



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo Bay

Project
ID:
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 180333
Control Number:
Date Received: Jul 08, 2002
Date Reported: Jul 15, 2002
Report Number: 277733

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Metals Dissolved

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Sulphur	mg/L	4.17	4.18	10.000	0.024	✓

Material Used: Edmonton Duplicate
Date Acquired: Jul 09, 2002
Acquired By: Jesse Dang

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Sulphur	mg/L	20.0	20.000	18.000	22.000	✓

Material Used: Metals High
Date Acquired: Jul 09, 2002
Acquired By: Jesse Dang

Sulphur	mg/L	0.193	0.200	0.160	0.240	✓
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Material Used: Metals Low
Date Acquired: Jul 09, 2002
Acquired By: Jesse Dang



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Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Cyanide	mg/L	<0.001	0.00000	-0.00100	0.00100	✓
Material Used:	Edmonton Method Blank					
Date Acquired:	Jul 11, 2002					
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	1.21	1.20	10.00	0.10	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jul 09, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	3.00	3.00	2.70	3.30	✓
Cyanide	mg/L	0.075	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Jul 11, 2002					
Acquired By:						
Ammonium - N	mg/L	0.78	0.800	0.720	0.880	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Jul 11, 2002					
Acquired By:						



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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	7	7	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jul 09, 2002					
Acquired By:	Matt Cummings					



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Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.06	8.06	10.00	0.10	✓
Conductivity	dS/m	12.0	12.1	10.000	0.002	✓
Calcium	mg/L	5.0	5.0	10.0	0.6	✓
Magnesium	mg/L	1.85	1.81	10.00	0.15	✓
P-Alkalinity	mg/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mg/L	608	613	10.0	5.0	✓

Material Used: Edmonton Duplicate
Date Acquired: Jul 09, 2002
Acquired By: Shane Knapp



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Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Magnesium	mg/L	49.5	50.00	45.00	55.00	✓
Material Used:	Metals High					
Date Acquired:	Jul 09, 2002					
Acquired By:	Jesse Dang					
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.54	0.500	0.400	0.600	✓
Material Used:	Metals Low					
Date Acquired:	Jul 09, 2002					
Acquired By:	Jesse Dang					
pH		9.00	9.18	8.73	9.67	✓
Conductivity	dS/m	2.81	2.765	2.680	2.840	✓
P-Alkalinity	mq/L	523		490	557	✓
T-Alkalinity	mq/L	998	1000	972	1035	✓
Material Used:	Water High					
Date Acquired:	Jul 10, 2002					
Acquired By:						
pH		6.85	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
P-Alkalinity	mq/L	64		46.8	71.0	✓
T-Alkalinity	mq/L	129	125	121	133	✓
Material Used:	Water Low					
Date Acquired:	Jul 09, 2002					
Acquired By:	Shane Knapp					



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Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.0000	-0.0312	0.2000	✓
Iron	mg/L	<0.003	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.05	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.0002	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.004	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.008	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Jul 09, 2002
Acquired By:

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	139	135	10.0	0.6	✓
Iron	mg/L	1.00	0.956	10.000	0.009	✓
Magnesium	mg/L	362	353	10.00	0.18	✓
Manganese	mg/L	0.107	0.0974	10.0000	0.0006	✓
Potassium	mg/L	122	120	10.0	1.2	✓
Silicon	mg/L	2.68	2.74	10.000	0.012	✓
Sodium	mg/L	3080	3100	10.0	1.2	✓
Sulphur	mg/L	207	200	10.000	0.027	✓

Material Used: Edmonton Duplicate
Date Acquired: Jul 09, 2002
Acquired By: Stef Pavlyshyn



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	1.1	1.000	0.900	1.100	✓
Iron	mg/L	0.539	0.500	0.478	0.552	✓
Magnesium	mg/L	5.14	5.00	4.48	5.19	✓
Manganese	mg/L	0.0501	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.7	5.00	4.30	5.06	✓
Silicon	mg/L	1.80	2.000	1.700	2.160	✓
Sodium	mg/L	5.0	5.00	4.08	5.25	✓
Sulphur	mg/L	2.00	2.000	1.730	2.110	✓

Material Used: Edmonton Digestion Check
Date Acquired: Jul 09, 2002
Acquired By: Jesse Dang

Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Iron	mg/L	5.35	5.000	4.500	5.500	✓
Magnesium	mg/L	52.1	50.00	45.00	55.00	✓
Manganese	mg/L	0.534	0.5000	0.4500	0.5500	✓
Potassium	mg/L	49.0	50.0	45.0	55.0	✓
Silicon	mg/L	23.1	20.000	16.000	24.000	✓
Sodium	mg/L	51.0	50.0	45.0	55.0	✓
Sulphur	mg/L	20.9	20.000	18.000	22.000	✓

Material Used: Metals High
Date Acquired: Jul 09, 2002
Acquired By: Jesse Dang



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Iron	mg/L	0.054	0.0500	0.0400	0.0600	✓
Magnesium	mg/L	0.53	0.500	0.400	0.600	✓
Manganese	mg/L	0.0047	0.00500	0.00400	0.00600	✓
Potassium	mg/L	0.5	0.500	0.400	0.600	✓
Silicon	mg/L	0.237	0.200	0.160	0.240	✓
Sodium	mg/L	0.6	0.500	0.400	0.600	✓
Sulphur	mg/L	0.214	0.200	0.160	0.240	✓
Aluminum	ug/L	214	200	180	220	✓
Antimony	ug/L	50.2	50.0	45.0	55.0	✓
Arsenic	ug/L	52.5	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.0	5.00	4.50	5.50	✓
Bismuth	ug/L	51.6	50.0	45.0	55.0	✓
Boron	ug/L	193	200	180	220	✓
Cadmium	ug/L	4.80	5.00	4.50	5.50	✓
Chromium	ug/L	9.6	10.00	9.00	11.00	✓
Cobalt	ug/L	9.6	10.00	9.00	11.00	✓
Copper	ug/L	11	10.00	9.00	11.00	✓
Lead	ug/L	20.1	20.0	18.0	22.0	✓
Lithium	ug/L	5	5.00	4.50	5.50	✓
Molybdenum	ug/L	10	10.00	9.00	11.00	✓
Nickel	ug/L	10.1	10.00	9.00	11.00	✓
Selenium	ug/L	51.2	50.0	45.0	55.0	✓
Silver	ug/L	9.8	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	51.2	50.00	45.00	55.00	✓
Titanium	ug/L	4.8	5.00	4.50	5.50	✓
Uranium	ug/L	515	500.0	450.0	550.0	✓
Vanadium	ug/L	9.6	10.00	9.00	11.00	✓
Zinc	ug/L	10	10.00	9.00	11.00	✓
Zirconium	ug/L	9	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Jul 09, 2002
Acquired By: Darren Crichton



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	20	20.0	18.0	22.0	✓
Antimony	ug/L	4.9	5.00	4.50	5.50	✓
Arsenic	ug/L	5.2	5.00	4.50	5.50	✓
Barium	ug/L	<1	0.500	0.450	0.550	✓
Beryllium	ug/L	0.5	0.500	0.450	0.550	✓
Bismuth	ug/L	5.1	5.00	4.50	5.50	✓
Boron	ug/L	21	20.0	18.0	22.0	✓
Cadmium	ug/L	0.48	0.500	0.450	0.550	✓
Chromium	ug/L	1.1	1.000	0.900	1.100	✓
Cobalt	ug/L	0.9	1.000	0.900	1.100	✓
Copper	ug/L	1	1.000	0.900	1.100	✓
Lead	ug/L	2.0	2.00	1.80	2.20	✓
Lithium	ug/L	<1	0.500	0.450	0.550	✓
Molybdenum	ug/L	1	1.000	0.900	1.100	✓
Nickel	ug/L	1.0	1.000	0.900	1.100	✓
Selenium	ug/L	4.9	5.00	4.50	5.50	✓
Silver	ug/L	0.9	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	4.99	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	51.5	50.0	45.0	55.0	✓
Vanadium	ug/L	0.9	1.000	0.900	1.100	✓
Zinc	ug/L	<1	1.000	0.900	1.100	✓
Zirconium	ug/L	<1	1.000	0.900	1.100	✓

Material Used: Metals Trace
Date Acquired: Jul 09, 2002
Acquired By: Darren Crichton