



**NORWEST
LABS**

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: D. Hohnstein
Company: Echo Bay Mines

Project
ID: Lupin Operation
Name:
Location:
LSD:
P.O.: L 48906
Acct. Code:

NWL Lot ID: 192626
Control Number:
Date Received: Sep 16, 2002
Date Reported: Sep 20, 2002
Report Number: 303105

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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:	Sep 20, 2002					
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	0.07	0.08	10.00	0.10	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 18, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	3.12	3.00	2.70	3.30	✓
Cyanide	mg/L	0.078	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Sep 20, 2002					
Acquired By:						

Ammonium - N	mg/L	0.85	0.800	0.720	0.880	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Sep 20, 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:	Sep 16, 2002					
Acquired By:	Tracey Blush					



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Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.46	7.47	10.00	0.10	✓
Conductivity	dS/m	1.10	1.11	10.000	0.002	✓
Calcium	mg/L	18.1	18.1	10.0	0.6	✓
Magnesium	mg/L	2.4	2.3	10.0	0.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 16, 2002
Acquired By:

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.7	10.00	9.00	11.00	✓
Magnesium	mg/L	49.0	50.0	45.0	55.0	✓

Material Used: Metals High
Date Acquired: Sep 16, 2002
Acquired By:

pH		9.20	9.18	8.73	9.67	✓
Conductivity	dS/m	2.71	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	526		490	557	✓
T-Alkalinity	mg/L	994	1000	972	1035	✓

Material Used: Water High
Date Acquired: Sep 16, 2002
Acquired By:

pH		6.88	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	68		46.8	71.0	✓
T-Alkalinity	mg/L	127	125	121	133	✓

Material Used: Water Low
Date Acquired: Sep 16, 2002
Acquired By:



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Acct. Code:

NWL Lot ID: **192626**
Control Number:
Date Received: Sep 16, 2002
Date Reported: Sep 20, 2002
Report Number: 303105

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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	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Sep 16, 2002
Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	20.5	20.4	10.0	0.6	✓
Iron	mg/L	<0.1	<0.1	10.0	0.0	✓
Magnesium	mg/L	2.6	2.5	10.0	0.2	✓
Manganese	mg/L	0.080	0.081	10.000	0.001	✓
Potassium	mg/L	2.0	2.0	10.0	1.2	✓
Silicon	mg/L	0.65	0.65	10.00	0.01	✓
Sodium	mg/L	21.7	21.4	10.0	1.2	✓
Sulphur	mg/L	28.1	28.3	10.00	0.03	✓
Arsenic	ug/L	2.9	2.8	10.0	0.4	✓
Chromium	ug/L	<0.5	<0.5	10.0	1.1	✓
Copper	ug/L	<1	1	10.0	2.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 16, 2002
Acquired By: To Thong



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.9	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	4.9	5.00	4.48	5.19	✓
Manganese	mg/L	0.053	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.6	5.00	4.30	5.06	✓
Silicon	mg/L	2.09	2.00	1.70	2.16	✓
Sodium	mg/L	4.2	5.00	4.08	5.25	✓
Sulphur	mg/L	1.74	2.00	1.73	2.11	✓

Material Used: Edmonton Digestion Check
Date Acquired: Sep 16, 2002
Acquired By: To Thong

Calcium	mq/L	9.4	10.00	9.00	11.00	✓
Iron	mq/L	5.2	5.00	4.50	5.50	✓
Magnesium	mq/L	52.0	50.0	45.0	55.0	✓
Manganese	mq/L	0.513	0.500	0.450	0.550	✓
Potassium	mq/L	48.9	50.0	45.0	55.0	✓
Silicon	mq/L	23.3	20.00	16.00	24.00	✓
Sodium	mq/L	51.1	50.0	45.0	55.0	✓
Sulphur	mq/L	20.8	20.00	18.00	22.00	✓

