

June 18, 2001 - 0925 14



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

4 of 15

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	0.0	0.000000	-0.000980	0.001300	✓
Phosphorus	mg/L	0.0	0.000000	-0.00260	0.00300	✓
Phosphate	mg/L	0.05	0.0000	-0.0500	0.0500	✓
Material Used:	Edmonton Method Blank					
Date Acquired:	Jun 20, 2001					
Acquired By:	Matt Cummings					

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Kjeldahl Nitrogen	mg/L	2.80	3.03	10.00	0.30	✓
Phosphorus	mg/L	0.26	0.24	10.00	0.05	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jun 19, 2001					
Acquired By:	Brent Wasylynchuk					

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	30.9	30.00	27.00	33.00	✓
Ammonium - N	mg/L	3.28	3.00	2.70	3.30	✓
Phosphorus	mg/L	4.18	4.00	3.60	4.40	✓
Phosphate	mg/L	4.36	4.00	3.60	4.40	✓
Material Used:	Water High					
Date Acquired:	Jun 20, 2001					
Acquired By:	Matt Cummings					

Kjeldahl Nitrogen	mg/L	4.85	5.00	4.50	5.50	✓
Ammonium - N	mg/L	0.80	0.800	0.720	0.880	✓
Phosphorus	mg/L	0.42	0.400	0.360	0.440	✓
Phosphate	mg/L	0.43	0.400	0.360	0.440	✓
Material Used:	Water Low					
Date Acquired:	Jun 20, 2001					
Acquired By:	Matt Cummings					



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page: 5 of 15

Aggregate Organic Constituents

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Biochemical Oxygen Demand	mg/L	207	200	166	211	✓
Material Used:	Water High					
Date Acquired:	Jun 20, 2001					
Acquired By:	Gordon Grensman					

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	238	252	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jun 19, 2001					
Acquired By:	Trisha Perverseff					



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project
ID: Requisition No. L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 123542
Control Number:
Date Received: Jun 18, 2001
Date Reported: Jul 06, 2001
Report Number: 184744

Page: 6 of 15

Routine Water

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓
Nitrite - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓
Material Used: Edmonton Method Blank						
Date Acquired: Jul 03, 2001						
Acquired By: Jesse Dang						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.87	7.86	10.00	0.10	✓
Calcium	mg/L	127	127	10.0	0.6	✓
Magnesium	mg/L	48.3	48.8	10.00	0.15	✓
Nitrate - N	mg/L	0.055	0.056	10.000	0.010	✓
Nitrite - N	mg/L	<0.002	0.0	10.000	0.010	✓
Material Used: Edmonton Duplicate						
Date Acquired: Jun 19, 2001						
Acquired By:						



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

7 of 15

Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mcg/L	0.1	0.1000	0.0800	0.1200	✓
Magnesium	mcg/L	0.50	0.500	0.400	0.600	✓
Material Used:	1303 - Metals Low					
Date Acquired:	Jul 04, 2001					
Acquired By:	Jodi Johnston					
Calcium	mcg/L	9.8	10.00	9.00	11.00	✓
Magnesium	mcg/L	50.7	50.00	45.00	55.00	✓
Material Used:	1304 - Metals High					
Date Acquired:	Jul 04, 2001					
Acquired By:	Jodi Johnston					
pH		9.17	9.18	9.08	9.26	✓
Nitrate - N	mg/L	9.93	10.000	9.000	11.000	✓
Nitrite - N	mg/L	9.96	10.000	9.000	11.000	✓
P-Alkalinity	mg/L	510		472	554	✓
T-Alkalinity	mg/L	1010	1000	900	1100	✓
Material Used:	Water High					
Date Acquired:	Jul 03, 2001					
Acquired By:	Trisha Perverseff					
pH		6.87	6.86	6.83	6.97	✓
Nitrate - N	mg/L	0.538	0.500	0.400	0.600	✓
Nitrite - N	mg/L	0.503	0.500	0.400	0.600	✓
P-Alkalinity	mg/L	62		40.8	73.6	✓
T-Alkalinity	mg/L	128	125	113	138	✓
Material Used:	Water Low					
Date Acquired:	Jul 03, 2001					
Acquired By:	Trisha Perverseff					



