lupin%20Mine%20Geotech%20Inspection%20RPT%20Final-IVKE.pdf

i) A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken:

There were no unauthorized discharges or spill reports in 2016.

j) Where applicable, revisions as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals:

LMI has submitted the following updated plans to the NWB on March 25, 2016 and can be located on the NWB ftp site.

- Interim Abandonment and Restoration Plan including appendices
- Care and Maintenance Plan including:
    - Waste Management Plan (Solid and Hazardous) including
        - Incinerator Operating and Maintenance Procedures
        - Landfill Management Plan
        - Landfarm Management Plan
    - Liquid Waste Management Plan including:
        - Water Quality Monitoring Plan and Quality Assurance and Quality Control Plan
    - Wildlife Management Plan
    - Monitoring and Inspection Schedule
- Spill Contingency Management Plan

LMI is awaiting comments from the NWB and/or approval of the above noted plans.

k) For Care and Maintenance, provide an updated status of any progressive reclamation as it relates to tailings cover remediation and justification for not proceeding to full reclamation under Part I, Item 5:

LMI continues to monitor the global economic climate and evaluate the feasibility of operating the Lupin mine along with the potential for identifying additional resources

through its exploration activities. In the interim, the site remains in care and maintenance and a decision with respect to Part I, Item 5 for full reclamation. The Company commenced remediation work on Cell 5 within the TCA and this work will be continued/completed in 2017. The Company also completed minor repairs on Cell 1.

l) A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions:

The Company did not hold any public consultation or community events in 2016 due to the site being on care and maintenance.

Representatives from INAC and NWB on site October 6-7, 2016 to tour the mine site property and participate in a clarification meeting regarding the reclaim estimate. Participating in this tour and discussion were: Dave Hohnstein (NWB), Ian Parsons (INAC), Eva Paul (INAC) (part-time), Charles Gravelle (Arcadia- NWB), Regan McIssac (Knight Piesold- INAC), Amber Blackwell (Knight Piesold- INAC), Ken Booking (Golder- LMI), Patrick Downey (LMI), Karyn Lewis (LMI), and Dave Vokey (LMI).

m) A summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year:

LMI backhauled approx. 150,000 lbs of waste from site during the 2016 season. LMI will continue to backhaul waste during the 2017 season. The hazardous waste storage area at the Lupin Mine site is now empty. The hazardous waste manifests were provided to the NWB on January 19, 2017 as part of the water licence amendment process.

LMI, in consultation with Norwest Engineering, completed a majority of the construction for the approved Landfarm plan to initiate treatment of the hydrocarbon soil at the satellite tank farm. The Company will complete the final minor construction elements and commence treatment during the 2017 season.

Remediation on Cell 5 within the TCA is anticipated to continue during the 2017 season.

During the 2017 season, LMI anticipates to carry out the following as per the geotechnical report:

- Monitor and repair the divider dykes as directed by the Engineer-of-Record.
- Monitor the condition of Dam K and repair the eroded toe at Dam K.
- Connect the eastern and western buttresses at Dam M.

- Monitor the water level behind Dam N and lower the water level to maintain a minimum 1m freeboard and prevent localized erosion of dam crest
- Monitor the water level in Cell 4 and lower the water level to maintain a minimum 1m freeboard and prevent overtopping of the Divider Dykes ; and

LMI will carry out inspections during the 2017 season, where practical, to include the following:

- Monitor the seepage at Dam 2 and manage it as necessary by pumping the seepage back into Pond 2.
- Monitor the water level in Cell 5 and manage it as necessary by pumping the water to Pond 1.
- General repairs on surface and slope erosion at high water mark.
- Monitor animal burrow activities.
- Monitor the performance of the completed repair at Dam N for cracks, settlement, sloughs, sinkholes, erosion and other deformation.

n) An updated assessment of the current mine reclamation liability using the most current version of RECLAIM as required by Part I, Item 3:

LMI's cost estimate is located on the NWB ftp under the following link:

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/2%20SECURITY%20(C)/2014/141212%202AM-LUP0914%20Updated%20LMI%20Closure%20Estimate-Dec2014-Final%20with%20Appendices-ILAE.pdf

The amount of the cost estimate has not changed from the 2014 cost estimate. Due to fuel prices and labour costs dropping significantly in the last year LMI has decided to stay with the same cost estimate rather than lower the cost estimate to reflect the new rates during 2016. The Company will submitting a revised cost estimate in September 2017 as required under Part C, Item 4.

o) Any other details on water use or waste disposal requested by the Board by November 1st of the year being reported:

The Nunavut Water Board did not request additional information for the 2016 reporting period.

APPENDICES

Appendix A – 2016 Water Sample Results
Appendix B – 2016 Inspection Reports and LMI Responses
Appendix C = 2016 Geotechnical Cover Letter

Appendix A

2016 Water Sample Results

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 31-MAY-16
Report Date: 02-JUN-16 09:47 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1775952

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 10-366179
Legal Site Desc:

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775952-1	L1775952-2	L1775952-3		
	Description	WATER	WATER	WATER		
	Sampled Date	30-MAY-16	30-MAY-16	30-MAY-16		
	Sampled Time	18:00	18:20	18:05		
	Client ID	MTF-DF-2016-05-30	TPDS-2016-05-30	MTF-DF2-2016-05-30		
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	7.37	15.5	17.6		
	pH (pH)	6.37	5.21	5.38		
	Total Suspended Solids (mg/L)	5.7	8.3	<3.0		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	4.7	<2.0	<2.0		
	Ammonia, Total (as N) (mg/L)	<0.050	<0.050	<0.050		
	Nitrate and Nitrite (as N) (mg/L)	<0.022	0.035	<0.022		
	Nitrate (as N) (mg/L)	<0.020	0.035	<0.020		
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010		
Total Metals	Aluminum (Al)-Total (mg/L)	0.214	1.38	0.104		
	Antimony (Sb)-Total (mg/L)	0.00075	0.00014	0.00058		
	Arsenic (As)-Total (mg/L)	0.0165	0.157	0.0127		
	Barium (Ba)-Total (mg/L)	0.00367	0.0163	0.00433		
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010		
	Cadmium (Cd)-Total (mg/L)	0.0000433	0.000117	0.0000678		
	Calcium (Ca)-Total (mg/L)	2.22	3.58	5.72		
	Cesium (Cs)-Total (mg/L)	0.000125	0.00118	0.000071		
	Chromium (Cr)-Total (mg/L)	0.00151	0.00559	0.00062		
	Cobalt (Co)-Total (mg/L)	0.00087	0.00699	0.00426		
	Copper (Cu)-Total (mg/L)	0.00280	0.00443	0.00181		
	Iron (Fe)-Total (mg/L)	0.444	3.24	0.207		
	Lead (Pb)-Total (mg/L)	0.00368	0.00244	0.00259		
	Lithium (Li)-Total (mg/L)	0.0011	0.0065	0.0028		
	Magnesium (Mg)-Total (mg/L)	0.441	1.59	0.799		
	Manganese (Mn)-Total (mg/L)	0.0287	0.0624	0.0347		
	Molybdenum (Mo)-Total (mg/L)	0.000226	0.000069	0.000102		
	Nickel (Ni)-Total (mg/L)	0.00419	0.0235	0.0192		
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050		
	Potassium (K)-Total (mg/L)	0.648	1.34	0.722		
	Rubidium (Rb)-Total (mg/L)	0.00147	0.00739	0.00153		
	Selenium (Se)-Total (mg/L)	<0.000050	0.000057	<0.000050		
	Silicon (Si)-Total (mg/L)	0.569	2.78	0.610		
	Silver (Ag)-Total (mg/L)	0.000022	0.000032	0.000014		
	Sodium (Na)-Total (mg/L)	0.231	0.367	0.204		
	Strontium (Sr)-Total (mg/L)	0.00597	0.0195	0.0129		
	Sulfur (S)-Total (mg/L)	1.12	4.51	5.61		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775952-1	L1775952-2	L1775952-3		
	Description	WATER	WATER	WATER		
	Sampled Date	30-MAY-16	30-MAY-16	30-MAY-16		
	Sampled Time	18:00	18:20	18:05		
	Client ID	MTF-DF-2016-05-30	TPDS-2016-05-30	MTF-DF2-2016-05-30		
Grouping	**Analyte**					
WATER						
Total Metals	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000038	<0.000010		
	Thorium (Th)-Total (mg/L)	<0.00010	0.00031	<0.00010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.0109	0.0795	0.00408		
	Tungsten (W)-Total (mg/L)	<0.00010	0.00036	<0.00010		
	Uranium (U)-Total (mg/L)	0.000144	0.000374	0.000068		
	Vanadium (V)-Total (mg/L)	0.00055	0.00371	<0.00050		
	Zinc (Zn)-Total (mg/L)	0.0048	0.0239	0.0116		
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030		
Aggregate Organics	Oil and Grease (mg/L)	<1.0	<1.0	<1.0		
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050		
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050		
	Toluene (mg/L)	0.00050	<0.00050	<0.00050		
	o-Xylene (mg/L)	<0.00050	<0.00050	<0.00050		
	m+p-Xylene (mg/L)	0.00061	<0.00050	<0.00050		
	Xylenes (mg/L)	<0.00071	<0.00071	<0.00071		
	Surrogate: 4-Bromofluorobenzene (SS) (%)	92.0	82.0	96.0		
	Surrogate: 3,4-Dichlorotoluene (SS) (%)	102.0	103.0	103.0		
	Surrogate: 1,4-Difluorobenzene (SS) (%)	99.0	96.0	99.0		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-ED	Water	Alkalinity, T	APHA 2320 B-Auto-Pot. Titration
BTX-HS-ED	Water	BTEX (By Headspace)	EPA 5021/8260-Headspace GC-MS
ETL-HARDNESS-TOT-ED	Water	Hardness (from Total Ca and Mg)	APHA 2340 B-Calculation
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OGG-LLE-GRAV-ED	Water	O&G by Hex/MTBE extraction, gravimetric	APHA 5520 B HEXANE MTBE EXT. GRAVIME
This technique employs a hexane/methyl-tert-butyl ether extraction of water, followed by filtration of the solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish and the oil and grease content is calculated from the weight of material remaining.			
PH-ED	Water	pH	APHA 4500 H-Electrode
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
Gravimetric determination of solids in waters by filtration and drying filter at 104 degrees Celsius.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