Material Used: Metals High
Date Acquired: Sep 16, 2002
Acquired By: To Thong



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NWL Lot ID: 192626
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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	213	200	180	220	✓
Antimony	ug/L	50.4	50.0	45.0	55.0	✓
Arsenic	ug/L	51.3	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.5	5.00	4.50	5.50	✓
Bismuth	ug/L	51.2	50.0	45.0	55.0	✓
Boron	ug/L	201	200	180	220	✓
Cadmium	ug/L	4.92	5.00	4.50	5.50	✓
Chromium	ug/L	9.9	10.00	9.00	11.00	✓
Cobalt	ug/L	10.2	10.00	9.00	11.00	✓
Copper	ug/L	10	10.00	9.00	11.00	✓
Lead	ug/L	20.4	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	9.8	10.00	9.00	11.00	✓
Selenium	ug/L	49.3	50.0	45.0	55.0	✓
Silver	ug/L	9.7	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	50.7	50.00	45.00	55.00	✓
Titanium	ug/L	5.3	5.00	4.50	5.50	✓
Uranium	ug/L	479	500.0	450.0	550.0	✓
Vanadium	ug/L	10.3	10.00	9.00	11.00	✓
Zinc	ug/L	11	10.00	9.00	11.00	✓
Zirconium	ug/L	11	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Sep 16, 2002
Acquired By: To Thong



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Company: Echo Bay Mines

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Name:
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Date Received: Sep 16, 2002
Date Reported: Sep 20, 2002
Report Number: 303105

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	21	20.0	18.0	22.0	✓
Antimony	ug/L	5.0	5.00	4.50	5.50	✓
Arsenic	ug/L	5.0	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	5.0	5.00	4.50	5.50	✓
Boron	ug/L	22	20.0	18.0	22.0	✓
Cadmium	ug/L	0.49	0.500	0.450	0.550	✓
Chromium	ug/L	0.8	1.000	0.900	1.100	✓
Cobalt	ug/L	1.0	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	1.1	1.000	0.900	1.100	✓
Selenium	ug/L	5.1	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	5.12	5.00	4.50	5.50	✓
Titanium	ug/L	0.6	0.500	0.450	0.550	✓
Uranium	ug/L	49.3	50.0	45.0	55.0	✓
Vanadium	ug/L	1.1	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: Sep 16, 2002
Acquired By: To Thong



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Attn: David Hohnstein
Sampled By: D. Hohnstein
Company: Echo bay mines

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

NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
Report Number: 300204

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Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	<0.05	0.000000	-0.000980	0.050000	✓
Phosphorus	mg/L	<0.05	0.000000	-0.00260	0.050000	✓
Phosphate	mg/L	<0.05	0.000000	-0.0500	0.0500	✓
Cyanide	mg/L	<0.001	0.000000	-0.00100	0.00100	✓

Material Used: Edmonton Method Blank
Date Acquired: Sep 11, 2002
Acquired By:

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	0.09	0.09	10.00	0.10	✓
Phosphorus	mg/L	<0.05	<0.05	10.00	0.05	✓
Phosphate	mg/L	<0.05	<0.05	10.00	0.05	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 10, 2002
Acquired By: Hanmei Li



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Inorganic Nonmetallic Parameters (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	30.4	30.00	27.70	32.50	✓
Ammonium - N	mg/L	3.03	3.00	2.70	3.30	✓
Phosphorus	mg/L	3.91	4.00	3.52	4.24	✓
Cyanide	mg/L	0.077	0.0750	0.0680	0.0870	✓

Material Used: Water High
Date Acquired: Sep 11, 2002
Acquired By:

Kjeldahl Nitrogen	mg/L	5.15	5.00	4.40	5.40	✓
Ammonium - N	mg/L	0.79	0.800	0.720	0.880	✓
Phosphorus	mg/L	0.41	0.400	0.360	0.440	✓
Phosphate	mg/L	0.39	0.400	0.360	0.440	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓

Material Used: Water Low
Date Acquired: Sep 11, 2002
Acquired By:

Aggregate Organic Constituents

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Biochemical Oxygen Demand	mg/L	183	200	166	211	✓

Material Used: Water High
Date Acquired: Sep 09, 2002
Acquired By: To Thong



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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	5820	5760	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 10, 2002					
Acquired By:	Stacey Mebs					



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Routine Water

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	<0.004	0.0000	-0.0100	0.0100	✓
Nitrite - N	mg/L	<0.002	0.0000	-0.0100	0.0100	✓

Material Used: Edmonton Method Blank
Date Acquired: Sep 10, 2002
Acquired By: Stacey Mebs

