

## **Appendix C**

### **Unit Costs for Waste Rock and Tailings**

**LMI Labor Summary** (based on 2014 take-off quantities)

## LMI Rate Structure

Designation	2014 Rate	2015 Rate	2016 Rate
Electrician-F/M	\$54.43	\$54.43	\$51.71
Electrician-J/M	\$49.17	\$49.17	\$46.71
Ironworker-F/M	\$53.43	\$53.43	\$50.76
Ironworker-J/M	\$47.95	\$47.95	\$45.55
Labourer-F/M	\$43.38	\$43.38	\$41.21
Labourer-J/M	\$39.77	\$39.77	\$37.78
Mechanic (ME2)	\$40.41	\$40.41	\$38.39
Mechanic (ME2)	\$40.41	\$40.41	\$38.39
Serviceman	\$33.92	\$33.92	\$32.22
Millwright-F/M	\$56.55	\$56.55	\$53.72
Millwright-J/M	\$51.06	\$51.06	\$48.51
Operator-F/M	\$51.79	\$51.79	\$49.20
Operator-R/T	\$47.36	\$47.36	\$44.99
Operator-Truck	\$44.01	\$44.01	\$41.81
Operator-Equip	\$46.29	\$46.29	\$43.98
Operator-J/M	\$50.64	\$50.64	\$48.11
Pipefitter-F/M	\$56.37	\$56.37	\$53.55
Pipefitter-J/M	\$50.86	\$50.86	\$48.32

**Equipment Charge-out Rates**

Cat 777	\$187.00
Bkho 375L	\$179.20
7500 ftlb	\$44.05
Cat 992D	\$245.00
Cat D10N	\$185.26
110 Ton	\$185.10
40t Toro	\$22.48
LT 9000	\$28.67
Volvo 5350B	\$77.23
D85E	\$34.65
D8K	\$34.65
966E FEL	\$16.57
RT522	\$111.86

## PAG Rock

Total 0 100,000

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	100,000	m <sup>3</sup>	
Total time required to load material:	314	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	14
		@ 4.3 weeks/mth =	0.5 months
		@ 3 mths/season =	0.2 seasons

Capacity Volvo Truck	35	m <sup>3</sup> (crushed rock)	
Fill factor	85%		
Load factor	85%		
Calculated Load	25.3	m <sup>3</sup> (crushed rock)	
Cycle time	18	minutes/cycle =	3.33 loads per hour max
		@ 50 min/hr =	2.78 loads per hour assumed
Calculated productivity:	70	m <sup>3</sup> per hour, per truck	
Number trucks required:	1.00	trucks, rounded up =	1 trucks
Total trucking time required:	1,424	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	65
		@ 4.3 weeks/mth =	2.1
		@ 3 mths/season =	0.7

Therefore One season will Complete the movement required.



SHAFT DUMP AREAS					Labor		Equipment		Total Cost
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	

## PAG Rock

Total 0 200,000  
Dump to open stopes to average of 500m UG- Maximum haul distance 4.2km.

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	200,000	m <sup>3</sup>	
Total time required to load material:	627	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	29
		@ 4.3 weeks/mth =	0.9 months
		@ 3 mths/season =	0.3 seasons

Capacity 40t UG Truck	40	m <sup>3</sup> (crushed rock)	
Fill factor	95%		
Load factor	95%		
Calculated Load	36.1	m <sup>3</sup> (crushed rock)	
Cycle time	32	minutes/cycle =	1.88 loads per hour max
		@ 50 min/hr =	1.56 loads per hour assumed
Calculated productivity:	56	m <sup>3</sup> per hour, per truck	
Number trucks required:	2.00	trucks, rounded up =	2 trucks
Total trucking time required:	1,773	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	81
		@ 4.3 weeks/mth =	2.7
		@ 3 mths/season =	0.9

Therefore One season will Complete the movement required.

PAG TO UG					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Rock Placement</b>		200,000	m^3 ROM mat'l to move from mill area to tails area.						
Rip/ Stockpile	1	D10N Dozer	100	100	\$43.98	\$4,398	\$185.26	\$18,526	\$22,924
	1	D8K Dozer	100	100	\$43.98	\$4,398	\$34.65	\$3,465	\$7,863
Load	1	992D Loader	627	627	\$43.98	\$27,592	\$245.00	\$153,725	\$181,318
Haul and Dump	2	40t Toro	1773	3546	\$41.81	\$148,244	\$22.48	\$79,707	\$227,952
UG spotters	8		800	6400	\$43.98	\$281,443			\$281,443
safety	2		800	1600	\$51.71	\$82,734			\$82,734
Sub-total						\$548,809		\$255,424	\$804,233
PAG UG1				12373		\$548,809		\$255,424	\$804,233

## PAG Rock

Total 0 100,000

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	100,000	m <sup>3</sup>	
Total time required to load material:	314	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	14
		@ 4.3 weeks/mth =	0.5 months
		@ 3 mths/season =	0.2 seasons

Capacity Cat 777 Truck	51.5	m <sup>3</sup> crushed rock)	
Fill factor	85%		
Load factor	75%		
Calculated Load	32.8	m <sup>3</sup> (crushed rock)	
Cycle time	27	minutes/cycle =	2.22 loads per hour max
		@ 50 min/hr =	1.85 loads per hour assumed
Calculated productivity:	61	m <sup>3</sup> per hour, per truck	
Number trucks required:	1.00	trucks, rounded up =	1 trucks
Total trucking time required:	1,645	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	75
		@ 4.3 weeks/mth =	2.5
		@ 3 mths/season =	0.8

Therefore One season will Complete the movement required.

PAG to Tails					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Rock Placement</b>		100,000	m^3 ROM mat'l to move from mill area to tails area.						
Rip/ Stockpile	1	D10N Dozer	200	200	\$43.98	\$8,795	\$185.26	\$37,052	\$45,847
	1	D8K Dozer	200	200	\$43.98	\$8,795	\$34.65	\$6,930	\$15,725
Load	1	992D Loader	314	314	\$43.98	\$13,796	\$245.00	\$76,863	\$90,659
Haul	1	Cat 777 Trucks	1645	1645	\$41.81	\$68,767	\$187.00	\$307,573	\$376,340
Place	1	Cat D85E Dozer	314	314	\$43.98	\$13,796	\$34.65	\$10,871	\$24,667
Spotters	2		1645	3290	\$32.22	\$106,017			\$106,017
safety	2		1646	3292	\$51.71	\$170,224			\$170,224
Sub-total						\$219,967		\$439,288	\$659,255
PAG-Tailings Containment Area				9254.2		\$219,967		\$439,288	\$659,255

## Tailing Containment Area

Cell	Depth m	Area m <sup>2</sup>	Volume m <sup>3</sup>
5	1.20	129,000	154,800
3	1.20	71,100	85,320
Total		200,100	240,120

## Using PCL productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (heaped esker sand)
Fill factor	90%	
Load factor	90%	
Calculated Load	8.1	m <sup>3</sup> per bucket (heaped esker sand)
Cycle time	0.75	minutes/cycle = 80 loads per hour max
		@ 50 min/hr = 66.7 loads per hour assumed
Calculated productivity:	540	m <sup>3</sup> per hour
Esker material required to move:	240,120	m <sup>3</sup>
Total time required to load material:	445	hours
	Hours per shift	11
	Shifts per day	2
	Total days =	20
	@ 4.3 weeks/mth =	0.7 months
	@ 3 mths/season =	0.2 seasons

Capacity Cat 777 Truck	51.5	m <sup>3</sup> (heaped esker sand)
Fill factor	90%	
Load factor	85%	
Calculated Load	39.4	m <sup>3</sup> (heaped esker sand)
Cycle time	28.6	minutes/cycle = 2.10 loads per hour max
		@ 50 min/hr = 1.75 loads per hour assumed
Calculated productivity:	69	m <sup>3</sup> per hour, per truck
Number trucks required:	2.00	trucks, rounded up = 2 trucks
Total trucking time required:	1,743	hours
	Hours per shift	11
	Shifts per day	2
	Total days =	79
	@ 4.3 weeks/mth =	2.6
	@ 3 mths/season =	0.9

Therefore One season will Complete the Cover required.

TAILINGS CONTAINMENT AREA					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Granular Cover</b>		240,120	m^3 esker mat'l to move from Fingers Lake to tails area.						
Stockpiling									
Strip / Stockpile	1	D10N Dozer	200	200	\$43.98	\$8,795	\$185.26	\$37,052	\$45,847
	1	D8K Dozer	200	200	\$43.98	\$8,795	\$34.65	\$6,930	\$15,725
Load	1	992D Loader	445	445	\$43.98	\$19,554	\$245.00	\$108,943	\$128,498
Haul	2	Cat 777 Trucks	1743	3486	\$41.81	\$145,757	\$187.00	\$651,925	\$797,682
Place	1	Cat D85E Dozer	445	445	\$43.98	\$19,554	\$34.65	\$15,408	\$34,962
spotters	2		1743	3486	\$32.22	\$112,340		\$0	\$112,340
Sub-total						\$314,797		\$820,258	\$1,135,054
<b>Fingers Lake Esker</b>		Reclaim - contour and grade quarry							
Sub-total	1	D10N Dozer	2400	2400	\$43.98	\$105,541	\$185.26	\$444,624	\$550,165
Tailings Containment Area				10662		\$420,338		\$1,264,882	\$1,685,219

## **Appendix D**

### **KBL Hazardous Waste Manifests**



# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Jul 12, 2016

NO: YK0000000410

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT09997-7

## CARRIER / TRANSPORTER

Weatherby Trucking  
Box 1949  
Yellowknife, NT X1A 2P5

Carrier Pin #: NTC000095

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666			PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)						
			Yes	<input type="checkbox"/> No	<input type="checkbox"/>	Number Required		Type	
D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING				
					NO	CODE			
X	1993	STEEL TOTE - FLAMMABLE LIQUIDS FUEL	3	III	2	07	2.00		ST
	NRL	STEEL TOTE - WASTE LEACHATE MIXED	NRL	NRL	2	07	2.00		ST
	NRL	WASTE LECHATE OIL	NRL	NRL	30	07	30.00		ST
	NRS	NON REGULATED SOLIDS-EMPTY STEEL TOTE	NRS	NRS	2	07	2.00		ST
		One oil tote was leaking, had to be transferred intoKBL totes TOTE-RECONDITIONED					2.00		EACH

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 3.00

TRANSPORT TIME: 0.00

## GENERAL TERMS AND CONDITIONS:

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

Lupin Mines Mandalay

ABOVE NAME PRINTED

Weatherby Trucking

ABOVE NAME PRINTED

BSV ANSRW

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Jul 26, 2016

NO: YK0000000471

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT11050-1

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

PO #:

Carrier Pin #: NTC000124

**DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #**  
CANUTEC (613) 996-6666

**PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)**

Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
	NRL	WASTE LEACHATE-OIL	NRL	NRL	4	01	4.00		DRUM

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 0.00

TRANSPORT TIME: 1.00

## GENERAL TERMS AND CONDITIONS:

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site at conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

Discovery Mining c/o Lupin.

ABOVE NAME PRINTED

Arunk Sparks

ABOVE NAME PRINTED

Jeff Bembidge

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Aug 16, 2016

NO: YK0000000498

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT11070-9

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #  
CANUTEC (613) 996-6666

## PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)

Yes: ☐ No: ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	NRL	WASTE LEACHATE-OIL	NRL	NRL	3	01	3.00		DRUM
	1993	FLAMMABLE LIQUIDS-FUEL	3	III	1	01	1.00		DRUM
	NRS	NON REGULATED SOLIDS-INCINERATOR ASH	NRS	NRS	2	01	2.00		DRUM
	NRL	WASTE LEACHATE-MIX	NRL	NRL	1	01	1.00		DRUM
	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	2	05	2.00		MEGABAG

DG-Nonhazardous (X-Yes)

TECHNICIAN TIME: 1.00

TRANSPORT TIME: 1.00

## GENERAL TERMS AND CONDITIONS:

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and hold harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

LUPIN MINES / Disposal Mining

ABOVE NAME PRINTED

Jonathan Jubenville

ABOVE NAME PRINTED

BSV AVER

**BILL OF LADING**

KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Aug 31, 2016

NO: YK0000000532

**CONSIGNOR / CUSTOMER SITE ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

**CUSTOMER BILLING ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

**CONSIGNEE / RECEIVER SITE ADDRESS**

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123 Manifest #: NT11099-8

**CARRIER / TRANSPORTER**

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

**DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #**  
CANUTEC (613) 996-6666

**PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)**Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	7	05	7.00		MEGABAG
	NRS	NON REGULATED SOLIDS-PRINTER CARTRIDGES	NRS	NRS	1	05	1.00		MEGABAG
	NRL	WASTE LEACHATE-OIL	NRL	NRL	9	01	9.00		DRUM
	NRL	WASTE LEACHATE-MIX	NRL	NRL	3	01	3.00		DRUM
	NRL	LAB PACKS-NON REGULATED LIQUID	NRL	NRL	1	01	1.00		DRUM
	NRL	NON REGULATED LIQUID-PETROLEUM GREASE	NRL	NRL	2	01	2.00		DRUM
	1268	PETROLEUM DISTILLATES	3	II	1	01	1.00		DRUM
	NRL	WASTE LEACHATE-GLYCOL	NRL	NRL	2	01	2.00		DRUM