10-366179

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10 - 366179

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	Mandalay Resources (Lupin Mine)	Standard: ✓	Other (specify):		Regular (Standard Turnaround Times - Business Days)
Contact:	Karyn Lewis	Select: PDF ✓	Excel Digital Fax	✓	Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	1204 - 700 West Pender St.	Email 1:	klewis@elginmining.com		Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
	Vancouver, BC V6C 0A3	Email 2:	DaveVokey1@aim.com		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	778-386-7340 Fax:				

Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) (Yes) or No	Job #:	Lupin Mine
Company:	Payables@mandalayresources.com	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	Q56622
Lab Work Order # (lab use only)	L1775952	ALS Contact: R. Zolkiewski	Sampler: D. Vokey

Analysis Request
(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TSS	pH	Total Ammonia	Total Metals	Total O&G	Benzene	Toluene	Ethylbenzene	Nitrite (NO_2)	Nitrate (NO_3)	Hardness	Alkalinity	Number of Containers
*	MTF-DF-2016-05-30	30-May-16	18:00	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	MTF-JF-2016-05-30	30-May-16	18:00	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	STF-2016-05-30	30-May-16	18:15	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	WOTF-2016-05-30	30-May-16	18:15	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
*	TPDS-2016-05-30	30-May-16	18:20	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
*	MTF-DF2-2016-05-30	30-May-16	18:05	Water	X	X	X	X	X	X	X	X	+	X	X	X	7

L1775952-COFC

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Comm

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Vokey	31-May-16	12:00	AT	31-May-16	12:00	9.5 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 31-MAY-16
Report Date: 02-JUN-16 16:36 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1775986

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 10-366179
Legal Site Desc:

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775986-1	L1775986-2	L1775986-3		
	Description	WATER	WATER	WATER		
	Sampled Date	30-MAY-16	30-MAY-16	30-MAY-16		
	Sampled Time	18:00	18:15	18:15		
	Client ID	MTF-JF-2016-05-30	STF-2016-05-30	WOTF-2016-05-30		
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	25.9	4.27	8.73		
	pH (pH)	6.15	5.48	6.69		
	Total Suspended Solids (mg/L)	3.6	<3.0	<3.0		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	2.6	<2.0	8.1		
	Ammonia, Total (as N) (mg/L)	<0.050	<0.050	<0.050		
	Nitrate and Nitrite (as N) (mg/L)	<0.022	<0.022	<0.022		
	Nitrate (as N) (mg/L)	<0.020	<0.020	<0.020		
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010		
Total Metals	Aluminum (Al)-Total (mg/L)	0.0571	0.0638	0.0066		
	Antimony (Sb)-Total (mg/L)	0.00012	0.00055	0.00093		
	Arsenic (As)-Total (mg/L)	0.0100	0.0327	0.00507		
	Barium (Ba)-Total (mg/L)	0.00354	0.00195	0.00246		
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	<0.010	0.047		
	Cadmium (Cd)-Total (mg/L)	0.000105	0.000180	0.0000154		
	Calcium (Ca)-Total (mg/L)	8.87	1.07	2.28		
	Cesium (Cs)-Total (mg/L)	0.000096	0.000019	0.000011		
	Chromium (Cr)-Total (mg/L)	0.00028	0.00111	0.00049		
	Cobalt (Co)-Total (mg/L)	0.00207	0.00446	0.00109		
	Copper (Cu)-Total (mg/L)	0.00103	0.00331	0.00176		
	Iron (Fe)-Total (mg/L)	0.482	0.340	0.520		
	Lead (Pb)-Total (mg/L)	0.000361	0.00204	0.00666		
	Lithium (Li)-Total (mg/L)	0.0048	0.0011	0.0012		
	Magnesium (Mg)-Total (mg/L)	0.921	0.385	0.738		
	Manganese (Mn)-Total (mg/L)	0.0678	0.0440	0.0777		
	Molybdenum (Mo)-Total (mg/L)	0.000150	0.000382	0.000379		
	Nickel (Ni)-Total (mg/L)	0.0157	0.00843	0.00474		
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050		
	Potassium (K)-Total (mg/L)	1.21	0.534	1.59		
	Rubidium (Rb)-Total (mg/L)	0.00208	0.00061	0.00139		
	Selenium (Se)-Total (mg/L)	<0.000050	0.000050	<0.000050		
	Silicon (Si)-Total (mg/L)	0.245	0.602	0.169		
	Silver (Ag)-Total (mg/L)	<0.000010	0.000038	<0.000010		
	Sodium (Na)-Total (mg/L)	0.388	0.367	0.993		
	Strontium (Sr)-Total (mg/L)	0.0246	0.00476	0.00783		
	Sulfur (S)-Total (mg/L)	8.51	0.88	1.23		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775986-1	L1775986-2	L1775986-3		
	Description	WATER	WATER	WATER		
	Sampled Date	30-MAY-16	30-MAY-16	30-MAY-16		
	Sampled Time	18:00	18:15	18:15		
	Client ID	MTF-JF-2016-05-30	STF-2016-05-30	WOTF-2016-05-30		
Grouping	**Analyte**					
WATER						
Total Metals	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.00198	0.00161	<0.00030		
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Total (mg/L)	0.000052	0.000097	0.000014		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	0.0144	0.0113	0.0075		
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030		
Aggregate Organics	Oil and Grease (mg/L)	<1.0	2.3	<1.0		
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050		
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050		
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050		
	o-Xylene (mg/L)	<0.00050	<0.00050	<0.00050		
	m+p-Xylene (mg/L)	<0.00050	<0.00050	<0.00050		
	Xylenes (mg/L)	<0.00071	<0.00071	<0.00071		
	Surrogate: 4-Bromofluorobenzene (SS) (%)	91.0	94.0	101.0		
	Surrogate: 3,4-Dichlorotoluene (SS) (%)	102.0	98.0	105.0		
	Surrogate: 1,4-Difluorobenzene (SS) (%)	97.0	99.0	98.0		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-ED	Water	Alkalinity, T	APHA 2320 B-Auto-Pot. Titration
BTX-HS-ED	Water	BTEX (By Headspace)	EPA 5021/8260-Headspace GC-MS
ETL-HARDNESS-TOT-ED	Water	Hardness (from Total Ca and Mg)	APHA 2340 B-Calculation
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OGG-LLE-GRAV-ED	Water	O&G by Hex/MTBE extraction, gravimetric	APHA 5520 B HEXANE MTBE EXT. GRAVIME
This technique employs a hexane/methyl-tert-butyl ether extraction of water, followed by filtration of the solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish and the oil and grease content is calculated from the weight of material remaining.			
PH-ED	Water	pH	APHA 4500 H-Electrode
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
Gravimetric determination of solids in waters by filtration and drying filter at 104 degrees Celsius.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

10-366179

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

10- 366179

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page 1 of 1

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)	
Company:	Mandalay Resources (Lupin Mine)	Standard: ✓	Other (specify):		Regular (Standard Turnaround Times - Business Days)
Contact:	Karyn Lewis	Select: PDF ✓	Excel Digital Fax	✓	Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address:	1204 - 700 West Pender St. Vancouver, BC V6C 0A3	Email 1:	klewis@elginmining.com		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
		Email 2:	DaveVolkey1@aim.com		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	778-386-7340 Fax:				

Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	Client / Project Information	
	Copy of Invoice with Report? (circle) (Yes) or No	Job #:	Lupin Mine
Company:	Payables@mandalayresources.com	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	Q56622
Lab Work Order # (lab use only)	L1775986	ALS Contact:	R. Zolkiewski
		Sampler:	D. Volkey

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TSS	PH	Total Ammonia	Total Metals	Total O&G	Benzene	Toluene	Ethyl Benzene	Nitrite (NO2)	Nitrate (NO3)	Hardness	Alkalinity	Number of Containers
	MTF-DF-2016-05-30	30-May-16	18:00	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	MTF-JF-2016-05-30	30-May-16	18:00	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	STF-2016-05-30	30-May-16	18:15	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	WOTF-2016-05-30	30-May-16	18:15	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	TPDS-2016-05-30	30-May-16	18:20	Water	X	X	X	X	X	X	X	X	X	X	X	X	7
	MTF-DF2-2016-05-30	30-May-16	18:05	Water	X	X	X	X	X	X	X	X	X	X	X	X	7

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commerc

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Volkey	31-May-16	12:00	AT	31-May-16	12:00	9.5 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION | WHITE - LABORATORY COPY | YELLOW - CLIENT COPY | GENF 18.01 Front

GENERAL TERMS AND CONDITIONS:

These terms and conditions are incorporated in and form part of the Agreement between ALS Laboratory Group – Environmental Division ("ALS") and the party named in the Offer (the "Client").