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

8 of 15

Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.026	0.00000	-0.00650	0.03290	✓
Antimony	mg/L	0.0	0.00000	-0.00980	0.00910	✓
Arsenic	mg/L	0.0	0.000000	-0.000200	0.000200	✓
Barium	mg/L	0.0002	0.000000	-0.000300	0.000600	✓
Beryllium	mg/L	0.0	0.000000	-0.000600	0.000600	✓
Bismuth	mg/L	-0.000	0.0000	-0.0176	0.0174	✓
Boron	mg/L	0.016	0.0000	-0.0272	0.0534	✓
Cadmium	mg/L	0.0	0.000000	-0.000300	0.000600	✓
Calcium	mg/L	0.0	0.0000	-0.0312	0.0538	✓
Chromium	mg/L	-0.0006	0.00000	-0.00130	0.00180	✓
Cobalt	mg/L	0.0	0.00000	-0.00110	0.00110	✓
Copper	mg/L	0.000	0.00000	-0.00280	0.00390	✓
Iron	mg/L	0.061	0.0000	-0.0149	0.0290	✓
Lead	mg/L	-0.000	0.00000	-0.00590	0.00780	✓
Lithium	mg/L	-0.000	0.00000	-0.00210	0.00240	✓
Magnesium	mg/L	0.01	0.0000	-0.0305	0.0426	✓
Manganese	mg/L	0.0	0.000000	-0.000700	0.001200	✓
Molybdenum	mg/L	0.000	0.00000	-0.00250	0.00280	✓
Nickel	mg/L	0.0	0.00000	-0.00400	0.00370	✓
Phosphorus	mg/L	0.01	0.0000	-0.0227	0.0253	✓
Potassium	mg/L	0.0	0.0000	-0.102	0.150	✓
Selenium	mg/L	0.001	0.0000	-0.0284	0.0268	✓
Silicon	mg/L	0.026	0.0000	-0.0435	0.0933	✓
Silver	mg/L	0.0	0.00000	-0.00200	0.00200	✓
Sodium	mg/L	0.0	0.0000	-0.194	0.318	✓
Strontium	mg/L	0.0	0.000000	-0.000100	0.000300	✓
Sulphur	mg/L	0.016	0.0000	-0.0333	0.0447	✓
Thallium	mg/L	-0.001	0.0000	-0.0157	0.0175	✓
Tin	mg/L	0.001	0.00000	-0.00730	0.00970	✓
Titanium	mg/L	-0.0020	0.00000	-0.00580	0.00570	✓
Vanadium	mg/L	-0.002	0.00000	-0.00450	0.00310	✓
Zinc	mg/L	0.0018	0.00000	-0.00530	0.01220	✓

Material Used: Edmonton Method Blank

Date Acquired: Jun 20, 2001

Acquired By: Jodi Johnston



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page: 9 of 15

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
------------	-------	------------	------------	----------------	-------------------	-----------