D/G-Dangerous Goods (X, Yes)

TECHNICIAN TIME: 5.00

TRANSPORT TIME: 1.00

**GENERAL TERMS AND CONDITIONS:**

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

Jenn Ryden

B. W. ANDERSON

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1895  
17 Cameron Rd.  
Yellowknife, NT X1A 2P4

DATE: Oct 18, 2016

NO: YK0000000636

## CONSIGNOR / CUSTOMER SITE ADDRESS

Ulu Camp

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

Generator Pin #:

Receiver Pin #:

Manifest #: NT11201-0

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Phone: (604) 682-3366

PO #:

Carrier Pin #: NTC000124

DA  
G  
P.I.N.  
SHIPPING NAME / DESCRIPTION  
CLASS  
PACKING GROUP  
PACKING NO  
CODE  
EXPECTED QUANTITY  
ACTUAL QUANTITY  
UOM

## PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)

Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	1993	REGULATED DANGEROUS GOODS FLAMMABLE LIQUIDS-FUEL	3	III	5	01	5.00		DRUM
	NRL	NON REGULATED DANGEROUS GOODS WASTE LEACHATE-OIL	NRL	NRL	15	01	15.00		DRUM

DC-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 6.00

TRANSPORT TIME: 1.00

## CONSIGNOR CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respect proper condition for transport according to the Transportation of Dangerous Goods Regulations.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ULU CAMP

Jeff Benbridge

BEN ANSRN

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Jul 12, 2016

NO: YK0000000410

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT09997-7

## CARRIER / TRANSPORTER

Weatherby Trucking  
Box 1949  
Yellowknife, NT X1A 2P5

Carrier Pin #: NTC000095

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666				PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)					
				Yes <input type="checkbox"/>	No <input type="checkbox"/>	Number Required		Type	
D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	1993	STEEL TOTE - FLAMMABLE LIQUIDS FUEL	3	III	2	07	2.00		ST
	NRL	STEEL TOTE - WASTE LEACHATE MIXED	NRL	NRL	2	07	2.00		ST
	NRL	WASTE LECHATE OIL	NRL	NRL	30	07	30.00		ST
	NRS	NON REGULATED SOLIDS-EMPTY STEEL TOTE	NRS	NRS	2	07	2.00		ST
		One oil tote was leaking, had to be transferred into KBL totes TOTE-RECONDITIONED					2.00		EACH

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 3.00

TRANSPORT TIME: 0.00

## GENERAL TERMS AND CONDITIONS:

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

Lupin Mines Mandalay

ABOVE NAME PRINTED

Weatherby Trucking

ABOVE NAME PRINTED

BSV ANSRW

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Jul 26, 2016

NO: YK0000000471

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT11050-1

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

PO #:

Carrier Pin #: NTC000124

**DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #**  
CANUTEC (613) 996-6666

**PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)**

Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
	NRL	WASTE LEACHATE-OIL	NRL	NRL	4	01	4.00		DRUM

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 0.00

TRANSPORT TIME: 1.00

## GENERAL TERMS AND CONDITIONS:

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site at conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

Discovery Mining c/o Lupin.

ABOVE NAME PRINTED

Arunk Sparks

ABOVE NAME PRINTED

Jeff Bembidge

# **BILL OF LADING**



KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Aug 16, 2016

NO: YK0000000498

## **CONSIGNOR / CUSTOMER SITE ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## **CUSTOMER BILLING ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## **CONSIGNEE / RECEIVER SITE ADDRESS**

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT11070-9

## **CARRIER / TRANSPORTER**

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

**DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #**  
CANUTEC (613) 996-6666

## **TACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)**

Yes: ☐ No: ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	NRL	WASTE LEACHATE-OIL	NRL	NRL	3	01	3.00		DRUM
	1993	FLAMMABLE LIQUIDS-FUEL	3	III	1	01	1.00		DRUM
	NRS	NON REGULATED SOLIDS-INCINERATOR ASH	NRS	NRS	2	01	2.00		DRUM
	NRL	WASTE LEACHATE-MIX	NRL	NRL	1	01	1.00		DRUM
	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	2	05	2.00		MEGABAG

DG-Nonhazardous (X-Yes)

TECHNICIAN TIME: 1.00

TRANSPORT TIME: 1.00

## **GENERAL TERMS AND CONDITIONS:**

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and hold harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

LUPIN MINES / Disposal Mining

ABOVE NAME PRINTED

Jonathan Jubenville

ABOVE NAME PRINTED

BSV AVER



**BILL OF LADING**

KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Aug 31, 2016

NO: YK0000000532

**CONSIGNOR / CUSTOMER SITE ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

**CUSTOMER BILLING ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

**CONSIGNEE / RECEIVER SITE ADDRESS**

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123 Manifest #: NT11099-8

**CARRIER / TRANSPORTER**

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

**DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE #**  
CANUTEC (613) 996-6666

**PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)**Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	7	05	7.00		MEGABAG
	NRS	NON REGULATED SOLIDS-PRINTER CARTRIDGES	NRS	NRS	1	05	1.00		MEGABAG
	NRL	WASTE LEACHATE-OIL	NRL	NRL	9	01	9.00		DRUM
	NRL	WASTE LEACHATE-MIX	NRL	NRL	3	01	3.00		DRUM
	NRL	LAB PACKS-NON REGULATED LIQUID	NRL	NRL	1	01	1.00		DRUM
	NRL	NON REGULATED LIQUID-PETROLEUM GREASE	NRL	NRL	2	01	2.00		DRUM
	1268	PETROLEUM DISTILLATES	3	II	1	01	1.00		DRUM
	NRL	WASTE LEACHATE-GLYCOL	NRL	NRL	2	01	2.00		DRUM

D/G-Dangerous Goods (X, Yes)

TECHNICIAN TIME: 5.00

TRANSPORT TIME: 1.00

**GENERAL TERMS AND CONDITIONS:**

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

Jenn Ryden

B. W. ANDERSON

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1895  
17 Cameron Rd.  
Yellowknife, NT X1A 2P4

DATE: Oct 18, 2016

NO: YK0000000636

## CONSIGNOR / CUSTOMER SITE ADDRESS

Ulu Camp

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

Generator Pin #:

Receiver Pin #:

Manifest #: NT11201-0

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Phone: (604) 682-3366

PO #:

Carrier Pin #: NTC000124

DA  
G  
P.I.N.  
SHIPPING NAME / DESCRIPTION  
CLASS  
PACKING GROUP  
PACKING NO  
CODE  
EXPECTED QUANTITY  
ACTUAL QUANTITY  
UOM

## PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)

Yes ☐ No ☐ Number Required Type

D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	1993	REGULATED DANGEROUS GOODS FLAMMABLE LIQUIDS-FUEL	3	III	5	01	5.00		DRUM
	NRL	NON REGULATED DANGEROUS GOODS WASTE LEACHATE-OIL	NRL	NRL	15	01	15.00		DRUM

DC-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 6.00

TRANSPORT TIME: 1.00

## CONSIGNOR CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respect proper condition for transport according to the Transportation of Dangerous Goods Regulations.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ULU CAMP

Jeff Benbridge

BEN ANSRN

**BILL OF LADING**

KBL Environmental Ltd.  
PO Box 1108  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

DATE: Sep 12, 2016

NO: YK0000000557

**CONSIGNOR / CUSTOMER SITE ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

**CUSTOMER BILLING ADDRESS**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

**CONSIGNEE / RECEIVER SITE ADDRESS**

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1108  
Yellowknife, NT X1A 2N8

Receiver Pin #: NTR000123

Manifest #: NT0883-0

**CARRIER / TRANSPORTER**

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666			PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)						
			Yes	<input type="checkbox"/> No	<input type="checkbox"/>	Number Required		Type	
D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING				
					NO	CODE			
	NRL	WASTE LEACHATE-OIL	NRL	NRL	4	01	4.00		DRUM
	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	2	05	2.00		MEGABAG

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 0.00

TRANSPORT TIME: 1.00

**GENERAL TERMS AND CONDITIONS:**

All wastes must meet the specifications described on the customer's Bill of Lading sheet. Wastes that do not meet the profile are subject to rejection at the Receiver site or conditional acceptance at a higher price. Customer acknowledges and accepts these conditions by signing below. Customer agrees to indemnify and save harmless KBL from any and all claims, penalties, forfeitures, and expenses incident thereto, which it may incur as a result of death, bodily injuries, to any person, destruction to any property, contamination or any adverse effects on the environment, violation of laws, regulations, or orders, caused in whole or in part by the Customer failure to provide waste which meets the specification as described on this Bill of Lading.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

Lupin Mines

Terry Bourke

Austin Spence

MOVEMENT DOCUMENT / MANIFEST  
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation. Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

NT108883-0

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifeste

A Generator / consigneur  
Producteur / expéditeur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale

E-mail / Courriel électronique

Shipping site address / Adresse du lieu de l'expédition

City / Ville

Intended Receiver / consignee

Receptionnaire / destinataire prévu

Mailing address / Adresse postale

E-mail / Courriel électronique

Receiving site address / Adresse du lieu de destination

City / Ville

Prov. code

Code prov.

Shipment

OT/De

D of R code

C code

Basel Annex VIII or

OECD code

Arrière VIII de Bâle

Code H

Y code

Export

Import

Customs code(s)

Code(s) de douanes

B Carrier  
Transporteur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale

E-mail / Courriel électronique

Vehicle / Véhicule

Trailer - Rail car No. 1

Trailer - Rail car No. 2

Port of entry

Point of entry

Port of exit

Point of exit

Year / Année

Month / Mois

Day / Jour

Signature

UN No.

Packing / rsk gr 7

Gr. d'emballage

Quantity shipped

Units

L or / ou kg

No. / N°

Packaging/Conteneur

Codes

Inc. ext.

Etail phys.

Phys. state

C Receiver / consignee  
Receptionnaire / destinataire

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale

E-mail / Courriel électronique

City / Ville

Province

Postal code / Code postal

Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Year / Année

Month / Mois

Day / Jour

Time / Heure

AM

PM

Quantity received

Units

L or / ou kg

Comments

Handling

Code / Code

Accepted

Refused

Decl. VEH.

Signature

Tel. No. / N° de tél.

Date shipped / Date d'expédition

Year / Année

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MOVEMENT DOCUMENT / MANIFEST  
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement Document/Manifest conforms to all federal and provincial transport and environmental legislation. Ce document de mouvement/manifes est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

NT08883-0

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifes

**A** Generator / consigneur  
Producteur / expéditeur

**B** Carrier  
Transporteur

Company name / Nom de l'entreprise

Company name / Nom de l'entreprise

Mailing address / Adresse postale

Mailing address / Adresse postale

E-mail / Courriel électronique

E-mail / Courriel électronique

Shipping site address / Adresse du lieu de l'expédition

Vehicle / Véhicule  
Trailer - Rail car No. 1  
1<sup>re</sup> remorque - wagon  
Trailer - Rail car No. 2  
2<sup>de</sup> remorque - wagon

City / Ville

Port of entry / Point d'entrée  
Information on entry  
Port of exit / Point de sortie  
Information on exit

Intended Receiver / consignee  
Réceptionnaire / destinataire prévu

Carrier Certification: I certify that I have received waste or recyclable material from the generator / consigneur for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct. Attestation du transporteur: J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au récepteur / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.

Mailing address / Adresse postale

City / Ville

E-mail / Courriel électronique

Receiving site address / Adresse du lieu de destination

City / Ville

Year / Année

Province

Month / Mois

Postal code / Code postal

Day / Jour

Signature

Signature

Prov. code

Units

Shipping name

Quantity shipped

Application réglementaire

Units

Class / Classe

Units

UN No.

Units

Packing / Net gr.

Units

Gr. déballage

Units

Quantity shipped

Units

L or / ou kg

Units

Comments

Comments

Handling

Handling

Shipment

Shipment

OT / De

OT / De

D or R code

D or R code

C code

C code

**C** Receiver / consignee  
Réceptionnaire / destinataire

Reference No. of other movement document(s) handled / used /  
N° de référence des autres documents de mouvement/manifes utilisés

Receiver / consignee information same as in Part A  
Les renseignements du récepteur / destinataire sont les mêmes qu'à la Partie A

Yes / Oui No / Non, complete the box below / Non, remplir la case ci-dessous

Company name / Nom de l'entreprise

Mailing address / Adresse postale

City / Ville

Province

Postal code / Code postal

E-mail / Courriel électronique

Receiving site address / Adresse du lieu de destination

City / Ville

Year / Année

Month / Mois

Day / Jour

Time / Heure

AM / PM

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

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Year / Année

Month / Mois

Day / Jour

Signature

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Quantity received

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L or / ou kg

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Handling

Shipment

OT / De

D or R code

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Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

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Attached / Joindre

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Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

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Quantity received

Quantity received

L or / ou kg

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Comments

Handling

Shipment

OT / De

D or R code

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Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

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D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition

Time / Heure

AM / PM

Scheduled arrival date / Date d'arrivée prévue

Year / Année

Month / Mois

Day / Jour

Signature

Signature

Quantity received

Quantity received

L or / ou kg

Comments

Comments

Handling

Shipment

OT / De

D or R code

C code

Special handling / Manutention spéciale

Attached / Joindre

As follows / Comme:

Date shipped / Date d'expédition</



## Certificate of Disposal

**Date:** 10-03-2016

**Invoice:** OE0643

KBL Environmental Ltd. hereby certifies that the waste shipped from Lupin Mines Incorporated, on KBL Bill of Lading YK0000000557 and Manifest NT08883-0 which was received at KBL Environmental Ltd. on September 12, 2016 and has been processed, recycled/disposed of in accordance with all applicable Federal and Territorial/ Provincial Regulations.