1. Definitions. Capitalized Terms not defined in these Terms and Conditions have the definitions set out in the other Agreement documents.
2. The Services. ALS will provide the Services to the Client as described in the Offer and in any change of custody form provided with any sample.
3. Prices. ALS may review and change all prices, fees, surcharges or other charges set out in the Agreement if there are changes to ALS's cost beyond ALS's control, including changes in legislative requirements, Client variations of sample numbers and Client requests for changes to standard reporting requirements. Notwithstanding Condition 3, all quotations are reviewed and updated on a yearly basis.
4. Payment Terms. The Client shall pay ALS within 30 days of the invoice date OAC. ALS may, for reasonable business reasons, require the Client to arrange for payment in advance.
5. Quotation Numbers. The Client shall provide the quotation number to ALS (where applicable) to ensure correct pricing.
6. Taxes. Applicable taxes are not included in prices, surcharges and additional fees and will be added at the time of invoicing.
7. Quality Control. ALS has an extensive QA/QC program and all analytical data reported is analyzed using approved, referenced procedures followed by checks and reviews of senior managers and quality assurance personnel.
8. No Guarantee of Results. Results are obtained from chemical measurements. The Client is responsible for informing itself on the limitation of the results and acknowledges that the results are not guaranteed.
9. Standard of Care. ALS will use reasonable care and diligence as required by the laws of the province or territory where the sample is tested.
10. Storage. Where possible, ALS will store samples for 30 days from the date a final report is issued to the Client, after which ALS may discard the sample.
11. Holds. If the Client requests a sample be placed on hold, ALS will store the sample for 60 days for the quoted price, after which ALS will invoice the Client and discard the sample.
12. Archives. If the Client requests a sample be archived, ALS will store the sample for 6 months for the quoted price, after which ALS will invoice the Client and discard the sample.
13. Handling Protocol. Legal sample handling protocol must be arranged before samples are collected. ALS may charge a 20% surcharge on the list price plus the hourly technologist or chemist rates for legal sample protocol. Samples processed under legal protocol are stored indefinitely (storage charges may apply).
14. Samples. The quality, condition, content and source of samples stored and tested are not known to ALS except as declared and described on the chain of custody form completed and submitted by the Client and accompanying the sample.
15. Risk of Loss. ALS will use reasonable care to protect samples during storage, however all samples are stored at the Client's risk and the Client is responsible for obtaining appropriate insurance, if desired. The Client acknowledges that during the performance of the Services samples may be altered, lost, damaged or destroyed and the Client releases ALS from any claim the Client may have for any loss or damage to the sample.
16. Environmental. The Client must comply with all applicable environment legislation, including labeling all hazardous samples to comply with WHMIS and TDG regulations, and must provide appropriate material safety data sheets that include the nature of the hazard and a contact name and phone number to call for information. The Client will indemnify ALS for all loss or damages, including any fine or cost of complying with an order of any government authority, resulting from the Client's breach of this paragraph.
17. Hazardous Materials Disposal. ALS may return, at the Client's cost, hazardous material to the Client for disposal.
18. Hazardous Materials Surcharge. ALS may apply an additional surcharge for handling of hazardous samples or samples with Naturally Occuring Radioactive Materials (NORM), H2S, CN, etc.
19. Sample Containers. ALS may ship sample containers to the Client's location by the most cost effective means using ALS preferred courier suppliers, within the specified project timeline.
20. Additional Charges. ALS may charge the Client (a) its cost for emergency bottle shipments and shipments to and from a remote site, and (b) where pick up and delivery services are provided, subject in each instance to a minimum charge of $25.00.
21. Large Bottle Orders. The Client shall provide ALS with 24 hours notice for large bottle orders.
22. Re-Tests. ALS reserves the right to re-test any samples that remains in its possession. Re-tests requested by the Client may be charged.
23. Waiver. The Client is responsible for making any assessment regarding the suitability of the Services and the intended results for the Client's purposes and waives any claims against ALS it may have as a result of the interpretation of the results. The Client shall indemnify ALS for all claims made by any third party against ALS in respect of all losses however arising from the performance of the Services or the use of any report provided in the performance of the Services.
24. Limitation of Liability. In no event shall ALS be liable for any consequential, indirect, incidental, special, exemplary or punitive damages, whether foreseeable of unforeseeable, (including claims for loss of profits or revenue or losses caused by stoppage of other work or impairment of other assets) incurred by the Client arising out of breach or failure of express of implied warranty, breach of contract, breach of warranty, misrepresentation, negligence, strict liability in tort or otherwise. In any event, the liability of ALS to the Client shall be limited to the cost of testing the sample as requested in the chain of custody form under which the sample was originally deposited. For the purposes of this paragraph and paragraphs 8, 15, 16, 23 and 25, as the applicable, "ALS" includes without limitations its directors, officers, employees and affiliates and the "Client" includes without limitation any third party that may have a claim against ALS through the Client.
25. Notice of Liability. Notwithstanding paragraph 24, ALS shall not be liable to the Client unless the Client provides notice in writing to ALS of such loss or damage, together with full particulars thereof, within 30 days of the Client's receipt of the report of the analysis of the sample giving rise to such liability. The provisions of this paragraph allocate the risk under the Agreement between the Client and ALS, and the fees to be paid by the Client to ALS reflect this allocation of risks and the limitations of liability in this Agreement.
26. Entire Agreement. The Agreement is the entire agreement between the parties and supercedes and takes precedence over any terms and conditions contained in any documentation provided by the Client. ALS's execution of any subsequent documentation from the Client only acknowledges receipt and not acceptance of any terms or conditions therein. If there is a conflict between these terms and conditions and any other Agreement document, these terms and conditions prevail.

GENF 19.00 Terms

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 31-MAY-16
Report Date: 09-JUN-16 21:40 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1775997

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 08-012471
Legal Site Desc:

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775997-1				
	Description	WATER				
	Sampled Date	31-MAY-16				
	Sampled Time	09:00				
	Client ID	LUP-01-2016-05-31				
Grouping	**Analyte**					
WATER						
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<2.0 RRV				
	Bicarbonate (HCO3) (mg/L)	<5.0 RRV				
	Carbonate (CO3) (mg/L)	<5.0 RRV				
	Chloride (Cl) (mg/L)	<0.50 RRV				
	Conductivity (EC) (uS/cm)	138 RRV				
	Fluoride (F) (mg/L)	0.119 RRV				
	Hardness (as CaCO3) (mg/L)	35.7				
	Hydroxide (OH) (mg/L)	<5.0 RRV				
	Ion Balance (%)	63.5 BL:INT				
	Nitrate and Nitrite (as N) (mg/L)	0.022				
	Nitrate (as N) (mg/L)	0.022 RRV				
	Nitrite (as N) (mg/L)	<0.010 RRV				
	pH (pH)	4.35 RRV				
	TDS (Calculated) (mg/L)	67.4				
	Sulfate (SO4) (mg/L)	54.7 RRV				
Bacteriological Tests	Escherichia Coli (MPN/100mL)	1				
	MPN-Fecal Coliform (MPN/100mL)	<1				
	Total Coliforms (MPN/100mL)	29				
Total Metals	Aluminum (Al)-Total (mg/L)	2.61				
	Antimony (Sb)-Total (mg/L)	0.00012				
	Arsenic (As)-Total (mg/L)	0.00286				
	Barium (Ba)-Total (mg/L)	0.00515				
	Beryllium (Be)-Total (mg/L)	0.00044				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (mg/L)	0.000264				
	Calcium (Ca)-Total (mg/L)	8.96				
	Cesium (Cs)-Total (mg/L)	0.000157				
	Chromium (Cr)-Total (mg/L)	0.00015				
	Cobalt (Co)-Total (mg/L)	0.0261				
	Copper (Cu)-Total (mg/L)	0.0250				
	Iron (Fe)-Total (mg/L)	0.231				
	Lead (Pb)-Total (mg/L)	0.000644				
	Lithium (Li)-Total (mg/L)	0.0151				
	Magnesium (Mg)-Total (mg/L)	3.68				
	Manganese (Mn)-Total (mg/L)	0.198				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1775997-1				
	Description	WATER				
	Sampled Date	31-MAY-16				
	Sampled Time	09:00				
	Client ID	LUP-01-2016-05-31				
Grouping	**Analyte**					
WATER						
Total Metals	Molybdenum (Mo)-Total (mg/L)	<0.000050				
	Nickel (Ni)-Total (mg/L)	0.0700				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	0.532				
	Rubidium (Rb)-Total (mg/L)	0.00216				
	Selenium (Se)-Total (mg/L)	0.000065				
	Silicon (Si)-Total (mg/L)	1.43				
	Silver (Ag)-Total (mg/L)	0.000024				
	Sodium (Na)-Total (mg/L)	0.559				
	Strontium (Sr)-Total (mg/L)	0.0413				
	Sulfur (S)-Total (mg/L)	964				
	Tellurium (Te)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Thorium (Th)-Total (mg/L)	<0.00010				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.00030				
	Tungsten (W)-Total (mg/L)	<0.00010				
	Uranium (U)-Total (mg/L)	0.00151				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	0.0633				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
Dissolved Metals	Dissolved Metals Filtration Location	FIELD				
	Calcium (Ca)-Dissolved (mg/L)	8.31 RRV				
	Magnesium (Mg)-Dissolved (mg/L)	3.64 RRV				
	Potassium (K)-Dissolved (mg/L)	0.56 RRV				
	Sodium (Na)-Dissolved (mg/L)	<1.0 RRV				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1775997-1	LUP-01-2016-05-31	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low. - HG-T