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

10 of 15

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	mg/L	0.025	0.033	10.000	0.027	✓
Antimony	mg/L	<0.006	0.001	10.000	0.018	✓
Arsenic	mg/L	0.0109	0.0105	10.0000	0.0006	✓
Barium	mg/L	0.0002	0.0002	10.0000	0.0006	✓
Beryllium	mg/L	<0.0006	0.0001	10.0000	0.0018	✓
Bismuth	mg/L	<0.008	-0.002	10.000	0.024	✓
Boron	mg/L	0.008	0.007	10.000	0.006	✓
Cadmium	mg/L	<0.0006	0.0001	10.0000	0.0018	✓
Calcium	mg/L	<0.2	0.1	10.0	0.6	✓
Chromium	mg/L	<0.0009	0.0008	10.0000	0.0027	✓
Cobalt	mg/L	<0.0008	-0.0001	10.0000	0.0024	✓
Copper	mg/L	<0.001	0.001	10.000	0.003	✓
Iron	mg/L	<0.003	0.0	10.000	0.009	✓
Lead	mg/L	<0.002	-0.000	10.000	0.006	✓
Lithium	mg/L	<0.001	-0.000	10.000	0.003	✓
Magnesium	mg/L	<0.06	0.02	10.00	0.18	✓
Manganese	mg/L	0.0006	0.0	10.0000	0.0006	✓
Molybdenum	mg/L	<0.001	-0.000	10.000	0.003	✓
Nickel	mg/L	0.001	0.0	10.000	0.003	✓
Phosphorus	mg/L	<0.03	-0.00	10.00	0.09	✓
Potassium	mg/L	<0.4	0.0	10.0	1.2	✓
Selenium	mg/L	<0.004	-0.000	10.000	0.012	✓
Silicon	mg/L	0.076	0.073	10.000	0.012	✓
Silver	mg/L	<0.001	0.000	10.000	0.003	✓
Sodium	mg/L	<0.4	0.2	10.0	1.2	✓
Strontium	mg/L	<0.0001	0.0002	10.0000	0.0003	✓
Sulphur	mg/L	0.017	0.024	10.000	0.027	✓
Thallium	mg/L	<0.004	-0.003	10.000	0.012	✓
Tin	mg/L	<0.003	0.001	10.000	0.009	✓
Titanium	mg/L	<0.0004	-0.0013	10.0000	0.0012	✓
Vanadium	mg/L	<0.001	-0.000	10.000	0.003	✓
Zinc	mg/L	0.0017	0.0028	10.0000	0.0021	✓



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

11 of 15

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Material Used:	Edmonton Duplicate					
Date Acquired:	Jun 20, 2001					
Acquired By:	Jodi Johnston					



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

12 of 15

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mq/L	0.178	0.200	0.160	0.240	✓
Antimony	mq/L	0.049	0.0500	0.0400	0.0600	✓
Arsenic	mq/L	0.0022	0.00200	0.00160	0.00240	✓
Barium	mq/L	0.0050	0.00500	0.00400	0.00600	✓
Beryllium	mq/L	0.0046	0.00500	0.00400	0.00600	✓
Bismuth	mq/L	0.047	0.0500	0.0400	0.0600	✓
Boron	mq/L	0.192	0.200	0.160	0.240	✓
Cadmium	mq/L	0.0048	0.00500	0.00400	0.00600	✓
Calcium	mq/L	0.1	0.1000	0.0800	0.1200	✓
Chromium	mq/L	0.0097	0.01000	0.00800	0.01200	✓
Cobalt	mq/L	0.0094	0.01000	0.00800	0.01200	✓
Copper	mq/L	0.010	0.01000	0.00800	0.01200	✓
Iron	mq/L	0.056	0.0500	0.0400	0.0600	✓
Lead	mq/L	0.018	0.0200	0.0160	0.0240	✓
Lithium	mq/L	0.005	0.00500	0.00400	0.00600	✓
Magnesium	mq/L	0.51	0.500	0.400	0.600	✓
Manganese	mq/L	0.0049	0.00500	0.00400	0.00600	✓
Molybdenum	mq/L	0.009	0.01000	0.00800	0.01200	✓
Nickel	mq/L	0.011	0.01000	0.00800	0.01200	✓
Phosphorus	mq/L	0.52	0.500	0.400	0.600	✓
Potassium	mq/L	0.4	0.500	0.400	0.600	✓
Selenium	mq/L	0.040	0.0500	0.0400	0.0600	✓
Silicon	mq/L	0.210	0.200	0.160	0.240	✓
Silver	mq/L	0.010	0.01000	0.00800	0.01200	✓
Sodium	mq/L	0.5	0.500	0.400	0.600	✓
Strontium	mq/L	0.0043	0.00500	0.00400	0.00600	✓
Sulphur	mq/L	0.177	0.200	0.160	0.240	✓
Thallium	mq/L	0.047	0.0500	0.0400	0.0600	✓
Tin	mq/L	0.046	0.0500	0.0400	0.0600	✓
Titanium	mq/L	0.0047	0.00500	0.00400	0.00600	✓
Vanadium	mq/L	0.010	0.01000	0.00800	0.01200	✓
Zinc	mq/L	0.0105	0.01000	0.00800	0.01200	✓