**Generator:**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

**Generator #:**

**Issued By:**

Operations Manager  
KBL Environmental Ltd.

NTR000123

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1895  
17 Cameron Rd.  
Yellowknife, NT X1A 2P4

DATE: Sep 29, 2016

NO: YK0000000603

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

Receiver Pin #: NTR000123

Manifest #: NT11171-5

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

PO #:

Carrier Pin #: NTC000124

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666				PLACARDS REQUIRED BY CARRIER(PER T.D.G. REGULATIONS)						
				Yes	<input type="checkbox"/> No	<input type="checkbox"/>	Number Required	Type		
D G	P.I.N.	SHIIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM	
			CLASS	PACKING GROUP	PACKING					
					NO	CODE				
		<b>REGULATED DANGEROUS GOODS</b>								
X	1993	FLAMMABLE LIQUIDS-FUEL	3	III	2	01	2.00		DRUM	
X	3264	LAB PACK-CORROSIVE LIQUID ACIDIC	8	II	13	07	13.00		PAIL	
X	3266	LAB PACK-CORROSIVE LIQUID BASIC	8	II	18	07	18.00		PAIL	
		<b>NON REGULATED DANGEROUS GOODS</b>								
	NRL	NON REGULATED LIQUIDS-PETROLEUM GREASE	NRL	NRL	60	07	60.00		KEG	
	NRL	WASTE LEACHATE-OIL	NRL	NRL	2	01	2.00		DRUM	
	NRS	NON REGULATED SOLID - EWASTE	NRS	NRS	2	05	2.00		MEGABAG	

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME:

0.00

TRANSPORT TIME:

2.00

## CONSIGNOR CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

Lupin.

Jeff Benbridge

Ben Avern



MOVEMENT DOCUMENT / MANIFEST  
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial environmental legislation.  
Ce document de mouvement/manifester est conforme aux législations fédérale et provinciale sur l'environnement.

NT11171-5

A Generator / consigneur  
Producteur / expéditeur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise  
MILCO LTD

Mailing address / Adresse postale  
City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Shipping site address / Adresse du lieu de l'expédition

City/Ville  
Province  
Postal code / Code postal

Intended Receiver / consignee  
Réceptionnaire / destinataire prévu

Mailing address / Adresse postale  
City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

B Carrier  
Transporteur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise  
MT

Mailing address / Adresse postale  
City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Vehicle / Véhicule  
Registration No. / N° d'immatriculation

Port of entry  
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C Receiver / consignee  
Réceptionnaire / destinataire

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

City/Ville  
Province  
Postal code / Code postal

Email / Courriel électronique  
Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Retained by Consignor  
Gardée par l'expéditeur

Copy / Copie 2 (green / verte)



## NT1171-5

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifeste

[illegible]

This Movement document/manifest conforms to all federal and provincial environmental legislation.  
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement.

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifeste

<b>A Generator / consigneur</b> <b>A Producteur / expéditeur</b> Company name / Nom de l'entreprise LUPIN MINING INC.		Registration No. / Provincial ID No. N° d'immatriculation - dtd. provincial N1C01047			
Mailing address / Adresse postale Suite 202-203 West Pemberton Mainway BC		City / Ville BC		Province BC	
E-mail / Courriel électronique philip@lupinmining.com		Tel. No. / N° de tél. ( )			
Shipping site address / Adresse du lieu de l'expédition ( )					
City / Ville NT		Province NT		Postal code / Code postal NT	
Intended Receiver / consignee Receptonnaire / destinataire prévu KBL Environmental		Registration No. / Provincial ID No. N° d'immatriculation - dtd. provincial N1R00123			
Mailing address / Adresse postale P.O. Box 1100		City / Ville Yellowknife		Province NT	
E-mail / Courriel électronique ( )		Tel. No. / N° de tél. ( )			
Receiving site address / Adresse du lieu de destination ( )					
City / Ville Yellowknife		Province NT		Postal code / Code postal NT	

<b>B Carrier</b> <b>Transporteur</b> Company name / Nom de l'entreprise KBL Environmental		Registration No. / Provincial ID No. N° d'immatriculation - dtd. provincial NT000124			
Mailing address / Adresse postale P.O. Box 1100		City / Ville Yellowknife		Province NT	
E-mail / Courriel électronique ( )		Tel. No. / N° de tél. ( )			
Vehicle / Véhicule Trailer - Rail car No. 1 Trailer - Rail car No. 2 27 remorque - wagon					
Registration No. / N° d'immatriculation C39678		Prox. 26 NT			
Port of entry International border		Port of exit International border			
Carrier Certification: I certify that I have received waste or recyclable material from the generator / consignee for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct.					
Attestation du transporteur: J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptonnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.					
Name of authorized person (p/nm) Nom de l'agent autorisé (caractères d'imprimerie) Year / Année Month / Mois Day / Jour		Signature: ( )			

<b>C Receiver / consignee</b> <b>Receptonnaire / destinataire</b> Company name / Nom de l'entreprise LUPIN MINING INC.		Registration No. / Provincial ID No. N° d'immatriculation - dtd. provincial N1C01047			
Mailing address / Adresse postale Suite 202-203 West Pemberton Mainway BC		City / Ville BC		Province BC	
E-mail / Courriel électronique philip@lupinmining.com		Tel. No. / N° de tél. ( )			
Receiving site address / Adresse du lieu de destination ( )					
City / Ville NT		Province NT		Postal code / Code postal NT	

Date shipped / Date d'expédition Year / Année Month / Mois Day / Jour		Time / Heure <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.		Scheduled arrival date / Date d'arrivée prévue Year / Année Month / Mois Day / Jour	
Special handling / Manutention spéciale <input type="checkbox"/> Attached (C/point) <input type="checkbox"/> As follows (C/contre):					
Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. / Attestation du réceptonnaire / destinataire: J'atteste que tous les renseignements à la partie C sont exacts et complets.					
Signature ( )		Tel. No. / N° de tél. ( )			

Quantity received / Quantité reçue Units / Unités L or / ou kg		Comments / Commentaires Code / Code de manutention		Handling / Manutention Accepted / Refused / Rejected / Cont. / Vah.	
It handling code "Other" (specify) Si code de manutention « autre » (spécifier)		Name of authorized person (p/nm) Nom de l'agent autorisé (caractères d'imprimerie)			

MOVEMENT DOCUMENT / MANIFEST  
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial environmental legislation.  
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement.

NT11192-1

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifeste

**A** Generator / consigneur  
Producteur / expéditeur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

**B** Carrier  
Transporteur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

**C** Receiver / consignee  
Réceptionnaire / destinataire

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise

Company name / Nom de l'entreprise

Company name / Nom de l'entreprise

Mailing address / Adresse postale

Mailing address / Adresse postale

Receiver / consignee information same as in Part A  
Les renseignements du réceptionnaire / destinataire sont les mêmes qu'à la Partie A

Email / Courriel électronique

Email / Courriel électronique

Yes / Oui ☐ No, complete the box below / Non, rempli la case d-dessous ☐

Shipping site address / Adresse du lieu de l'expédition

Vehicle / Véhicule

Company name / Nom de l'entreprise

City / Ville

City / Ville

Mailing address / Adresse postale

Intended Receiver / consignee  
Réceptionnaire / destinataire prévu

Port of entry  
Point d'entrée

City / Ville

Mailing address / Adresse postale

Port of exit  
Point de sortie

Email / Courriel électronique

Email / Courriel électronique

Port of exit  
Point de sortie

Receiving site address / Adresse du lieu de destination

Receiving site address / Adresse du lieu de destination

Port of exit  
Point de sortie

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Port of exit  
Point de sortie

Receiving site address / Adresse du lieu de destination

Copy / Copie 6 (brown / brun)

International use only

Generator / consigneur certification: I certify that the information contained in Part A is correct and complete. I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Name of authorized person (pnt)

Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Time / Heure

Scheduled arrival date / Date d'arrivée prévue

Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets. Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par la désignation officielle de transport et qu'il est convenablement classé, emballé, marqué, étiqueté, muni de plaques-décliquettes et à tous égards bien conditionné pour être transporté conformément aux réglementations internationales et nationales applicables.

Nom de l'agent autorisé (caractère d'imprimé)

Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Time / Heure

Scheduled arrival date / Date d'arrivée prévue

Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets. Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par la désignation officielle de transport et qu'il est convenablement classé, emballé, marqué, étiqueté, muni de plaques-décliquettes et à tous égards bien conditionné pour être transporté conformément aux réglementations internationales et nationales applicables.

Nom de l'agent autorisé (caractère d'imprimé)

Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Time / Heure

Scheduled arrival date / Date d'arrivée prévue

Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets. Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par la désignation officielle de transport et qu'il est convenablement classé, emballé, marqué, étiqueté, muni de plaques-décliquettes et à tous égards bien conditionné pour être transporté conformément aux réglementations internationales et nationales applicables.

Nom de l'agent autorisé (caractère d'imprimé)

Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Time / Heure

Scheduled arrival date / Date d'arrivée prévue



# KBL

Environmental LTD.

## Certificate of Disposal

Date: 10-20-2016

Invoice: OE0679

KBL Environmental Ltd. hereby certifies that the waste shipped from Lupin Mines Incorporated, on KBL Bill of Lading YK0000000603 and Manifest NT111715 which was received at KBL Environmental Ltd. on September 29, 2016 and has been processed, recycled/disposed of in accordance with all applicable Federal and Territorial/ Provincial Regulations.

**Generator:**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

**Generator #:**

**Issued By:**

  
Operations Manager  
KBL Environmental Ltd.

NTR000123

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4



Environmental LTD.

## Certificate of Disposal

**Date:** 11-09-2016

**Invoice:** OE0681

KBL Environmental Ltd. hereby certifies that the waste shipped from Lupin Mines Incorporated, on KBL Bill of Lading YK0000000637 and Manifest NT11202-8 which was received at KBL Environmental Ltd. on October 18, 2016 and has been processed, recycled/disposed of in accordance with all applicable Federal and Territorial/ Provincial Regulations.

**Generator:**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

**Generator #:**

**Issued By:**

  
Operations Manager  
KBL Environmental Ltd.

NTR000123

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

# BILL OF LADING



KBL Environmental Ltd.  
PO Box 1895  
17 Cameron Rd.  
Yellowknife, NT X1A 2P4

DATE: Oct 18, 2016

NO: YK0000000637

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

Receiver Pin #: NTR000123

Manifest #: NT11202-8

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666				PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)					
				Yes	No	Number Required		Type	
D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO	CODE			
X	1993	REGULATED DANGEROUS GOODS FLAMMABLE LIQUIDS-FUEL	3	III	1	01	1.00		DRUM
	NRL	NON REGULATED DANGEROUS GOODS WASTE LEACHATE-OIL	NRL	NRL	1	01	1.00		DRUM
	NRS	NON REGULATED SOLIDS - FLOOR DRY	NRS	NRS	3	01	3.00		DRUM

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 1.00

TRANSPORT TIME: 1.00

### CONSIGNOR CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respect proper condition for transport according to the Transportation of Dangerous Goods Regulations.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

ABOVE NAME PRINTED

ABOVE NAME PRINTED

Lupin.

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**This Movement document/manifest conforms to all federal and provincial environmental legislation.**  
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement.

NT11202-8

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MOVEMENT DOCUMENT / MANIFEST  
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal  
and provincial environmental legislation.  
Ce document de mouvement/manifeste est conforme aux législations  
fédérale et provinciale sur l'environnement.

NT11202-8

Movement Document / Manifest Reference No.  
N° de référence du document de mouvement/manifeste

A Generator / consigneur  
Producteur / expéditeur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

B Carrier  
Transporteur

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

C Receiver / consignee  
Réceptionnaire / destinataire

Registration No. / Provincial ID No.  
N° d'immatriculation - dtd, provincial

Company name / Nom de l'entreprise

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Mailing address / Adresse postale

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E-mail / Courriel électronique

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Shipping site address / Adresse du lieu de l'expédition

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# KBL

Environmental LTD.

## Certificate of Disposal

**Date:** 11-18-2016

**Invoice:** OE0690

KBL Environmental Ltd. hereby certifies that the waste shipped from Lupin Mines Incorporated, on KBL Bill of Lading YK0000000664 and Manifest N/R which was received at KBL Environmental Ltd. on October 28, 2016 and has been processed, recycled/disposed of in accordance with all applicable Federal and Territorial/ Provincial Regulations.