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1775997-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-ED	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
F-IC-N-ED	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
FCOLI-MPN-YL	Water	Thermotolerant (Fecal) Coliforms	APHA 9223B, 2004 Enzyme Substrate Method
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal Coliform (Thermotolerant) bacteria are determined by mixing sample with a mixture of hydrolyzable substrates and then sealing in a multi-well packet. The packet is incubated for 18-24 hours and the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.			
HG-T-CVAA-ED	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-CCMS-ED	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
SO4-IC-N-ED	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
TC,EC-QT97-YL	Water	Total Coliform and E.coli	APHA 9223
The analysis of Total Coliform (TC) & Escherichia coli (EC) is processed by Quanti-tray (QT): Two substrates, ONPG for TC detection and MUG for EC detection are used. The substrates are added to the 100 ml sample dispensed into the 51 well tray. The tray is incubated at 35 Celcius for 24 hours. A colour reaction develops to indicate a positve reaction (presence of TC, EC). The number of positive wells are counted and converted to Most Probable Number Units (MPNU) per 100 ml. This test is also called 'rapid MPN method', therefore, the MPN results are derived from a statistical table with a 95% confidence and report as MPN units. The QT detection limit for a negative result is reported as zero.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

08-012471

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # 08-012471

Page 1 of 1

Report to:	Report Format / Distribution	Service Requested: (rush - subject to availability)
Company: Mandalay Resources	Standard: ✓ Other:	✓ Regular (Default)
Contact: Karyn Lewis	Select: PDF ✓ Excel Digital	Priority (2-3 Business Days) - 50% Surcharge
Address: 1204-700 west Pender St. Vancouver, BC V6C 0A3	Email 1: klewis@elginmining.com	Emergency (1 Business Day) - 100% Surcharge
Phone: 778-386-7340 Fax:	Email 2: DaveVolkey1@aim.com	For Emergency < 1 Day, ASAP or Weekend - Contact ALS

Invoice To: Same as Report ? Yes / No ?	Client / Project Information:	Analysis Request
Company: Payables@mandalayresources.com	Job #: Lupin Mine	(Indicate Filtered or Preserved, F/P)
Contact:	PO / AFE:	
Address:	Legal Site Description:	
Phone: Fax:	Quote #: Q56622	
Lab Work Order # (lab use only): L1775997	ALS Contact: R. Zolkiewski Sampler: D. Volkey	

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Routine	Total Mercury	Total Metals (ICP)	Fecal Coliforms	Total Coliforms	E. Coli	Number of Containers
	LUP-01-2016-05-31	31-May-16	0900 am	Water	X	X	X	X	X	X	4

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
D. Volkey	31-May-16 @ 12:00	AT	31-May-2016	12:00	9.5°C			

GENERAL TERMS AND CONDITIONS:

These terms and conditions are incorporated in and form part of the Agreement between ALS Laboratory Group – Environmental Division ("ALS") and the party named in the Offer (the "Client").

1. Definitions. Capitalized Terms not defined in these Terms and Conditions have the definitions set out in the other Agreement documents.
2. The Services. ALS will provide the Services to the Client as described in the Offer and in any change of custody form provided with any sample.
3. Prices. ALS may review and change all prices, fees, surcharges or other charges set out in the Agreement if there are changes to ALS's cost beyond ALS's control, including changes in legislative requirements, Client variations of sample numbers and Client requests for changes to standard reporting requirements. Notwithstanding Condition 3, all quotations are reviewed and updated on a yearly basis.
4. Payment Terms. The Client shall pay ALS within 30 days of the invoice date OAC. ALS may, for reasonable business reasons, require the Client to arrange for payment in advance.
5. Quotation Numbers. The Client shall provide the quotation number to ALS (where applicable) to ensure correct pricing.
6. Taxes. Applicable taxes are not included in prices, surcharges and additional fees and will be added at the time of invoicing.
7. Quality Control. ALS has an extensive QA/QC program and all analytical data reported is analyzed using approved, referenced procedures followed by checks and reviews of senior managers and quality assurance personnel.
8. No Guarantee of Results. Results are obtained from chemical measurements. The Client is responsible for informing itself on the limitation of the results and acknowledges that the results are not guaranteed.
9. Standard of Care. ALS will use reasonable care and diligence as required by the laws of the province or territory where the sample is tested.
10. Storage. Where possible, ALS will store samples for 30 days from the date a final report is issued to the Client, after which ALS may discard the sample.
11. Holds. If the Client requests a sample be placed on hold, ALS will store the sample for 60 days for the quoted price, after which ALS will invoice the Client and discard the sample.
12. Archives. If the Client requests a sample be archived, ALS will stored the sample for 6 months for the quoted price, after which ALS will invoice the Client and discard the sample.
13. Handling Protocol. Legal sample handling protocol must be arranged before samples are collected. ALS may charge a 20% surcharge on the list price plus the hourly technologist or chemist rates for legal sample protocol. Samples processed under legal protocol are stored indefinitely (storage charges may apply).
14. Samples. The quality, condition, content and source of samples stored and tested are not known to ALS except as declared and described on the chain of custody from completed and submitted by the Client and accompanying the sample.
15. Risk of Loss. ALS will use reasonable care to protect samples during storage, however all samples are stored at the Client's risk and the Client is responsible for obtaining appropriate insurance, if desired. The Client acknowledges that during the performance of the Services samples may be altered, lost, damaged or destroyed and the Client releases ALS from any claim the Client may have for any loss or damage to the sample.
16. Environmental. The Client must comply with all applicable environment legislation, including labeling all hazardous samples to comply with WHMIS and TDG regulations, and must provide appropriate material safety data sheets that include the nature of the hazard and a contact name and phone number to call for information. The Client will indemnify ALS for all loss or damages, including any fine or cost of complying with an order of any government authority, resulting from the Client's breach of this paragraph.
17. Hazardous Materials Disposal. ALS may return, at the Client's cost, hazardous material to the Client for disposal.
18. Hazardous Materials Surcharge. ALS may apply an additional surcharge for handling of hazardous samples or samples with Naturally Occuring Radioactive Materials (NORM), H2S, CN, etc.
19. Sample Containers. ALS may ship sample containers to the Client's location by the most cost effective means using ALS preferred courier suppliers, within the specified project timeline.
20. Additional Charges. ALS may charge the Client (a) its cost for emergency bottle shipments and shipments to and from a remote site, and (b) where pick up and delivery services are provided, subject in each instance to a minimum charge of $25.00.
21. Large Bottle Orders. The Client shall provide ALS with 24 hours notice for large bottle orders.
22. Re-Tests. ALS reserves the right to re-test any samples that remains in its possession. Re-tests requested by the Client may be charged.
23. Waiver. The Client is responsible for making any assessment regarding the suitability of the Services and the intended results for the Client's purposes and waives any claims against ALS it may have as a result of the interpretation of the results. The Client shall indemnify ALS for all claims made by any third party against ALS in respect of all losses however arising from the performance of the Services or the use of any report provided in the performance of the Services.
24. Limitation of Liability. In no event shall ALS be liable for any consequential, indirect, incidental, special, exemplary or punitive damages, whether foreseeable of unforeseeable, (including claims for loss of profits or revenue or losses caused by stoppage of other work or impairment of other assets) incurred by the Client arising out of breach or failure of express of implied warranty, breach of contract, breach of warranty, misrepresentation, negligence, strict liability in tort or otherwise. In any event, the liability of ALS to the Client shall be limited to the cost of testing the sample as requested in the chain of custody form under which the sample was originally deposited. For the purposes of this paragraph and paragraphs 8, 15, 16, 23 and 25, as the applicable, "ALS" includes without limitations its directors, officers, employees and affiliates and the "Client" includes without limitation any third party that may have a claim against ALS through the Client.
25. Notice of Liability. Notwithstanding paragraph 24, ALS shall not be liable to the Client unless the Client provides notice in writing to ALS of such loss or damage, together with full particulars thereof, within 30 days of the Client's receipt of the report of the analysis of the sample giving rise to such liability. The provisions of this paragraph allocate the risk under the Agreement between the Client and ALS, and the fees to be paid by the Client to ALS reflect this allocation of risks and the limitations of liability in this Agreement.
26. Entire Agreement. The Agreement is the entire agreement between the parties and supercedes and takes precedence over any terms and conditions contained in any documentation provided by the Client. ALS's execution of any subsequent documentation from the Client only acknowledges receipt and not acceptance of any terms or conditions therein. If there is a conflict between these terms and conditions and any other Agreement document, these terms and conditions prevail.

GENF 19.00 Terms

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 10-JUN-16
Report Date: 17-JUN-16 17:38 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1781641

Project P.O. #: NOT SUBMITTED
Job Reference: LUPIN MINE
C of C Numbers: 08-013773
Legal Site Desc:

Comments:
15-JUN-2016 Prelim Report

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1781641-1				
	Description	water				
	Sampled Date	10-JUN-16				
	Sampled Time	09:30				
	Client ID	LSP-2016-60-10				
Grouping	**Analyte**					
WATER						
Physical Tests	Total Suspended Solids (mg/L)	4.2				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	14.6				
	Ammonia, Total (as N) (mg/L)	<0.050				
	Bicarbonate (HCO3) (mg/L)	17.8				
	Carbonate (CO3) (mg/L)	<5.0				
	Chloride (Cl) (mg/L)	21.2				
	Conductivity (EC) (uS/cm)	228				
	Fluoride (F) (mg/L)	0.070				
	Hardness (as CaCO3) (mg/L)	71.0				
	Hydroxide (OH) (mg/L)	<5.0				
	Ion Balance (%)	107				
	Nitrate and Nitrite (as N) (mg/L)	<0.022				
	Nitrate (as N) (mg/L)	<0.020				
	Nitrite (as N) (mg/L)	<0.010				
	Total Kjeldahl Nitrogen (mg/L)	0.34				
	pH (pH)	7.36				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.010				
	Phosphorus (P)-Total (mg/L)	<0.020				
	TDS (Calculated) (mg/L)	119				
	Sulfate (SO4) (mg/L)	48.5				
Bacteriological Tests	MPN-Fecal Coliform (MPN/100mL)	1				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0512				
	Antimony (Sb)-Total (mg/L)	0.00014				
	Arsenic (As)-Total (mg/L)	0.00746				
	Barium (Ba)-Total (mg/L)	0.0133				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	0.000060				
	Boron (B)-Total (mg/L)	0.029				
	Cadmium (Cd)-Total (mg/L)	0.0000131				
	Calcium (Ca)-Total (mg/L)	20.7				
	Cesium (Cs)-Total (mg/L)	0.000106				
	Chromium (Cr)-Total (mg/L)	0.00021				
	Cobalt (Co)-Total (mg/L)	0.00313				
	Copper (Cu)-Total (mg/L)	0.00304				
	Iron (Fe)-Total (mg/L)	0.612				
	Lead (Pb)-Total (mg/L)	0.000389				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1781641-1				
	Description	water				
	Sampled Date	10-JUN-16				
	Sampled Time	09:30				
	Client ID	LSP-2016-60-10				
Grouping	**Analyte**					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	0.0155				
	Magnesium (Mg)-Total (mg/L)	4.68				
	Manganese (Mn)-Total (mg/L)	0.302				
	Mercury (Hg)-Total (mg/L)	<0.0000050				
	Molybdenum (Mo)-Total (mg/L)	0.000118				
	Nickel (Ni)-Total (mg/L)	0.00866				
	Phosphorus (P)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	2.44				
	Rubidium (Rb)-Total (mg/L)	0.00525				
	Selenium (Se)-Total (mg/L)	<0.000050				
	Silicon (Si)-Total (mg/L)	0.472				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	12.9				
	Strontium (Sr)-Total (mg/L)	0.152				
	Sulfur (S)-Total (mg/L)	17.3				
	Tellurium (Te)-Total (mg/L)	<0.00020				
	Thallium (Tl)-Total (mg/L)	<0.000010				
	Thorium (Th)-Total (mg/L)	<0.00010				
	Tin (Sn)-Total (mg/L)	0.00232				
	Titanium (Ti)-Total (mg/L)	0.00133				
	Tungsten (W)-Total (mg/L)	<0.00010				
	Uranium (U)-Total (mg/L)	0.000029				
	Vanadium (V)-Total (mg/L)	<0.00050				
	Zinc (Zn)-Total (mg/L)	0.0057				
	Zirconium (Zr)-Total (mg/L)	<0.00030				
Aggregate Organics	Biochemical Oxygen Demand (mg/L)	2.0				
	Oil and Grease (mg/L)	<1.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1781641-1	LSP-2016-60-10	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low. - HG-T

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD5-TG	Water	Biochemical Oxygen Demand- 5 day (TAIGA)	SM5210B
CL-IC-N-ED	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
F-IC-N-ED	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
FCOLI-MPN-YL	Water	Thermotolerant (Fecal) Coliforms	APHA 9223B, 2004 Enzyme Substrate Method
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal Coliform (Thermotolerant) bacteria are determined by mixing sample with a mixture of hydrolyzable substrates and then sealing in a multi-well packet. The packet is incubated for 18-24 hours and the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.			
HG-T-CVAA-ED	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OGG-LLE-GRAV-ED	Water	O&G by Hex/MTBE extraction, gravimetric	APHA 5520 B HEXANE MTBE EXT. GRAVIME
This technique employs a hexane/methyl-tert-butyl ether extraction of water, followed by filtration of the solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish and the oil and grease content is calculated from the weight of material remaining.			
P-T-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-COL-ED	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-ED	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
Gravimetric determination of solids in waters by filtration and drying filter at 104 degrees Celsius.			
TKN-CFA-ED	Water	TKN in Water by Colour	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
YL	ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA
TG	TAIGA ENVIRONMENTAL LABORATORY (INAC)

Chain of Custody Numbers:

08-013773

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160353

- FINAL REPORT -

Prepared For: ALS Environmental

Address: 314 Old Airport Road
Unit 116
Yellowknife,NT
X1A 2R1

Attn: **Rick Zolkiewski** **Facsimile:**

Final report has been reviewed and approved by:

Judy Mah
Client Service Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Thursday, June 16, 2016
Print Date: ***Thursday, June 16, 2016***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160353

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L1781641-1 LSP-2016-60-10 **Taiga Sample ID:** 001

Client Project:
Sample Type: Water
Received Date: 11-Jun-16
Sampling Date: 10-Jun-16
Sampling Time: 9:30
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Biochemical Oxygen Demand	2	2	mg/L	11-Jun-16	SM5210:B	6

ReportDate: Thursday, June 16, 2016
Print Date: ***Thursday, June 16, 2016***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160353

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L1781641-1 LSP-2016-60-10 **Taiga Sample ID:** 001

- DATA QUALIFERS -

Data Qualifier Descriptions:

6 *Sample received above the recommended temperature*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Thursday, June 16, 2016

Print Date: ***Thursday, June 16, 2016***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # 08-013773

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)	
Company:	Mandalay Resources (Lupin Mine)	Standard: ✓	Other:		Regular (Default)
Contact:	Karyn Lewis	Select: PDF ✓	Excel	Digital	✓ Priority (2-3 Business Days) - 50% Surcharge
Address:	1204-700 west Pender St	Email 1:	Klewis@elginmining.com		Emergency (1 Business Day) - 100% Surcharge
	Vancouver BC V6C 0A3	Email 2:	lupinlogistics@discoverymining.ca		For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	778-386-7340 Fax:				

Invoice To:	Same as Report ? Yes / No ?	Client / Project Information:	
Company:	Payables@mandalayresources.com	Job #:	Lupin Mine
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	Q56622
Lab Work Order # (lab use only)	L1781641	ALS Contact: R. Zalkiewski	Sampler: D. Volkey

Analysis Request (Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Total Metals (ICP scan)	BOD5	[illegible]	Routine	Total Phosphorus	ortho Phosphorus	TKN	Nitrite	Nitrate	Ammonia	Fecal Coliform	O&G	Number of Containers
	[illegible] LSP-2016-06-10	10-06-16	09:30am	Water	X	X		X	X	X	X	X	X	X	X	X	

L1781641-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
D. Volkey	10-Jun-16 @ 17:00	AT	11-Jun-16	8:45 AM	5.1			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 17-JUN-16
Report Date: 15-JUL-16 14:51 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1785542

Project P.O. #: NOT SUBMITTED
Job Reference: LUPIN MINE
C of C Numbers: 08-011366
Legal Site Desc:

Comments: ADDITIONAL 15-JUL-16 08:18

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1785542-1
	Description	water
	Sampled Date	15-JUN-16
	Sampled Time	17:30
	Client ID	LUP-10 (LUP-102)-2016-06-15
Grouping	**Analyte**	
WATER		
Physical Tests	Total Suspended Solids (mg/L)	39.6
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	4.0 RRV
	Ammonia, Total (as N) (mg/L)	0.158
	Bicarbonate (HCO3) (mg/L)	<5.0 RRV
	Carbonate (CO3) (mg/L)	<5.0 RRV
	Chloride (Cl) (mg/L)	29.1
	Conductivity (EC) (uS/cm)	510
	Fluoride (F) (mg/L)	0.052
	Hardness (as CaCO3) (mg/L)	162
	Hydroxide (OH) (mg/L)	<5.0 RRV
	Ion Balance (%)	103
	Nitrate and Nitrite (as N) (mg/L)	0.591
	Nitrate (as N) (mg/L)	0.591
	Nitrite (as N) (mg/L)	<0.010
	pH (pH)	6.61
	TDS (Calculated) (mg/L)	320
	Sulfate (SO4) (mg/L)	186
Cyanides	Cyanide, Total (mg/L)	<0.0050
Total Metals	Aluminum (Al)-Total (mg/L)	0.0712 RRV
	Antimony (Sb)-Total (mg/L)	<0.00010 RRV
	Arsenic (As)-Total (mg/L)	0.00908 RRV
	Barium (Ba)-Total (mg/L)	0.0122 RRV
	Beryllium (Be)-Total (mg/L)	<0.00010 RRV
	Bismuth (Bi)-Total (mg/L)	<0.000050 RRV
	Boron (B)-Total (mg/L)	0.052 RRV
	Cadmium (Cd)-Total (mg/L)	0.000176 RRV
	Calcium (Ca)-Total (mg/L)	54.3 RRV
	Cesium (Cs)-Total (mg/L)	0.000055 RRV
	Chromium (Cr)-Total (mg/L)	<0.00010 RRV
	Cobalt (Co)-Total (mg/L)	0.0293 RRV
	Copper (Cu)-Total (mg/L)	0.00302 RRV
	Iron (Fe)-Total (mg/L)	0.277 RRV
	Lead (Pb)-Total (mg/L)	0.000051 RRV
	Lithium (Li)-Total (mg/L)	0.0201 RRV
	Magnesium (Mg)-Total (mg/L)	6.31 RRV
	Manganese (Mn)-Total (mg/L)	0.719 RRV
	Mercury (Hg)-Total (mg/L)	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1785542-1				
	Description	water				
	Sampled Date	15-JUN-16				
	Sampled Time	17:30				
	Client ID	LUP-10 (LUP-102)-2016-06-15				
Grouping	**Analyte**					
WATER						
Total Metals	Molybdenum (Mo)-Total (mg/L)	<0.000050 RRV				
	Nickel (Ni)-Total (mg/L)	0.0631 RRV				
	Phosphorus (P)-Total (mg/L)	<0.050 RRV				
	Potassium (K)-Total (mg/L)	3.84 RRV				
	Rubidium (Rb)-Total (mg/L)	0.00180 RRV				
	Selenium (Se)-Total (mg/L)	<0.000050 RRV				
	Silicon (Si)-Total (mg/L)	1.77 RRV				
	Silver (Ag)-Total (mg/L)	<0.000010 RRV				
	Sodium (Na)-Total (mg/L)	35.5 RRV				
	Strontium (Sr)-Total (mg/L)	0.236 RRV				
	Sulfur (S)-Total (mg/L)	63.1 RRV				
	Tellurium (Te)-Total (mg/L)	<0.00020 RRV				
	Thallium (Tl)-Total (mg/L)	<0.000010 RRV				
	Thorium (Th)-Total (mg/L)	<0.00010 RRV				
	Tin (Sn)-Total (mg/L)	<0.00010 RRV				
	Titanium (Ti)-Total (mg/L)	<0.00030 RRV				
	Tungsten (W)-Total (mg/L)	<0.00010 RRV				
	Uranium (U)-Total (mg/L)	0.000016 RRV				
	Vanadium (V)-Total (mg/L)	<0.00050 RRV				
	Zinc (Zn)-Total (mg/L)	0.201 RRV				
	Zirconium (Zr)-Total (mg/L)	<0.00030 RRV				
Aggregate Organics	Oil and Grease (mg/L)	<1.0				
Radiological Parameters	Ra-226 (Bq/L)	<0.0100				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low. - HG-T