Material Used: 1303 - Metals Low

Date Acquired: Jun 20, 2001

Acquired By: Jodi Johnston



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 123542

Control Number:

Date Received: Jun 18, 2001

Date Reported: Jul 06, 2001

Report Number: 184744

Page:

13 of 15

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	20.5	20.000	18.000	22.000	✓
Antimony	mg/L	4.81	5.000	4.500	5.500	✓
Arsenic	mg/L	0.0215	0.0200	0.0180	0.0220	✓
Barium	mg/L	0.504	0.5000	0.4500	0.5500	✓
Beryllium	mg/L	0.502	0.5000	0.4500	0.5500	✓
Bismuth	mg/L	4.93	5.000	4.500	5.500	✓
Boron	mg/L	20.2	20.000	18.000	22.000	✓
Cadmium	mg/L	0.506	0.5000	0.4500	0.5500	✓
Calcium	mg/L	9.6	10.00	9.00	11.00	✓
Chromium	mg/L	1.02	1.0000	0.9000	1.1000	✓
Cobalt	mg/L	1.01	1.0000	0.9000	1.1000	✓
Copper	mg/L	1.02	1.000	0.900	1.100	✓
Iron	mg/L	5.22	5.000	4.500	5.500	✓
Lead	mg/L	2.04	2.000	1.800	2.200	✓
Lithium	mg/L	0.521	0.500	0.450	0.550	✓
Magnesium	mg/L	50.5	50.00	45.00	55.00	✓
Manganese	mg/L	0.520	0.5000	0.4500	0.5500	✓
Molybdenum	mg/L	0.970	1.000	0.900	1.100	✓
Nickel	mg/L	1.02	1.000	0.900	1.100	✓
Phosphorus	mg/L	50.6	50.00	45.00	55.00	✓
Potassium	mg/L	49.3	50.0	45.0	55.0	✓
Selenium	mg/L	5.29	5.000	4.500	5.500	✓
Silicon	mg/L	22.6	20.000	16.000	24.000	✓
Silver	mg/L	1.03	1.000	0.900	1.100	✓
Sodium	mg/L	48.9	50.0	45.0	55.0	✓
Strontium	mg/L	0.484	0.5000	0.4000	0.6000	✓
Sulphur	mg/L	19.4	20.000	18.000	22.000	✓
Thallium	mg/L	5.05	5.000	4.500	5.500	✓
Tin	mg/L	4.90	5.000	4.500	5.500	✓
Titanium	mg/L	0.533	0.5000	0.4500	0.5500	✓
Vanadium	mg/L	1.00	1.000	0.900	1.100	✓
Zinc	mg/L	1.00	1.0000	0.9000	1.1000	✓

Material Used: 1304 - Metals High

Date Acquired: Jun 20, 2001

Acquired By: Jodi Johnston



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Methodology and Notes

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: D. Determan
Echo Bay Mines

Project
ID: Requisition No. L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 123542
Control Number:
Date Received: Jun 18, 2001
Date Reported: Jul 06, 2001
Report Number: 184744

Page: 14 of 15

Method of Analysis:

Test	Reference	Method	Date of Analysis	Location	Analyst
(Ortho)Phosphate in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Jun 20, 2001	Norwest Edmonton	Matt Cummings
Alkalinity, pH, and EC in water	APHA	Electrometric Method, 4500-H+ B	Jul 06, 2001	Norwest Edmonton	Trisha Perverseff
		Laboratory & Field Methods, 2550 B	Jul 06, 2001	Norwest Edmonton	Trisha Perverseff
		Titration Method, 2320 B	Jul 06, 2001	Norwest Edmonton	Trisha Perverseff
Ammonium in Water	APHA	Automated Phenate Method, 4500-NH3 G	Jun 20, 2001	Norwest Edmonton	Gordon Grensmann
Anions (Routine) by Ion Chromatography	APHA	Single-Column Ion Chromatography with Electronic Suppression, 4110 C	Jul 04, 2001	Norwest Edmonton	Jesse Dang
BOD in water	APHA	5 Day, 5210 B	Jun 23, 2001	Norwest Edmonton	Gordon Grensmann
Fecal Coliforms - MF	APHA	Fecal Coliform Membrane Filter Procedure, 9222 D	Jun 21, 2001	Norwest Calgary	Melissa Stewart
Kjeldahl Nitrogen & Phosphorus (Total) in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Jun 19, 2001	Norwest Edmonton	Matt Cummings
		Total Kjeldahl Nitrogen in Soil/Plant, 13-107-6-2-D	Jun 19, 2001	Norwest Edmonton	Matt Cummings
Metals Hydride (Total) in water	APHA	Continuous Hydride Generation / Atomic Absorption Spectrometry, 3114 C	Jun 20, 2001	Norwest Edmonton	Stef Pavlyshyn
Metals Trace (Dissolved) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 05, 2001	Norwest Edmonton	Jodi Johnston
Metals Trace (Total) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Jun 21, 2001	Norwest Edmonton	Darren Crichton
Oil and Grease in water	APHA	Oil and Grease: Partition-Gravimetric Method, 5520 B	Jun 22, 2001	Norwest Edmonton	Brent Wasylynchuk
Solids Suspended (Total, Fixed and Volatile)	APHA	TSS Dried at 103-105 C, 2540 D	Jun 20, 2001	Norwest Edmonton	Trisha Perverseff
Total Coliforms - MF	APHA	Standard Total Coliform Membrane Filter Procedure, 9222 B	Jun 21, 2001	Norwest Calgary	Melissa Stewart



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

MAY 29, 2001 - 0925-01

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 120731
Control Number:
Date Received: May 29, 2001
Date Reported: May 31, 2001
Report Number: 177580

Page: 3 of 9

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	2	2	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	May 30, 2001					
Acquired By:	Brent Wasylynchuk					

Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.58	7.57		0.100	✓
Conductivity	dS/m	1.62	1.61	10.000	0.002	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	May 29, 2001					
Acquired By:	Darren Crichton					

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
pH		9.20	9.18	9.08	9.26	✓
Conductivity	dS/m	2.74	2.767	2.740	2.780	✓
Material Used:	Water High					
Date Acquired:	May 29, 2001					
Acquired By:	Darren Crichton					
pH		6.87	6.86	6.83	6.97	✓
Conductivity	dS/m	0.076	0.0800	0.0730	0.0850	✓
Material Used:	Water Low					
Date Acquired:	May 29, 2001					
Acquired By:	Darren Crichton					



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 120731

Control Number:

Date Received: May 29, 2001

Date Reported: May 31, 2001

Report Number: 177580

Page:

4 of 9

Metals Total



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 120731
Control Number:
Date Received: May 29, 2001
Date Reported: May 31, 2001
Report Number: 177580

Page: 5 of 9

Metals Total (Continued...)