**Generator:**

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

**Generator #:**

**Issued By:**

  
Operations Manager  
KBL Environmental Ltd.

NTR000123

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

## BILL OF LADING

DATE: Oct 28, 2016

NO: YK0000000664



KBL Environmental Ltd.  
PO Box 1895  
17 Cameron Rd.  
Yellowknife, NT X1A 2P4

## CONSIGNOR / CUSTOMER SITE ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

Generator Pin #:

## CUSTOMER BILLING ADDRESS

Lupin Mines Incorporated  
SUITE #201 - 750 WEST PENDER STREET  
VANCOUVER, BC V6C 2T7

Phone: (604) 682-3366

PO #:

## CONSIGNEE / RECEIVER SITE ADDRESS

Yellowknife Waste Facility  
17 Cameron Road  
PO Box 1895  
Yellowknife, NT X1A 2P4

Receiver Pin #: NTR000123 Manifest #: N/R

## CARRIER / TRANSPORTER

KBL Environmental Ltd.  
17 Cameron Rd.  
Yellowknife, NT X1A 2N8

Carrier Pin #: NTC000124

DANGEROUS GOOD INFO. 24 HOUR EMERGENCY PHONE # CANUTEC (613) 996-6666			PLACARDS REQUIRED BY CARRIER (PER T.D.G. REGULATIONS)						
			Yes <input type="checkbox"/> No <input type="checkbox"/>		Number Required		Type		
D G	P.I.N.	SHIPPING NAME / DESCRIPTION	T.D.G. INFORMATION				EXPECTED QUANTITY	ACTUAL QUANTITY	UOM
			CLASS	PACKING GROUP	PACKING NO CODE				
		<b>NON REGULATED DANGEROUS GOODS</b>							
	NRL	NON REGULATED LIQUIDS-PETROLEUM GREASE	NRL	NRL	19	07	19.00		KEG
	NRL	NON REGULATED LIQUID-PETROLEUM GREASE	NRL	NRL	10	01	10.00		DRUM

DG-Dangerous Goods (X-Yes)

TECHNICIAN TIME: 0.00

TRANSPORT TIME: 1.00

## CONSIGNOR CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respect proper condition for transport according to the Transportation of Dangerous Goods Regulations.

CONSIGNOR SIGNATURE

DRIVER SIGNATURE

CONSIGNEE SIGNATURE

ABOVE NAME PRINTED

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## **Appendix E**

### **LMI Follow-up Data and Information to the NWB and KP**

## MEMO FOR LUPIN MINES INCORPORATED

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**Date:** October 17, 2016

**To:** Dave Hohnstein, Nunavut Water Board (NWB) and Richard Cook, Knight Piesold (KP)

**From:** Karyn Lewis

**Cc:** Patrick Downey and Mark Sander

**Re:** Follow-up Data and Information resulting from site visit of 6<sup>th</sup> and 7<sup>th</sup> October 2016

---

Dear Dave,

Further to the recent visit by all parties, NWB, KP (on behalf of the NWB), Indigenous and North Affairs (INAC), ARCADIS (on behalf of INAC), Lupin Mines Incorporated (LMI), and Golder Associates (on behalf of LMI), please find responses to several questions and additional data as requested. Should the NWB or KP require any additional information or clarification please feel free to contact me at your convenience. LMI have endeavoured to answer and provide the data based on the discussions and issues arising from the recent teleconferences between INAC, NWB and LMI and those discussed during the follow-up site visit.

### 1. Landfarm

The first phase Landfarm is now engineered and constructed (see attached photos – Appendix A). The Landfarm is now ready for treatment of contaminated soils. As discussed in the meetings at site, LMI is basing the treatment amounts on the maximum amount estimated in the 2006 Morrow report which is 40,000m<sup>3</sup>. The design and construction of this unit amounted to just under \$75,000 including engineering (\$30,000) and shipment of liner to site (see attached – Appendix A). No further engineering will be required but geotechnical inspections will be required on an annual basis. Therefore the estimated costs to construct 4 additional cells for the Landfarm is estimated at \$180,000. This cost will be reflected in the updated estimate,

The costs to move the contaminated soil to the facility is per the attached (Appendix B) and is based on the areas identified in the aforementioned Morrow report. The soil will be moved by equipment currently available on site and using the diesel at site. Please note the difference in unit cost between on-site Landfarm treatment and that of the 2014 estimate which was off-site treatment.

### 2. Tailings Cover

As discussed the area of tailings cover of 241,328m<sup>2</sup> is that from the actual drawings and confirmed from site surveys. There is a small quantity of tailings material in cell #4 and this was accounted for and marked out with orange markers as observed in the field during the site visit. Also as discussed there may be an additional small amount within another area of cell 4 and LMI will endeavour to determine this amount but it is not deemed significant. The costs that were included in the LMI 2014 estimate were based on actual costs from the placement of cover (see attached Rate and Productivity – Appendix C). These costs were modified with escalation factors for the 2014 estimate.

It is important to note that based on work completed during 2016 the current unit rate is actually below the 2014 estimated rates by almost \$1.00/m<sup>2</sup>.

However LMI will leave the 2014 rate as a safety factor for this area of the estimate. Also from the site visit dam M is now fully repaired and passed by the independent engineer (will be provided as soon as we have the final or final draft which we anticipate having this week).

See below for links to the I. Holubec Consulting Inc. report (Parts 1-5) called Closure Plan for Tailings Containment Area as well the Golder Report - Studies Related to Water Licence Requirements and in Support of Reclamation and I. Holubec Consulting Reports, Volumes I and II - Geotechnical, seepage and Water Balance in the Tailings Containment Area.

### **3. Spillways**

As observed from the site visit the two spillways at Dam 1 and Dam 2 will NOT be engineered spillways and all protective rip rap will be recovered and placed from within the dam areas and will NOT be drill blasted and hauled to these areas. LMI now estimate that the cost to complete these openings in the dams will be \$20,400.

### **4. Pipe Removal**

As discussed in the site visit the cost to remove the tailings and water piping was to remove all such pipe from site and dispose of within a facility in Yellowknife with associated disposal costs. The renewed water licence includes a landfill permit. The new cost as estimated by an independent engineer is \$110,346 as opposed to the \$343,990 from the 2014 submission.

### **5. PAG**

The PAG quantities are based on the maximum estimate from the Morrow report (see below for a link to documents). The 2014 LMI estimate was based on disposal of the PAG in three separate areas- main and ventilation shaft; tailings area and underground (see attached Rate and Productivity – Appendix C). In 2016, LMI completed excavation of one area deemed to have significant PAG rock- the old “Ballfield”. We removed over approximately 6,000m<sup>3</sup> and placed this material in tailings cell #5. The unit rate for this work was approximately 2.95/m<sup>3</sup> well below the 2014 estimate. Furthermore as observed from the site visit only a small amount of surface cover even appeared to have sulphides. Below this no such rock was identified. Therefore LMI believe that the Morrow report has greatly over estimated the PAG rock on site. However until LMI have completed the Phase 2 ESA update we will continue to use the 400,000 m<sup>3</sup> amount per Morrow and the rates in the 2014 estimate which will more than cover this work based on the removal and disposal of PAG rock in 2016.

### **6. Fuel**

The fuel on site has been tested and meets specifications. No further comment from LMI at this stage.

## **7. Equipment**

As observed on site LMI has significant usable equipment on-site for the work contemplated for closure. LMI has also estimated that an additional 10 pieces would be required and shipped to site on the first ice road.

## **8. Hazardous waste**

LMI has removed significant hazardous waste from site since completion of the 2014 closure estimate. We are also still awaiting the hazardous waste documentation from KBL in Yellowknife, once we have this documentation we forward onto you. As an overview, in 2015, we backhauled approx. 130,000lbs of waste from site. Of the 130,000lbs of waste backhauled approx. 90,000lbs was hazardous waste. In 2016, in May we backhauled approx. 1,100lbs of waste, in June we backhauled approx. 90,000lbs of hazardous waste and 2,000lbs of waste, in July we backhauled approx. 51,500lbs of hazardous waste and 1,500lbs of waste, August we backhauled approx. 27,000lbs of hazardous waste and 3,500lbs of waste. We do not have the current numbers for September or October but we should be able to provide these numbers to you shortly.

## **9. Buildings**

LMI would like to make note that in their cost estimate they used a rate of \$128/m<sup>2</sup> for 24,711m<sup>2</sup> for removal of buildings which reflects cleanup, decontaminate, teardown, cutting (where appropriate) and also concrete breakup and dozing for a total of \$3,163,000. To be conservative, LMI also included a secondary cost for hazardous materials which includes oil, fuel, glycol and asbestos at \$22.80/m<sup>2</sup> for 8,490m<sup>2</sup> (\$193,572) noting much of this material has been shipped off site since the 2014 estimate was submitted. It should also be noted that, LMI included an additional line item for 25,000m<sup>2</sup> of concrete slab removal at 7.28/m<sup>2</sup> (\$181,955). Likely this concrete will be left in place and covered graded and contoured.

INAC has used the same \$128/m<sup>2</sup> as LMI for building removal instead of the rates in RECLAIM 7 (between \$40-\$60). INAC has then added an additional \$1,130,689 to decontaminate oil, fuel, glycol, asbestos, offices, warehouse and accommodations which is already included the \$128/m<sup>2</sup>.

## **10. Indirects**

### Engineering

The main components of the 2014 LMI engineering estimate were as follows;

- Design of a landfarm system (now completed)
- Final review and design of location of thermistors for cells 3, 4 and 5
- Design of the final tailings water management system including all instrumentation- As noted there will be no structural design required for the “spillways”.

## LMI Follow-up Data and Information resulting from site visit of 6<sup>th</sup> and 7<sup>th</sup> October 2016

- Final work on the Stage 2 ESA including seep sampling, assays and design for PAG quantification.
- Final design criteria for closure of landfill system, Sewage ponds including sampling systems/piezometers.
- Completion of Detailed Request for Quotation (RFQ) packages for closure contracts including scope of work details, adjudication and final award.

The general estimated costs for the above are attached in Appendix D.

### Project Management

The main components of the Project Management area in the 2014 LMI estimate are as follows:

- Onsite management to ensure work is being completed as per the agreed contracts and specifications. The 2014 estimate assumed that there would be a requirement for 2 PM supervisors- one for the outside areas such as tailings etc and one for the main plant. There would be 4 on site at any time 2 on day shift and 2 on night shift.
- QA/QC including sampling and analysis
- Camp manager
- On site administration for billings/accounts payable, communication and logistics.
- Of site administration for above including flight coordination etc.
- Internet, phones and sat phones- Note all hard ware for these systems are on site.

HS&E officer and assistants- Please note that the areas of tailings cover and PAG removal include Safety personnel

### **11. Document Links**

- NWB Water Licence – 2AM-LUP1520 - <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/4%20LICENCE/1%20LICENCE/2015%20Amend%20Renew/150821%202AM-LUP1520%20Reissuance-Renewal%20and%20Amended%20Licence-OSJE.pdf>
- NWB Reason for Decision - <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/4%20LICENCE/1%20LICENCE/2015%20Amend%20Renew/150511%202AM-LUP1520%20Licence%20Decision-OTME.pdf>
- Morrow Environmental Phase 1 and Phase 2 Environmental Site Assessment – Lupin Mine Site  
Volume 1 - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/9%20MONITORING%20\(J\)/Environmental%20Site%20Assessment/060921%202AM-LUP0008%20Phase%201%20and%202%20ESA%20-%20Vol.%201-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/9%20MONITORING%20(J)/Environmental%20Site%20Assessment/060921%202AM-LUP0008%20Phase%201%20and%202%20ESA%20-%20Vol.%201-ILAE.pdf)

Volume 2 - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/9%20MONITORING%20\(J\)/Environmental%20Site%20Assessment/060921%202AM-LUP0008%20Phase%201%20and%202%20ESA%20-%20Vol.%202-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/9%20MONITORING%20(J)/Environmental%20Site%20Assessment/060921%202AM-LUP0008%20Phase%201%20and%202%20ESA%20-%20Vol.%202-ILAE.pdf)

- I. Holubec Report – Closure for Tailings Containment Area

Part 1 - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBa-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBa-ILAE.pdf)

Part 2 – Photos – [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBb-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBb-ILAE.pdf)

Part 3 – Supporting Figures – [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBc-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBc-ILAE.pdf)

Part 4 – Ground Temperatures – [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBd-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBd-ILAE.pdf)

Part 5 – Dams and Earth Structures Stability Analysis - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBe-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppBe-ILAE.pdf)

- Golder Report - Studies Related to Water Licence Requirements and in Support of Reclamation Planning - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppC-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20A%20and%20R%20Plan%20App%204%20-%20AppC-ILAE.pdf)

- I. Holubec Report – Volume I - Geotechnical, Seepage and Water Balance - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20IntAnnual%20Report%20%20A%20and%20R%20Plan%20App%204%20-%20AppEb-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20IntAnnual%20Report%20%20A%20and%20R%20Plan%20App%204%20-%20AppEb-ILAE.pdf)

I. Holubec Report - Volume II of Seepage and Water Quality For Reclaimed Tailings Containment Area - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20\(I\)/2012/043013\\_2AM-LUP0914%20Int%20Annual%20Report%20%20A%20and%20R%20Plan%20App%204%20-%20AppEc-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/10%20A%20and%20R%20(I)/2012/043013_2AM-LUP0914%20Int%20Annual%20Report%20%20A%20and%20R%20Plan%20App%204%20-%20AppEc-ILAE.pdf)



## LMI Follow-up Data and Information resulting from site visit of 6<sup>th</sup> and 7<sup>th</sup> October 2016

- Geotechnical Reports:

There are numerous annual geotechnical reports and so I have included the link to the geotechnical reports for years 1991-2015 as well as links to the Waste Management, Tank Farm and Sewage Pond Dams geotechnical reports. As soon as we have the final or final draft of the 2016 Annual Geotechnical Report we will forward onto. We anticipate that we will have the report this week.