Qualifiers for Individual Parameters Listed:

Qualifier	Description
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-ED	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CN-T-CFA-VA	Water	Total Cyanide in water by CFA	ISO 14403:2002
This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.			
F-IC-N-ED	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HG-T-CVAA-ED	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OGG-LLE-GRAV-ED	Water	O&G by Hex/MTBE extraction, gravimetric	APHA 5520 B HEXANE MTBE EXT. GRAVIME
This technique employs a hexane/methyl-tert-butyl ether extraction of water, followed by filtration of the solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish and the oil and grease content is calculated from the weight of material remaining.			
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
RA226-MMER-FC	Water	Ra226 by Alpha Scint, MDC=0.01 Bq/L	EPA 903.1
SO4-IC-N-ED	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
Gravimetric determination of solids in waters by filtration and drying filter at 104 degrees Celsius.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

Reference Information

FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

08-011366

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Friday, July 08, 2016

Rick Zolkiewski
ALS Environmental
314 Old Airport Road Unit 116
Yellowknife, NT X1A 3T3

Re: ALS Workorder: 1606469
Project Name:
Project Number: L1785542

Dear Mr. Zolkiewski:

One water sample was received from ALS Environmental, on 6/24/2016. The sample was scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Amy R. Wolf
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1606469

Radium-226:
The sample was prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1606469
Client Name: ALS Environmental
Client Project Name:
Client Project Number: L1785542
Client PO Number: L1785542

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L1785542-1	1606469-1		WATER	15-Jun-16	

ALS Environmental

1606469

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
225 COMMERCE DRIVE
FORT COLLINS,CO 80524

NOTES: Please reference on final report and invoice: PO# *L1785542*
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 1 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED / DUE DATE	Priority Flag
L1785542-1 LUP-10 (LUP-102)-2016-06-15		**6/15/2016**	
	(1) Ra226 by Alpha Scint, MDC=0.01 Bq/L (RA226-MMER-FC 1)	7/12/2016	

Subcontract Info Contact: Rick Zolkiewski (867) 873-5593
Analysis and reporting info contact: Rick Zolkiewski
314 OLD AIRPORT ROAD
Unit 116
YELLOWKNIFE,NT X1A 3T3
Phone: (867) 873-5593 Email: Rick.Zolkiewski@alsglobal.com

Please email confirmation of receipt to: **Rick.Zolkiewski@alsglobal.com**

Shipped By: _____ Date Shipped: _____
Received By: [signature] Date Received: 6/24/16 1035
Verified By: _____ Date Verified: _____
Temperature: _____
Sample Integrity Issues: _____

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS . Edmonton Workorder No: 1606469

Project Manager: ARW Initials: RLR Date: 6/24/16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(YES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	(NO)
16. Were the samples shipped on ice?		(YES)	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 (#4)	(RAD ONLY)	YES	(NO)

Cooler #:	1
Temperature (°C):	20.2°C
No. of custody seals on cooler:	0
DOT Survey/ Acceptance Information — External µR/hr reading:	10
Background µR/hr reading:	11

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES / NO / NA) (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: 6/24/16

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Client:	ALS Environmental	**Date:**	*08-Jul-16*
Project:	L1785542	**Work Order:**	1606469
Sample ID:	L1785542-1	**Lab ID:**	1606469-1
Legal Location:		**Matrix:**	WATER
Collection Date:	6/15/2016	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **6/26/2016**	PrepBy: **CDJ**
Ra-226	ND (+/- 0.0063)	U	0.0086	BQ/l	NA	7/5/2016 16:54
Carr: BARIUM	*95.6*		*40-110*	*%REC*	DL = NA	7/5/2016 16:54

Client:	ALS Environmental	**Date:**	*08-Jul-16*
Project:	L1785542	**Work Order:**	1606469
Sample ID:	L1785542-1	**Lab ID:**	1606469-1
Legal Location:		**Matrix:**	WATER
Collection Date:	6/15/2016	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample.

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Batch ID: **RE160626-1-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE160626-1** Units: **BQ/l** Analysis Date: **7/5/2016 17:33**

Client ID: Run ID: **RE160626-1A** Prep Date: **6/26/2016** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	1.64 (+/- 0.411)	0.0153	1.673		97.9	67-120					P,M3
Carr: BARIUM	12700		15440		82	40-110					

LCSD Sample ID: **RE160626-1** Units: **BQ/l** Analysis Date: **7/5/2016 17:33**

Client ID: Run ID: **RE160626-1A** Prep Date: **6/26/2016** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	1.65 (+/- 0.413)	0.0113	1.673		98.6	67-120		1.64	0.02	2.1	P,M3
Carr: BARIUM	14500		15440		94.2	40-110		12700			

MB Sample ID: **RE160626-1** Units: **BQ/l** Analysis Date: **7/5/2016 17:33**

Client ID: Run ID: **RE160626-1A** Prep Date: **6/26/2016** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.0081									U
Carr: BARIUM	15100		15440		97.8	40-110					

The following samples were analyzed in this batch:

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # 08-011366

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mandalay Resources (Lupin Mine)	☐ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Karyn Lewis	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:		Email 1: klewis@elginmining.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2: lupinlogistics@discoverymining.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	778-386-7340 Fax:	Email 3:	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information	
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Lupin Mine	
Company:	payables@mandalayresources.com	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #: Q56622	
Lab Work Order # (lab use only)	L1785542	ALS Contact: R. Zolkieski	Sampler: D. Vokey

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TSS, pH, Alkalinity, Hardness	T-Oil and Grease	T-Metals (ICP Scan)	T-Cyanide	T-Mercury	T-Ammonia	Radium 226					Number of Containers
						P	P	P	P	P	P					
	LUP-10 (LUP-102) - 2016-06-15	15-Jun-16	17:30	Water	X	X	X	X	X	X	X					7

L1785542-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Vokey	16-Jun-16	13:30		17 June 16	7pm	4.9 °C				

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 23-JUN-16
Report Date: 06-JUL-16 11:25 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1788128

Project P.O. #: NOT SUBMITTED
Job Reference: LUPIN MINE
C of C Numbers: 08-012474
Legal Site Desc:

Comments: ADDITIONAL 05-JUL-16 19:21

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1788128-1				
	Description	WATER				
	Sampled Date	23-JUN-16				
	Sampled Time	08:00				
	Client ID	LUP-14-2016-06-23				
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	73.7				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	12.2				
	Ammonia, Total (as N) (mg/L)	<0.050				
	Bicarbonate (HCO3) (mg/L)	14.9				
	Carbonate (CO3) (mg/L)	<5.0				
	Chloride (Cl) (mg/L)	21.5				
	Conductivity (EC) (uS/cm)	214				
	Fluoride (F) (mg/L)	0.049				
	Hydroxide (OH) (mg/L)	<5.0				
	Nitrate and Nitrite (as N) (mg/L)	<0.022				
	Nitrate (as N) (mg/L)	<0.020				
	Nitrite (as N) (mg/L)	<0.010				
	Total Kjeldahl Nitrogen (mg/L)	<0.20				
	pH (pH)	7.19				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.010				
	Phosphorus (P)-Total (mg/L)	0.023				
	Sulfate (SO4) (mg/L)	49.5				
Bacteriological Tests	MPN-Fecal Coliform (MPN/100mL)	1				
Total Metals	Aluminum (Al)-Total (mg/L)	0.149				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	0.00995				
	Barium (Ba)-Total (mg/L)	0.0127				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	0.028				
	Cadmium (Cd)-Total (mg/L)	0.0000088				
	Calcium (Ca)-Total (mg/L)	20.8				
	Cesium (Cs)-Total (mg/L)	0.000154				
	Chromium (Cr)-Total (mg/L)	0.00076				
	Cobalt (Co)-Total (mg/L)	0.00123				
	Copper (Cu)-Total (mg/L)	0.00122				
	Iron (Fe)-Total (mg/L)	0.568				
	Lead (Pb)-Total (mg/L)	0.000506				
	Lithium (Li)-Total (mg/L)	0.0169				
	Magnesium (Mg)-Total (mg/L)	5.31				
	Manganese (Mn)-Total (mg/L)	0.109				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1788128-1
	Description	WATER
	Sampled Date	23-JUN-16
	Sampled Time	08:00
	Client ID	LUP-14-2016-06-23
Grouping	**Analyte**	
WATER		
Total Metals	Mercury (Hg)-Total (mg/L)	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000128
	Nickel (Ni)-Total (mg/L)	0.00745
	Phosphorus (P)-Total (mg/L)	<0.050
	Potassium (K)-Total (mg/L)	2.48
	Rubidium (Rb)-Total (mg/L)	0.00543
	Selenium (Se)-Total (mg/L)	<0.000050
	Silicon (Si)-Total (mg/L)	0.383
	Silver (Ag)-Total (mg/L)	<0.000010
	Sodium (Na)-Total (mg/L)	12.2
	Strontium (Sr)-Total (mg/L)	0.165
	Sulfur (S)-Total (mg/L)	18.6
	Tellurium (Te)-Total (mg/L)	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00739
	Tungsten (W)-Total (mg/L)	<0.00010
	Uranium (U)-Total (mg/L)	0.000042
	Vanadium (V)-Total (mg/L)	0.00054
	Zinc (Zn)-Total (mg/L)	0.0039
	Zirconium (Zr)-Total (mg/L)	<0.00030
Aggregate Organics	Biochemical Oxygen Demand (mg/L)	2.0
	Oil and Grease (mg/L)	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1788128-1	LUP-14-2016-06-23	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low. - HG-T