Blank	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.009	0.00000	-0.00650	0.03290	✓
Antimony	mg/L	0.001	0.00000	-0.00980	0.00910	✓
Arsenic	mg/L	-0.00	0.0000	-0.0131	0.0170	✓
Barium	mg/L	0.0002	0.000000	-0.000300	0.000600	✓
Beryllium	mg/L	0.0	0.000000	-0.000300	0.000400	✓
Bismuth	mg/L	-0.001	0.0000	-0.0176	0.0174	✓
Boron	mg/L	0.008	0.0000	-0.0272	0.0534	✓
Cadmium	mg/L	0.0	0.000000	-0.000300	0.000600	✓
Calcium	mg/L	0.0	0.0000	-0.0312	0.0538	✓
Chromium	mg/L	-0.0001	0.00000	-0.00130	0.00180	✓
Cobalt	mg/L	0.0	0.00000	-0.00110	0.00110	✓
Copper	mg/L	0.0	0.00000	-0.00280	0.00390	✓
Iron	mg/L	0.008	0.0000	-0.0149	0.0290	✓
Lead	mg/L	0.001	0.00000	-0.00590	0.00780	✓
Lithium	mg/L	-0.000	0.00000	-0.00210	0.00240	✓
Magnesium	mg/L	-0.01	0.0000	-0.0305	0.0426	✓
Manganese	mg/L	0.0003	0.000000	-0.000700	0.001200	✓
Molybdenum	mg/L	0.0	0.00000	-0.00250	0.00280	✓
Nickel	mg/L	-0.000	0.00000	-0.00400	0.00370	✓
Phosphorus	mg/L	-0.01	0.0000	-0.0227	0.0253	✓
Potassium	mg/L	-0.0	0.000	-0.102	0.150	✓
Selenium	mg/L	0.002	0.0000	-0.0284	0.0268	✓
Silicon	mg/L	0.019	0.0000	-0.0435	0.0933	✓
Silver	mg/L	0.0	0.000000	-0.000600	0.000300	✓
Sodium	mg/L	0.0	0.000	-0.194	0.318	✓
Strontium	mg/L	0.0	0.000000	-0.000100	0.000300	✓
Sulphur	mg/L	-0.003	0.0000	-0.0333	0.0447	✓
Thallium	mg/L	-0.000	0.0000	-0.0157	0.0175	✓
Tin	mg/L	0.001	0.00000	-0.00730	0.00970	✓
Titanium	mg/L	-0.0004	0.00000	-0.00580	0.00570	✓
Vanadium	mg/L	-0.000	0.00000	-0.00450	0.00310	✓
Zinc	mg/L	0.0013	0.00000	-0.00530	0.01220	✓
Mercury	mg/L	0.0	0.000000	-0.000111	0.000111	✓
Arsenic	mg/L	0.0	0.000000	-0.000200	0.000200	✓

Material Used: Edmonton Method Blank
Date Acquired: May 29, 2001
Acquired By: Stef Pavlyshyn



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 120731

Control Number:

Date Received: May 29, 2001

Date Reported: May 31, 2001

Report Number: 177580

Page:

6 of 9

Metals Total (Continued...)



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 120731
Control Number:
Date Received: May 29, 2001
Date Reported: May 31, 2001
Report Number: 177580

Page: 7 of 9

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.186	0.200	0.160	0.240	✓
Antimony	mg/L	0.051	0.0500	0.0400	0.0600	✓
Arsenic	mg/L	0.05	0.0500	0.0400	0.0600	✓
Barium	mg/L	0.0055	0.00500	0.00400	0.00600	✓
Beryllium	mg/L	0.0045	0.00500	0.00400	0.00600	✓
Bismuth	mg/L	0.050	0.0500	0.0400	0.0600	✓
Boron	mg/L	0.188	0.200	0.160	0.240	✓
Cadmium	mg/L	0.0049	0.00500	0.00400	0.00600	✓
Calcium	mg/L	0.1	0.1000	0.0800	0.1200	✓
Chromium	mg/L	0.0104	0.01000	0.00800	0.01200	✓
Cobalt	mg/L	0.0103	0.01000	0.00800	0.01200	✓
Copper	mg/L	0.011	0.01000	0.00800	0.01200	✓
Iron	mg/L	0.054	0.0500	0.0400	0.0600	✓
Lead	mg/L	0.022	0.0200	0.0160	0.0240	✓
Lithium	mg/L	0.005	0.00500	0.00400	0.00600	✓
Magnesium	mg/L	0.52	0.500	0.400	0.600	✓
Manganese	mg/L	0.0044	0.00500	0.00400	0.00600	✓
Molybdenum	mg/L	0.009	0.01000	0.00800	0.01200	✓
Nickel	mg/L	0.010	0.01000	0.00800	0.01200	✓
Phosphorus	mg/L	0.50	0.500	0.400	0.600	✓
Potassium	mg/L	0.5	0.500	0.400	0.600	✓
Selenium	mg/L	0.059	0.0500	0.0400	0.0600	✓
Silicon	mg/L	0.217	0.200	0.160	0.240	✓
Silver	mg/L	0.011	0.01000	0.00800	0.01200	✓
Sodium	mg/L	0.5	0.500	0.400	0.600	✓
Strontium	mg/L	0.0049	0.00500	0.00400	0.00600	✓
Sulphur	mg/L	0.176	0.200	0.160	0.240	✓
Thallium	mg/L	0.050	0.0500	0.0400	0.0600	✓
Tin	mg/L	0.049	0.0500	0.0400	0.0600	✓
Titanium	mg/L	0.0053	0.00500	0.00400	0.00600	✓
Vanadium	mg/L	0.010	0.01000	0.00800	0.01200	✓
Zinc	mg/L	0.0095	0.01000	0.00800	0.01200	✓
Mercury	mg/L	0.0008	0.000800	0.000720	0.000880	✓
Arsenic	mg/L	0.0023	0.00200	0.00160	0.00240	✓