1997-2015 - Annual Geotechnical Reports: [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/](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/)

Waste Management Geotechnical Report - [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/2015/151201%202AM-LUP1520%201CL008%20002%202015Waste%20Mgmt%20Facilities%20Geotechnical%20Inspection%20FNL-IAAE.pdf](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/2015/151201%202AM-LUP1520%201CL008%20002%202015Waste%20Mgmt%20Facilities%20Geotechnical%20Inspection%20FNL-IAAE.pdf)

Sewage Pond Dams Geotechnical Inspection - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/0%20SCOPE%20ENFORCE%20\(A\)/1%20INSPECTION/2014/141029%202AM-LUP0914%202014%20Sewage%20Pond%20Dams%20Geotechnical%20Inspection%201CL008%20002%20PMH%20AT%2020141020-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/0%20SCOPE%20ENFORCE%20(A)/1%20INSPECTION/2014/141029%202AM-LUP0914%202014%20Sewage%20Pond%20Dams%20Geotechnical%20Inspection%201CL008%20002%20PMH%20AT%2020141020-ILAE.pdf)

Lupin Fuel Tank Farm Geotechnical Inspection - [ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/0%20SCOPE%20ENFORCE%20\(A\)/1%20INSPECTION/2014/141029%202AM-LUP0914%20Addendum%20Memo%202014%20Lupin%20Fuel%20Tank%20Farm%20Inspection%201CL008%20002%2010302014%20FINAL-ILAE.pdf](ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-LUP1520%20LMI/3%20TECH/0%20SCOPE%20ENFORCE%20(A)/1%20INSPECTION/2014/141029%202AM-LUP0914%20Addendum%20Memo%202014%20Lupin%20Fuel%20Tank%20Farm%20Inspection%201CL008%20002%2010302014%20FINAL-ILAE.pdf)

### **Appendices:**

Appendix A	Landfarm Drawings and Photos
Appendix B	Contaminated Soil from Main Tank to Landfarm and Contaminated Soil from the Satellite Tank Farm to the Landfarm
Appendix C	LMI Rates and Productivity for PAG to Shaft, PAG to UG, PAG to Tails, Tailings Cover
Appendix D	Engineering
Appendix D	Asbestos Results

If you require any further documentation or have any questions please feel to contact at [klewis@elginmining.com](mailto:klewis@elginmining.com) or at 778-386-7340.

**APPENDIX A**

**LANDFARM DRAWINGS, PHOTOS AND COSTS**

Site Contaminated Soil to Landfarm					Labor		Equipment		Total Cost
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	
Liner Material									\$9,000
Shipping									\$5,000
Offload									\$500
Liner Total									\$14,500
Construction		40 m^3 underliner material							
Load	1	992D Excavator	4	4	\$43.98	\$176	\$245.00	\$980	\$1,156
Haul and Dump	1	35t Komatsu	4	4	\$41.81	\$167	\$77.23	\$309	\$476
Labourers to spread/comp in 3 cells	6		60	360	\$43.98	\$15,831			\$15,831
Sub-total						\$16,174		\$1,289	\$17,463
Leak detection pipe									
Material		at site							
Installation	4		60	240	\$43.98	\$10,554			\$10,554
Liner Installation	4		12	48	\$43.98	\$2,111			\$2,111
Site Contaminated soil				656		\$16,174		\$1,289	\$44,628

September 16, 2016

Project #: 931-1

Lupin Mine Incorporated  
Suite 201 – 750 West Pender Street  
Vancouver, BC V6C 0A3

**Attn: Karyn Lewis**  
**Project Manager**

Dear Karyn:

**Subject: As-built Document for the Pilot Landfarm at Lupin Mine**

## **INTRODUCTION**

Lupin Mine Incorporated (LMI) has commissioned Norwest Corporation (Norwest) to provide the design, as-built documentation, and operational guidance for the pilot landfarm at the Lupin Mine. The landfarm is designed to remediate the hydrocarbon-contaminated soil in the satellite tank farm using biological treatment. The landfarm is designed with primary and secondary containment to prevent contamination of the surrounding environment. This document provides the as-built documentation of the landfarm design and work completed on the structure.

## **SITE DESCRIPTION**

The Lupin Mine is located on the northwest shore of Contwoyto Lake, approximately 400km northeast of Yellowknife, Northwest Territories. The mine site consists of a mill, office, camp and supporting facilities, airstrip, fuel storage infrastructure, airstrip, and the tailings containment area.

The landfarm is located on the footprint of the decommissioned paste backfill plant, located south of the mill. The landfarm utilizes the concrete foundation of the plant as secondary containment and a prefabricated geosynthetic liner as primary containment.

## **ROLE AND RESPONSIBILITIES**

Table 1 shows the roles and responsibilities of key personnel involved in the design and construction work of the landfarm at Lupin Mine.

**Table 1: Roles and Responsibilities**

<b>Role and Responsibilities</b>	<b>Personnel (Company)</b>
Owner and Operator	Lupin Mine Incorporated (LMI)
Construction Manager	Dave Vokey (LMI)
Engineer of Record (EOR)	Alvin Tong (Norwest)
Design Engineers	Alvin Tong (Norwest) Jim McKinley (Norwest) Sara Wilkins (Norwest)
Quality Control (QC)	Dave Vokey (LMI)
Liner Supplier	Layfield Environmental System for geosynthetics liner
Quality Assurance (QA)	Alvin Tong (Norwest)

## DESIGN

A set of professionally stamped landfarm drawings were submitted to LMI in July 2016. The landfarm design is based on the LMI concept submitted to the Nunavut Water Board (NWB) in December 2014 (LMI 2014). The intent of the landfarm is to provide a contained facility and utilize biological treatment to remediate hydrocarbon-contaminated soil on site. Norwest built upon the original concept by evaluating the landfarm hydrology and providing detailed engineering drawings and specifications. The landfarm design uses the existing concrete foundation of the decommissioned paste backfill plant as secondary containment and a geosynthetic liner as primary containment of the contaminated soil.

The concrete foundation is a reinforced slab with an estimated minimum thickness of 0.25m and a surrounding footing that ranged from 0.25m to 1.8m high. The design intent was to use the impermeable slab and the footing to create secondary containment for any potential leakage through the landfarm liner. Locally available esker sand was used to construct a containment berm and sump. The earthen berm is approximately 1.3m in height with the floor graded to drain toward the sump situated at the west side of the facility. A reinforced, UV-protected liner was deployed over the finished subgrade to serve as primary containment.

## Hydrological Evaluation

A sump was constructed within the footprint of the landfarm for runoff and leachate collection and it is sized for a 1:100-year storm in addition to the freshet. The Federal Contaminated Sites Landfarming Guideline (GOC 2006) specifies the minimum criteria for leachate control is to satisfy a 1:10-year storm event. The hydrological data used for the sizing of the sump is based on information from the dam safety review report (SRK 2016). The 1:100 (24hr) storm event at Lupin has an equivalent precipitation of 56mm/m<sup>2</sup> and a freshet snow melt equivalent of 29mm/m<sup>2</sup>. The design surface area of the landfarm is 453m<sup>2</sup>, which equates to a runoff of 25.4m<sup>3</sup> for the 1:100-year storm and a 13.1m<sup>3</sup> freshet. The combined runoff and freshet volume is conservatively calculated to be 38.5m<sup>3</sup> where soil attenuation and storage are not considered. The maximum capacity of the sump is calculated to be 105m<sup>3</sup> with a 0.1m freeboard, while the operational sump capacity is 41m<sup>3</sup> with a 0.5m freeboard.

## **CONSTRUCTION**

The landfarm construction work commenced on July 2, 2016 with preparation of the concrete foundation and was completed on August 9, 2016 with the installation of a liner leakage detection pipe. The construction was carried out by LMI site personnel and quality controlled (QC) by LMI representative Dave Vokey. Quality control was done to ensure the foundation was prepared properly, earthwork grade and design lines were met, compaction was done on all earthwork, the liner was deployed with care, and the leakage detection pipe was installed appropriately.

The construction process was documented through photographs which were provided to Norwest at key hold points for quality assurance prior to advancing to the next phase of work. Norwest's representative, Alvin Tong, PEng., carried out a site inspection and completed a basic survey of the completed facility on August 24, 2016. The basic survey included relative elevation measurements using a survey level and planar dimension measurements using tape measures. The survey data are reported in the as-built drawings.

Photographs of the construction are provided in Attachment A. The as-built drawings of the facility are provided in Attachment B. Construction details for key components are summarized in the sections below.

### **Preparation of Concrete Foundation**

The decommissioned paste backfill plant foundation contained a number of drain channels and outlets, doorways, and cracks that could compromise the containment of landfarm runoff and leachate. To mitigate this issue, the entire foundation was cleared and cleaned to allow examination of the cracks and drains. The outlets of the drains were excavated to 0.2m below surface grade and backfilled with reinforced concrete. Channels within the concrete were levelled with additional concrete to create an even surface for construction. Old doorways created breaks in the surrounding footing that compromised the containment. These breaks were sealed with reinforced concrete and formed to match the dimensions of the existing footing. All identified cracks were sealed with grout.

### **Earthwork**

Once the concrete foundation preparation was completed and photographs of the work were reviewed by Norwest, earthwork was allowed to commence. Esker sand was hauled, placed and compacted to construct the landfarm berm and floor according to the design. The esker sand is a well-graded sand material with some rounded gravel and silts. All coarse particles (>5cm) were removed from the surface for liner subgrade preparation. The berm has an approximate 1.5H:1V (horizontal to vertical) interior slope and the exterior slope varies between 2H:1V to 1.5H:1V. The floor of the landfarm has an approximate 7% grade toward the sump at the east end of the facility.

**Geosynthetic Liner**

A Layfield Enviro Liner 1040N liner was pre-fabricated to fit the dimensions of the landfarm. The product specifications and data sheet are included in Attachment C. All seams were welded by the manufacturer (Layfield), eliminating the requirement to carry out on-site welding or modifications on the liner. The liner was manually deployed over the finished earthwork. Excess liner was trimmed to ensure a minimum 1m overlap over the crest of the berm. Tires and sandbags were used as ballast until operation when contaminated soil was placed inside.

**DESIGN MODIFICATION****Leakage Detection Pipe**

To assist evaluating and monitoring the performance of the primary containment liner, a leakage detection pipe was added into the subgrade, between the liner and concrete foundation. The pipe is located in the southwest corner of the sump and it is a 100mm outside diameter, galvanized steel pipe. The pipe is approximately 2m in height measured from the concrete with a 90° elbow at the bottom and extends 2.5m horizontally into the landfarm. The horizontal section of the pipe is perforated and wrapped with geotextile to allow leachate collection and prevent clogging by fines. The installation details of the leakage detection pipe are included in Attachment B. Details for the leakage detection monitoring are provided in the section below.

**OPERATION AND MONITORING**

A draft revision of the landfarm operation strategy (Norwest 2016) was provided to LMI on July 8, 2016. The general operation requirements after placement of the contaminated soil within the landfarm include aeration, moisture content adjustment as necessary, application of fertilizer as necessary, and monitoring. The strategy document will be updated as needed according to site conditions and operational requirements.

The function of the leakage detection pipe is to monitor the integrity of the primary containment liner. If the liner is compromised, leachate will be collected upon the secondary containment (concrete foundation). When the liner performs properly, there should be little to no water accumulating in the pipe. The advantage of this system is that a liner leak will be detectable early in the operation of the landfarm. The leakage detection pipe will also be used to sample any ponded water observed in the pipe so that the chemistry can be analyzed for confirmation that the water is originating from the landfarm and not from another source (i.e. precipitation). Analyte “trigger” concentrations will be calculated based on the hydrocarbon and nutrient content of the landfarm material. If water accumulates in the pipe but the chemical concentrations are below the trigger values (indicating the source of the water is not the landfarm, through the liner), no action will be taken. If concentrations are above the trigger values, the landfarm operation will be suspended and the material will be removed to investigate the source and extent of the leak.