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L1788128-1
Matrix Spike	Chloride (Cl)	MS-B	L1788128-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L1788128-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD5-TG	Water	Biochemical Oxygen Demand- 5 day (TAIGA)	SM5210B
CL-IC-N-ED	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ETL-HARDNESS-TOT-ED	Water	Hardness (from Total Ca and Mg)	APHA 2340 B-Calculation
F-IC-N-ED	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
FCOLI-MPN-YL	Water	Thermotolerant (Fecal) Coliforms	APHA 9223B, 2004 Enzyme Substrate Method
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal Coliform (Thermotolerant) bacteria are determined by mixing sample with a mixture of hydrolyzable substrates and then sealing in a multi-well packet. The packet is incubated for 18-24 hours and the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.			
HG-T-CVAA-ED	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-T-CCMS-ED	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-ED	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-ED	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OGG-LLE-GRAV-ED	Water	O&G by Hex/MTBE extraction, gravimetric	APHA 5520 B HEXANE MTBE EXT. GRAVIME
This technique employs a hexane/methyl-tert-butyl ether extraction of water, followed by filtration of the solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish and the oil and grease content is calculated from the weight of material remaining.			
P-T-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-COL-ED	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-ED	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TKN-CFA-ED	Water	TKN in Water by Colour	APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
YL	ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA
TG	TAIGA ENVIRONMENTAL LABORATORY (INAC)

Chain of Custody Numbers:

08-012474

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160429

- FINAL REPORT -

Prepared For: ALS Environmental

Address: 314 Old Airport Road
Unit 116
Yellowknife,NT
X1A 2R1

Attn: **Rick Zolkiewski** **Facsimile:**

Final report has been reviewed and approved by:

Judy Mah
Client Service Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Tuesday, July 05, 2016
Print Date: ***Tuesday, July 05, 2016***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160429

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L1788128-1 LUP-14-2016-06-23 **Taiga Sample ID:** 001

Client Project:
Sample Type: Water
Received Date: 23-Jun-16
Sampling Date: 23-Jun-16
Sampling Time: 8:00
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Biochemical Oxygen Demand	2	2	mg/L	23-Jun-16	SM5210:B	

ReportDate: Tuesday, July 05, 2016
Print Date: ***Tuesday, July 05, 2016***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 160429

- CERTIFICATE OF ANALYSIS -

Client Sample ID: L1788128-1 LUP-14-2016-06-23 **Taiga Sample ID:** 001

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Tuesday, July 05, 2016

Print Date: *Tuesday, July 05, 2016*

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # 08-012474

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Mandalay Resources (Lupin Mine)			☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Karyn Lewis			☑ PDF	☑ Excel	☐ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:				Email 1:	klewis@elginmining.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
				Email 2:	lupinlogistics@discoverymining.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	778-386-7340	Fax:		Email 3:				
Invoice To	Same as Report ?	☐ Yes	☐ No	Client / Project Information				
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:	Lupin Mine			
Company:	payable@mandalayresources.com			PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:	Q56622			
Lab Work Order # (lab use only)	L1788128			ALS Contact:	R. Zolkiewski	Sampler:	D. Vokey	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH, alkalinity, hardness	TSS	T-Oil and Grease	T-Metals (ICP Scan)	Ammonia	Nitrate	Nitrite	TKN	T-Phosphorous	Orthophosphorous	BOD5	Fecal Coliforms	Number of Containers
	LUP-14-2016-06-23	23-Jun-16	8:00	Water	X	X	X	X	X	X	X	X	X	X	X	X	7

Analysis Request — Please indicate below Filtered, Preserved or both (F, P, F/P)

L1788128-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Vokey	23-Jun-16	13:00	AT	23/June/16	3:00	4.1 °C				

LUPIN MINES INCORPORATED
ATTN: Karen Lewis
76 Richmond Street
Suite 330
Toronto ON M5C 1P1

Date Received: 29-JUL-16
Report Date: 02-AUG-16 15:15 (MT)
Version: FINAL

Client Phone: 778-386-7340

Certificate of Analysis

Lab Work Order #: L1805843

Project P.O. #: NOT SUBMITTED
Job Reference: LUPIN MINE
C of C Numbers: 09-002573
Legal Site Desc:

Rick Zolkiewski
General Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1805843-1	L1805843-2			
	Description	water	water			
	Sampled Date	28-JUL-16	28-JUL-16			
	Sampled Time	11:30	11:30			
	Client ID	LUPIN MINE KITCHEN TAP POTABLE WATER-2016-07-27	LUPIN MINE DRY LAUNDRY TUB TAP POTABLE WATER-2016-07-28			
Grouping	**Analyte**					
WATER						
Bacteriological Tests	Escherichia Coli (MPN/100mL)	<1	<1			
	MPN-Fecal Coliform (MPN/100mL)	<1	<1			
	Total Coliforms (MPN/100mL)	<1	<1			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
FCOLI-MPN-YL	Water	Thermotolerant (Fecal) Coliforms	APHA 9223B, 2004 Enzyme Substrate Method

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal Coliform (Thermotolerant) bacteria are determined by mixing sample with a mixture of hydrolyzable substrates and then sealing in a multi-well packet. The packet is incubated for 18-24 hours and the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.

TC,EC-QT97-YL	Water	Total Coliform and E.coli	APHA 9223

The analysis of Total Coliform (TC) & Escherichia coli (EC) is processed by Quanti-tray (QT): Two substrates, ONPG for TC detection and MUG for EC detection are used. The substrates are added to the 100 ml sample dispensed into the 51 well tray. The tray is incubated at 35 Celcius for 24 hours. A colour reaction develops to indicate a positve reaction (presence of TC, EC). The number of positive wells are counted and converted to Most Probable Number Units (MPNU) per 100 ml. This test is also called 'rapid MPN method', therefore, the MPN results are derived from a statistical table with a 95% confidence and report as MPN units. The QT detection limit for a negative result is reported as zero.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
YL	ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA

Chain of Custody Numbers:

09-002573

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

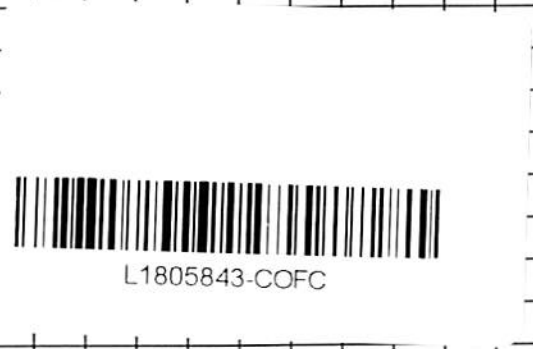
COC # 09-002573

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Lupin Mines Inc.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Karyn Lewis	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:		Email 1: klewis@elginmining.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2: lupinlogistics@discoverymining.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	778-386-7340 Fax:	Email 3:	
Invoice To	Same as Report ? ☐ Yes ☐ No	Client / Project Information	
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #: Lupin Mine	
Company:	payables@mandalayresources.ca	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #: 56622	
Lab Work Order # (lab use only)		ALS Contact: R. Zolkiewski	Sampler: D. Vokey

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	E.Coli	Total Coliforms	Fecal Coliforms	Number of Containers
	Lupin Mine Kitchen Tap Potable Water -2016-07-28	28-Jul-16	11:30	Water	X	X	X	1
	Lupin Mine Dry Laundry Tub Tap Potable Water -2016-07-28	28-Jul-16	11:30	Water	X	X	X	1



Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Vokey	28-Jul-16	13:30		July 29/16	0845	2.4 °C				

Appendix B

2016 Inspection Report and LMI Response

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

WATER LICENCE INSPECTION FORM

☒ Original ☐ Follow-Up Report

Licensee	Licensee Representative
LUPIN MINES INC.	KARYN LEWIS
Licence No. / Expiry	**Representative's Title**
2AM-LUP1520	
Land / Other Authorizations	**Land / Other Authorizations**
Date of Inspection	**Inspector**
14 JUNE 2016	EVA PAUL

Activities Inspected

☒ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☒ Fuel Storage
☒ Roads/Hauling ☒ Other: CIM activities ☒ Other: waste facilities

Conditions: A - Acceptable C - Concern U - Unacceptable NA – Not Applicable NI – Not Inspected

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	~~NA~~ A		Water Management Structures	A	4	Storage	A	
Flow Measure. Device	A		Culverts / Bridges	A		Spills	C	3
Source: Contwoyto	A		Drainage	A		Spill Plan	A	
Water Use: 66.6	A		Erosion / Sediment	C	2			
Recirculation (Y/N)	A		Mitigation Measures	C	2	**Administrative**		
			Reclamation Activities	NA		Records	A	
			Materials Storage	A		Reports	A	
Waste Disposal			Signage	A		Plans	A	
Waste Water	~~NA~~ C	1				Notifications	A	
Solid Waste	A		**Monitoring**			**Other**		
Hazardous Waste	A		Sample Collection / Analysis	A				

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	Location(s): LUP-01, LUP-10, LUP-14, LUP-27
☒ Yes ☐ No	

SECTION 1 ☒ Comments (s. 1 & 2) ☐ Non-Compliance with Act or Licence (s.__) ☒ Action Required (s. 3)

(1) pump intake in main tank farm berm (for discharge) was allowed to sit on bottom of berm; appears to have drawn sediment. Ensure intake is raised off sandy bottom.