Material Used: 1303 - Metals Low
Date Acquired: May 29, 2001
Acquired By: Stef Pavlyshyn



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 120731

Control Number:

Date Received: May 29, 2001

Date Reported: May 31, 2001

Report Number: 177580

Page:

8 of 9

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	20.2	20.000	18.000	22.000	✓
Antimony	mg/L	4.93	5.000	4.500	5.500	✓
Arsenic	mg/L	5.26	5.00	4.50	5.50	✓
Barium	mg/L	0.494	0.5000	0.4500	0.5500	✓
Beryllium	mg/L	0.493	0.5000	0.4500	0.5500	✓
Bismuth	mg/L	4.80	5.000	4.500	5.500	✓
Boron	mg/L	20.3	20.000	18.000	22.000	✓
Cadmium	mg/L	0.498	0.5000	0.4500	0.5500	✓
Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Chromium	mg/L	1.04	1.0000	0.9000	1.1000	✓
Cobalt	mg/L	1.00	1.0000	0.9000	1.1000	✓
Copper	mg/L	1.03	1.000	0.900	1.100	✓
Iron	mg/L	5.15	5.000	4.500	5.500	✓
Lead	mg/L	2.06	2.000	1.800	2.200	✓
Lithium	mg/L	0.509	0.500	0.450	0.550	✓
Magnesium	mg/L	51.3	50.00	45.00	55.00	✓
Manganese	mg/L	0.510	0.5000	0.4500	0.5500	✓
Molybdenum	mg/L	0.986	1.000	0.900	1.100	✓
Nickel	mg/L	1.02	1.000	0.900	1.100	✓
Phosphorus	mg/L	50.0	50.00	45.00	55.00	✓
Potassium	mg/L	49.5	50.0	45.0	55.0	✓
Selenium	mg/L	5.14	5.000	4.500	5.500	✓
Silicon	mg/L	23.1	20.000	16.000	24.000	✓
Silver	mg/L	1.03	1.000	0.900	1.100	✓
Sodium	mg/L	49.6	50.0	45.0	55.0	✓
Strontium	mg/L	0.538	0.5000	0.4000	0.6000	✓
Sulphur	mg/L	20.3	20.000	18.000	22.000	✓
Thallium	mg/L	4.81	5.000	4.500	5.500	✓
Tin	mg/L	4.86	5.000	4.500	5.500	✓
Titanium	mg/L	0.525	0.5000	0.4500	0.5500	✓
Vanadium	mg/L	1.02	1.000	0.900	1.100	✓
Zinc	mg/L	0.988	1.0000	0.9000	1.1000	✓
Mercury	mg/L	0.0031	0.00300	0.00270	0.00330	✓
Arsenic	mg/L	0.0220	0.0200	0.0180	0.0220	✓

Material Used: 1304 - Metals High

Date Acquired: May 29, 2001

Acquired By: Stef Pavlyshyn



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 120731

Control Number:

Date Received: May 29, 2001

Date Reported: May 31, 2001

Report Number: 177580

Page:

8 of 9

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	20.2	20.000	18.000	22.000	✓
Antimony	mg/L	4.93	5.000	4.500	5.500	✓
Arsenic	mg/L	5.26	5.00	4.50	5.50	✓
Barium	mg/L	0.494	0.5000	0.4500	0.5500	✓
Beryllium	mg/L	0.493	0.5000	0.4500	0.5500	✓
Bismuth	mg/L	4.80	5.000	4.500	5.500	✓
Boron	mg/L	20.3	20.000	18.000	22.000	✓
Cadmium	mg/L	0.498	0.5000	0.4500	0.5500	✓
Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Chromium	mg/L	1.04	1.0000	0.9000	1.1000	✓
Cobalt	mg/L	1.00	1.0000	0.9000	1.1000	✓
Copper	mg/L	1.03	1.000	0.900	1.100	✓
Iron	mg/L	5.15	5.000	4.500	5.500	✓
Lead	mg/L	2.06	2.000	1.800	2.200	✓
Lithium	mg/L	0.509	0.500	0.450	0.550	✓
Magnesium	mg/L	51.3	50.00	45.00	55.00	✓
Manganese	mg/L	0.510	0.5000	0.4500	0.5500	✓
Molybdenum	mg/L	0.986	1.000	0.900	1.100	✓
Nickel	mg/L	1.02	1.000	0.900	1.100	✓
Phosphorus	mg/L	50.0	50.00	45.00	55.00	✓
Potassium	mg/L	49.5	50.0	45.0	55.0	✓
Selenium	mg/L	5.14	5.000	4.500	5.500	✓
Silicon	mg/L	23.1	20.000	16.000	24.000	✓
Silver	mg/L	1.03	1.000	0.900	1.100	✓
Sodium	mg/L	49.6	50.0	45.0	55.0	✓
Strontium	mg/L	0.538	0.5000	0.4000	0.6000	✓
Sulphur	mg/L	20.3	20.000	18.000	22.000	✓
Thallium	mg/L	4.81	5.000	4.500	5.500	✓
Tin	mg/L	4.86	5.000	4.500	5.500	✓
Titanium	mg/L	0.525	0.5000	0.4500	0.5500	✓
Vanadium	mg/L	1.02	1.000	0.900	1.100	✓
Zinc	mg/L	0.988	1.0000	0.9000	1.1000	✓
Mercury	mg/L	0.0031	0.00300	0.00270	0.00330	✓
Arsenic	mg/L	0.0220	0.0200	0.0180	0.0220	✓

Material Used: 1304 - Metals High

Date Acquired: May 29, 2001

Acquired By: Stef Pavlyshyn



Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Methodology and Notes

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: D. Hohnstein
Echo Bay Mines

Project ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 120731

Control Number:

Date Received: May 29, 2001

Date Reported: May 31, 2001

Report Number: 177580

Page: 9 of 9

Method of Analysis:

Test	Reference	Method	Date of Analysis	Location	Analyst
Alkalinity, pH, and EC in water	APHA	Electrometric Method, 4500-H+ B	May 30, 2001	Norwest Edmonton	Darren Crichton
		Laboratory & Field Methods, 2550 B	May 30, 2001	Norwest Edmonton	Darren Crichton
Fecal Coliforms - MF	APHA	Laboratory Method, 2510 B	May 30, 2001	Norwest Edmonton	Darren Crichton
		Fecal Coliform Membrane Filter Procedure, 9222 D	May 31, 2001	Norwest Calgary	Tammy Still
Mercury (Total) in water	APHA	Cold Vapour Atomic Absorption Spectrometric Method, 3112 B	May 29, 2001	Norwest Edmonton	Stef Pavlyshyn
Metals Hydride (Total) in water	APHA	Continuous Hydride Generation / Atomic Absorption Spectromet, 3114 C	May 31, 2001	Norwest Edmonton	Stef Pavlyshyn
Metals Trace (Total) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	May 31, 2001	Norwest Edmonton	Lang Que Tran
Solids Suspended (Total, Fixed and Volatile)	APHA	TSS Dried at 103-105 C, 2540 D	May 30, 2001	Norwest Edmonton	Darren Crichton
Total Coliforms - MF	APHA	Standard Total Coliform Membrane Filter Procedure, 9222 B	May 31, 2001	Norwest Calgary	Tammy Still

References:

APHA

Standard Methods for the Examination of Water and Wastewater

Comments:

Norwest Labs strongly recommends that this report is not reproduced except in full.