LMI's current care and maintenance water license, Type "A" License 2AM-LUP1520 (NWB 2015), Part E 25, stipulates one observation well to be installed up-gradient and two observation wells to be installed down-gradient of the landfarm for groundwater monitoring. It is Norwest's professional opinion that the combination of secondary containment and leakage detection would render down-gradient observation wells unnecessary. The leakage detection pipe would identify any liner leakage prior to breach of secondary containment, without negative impacts outside of the containment. Relying on the sampling of observation wells would only detect a leak after the unlikely scenario where contaminated water has breached both containment systems and negatively impacted the down-gradient environment. Moreover, the observation wells would only detect groundwater contamination after a delay due to the cold climate and travel time through the soil, and during that delay the landfarm would continue to operate. The current leakage detection system has a more immediate response time therefore it could suspend landfarm operation with hydrocarbon-impacted water still within the secondary containment.

Any surface seeps from the landfarm could be identified by the current sampling program, as Part E 10 of the water license (NWB 2015) stipulates that all effluent discharged downstream from the landfarm at surface monitoring station LUP-28 to be sampled and tested. A review of water licenses from the Meliadone Gold Project (Water License No. 2AM-MEL1631), Meadowbank Gold Project (Water License No. 2AM-MEA1525), and Doris North Project (Water License No. 2AM-DOH0713) did not find any specifications requiring observation wells to monitor landfarm operations. Furthermore, observation wells installed in permafrost climate region typically have a limited monitoring window due to icing. The leakage detection pipe is located above the permafrost zone and will be functional throughout the warm season, providing a further advantage over the use of observation wells.



## **CLOSURE**

The purpose of this letter is to provide a construction summary record for the Lupin landfarm. This letter has been prepared for Lupin Mine Inc. (LMI). The text contained herein presents documentation of the review and inspection work carried out by Norwest regarding the construction of the landfarm at the Lupin Mine, Nunavut. This report represents the opinion of Norwest based on information provided by LMI and observation made during the engineer's site inspection.

All data contained herein has been reviewed and interpreted by Alvin Tong, PEng., with the review completed by James McKinley, Ph.D., PEng.

Yours sincerely,

**NORWEST CORPORATION**

Author

Reviewer

Alvin Tong, PEng.  
Senior Geotechnical Engineer

James McKinley, Ph.D., PEng.  
Senior Hydrogeologist

Enclosures

Attachment A – Construction Photograph Log

Attachment B – As-built Drawings

Attachment C – Geosynthetic Liner Specification and Data Sheets

## REFERENCES

Norwest Corporation (Norwest), 2016. Lupin Gold Mine Landfarm Operational Strategy, Revision B. Memorandum submitted to Lupin Mine Incorporated, July 8, 2016.

SRK Consulting (Canada) Inc. (SRK), 2016. Lupin Mine Tailings Management Facility 2015 Dam Safety Review Report. Submitted to Lupin Mine Incorporated, January 2016.

Nunavut Water Board (NWB), 2015. Type "A" Water License No. 2AM-LUP1520. Issued by Nunavut Water Board to Lupin Mines Incorporated, May 11, 2015.

Lupin Mine Incorporated (LMI), 2014. Lupin Mine, Landfarm Management Plan. Submitted to Nunavut Water Board, December 2014.

Government of Canada (GOC), 2006. Federal Contaminated Sites Action Plan (FCSAP), Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils, March 2006 (Editorial Update 2013).

**Attachment A**

**Construction Photograph Log**



**Photo 1:** Clearing of the concrete foundation and removal of debris in drain outlets



**Photo 2:** Rebar reinforcement within the drain outlet.



**Photo 3:** Rebar reinforcement within the drain outlet.



**Photo 4:** Rebar reinforcement between an old doorway.



**Photo 5:** concrete backfill in the channel and outlets.



**Photo 6:** Sealed old doorway.

<b>LMI</b>	<b>Lupin Mines Incorporated</b>		
	<b>Landfarm As-built Letter</b>		
<b>Construction Photograph Log</b>			
<b>NORWEST</b>	PN: 931-1	<b>FIGURE 1</b>	REV. A





**Photo 7:** Grouting the cracks on the foundation pad.



**Photo 8:** Liner deployment over the finished subgrade.



**Photo 9:** Liner deployment continued.



**Photo 10:** Liner deployment continued.



**Photo 11:** The Enviro Liner 1040N label.



**Photo 12:** Deployed liner with sand bags and old tires as ballast.

<b>LMI</b>	<b>Lupin Mines Incorporated</b>		
	<b>Landfarm As-built Letter</b>		
<b>Construction Photograph Log</b>			
<b>NORWEST</b>	PN: 931-1	<b>FIGURE 2</b>	REV. A



**Photo 13:** Horizontal section of the leakage detection pipe wrapped with geotextile within the subgrade.



**Photo 14:** View of the leakage detection pipe at the east end of the landfarm, between the sump and the raised concrete footing.



**Photo 15:** Close up view of the sampling port of the leakage detection pipe.



**Photo 16:** Liner edge are buried within the exterior slope.



**Photo 17:** Panoramic westerly view of the completed landfarm from the assess ramp.

LMI	Lupin Mines Incorporated		
	Landfarm As-built Letter		
Construction Photograph Log			
NORWEST	PN: 931-1	FIGURE 3	REV. A

**Attachment B**

**As-built Drawings**





AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT. AUTHORIZATION FOR ANY USE AND/OR PUBLICATION OF THIS REPORT OR ANY DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS, THROUGH ANY FORM OF PRINT OR ELECTRONIC MEDIA, INCLUDING WITHOUT LIMITATION, POSTING OR REPRODUCTION OF SAME ON ANY WEBSITE, IS RESERVED PENDING NORWEST'S WRITTEN APPROVAL. IF THIS REPORT IS ISSUED IN AN ELECTRONIC FORMAT, AN ORIGINAL PAPER COPY IS ON FILE AT NORWEST CORPORATION AND THAT COPY IS THE PRIMARY REFERENCE WITH PRECEDENCE OVER ANY ELECTRONIC COPY OF THE DOCUMENT, OR ANY EXTRACTS FROM OUR DOCUMENTS PUBLISHED BY OTHERS

Lupin Mine Inc.

As-built  
Conditions

931-1-DWG01

Date: Sept 14, 2016

Drawn By: DM

Chkd By: SW

Coordinate System: NAD 1983 UTM  
Zone 12N

Project #  
931-1

Revision  
A

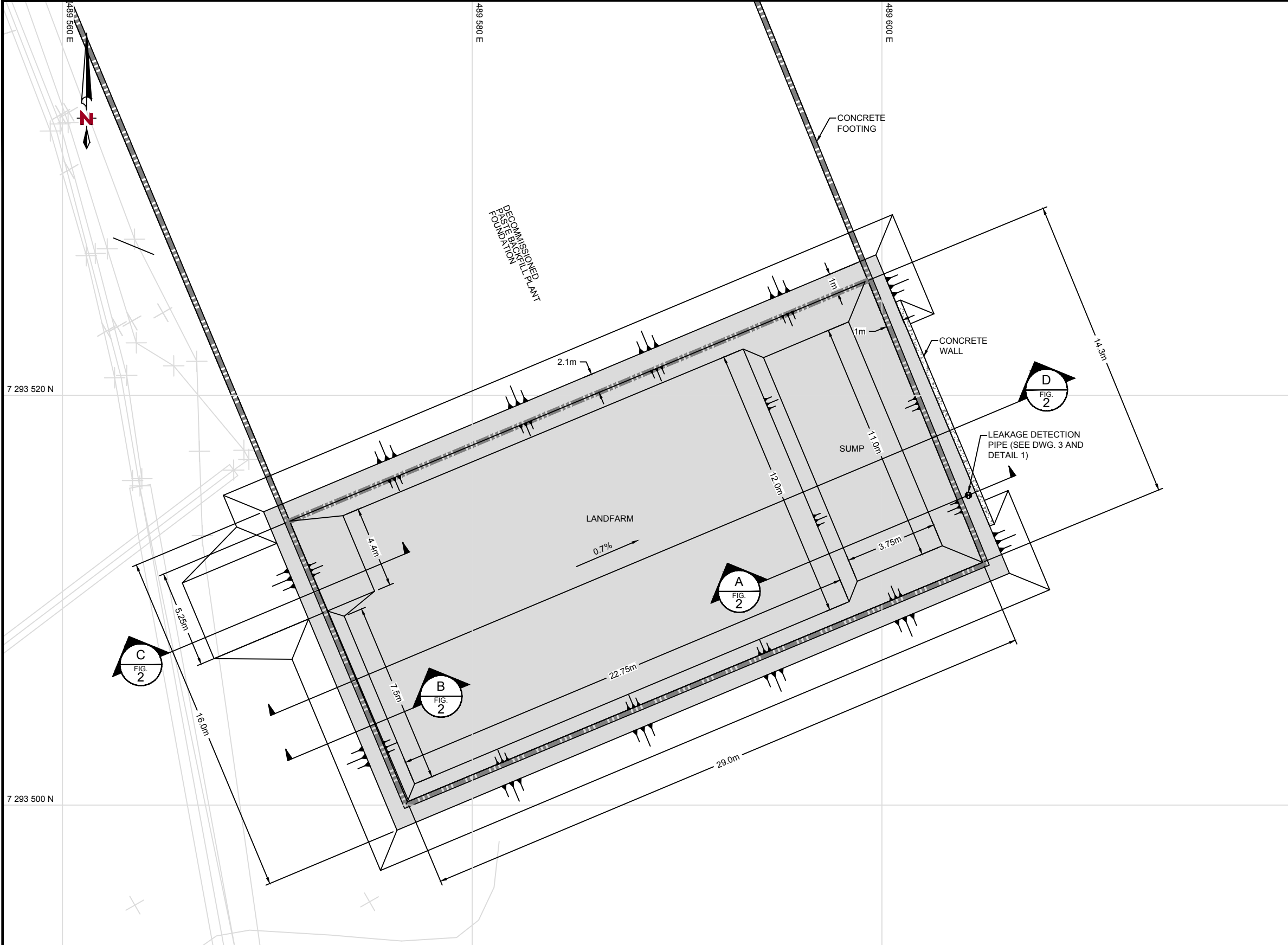
**NORWEST**

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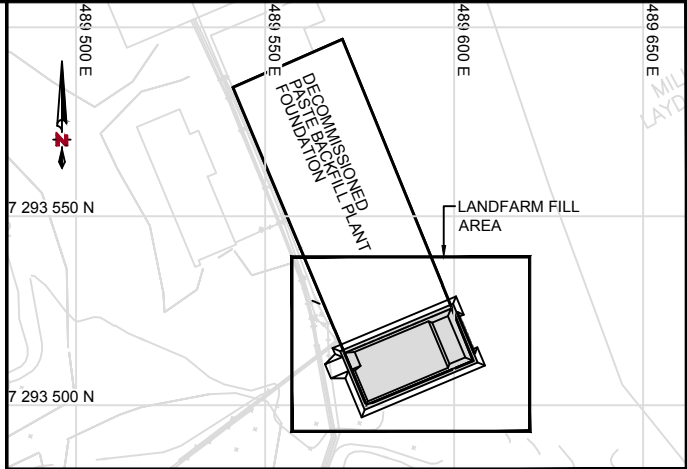


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XREF FILE(S):  
IMAGE FILE(S):