(2) General sediment/erosion seen along roads and air strip. Pump discharge from main tank farm was discharged onto sandy berm wall, causing erosion to main tank farm berm wall. Hose should be extended to rocky area to mitigate erosion.

(3) No measures are in place to prevent migration of Satellite tank farm spill (no dykes, absorbents etc). As this will result in spread of contamination (may result), consideration should be given to preventing the spread of hydrocarbons.

(4) Even with work done last season on lower sewage berm, fast freshet has raised Lower Sewage Lake to less than 1m freeboard and effluent is close to flowing around the south end. This should be monitored

Licensee or Representative	Inspector's Name
KARYN LEWIS	EVA PAUL
Signature	**Signature**
Date	**Date**
14/06/16	14/06/16

Office Use Only: Follow-up report to be issued by Inspector ☐ Yes ☒ No

2016-KITOOZ-EP

Canada

White Copy: Inspector Yellow Copy: Licensee or Representative Pink Copy: Nunavut Water Board

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

Licensee	Licensee Representative
LUPIN MINES INC	KARYN LEWIS
Licence No. / Expiry	**Representative's Title**
2AM-LUP1520	
Date of Inspection	**Inspector**
14 JUNE 2016	EVA PAUL

SECTION 2 ☒ Comments (s. 1+2) ☐ Non-Compliance with Act or Licence (s.__) ☒ Action Required (s. 3)

(4)(continued) and if necessary, berm height increased. LMI is waiting for results, and, if compliant, will discharge ASAP; However, there is little margin for error. If results are non-compliant, what is LMI's plan to deal with effluent?

SECTION 3 ☐ Comments (s.__) ☐ Non-Compliance with Act or Licence (s.__) ☒ Action Required (s. 3)

(1) Ensure discharges are conducted in a manner that does not result in sediment uptake, and minimizes erosion.

(2) Consider limiting hydrocarbon migration from STF spill. (Traffic over the spill, flow through sandy soil etc.)

(3) Ensure Lower Sewage Lake does not bypass the Lower Berm. Monitor daily. Develop measures to prevent occurrence.

Licensee or Representative	Inspector's Name
KARYN LEWIS	EVA PAUL
Signature	**Signature**
Date 14/06/16	**Date** 14/06/16 (P.)

Canada

2016-KITG02-EP

White Copy: Inspector's Copy | Yellow Copy: Licensee or Representative | Pink Copy: Nunavut Water Board

LUPIN MINES INCORPORATED

June 30, 2016

Eva Paul, Water Resources Officer
Indigenous and Northern Affairs Canada
Nunavut Regional Office
P.O. Box 1500
4923-52 Street
Yellowknife, NWT X1A 2R3

RE: 2016 Inspection Report dated June 14, 2016/paper copy received June 14, 2016/email copy received June 15, 2016

Dear Inspector Paul:

Lupin Mines Incorporated ("LMI") is responding to the Indigenous and Northern Affairs Canada ("INAC") Inspector's report dated June 14, 2016, with the inspection being carried out June 14, 2016.

The following summary we believe will assist in clarifying and resolving the issues and concerns identified.

1. ***Waste Disposal - Waste Water:***

   Inspection Report:

   Pump intake in main tank berm (for discharge) was allowed to sit on the bottom of the berm; appears to have drawn sediment. Ensure intake is raised off sandy bottom.

   Ensure discharges are conducted in a manner that does not result in sediment uptake, and minimizes erosion.

   LMI Response:

   LMI would like to confirm, as per our discussion at site, that during approved discharge (prior to your inspection) at the MTF there was a mesh cover in place and the pump intake was elevated. Once the discharge was completed the parts used for elevation and the mesh cover were removed and placed under and on the hose during the MTF-JF approved discharge (prior to your inspection). LMI staff have now removed the pump and hoses and placed them back in storage.

2. ***Site Conditions - Erosion/Sediment – Mitigation Measures***

   Inspection Report:

   General sediment/erosion seen along roads and airstrip. Pump discharge from main tank farm was discharged onto sandy berm wall, causing erosion to main tank farm berm wall. Hose should be extended to rocky area to mitigate erosion.

Consider limited hydrocarbon migration from STF spill (Traffic over the spill, flow through sandy soil etc.)

LMI Response:

In regards to the general sediment/erosion along the roads and airstrip, as per our discussion, there were no specific areas of major concern by the Inspector. LMI will take the necessary measures to repair erosion along the roads and airstrip as required.

In the future, LMI will make sure that the hose discharging to the environment is place further down the rocky embankment to minimize erosion. The erosion in photo 1 below, as noted during your inspection, has subsequently been repaired as shown in photo 2 below.

Photo 1 – before repairs

Photo 2 – after repairs

3. ***Haz/Mat Management - Spills***

Inspector Report:

No Measures are in place to prevent migration of satellite tank farm spill (no dykes, absorbents etc.). As this will result in spread of contamination (may result), consideration should be given to preventing the spread of hydrocarbons.

LMI Response:

In regards to the potential for hydrocarbon migration from the STF spill, LMI will implement measures at the STF to prevent migration at the STF as requested by the Inspectors. As agreed with the Inspector, LMI will build a trench to divert the water to be captured either with absorbent pads or some other form. This work has commenced and we will provide confirmation once completed. With the new landfarm provisions included in the renewed water licence (2AM-LUP1520), LMI's plan is to prepare, construct and operate a landfarm this year to begin treating the hydrocarbon soil at the STF.

4. ***Site Conditions – Water Management Structures***

Inspectors Report:

Even with work done last season on lower sewage berm, fast freshet has raised lower sewage lake to less than 1m freeboard and effluent is close to flowing around the south end. This should be monitored and if necessary, berm height increased. LMI is waiting for results, and if compliant, will discharge ASAP. However, there is little margin for error. If results are non-compliant, what is LMI's plan to deal with effluent?

LMI Response:

The results of the samples at the lower sewage lagoon returned within criteria and LMI has begun discharging with the Inspectors approval.

In the event that the samples had not meet criteria, as discussed, the effluent from the lower sewage lagoon would have been siphoned in tanks, beginning with the big blue tank located between the upper and lower sewage lagoon.

Please do not hesitate to contact me directly should you wish to discuss this letter.

Regards,

Karyn Lewis

Karyn Lewis
Lupin Mines Incorporated
778-386-7340

Appendix C

2016 Geotechnical Inspection Report Cover Letter

Lupin Mines Incorporated

October 31, 2016

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

To whom it may concern,

RE: 2016 Annual Geotechnical Inspection – Lupin Mine Tailings Containment Area, Nunavut
Lupin Mine, Nunavut, License Number 2AM-LUP1520

Please accept this cover letter with plan and timelines to implement the engineer's recommendations. The 2016 Lupin Geotechnical Inspection Report, completed by Norwest Corporation (Norwest), to fulfil part E, item 6 (i) for water licence 2AM-LUP1520.

Norwest makes the following general recommendations:

1. Monitor the condition of the Divider Dykes. Repair the Divider Dykes with compacted sand and gravel to restore the original design configuration, including side slopes, a leveled crest and armoring up to the high water mark (HWM), as directed by the Engineer-of-Record.
2. Monitor the condition of Dam K. Repair the eroded toe at Dam K with compacted sand and gravel to restore the original design configuration and armor the repaired toe with boulders/riprap for wave protection.
3. Connect the eastern and western buttresses to form a continuous structure to protect Dam M's eroded downstream toe.
4. Monitor the water level behind Dam N and lower the water level to maintain a minimum 1m freeboard and prevent localized erosion of dam crest.
5. Monitor the water level in Cell 4 and lower the water level to maintain a minimum 1m freeboard and prevent overtopping of the Divider Dykes.

LMI should carry out inspections during summer season where practical to include the following:

- Monitor the seepage at Dam 2 and manage it as necessary by pumping the seepage back into Pond 2.
- Monitor the water level in Cell 5 and manage it as necessary by pumping the water to Pond 1.
- General repairs on surface and slope erosion at high water mark.
- Monitor animal burrow activities.
- Monitor the performance of the completed repair at Dam N for cracks, settlement, sloughs, sinkholes, erosion and other deformation.

Lupin Mines Incorporated

During the 2017 season LMI will carry out the following:

- Monitor and repair the divider dykes as directed by the Engineer-of-Record.
- Monitor the condition of Dam K and repair the eroded toe at Dam K.
- Connect the eastern and western buttresses at Dam M.
- Monitor the water level behind Dam N and lower the water level to maintain a minimum 1m freeboard and prevent localized erosion of dam crest
- Monitor the water level in Cell 4 and lower the water level to maintain a minimum 1m freeboard and prevent overtopping of the Divider Dykes

LMI will carry out inspection during the 2017 season, where practical, to include the following:

- Monitor the seepage at Dam 2 and manage it as necessary by pumping the seepage back into Pond 2.
- Monitor the water level in Cell 5 and manage it as necessary by pumping the water to Pond 1.
- General repairs on surface and slope erosion at high water mark.
- Monitor animal burrow activities.
- Monitor the performance of the completed repair at Dam N for cracks, settlement, sloughs, sinkholes, erosion and other deformation.

There are no issues requiring immediate attention identified in the report. The erosional issues identified in the report will be addressed in the 2017 summer season.

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

Sincerely,

Lupin Mines Incorporated.

"Karyn Lewis"

Karyn Lewis