DATE: 9/16/2016 TIME: 15:00:18 PLOT SCALE: 1:3.872



PLAN  
SCALE B



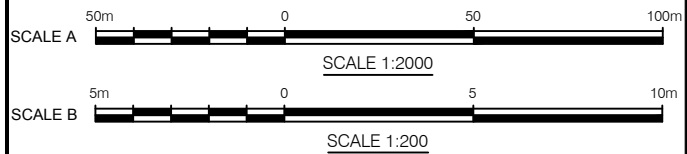
SITE PLAN  
SCALE A

LEGEND

- EXISTING RING WALL OF FOUNDATION
- ENVIRO LINER 1040N

NOTES

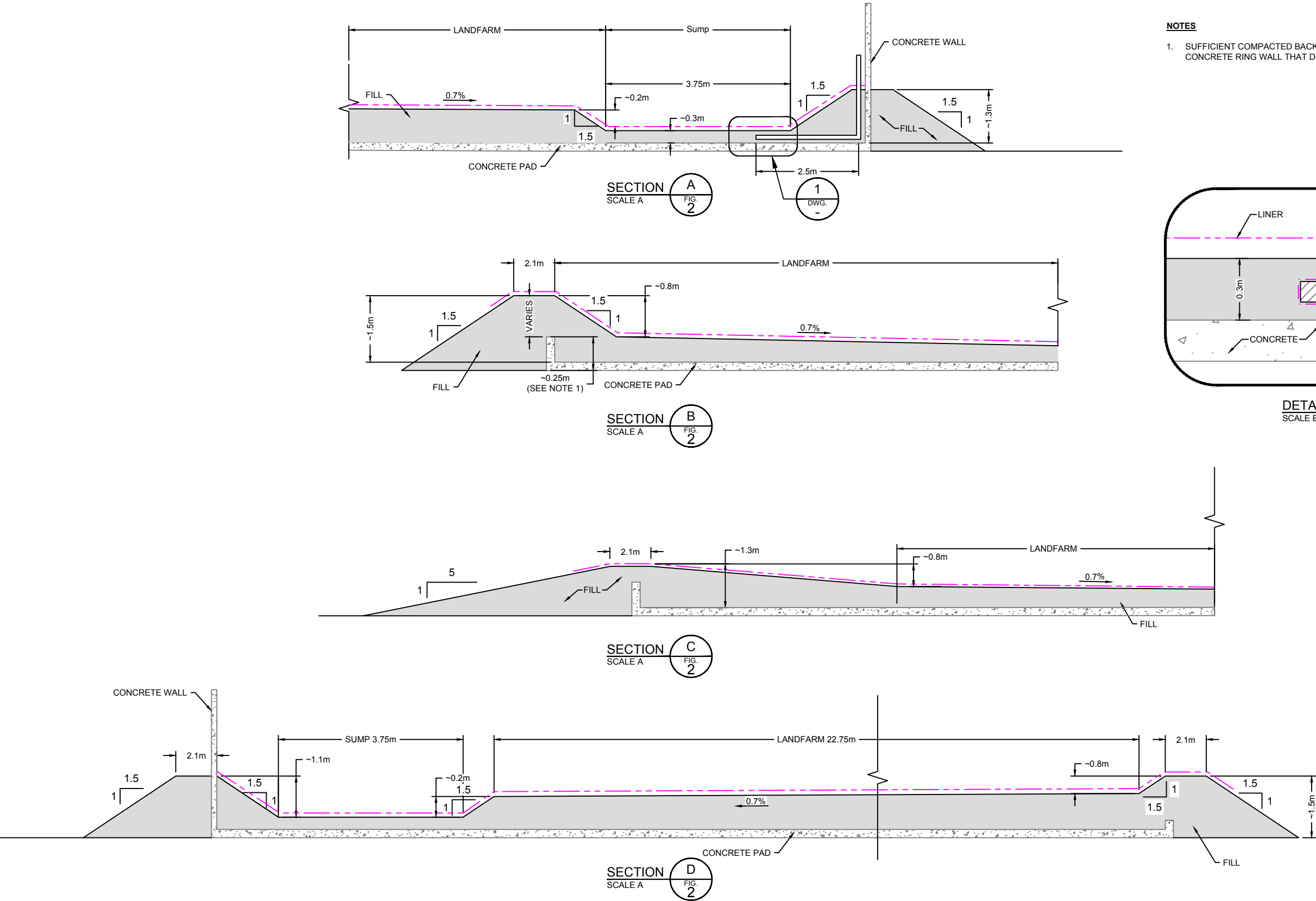
- THE DRAWINGS SHALL BE READ AND EXAMINED IN CONJUNCTION WITH THE LUPIN LANDFARM AS-BUILT LETTER (931-1)
- THE AS-BUILT SURVEY IS COMPLETED BY USING A SURVEYOR'S LEVEL FOR ELEVATION AND TAPE MEASURE FOR PLANAR MEASUREMENTS, WITH ACCURACY OF  $\pm 0.3\text{M}$ . NORTHING AND EASTING COORDINATES ARE NOT RECORDED.
- ALL THE CRACKS, DRAINAGE CHANNELS AND OUTLETS, AND DOORWAYS WITHIN THE DECOMMISSIONED PASTE BACKFILL PLANT'S CONCRETE FOUNDATION ARE SEALED USING REINFORCED CONCRETE OR GROUT.
- THE LANDFARM BERM AND SUBGRADE WERE CONSTRUCTED FROM THE WELL GRADED ESKER SAND AVAILABLE ON SITE. ALL COARSE PARTICLES ( $>5\text{cm}$ ) WERE REMOVED FROM THE SUBGRADE UNDERNEATH THE LINER.
- A LEAKAGE DETECTION PIPE WAS INSTALLED IN THE SOUTHEAST CORNER OF THE LANDFARM. INSTALLATION AND MONITORING DETAILS ARE PROVIDED IN THE LUPIN LANDFARM AS-BUILT LETTER AND LANDFARM OPERATIONAL STRATEGY MEMORANDUM.
- THE LINER IS A LAYFIELD EN1040, PREFABRICATED TO FIT THE LANDFARM IN ITS ENTIRETY AND MANUALLY DEPLOYED OVER THE FINISHED LANDFARM BERM AND FLOOR.
- PHOTOGRAPHS WERE TAKEN BY LMI AT KEY HOLD POINTS OF CONSTRUCTION AND PROVIDED THEM TO NORWEST FOR REVIEW.
- NORWEST REPRESENTATIVE HAS COMPLETE AN ON-SITE INSPECTION UPON WORK COMPLETION.



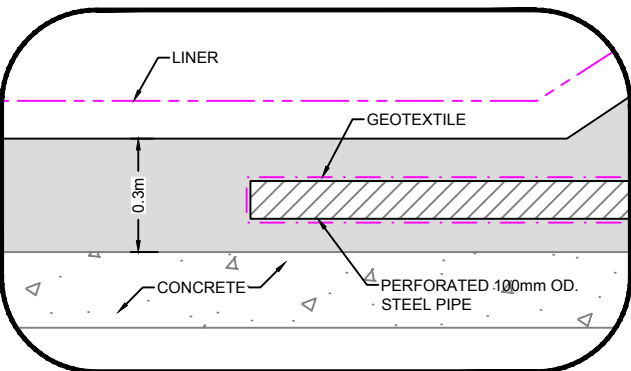
SCALES INDICATED BASED ON AN 11"x17" PLOT CONFIGURATION

REV.	DATE	DESCRIPTION	SC	AT	JK	SE
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1	2016-09-14	AS-BUILT CONDITIONS	SC	AT	JK	SE

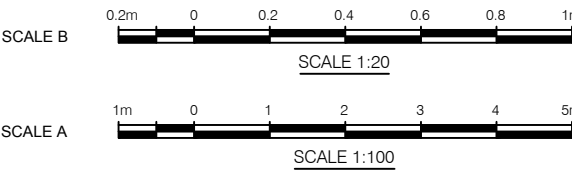
LUPIN MINE INC.			
LANDFARM PROJECT			
AS-BUILT LANDFARM FILL PLAN VIEW			
SCALE:	AS SHOWN		
DATE:	2016-09-14		
CO-ORD. SYS.:	UTM NAD83 ZONE 12N		
DRWN BY:	SC		
DSGN BY:	AT		
REVD BY:	JK		
APP'D BY:	SE		
PROJECT NO.:		DWG. NO.:	REV.:
931-1		02	0



- NOTES**
- SUFFICIENT COMPACTED BACKFILL SHALL BE PLACED OVER THE CONCRETE RING WALL THAT DOES NOT MEET THE MINIMUM 1m HEIGHT.



- LEGEND**
- FUTURE LINER 1040N
  - CONCRETE FOUNDATION AND RING WALL
  - FILL



0

2016-09-14

AS-BUILT CONDITIONS

SC

AT

JK

SE

REV.

DATE

DESCRIPTION

DWN

DSG

CHK

APR

LUPIN MINE INC.

LANDFARM PROJECT

SCALE:

AS SHOWN

DATE:

2016-09-14

CO-ORD. SYS.:

UTM NAD83 ZONE 12N

DRWN BY:

SC

DSGN BY:

AT

REVD BY:

JK

APPD BY:

SE

AS-BUILT LANDFARM

TYPICAL SECTIONS

NORWEST

931-1

03

0

PROJECT NO.:

DWG. NO.:

REV.:

**Attachment C**

**Geosynthetic Liner Specification and Data Sheets**



US 866-375-9749  
CAN 800-841-0836

## Enviro Liner 1000N - Geomembrane

### 1. Product Description

Enviro Liner® 1000N (EL1000N) series is a specialized polyethylene flexible membrane lining material that has been developed for the containment of drilling fluids and chemicals associated with hydraulic fracturing operations. EL1000N can also be used to line short term oil pits (up to 5 years). EL1000N comes with a light grey color top skin layer and a black layer on the bottom. The grey face helps to identify potential sheet damage and leaks (If the grey outer skin layer is damaged it will normally show the black core layer). The grey face also reflects sunlight better than the black face, helping reduce wrinkles caused by sheet thermal expansion and contraction. EL1000N is available in thicknesses of 30 and 40 mils. Enviro Liner® 1000N is a flexible membrane liner that is flexible enough to be factory fabricated so that it can be delivered in one large panel with no seaming required on site.

### 2. Technical Data

Materials information is on page 2.

### 3.

### 4. Availability and Cost

Available from Layfield or distributors. Call  
425-254-1075 Pacific time  
780-453-6731 Mountain time, or  
905-761-9123 Eastern time

### 5. Manufactured By

Layfield USA Corp.  
Layfield Canada Ltd.

### 6. Warranty

Products sold will meet Layfield's published specifications. Any extended warranty required by the buyer must be negotiated at the time of order. Extended warranties may be available on this product and may be at extra cost. Full warranty details are available from Layfield.

### 7. Maintenance

Geomembranes should be inspected at least once per year for damage, stress, or any other detrimental condition. The entire containment area should be visually inspected annually. Layfield provides geomembrane maintenance services on request.

### 8. Filing Systems

<https://www.layfieldgroup.com/Geosynthetics/Geomembrane-Liners/Enviro-Liner-1000N.aspx>

**9.**

10 Apr 2013	Enviro Liner® 1000N Series Typical Properties		
Style	ASTM	1030N	1040N
Style		30	40
Tensile Strength at Break	D638	114 ppi 21 N/mm	154 ppi 28.5 N/mm
Elongation	D638	800%	800%
Tear Resistance	D1004	16 lbs 71 N	22 lbs 98 N
Puncture Resistance	D4833	45 lbs 200 N	60 lbs 270 N
Low Temperature Impact Resistance	D1790	-40°F -40°C	-40°F -40°C
Maximum Continuous temperature <sup>1</sup>		70°C 158°F	70°C 158°F
Dimensional Stability	D1204 Max Chng	<2.0%	<2.0%
Water Vapor Permeability	F 1249	3 x 10 <sup>-13</sup> cm/sec	3 x 10 <sup>-13</sup> cm/sec

<sup>1</sup> Please contact Layfield for chemical compatibility at elevated temperatures

**10.**

10 Apr 2013	Enviro Liner® 1000N Shop Seam Strengths		
Style	ASTM	1030N	1040N
Heat Bonded Seam Strength	D6392 25.4 mm (1") Strip	36 ppi 6.3 N/mm	48 ppi 8.4 N/mm
Heat Bonded Peel Adhesion Strength	D6392 25.4 mm (1") Strip	FTB 29 ppi 5.1 N/mm	FTB 39 ppi 6.8 N/mm

**11.**

10 Apr 2013	Enviro Liner® 1000N Field Seam Strengths		
Style	ASTM	1030N	1040N
Heat Bonded Seam Strength	D6392 25.4 mm (1") Strip	FTB 29 ppi 5.1 N/mm	FTB 39 ppi 6.8 N/mm
Heat Bonded Peel Adhesion Strength	D6392 25.4 mm (1") Strip	FTB 25 ppi 4.4 N/mm	FTB 33 ppi 5.8 N/mm



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**APPENDIX B**

**COST TO MOVE CONTAMINATED SOIL TO LANDFARM**

Contaminated Soil from Main Tank to Landfarm and  
Contaminated Soil from the Satellite Tank Farm to the Landfarm

Site Contaminated Soil to Landfarm					Labor		Equipment		Total Cost
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	
Oil Removal and Placement		10,000 m^3	ROM soil from main tank farm to landfarm						
Load	1	992D Excavator	148	148	\$43.98	\$6,497	\$245.00	\$36,196	\$42,693
Haul and Dump	1	40t Toro	148	148	\$41.81	\$6,177	\$22.48	\$3,321	\$9,498
Labourers to spread in 3 cells	18		12	443	\$43.98	\$19,491			\$19,491
Sub-total						\$32,164		\$39,517	\$71,681
Site Contaminated soil									
				738.69	\$32,164		\$39,517		\$71,681

satellite tank farm to Landfarm					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Soil Placement</b>		250	m^3 contaminated soil			mat'l to move from satellite farm area to landfarm.			
Haul and Dump	1	3Cx JCB	18	18	\$41.81	\$772	\$22.48	\$415	\$1,187
Material spreaders	2		12	24	\$43.98	\$1,055			\$1,055
Sub-total						\$1,828		\$415	\$2,243
<b>STF to Landfill</b>				42.467		\$1,828		\$415	\$2,243



**APPENDIX C**

**LMI RATES AND PRODUCTIVITY**

PAG to Shaft, PAG to UG, PAG to Tails, Tailings Cover

**LMI Labor Summary** (based on 2014 take-off quantities)

## LMI Rate Structure

Designation	2014 Rate	2015 Rate	2016 Rate
Electrician-F/M	\$54.43	\$54.43	\$51.71
Electrician-J/M	\$49.17	\$49.17	\$46.71
Ironworker-F/M	\$53.43	\$53.43	\$50.76
Ironworker-J/M	\$47.95	\$47.95	\$45.55
Labourer-F/M	\$43.38	\$43.38	\$41.21
Labourer-J/M	\$39.77	\$39.77	\$37.78
Mechanic (ME2)	\$40.41	\$40.41	\$38.39
Mechanic (ME2)	\$40.41	\$40.41	\$38.39
Serviceman	\$33.92	\$33.92	\$32.22
Millwright-F/M	\$56.55	\$56.55	\$53.72
Millwright-J/M	\$51.06	\$51.06	\$48.51
Operator-F/M	\$51.79	\$51.79	\$49.20
Operator-R/T	\$47.36	\$47.36	\$44.99
Operator-Truck	\$44.01	\$44.01	\$41.81
Operator-Equip	\$46.29	\$46.29	\$43.98
Operator-J/M	\$50.64	\$50.64	\$48.11
Pipefitter-F/M	\$56.37	\$56.37	\$53.55
Pipefitter-J/M	\$50.86	\$50.86	\$48.32

**Equipment Charge-out Rates**

Cat 777	\$187.00
Bkho 375L	\$179.20
7500 ftlb	\$44.05
Cat 992D	\$245.00
Cat D10N	\$185.26
110 Ton	\$185.10
40t Toro	\$22.48
LT 9000	\$28.67
Volvo 5350B	\$77.23
D85E	\$34.65
D8K	\$34.65
966E FEL	\$16.57
RT522	\$111.86

## PAG Rock

Total 0 100,000

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	100,000	m <sup>3</sup>	
Total time required to load material:	314	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	14
		@ 4.3 weeks/mth =	0.5 months
		@ 3 mths/season =	0.2 seasons

Capacity Volvo Truck	35	m <sup>3</sup> (crushed rock)	
Fill factor	85%		
Load factor	85%		
Calculated Load	25.3	m <sup>3</sup> (crushed rock)	
Cycle time	18	minutes/cycle =	3.33 loads per hour max
		@ 50 min/hr =	2.78 loads per hour assumed
Calculated productivity:	70	m <sup>3</sup> per hour, per truck	
Number trucks required:	1.00	trucks, rounded up =	1 trucks
Total trucking time required:	1,424	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	65
		@ 4.3 weeks/mth =	2.1
		@ 3 mths/season =	0.7

Therefore One season will Complete the movement required.

SHAFT DUMP AREAS					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Rock Placement</b>		100,000	m^3ROM mat'l	to move from mill area to shaft area.					
Rip/ Stockpile	1	D10N Dozer	100	100	\$43.98	\$4,398	\$185.26	\$18,526	\$22,924
	1	D8K Dozer	100	100	\$43.98	\$4,398	\$34.65	\$3,465	\$7,863
Load	1	992D Loader	314	314	\$43.98	\$13,796	\$245.00	\$76,863	\$90,659
Haul and Dump	1	volvo	1424	1424	\$41.81	\$59,521	\$77.23	\$109,947	\$169,468
spotter	2		633	1266	\$32.22	\$40,796			\$40,796
safety	2		634	1268	\$51.71	\$65,566			\$65,566
Sub-total						\$188,474		\$208,801	\$397,275
<b>PAG- Shaft Area</b>				4471.4		\$188,474		\$208,801	\$397,275

## PAG Rock

Total 0 200,000  
Dump to open stopes to average of 500m UG- Maximum haul distance 4.2km.

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	200,000	m <sup>3</sup>	
Total time required to load material:	627	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	29
		@ 4.3 weeks/mth =	0.9 months
		@ 3 mths/season =	0.3 seasons

Capacity 40t UG Truck	40	m <sup>3</sup> (crushed rock)	
Fill factor	95%		
Load factor	95%		
Calculated Load	36.1	m <sup>3</sup> (crushed rock)	
Cycle time	32	minutes/cycle =	1.88 loads per hour max
		@ 50 min/hr =	1.56 loads per hour assumed
Calculated productivity:	56	m <sup>3</sup> per hour, per truck	
Number trucks required:	2.00	trucks, rounded up =	2 trucks
Total trucking time required:	1,773	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	81
		@ 4.3 weeks/mth =	2.7
		@ 3 mths/season =	0.9

Therefore One season will Complete the movement required.

PAG TO UG					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Rock Placement</b>		200,000	m^3 ROM mat'l to move from mill area to tails area.						
Rip/ Stockpile	1	D10N Dozer	100	100	\$43.98	\$4,398	\$185.26	\$18,526	\$22,924
	1	D8K Dozer	100	100	\$43.98	\$4,398	\$34.65	\$3,465	\$7,863
Load	1	992D Loader	627	627	\$43.98	\$27,592	\$245.00	\$153,725	\$181,318
Haul and Dump	2	40t Toro	1773	3546	\$41.81	\$148,244	\$22.48	\$79,707	\$227,952
UG spotters	8		800	6400	\$43.98	\$281,443			\$281,443
safety	2		800	1600	\$51.71	\$82,734			\$82,734
Sub-total						\$548,809		\$255,424	\$804,233
PAG UG1				12373		\$548,809		\$255,424	\$804,233

## PAG Rock

Total 0 100,000

### Productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (crushed rock)	
Fill factor	90%		
Load factor	85%		
Calculated Load	7.7	m <sup>3</sup> per bucket (crushed rock)	
Cycle time	1.20	minutes/cycle =	50 loads per hour max
		@ 50 min/hr =	41.7 loads per hour assumed
Calculated productivity:	319	m <sup>3</sup> per hour	
Rock required to move:	100,000	m <sup>3</sup>	
Total time required to load material:	314	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	14
		@ 4.3 weeks/mth =	0.5 months
		@ 3 mths/season =	0.2 seasons

Capacity Cat 777 Truck	51.5	m <sup>3</sup> crushed rock)	
Fill factor	85%		
Load factor	75%		
Calculated Load	32.8	m <sup>3</sup> (crushed rock)	
Cycle time	27	minutes/cycle =	2.22 loads per hour max
		@ 50 min/hr =	1.85 loads per hour assumed
Calculated productivity:	61	m <sup>3</sup> per hour, per truck	
Number trucks required:	1.00	trucks, rounded up =	1 trucks
Total trucking time required:	1,645	hours	
		Hours per shift	11
		Shifts per day	2
		Total days =	75
		@ 4.3 weeks/mth =	2.5
		@ 3 mths/season =	0.8

Therefore One season will Complete the movement required.



PAG to Tails					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Rock Placement</b>		100,000	m^3 ROM mat'l to move from mill area to tails area.						
Rip/ Stockpile	1	D10N Dozer	200	200	\$43.98	\$8,795	\$185.26	\$37,052	\$45,847
	1	D8K Dozer	200	200	\$43.98	\$8,795	\$34.65	\$6,930	\$15,725
Load	1	992D Loader	314	314	\$43.98	\$13,796	\$245.00	\$76,863	\$90,659
Haul	1	Cat 777 Trucks	1645	1645	\$41.81	\$68,767	\$187.00	\$307,573	\$376,340
Place	1	Cat D85E Dozer	314	314	\$43.98	\$13,796	\$34.65	\$10,871	\$24,667
Spotters	2		1645	3290	\$32.22	\$106,017			\$106,017
safety	2		1646	3292	\$51.71	\$170,224			\$170,224
Sub-total						\$219,967		\$439,288	\$659,255
PAG-Tailings Containment Area				9254.2		\$219,967		\$439,288	\$659,255

## Tailing Containment Area

Cell	Depth m	Area m <sup>2</sup>	Volume m <sup>3</sup>
5	1.20	129,000	154,800
3	1.20	71,100	85,320
Total		200,100	240,120

## Using PCL productivity calculations:

Capacity Cat 992D Loader	10.0	m <sup>3</sup> per bucket (heaped esker sand)
Fill factor	90%	
Load factor	90%	
Calculated Load	8.1	m <sup>3</sup> per bucket (heaped esker sand)
Cycle time	0.75	minutes/cycle = 80 loads per hour max
		@ 50 min/hr = 66.7 loads per hour assumed
Calculated productivity:	540	m <sup>3</sup> per hour
Esker material required to move:	240,120	m <sup>3</sup>
Total time required to load material:	445	hours
	Hours per shift	11
	Shifts per day	2
	Total days =	20
	@ 4.3 weeks/mth =	0.7 months
	@ 3 mths/season =	0.2 seasons

Capacity Cat 777 Truck	51.5	m <sup>3</sup> (heaped esker sand)
Fill factor	90%	
Load factor	85%	
Calculated Load	39.4	m <sup>3</sup> (heaped esker sand)
Cycle time	28.6	minutes/cycle = 2.10 loads per hour max
		@ 50 min/hr = 1.75 loads per hour assumed
Calculated productivity:	69	m <sup>3</sup> per hour, per truck
Number trucks required:	2.00	trucks, rounded up = 2 trucks
Total trucking time required:	1,743	hours
	Hours per shift	11
	Shifts per day	2
	Total days =	79
	@ 4.3 weeks/mth =	2.6
	@ 3 mths/season =	0.9

Therefore One season will Complete the Cover required.

TAILINGS CONTAINMENT AREA					Labor		Equipment		Total
Desc	Quan.	Item	Hours	Hrs Ttl	\$/hr	Cost	\$/hr	Cost	Cost
<b>Granular Cover</b>		240,120	m^3 esker mat'l to move from Fingers Lake to tails area.						
Stockpiling									
Strip / Stockpile	1	D10N Dozer	200	200	\$43.98	\$8,795	\$185.26	\$37,052	\$45,847
	1	D8K Dozer	200	200	\$43.98	\$8,795	\$34.65	\$6,930	\$15,725
Load	1	992D Loader	445	445	\$43.98	\$19,554	\$245.00	\$108,943	\$128,498
Haul	2	Cat 777 Trucks	1743	3486	\$41.81	\$145,757	\$187.00	\$651,925	\$797,682
Place	1	Cat D85E Dozer	445	445	\$43.98	\$19,554	\$34.65	\$15,408	\$34,962
spotters	2		1743	3486	\$32.22	\$112,340		\$0	\$112,340
Sub-total						\$314,797		\$820,258	\$1,135,054
<b>Fingers Lake Esker</b>		Reclaim - contour and grade quarry							
Sub-total	1	D10N Dozer	2400	2400	\$43.98	\$105,541	\$185.26	\$444,624	\$550,165
Tailings Containment Area				10662		\$420,338		\$1,264,882	\$1,685,219

**APPENDIX D**

**ENGINEERING**

Engineering Estimate

	quantity	Rate	cost	
Lanfarm Design	1	60,000	\$ 60,000.00	Completed
Spillway Design	1	60,000	\$ 60,000.00	
Contracts	1	200000	\$ 200,000.00	
Tailings final	1	60000	\$ 60,000.00	
Esa Final	1	80,000	\$ 80,000.00	
Misc incl seep sampling /analysis for ESA			\$ 60,000.00	
Final Closure Geotech report			\$ 25,000.00	
			\$ 545,000.00	

**APPENDIX E**

**ASBESTOS RESULTS**

### AANDC 3.2 Asbestos

*AANDC: Background - Given the age of the structures, there is concern that asbestos could be present at the site (i.e., insulation, buildings, etc.) and if this was the case, the reclamation liability could increase. An investigation should be completed to confirm there is no asbestos present on the site. Should asbestos be present, a remedial cost estimate for mitigation and cleanup should be completed and the reclamation cost estimate should be adjusted accordingly.*

#### **LMI Response:**

Sufficient asbestos inventories have been taken at site in order for LMI to be confident that it has appropriately been accounted for in its reclamation and closure planning. In 2006 an asbestos survey was conducted by Morrow Environmental Consultants in anticipation of the demolition of buildings on site. The survey identified a number of the buildings that require specific procedures, prior to demolition, for the handling, abatement, demolition and disposal of asbestos materials. The presence of asbestos materials as identified in that report was communicated to the contractors providing quotes for demolition so that the rates reflect these procedures.

A more recent investigation was completed by Industrial Hygiene experts with Arctic Response at the Lupin site in August 2012. The assessment was completed in order to identify the presence of asbestos in materials not previously sampled and to recommend safe work procedures during the refurbishment of the site. Please see the table below for the results.

Sample #	Sample location	Material	Asbestos content
A-1	CEILING TILE BATHROOM NEAR THE RECOVERY PLANT VAULT ROOM	acoustical ceiling tile	< 1%
A-2	FLOOR TILE FROM ENTRANCE TO LABS	vinyl sheet flooring	< 1%
A-3	CEILING TILE 2 FLOOR OFFICE OUTSIDE RECOVERY	acoustical ceiling tile	< 1%
A-4	CEILING TILE UPSTAIRS LOCKER ROOM	acoustical ceiling tile	< 1%
A-5	TILE - BATH FLOOR-RECOVERY BUILDING BACK ROOMS	vinyl floor tile	< 1%

**NOTE: The Federal Hazardous Product Act (HPA) defines asbestos containing materials as one that contains more than 1% asbestos fiber by weight or content.**

**The samples are all non asbestos containing**

*AANDC: Recommendation - AANDC recommends that the licence require LMI to conduct an investigation to confirm whether or not asbestos is present on site.*

#### **LMI Response:**

LMI has conducted investigations to confirm whether or not asbestos is present on site and the need for special handling of certain materials has been taken into consideration in the demolition plans.