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.32	7.83	10.00	0.10	✓
Conductivity	dS/m	0.517	0.519	10.000	0.002	✓
Calcium	mg/L	6.7	6.7	10.0	0.6	✓
Magnesium	mg/L	1.1	1.1	10.0	0.2	✓
Nitrate - N	mg/L	<0.004	<0.004	10.000	0.010	✓
Nitrite - N	mg/L	<0.002	<0.002	10.000	0.010	✓
P-Alkalinity	mg/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mg/L	286	281	10.0	5.0	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 12, 2002
Acquired By: Iona McCloughan



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Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.8	10.00	9.00	11.00	✓
Magnesium	mg/L	50.0	50.0	45.0	55.0	✓
Material Used:	Metals High					
Date Acquired:	Sep 09, 2002					
Acquired By:	To Thong					
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.6	0.500	0.400	0.600	✓
Material Used:	Metals Low					
Date Acquired:	Sep 09, 2002					
Acquired By:	To Thong					
pH		9.28	9.18	8.73	9.67	✓
Conductivity	dS/m	2.75	2.765	2.680	2.840	✓
Nitrate - N	mg/L	10.2	10.000	9.700	10.700	✓
Nitrite - N	mg/L	9.94	10.000	9.400	10.600	✓
P-Alkalinity	mg/L	539		490	557	✓
T-Alkalinity	mg/L	998	1000	972	1035	✓
Material Used:	Water High					
Date Acquired:	Sep 12, 2002					
Acquired By:	Stacey Mebs					
pH		6.89	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
Nitrate - N	mg/L	0.513	0.500	0.439	0.555	✓
Nitrite - N	mg/L	0.484	0.500	0.439	0.522	✓
P-Alkalinity	mg/L	67		46.8	71.0	✓
T-Alkalinity	mg/L	128	125	121	133	✓
Material Used:	Water Low					
Date Acquired:	Sep 12, 2002					
Acquired By:	Stacey Mebs					



**NORWEST
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Agri-Food & Environmental Group
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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
Company: Echo bay mines

Quality Control

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

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

NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
Report Number: 300204

Page: 17 of 22

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	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Sep 09, 2002
Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	52.5	53.1	10.0	0.6	✓
Iron	mg/L	0.2	0.2	10.0	0.0	✓
Magnesium	mg/L	6.2	6.2	10.0	0.2	✓
Manganese	mg/L	0.699	0.693	10.000	0.001	✓
Potassium	mg/L	4.8	4.8	10.0	1.2	✓
Silicon	mg/L	1.71	1.77	10.00	0.01	✓
Sodium	mg/L	57.9	58.7	10.0	1.2	✓
Sulphur	mg/L	77.0	78.6	10.00	0.03	✓
Arsenic	ug/L	19.9	19.9	10.0	0.4	✓
Copper	ug/L	8	8	10.0	2.2	✓
Zinc	ug/L	169	171	10.0	2.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 09, 2002
Acquired By: To Thong



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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
Company: Echo bay mines

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

NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
Report Number: 300204

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	1.0	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	4.9	5.00	4.48	5.19	✓
Manganese	mg/L	0.055	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	1.99	2.00	1.70	2.16	✓
Sodium	mg/L	4.6	5.00	4.08	5.25	✓
Sulphur	mg/L	1.78	2.00	1.73	2.11	✓

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

Calcium	mg/L	9.5	10.00	9.00	11.00	✓
Iron	mg/L	5.0	5.00	4.50	5.50	✓
Magnesium	mg/L	49.0	50.0	45.0	55.0	✓
Manganese	mg/L	0.507	0.500	0.450	0.550	✓
Potassium	mg/L	47.2	50.0	45.0	55.0	✓
Silicon	mg/L	22.7	20.00	16.00	24.00	✓
Sodium	mg/L	48.0	50.0	45.0	55.0	✓
Sulphur	mg/L	20.1	20.00	18.00	22.00	✓

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



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

9818 International Airport
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Attn: David Hohnstein
Sampled By: D. Hohnstein
Company: Echo bay mines

Quality Control

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Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
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Project
ID:
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
Report Number: 300204

Page: 19 of 22

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	213	200	180	220	✓
Antimony	ug/L	50.1	50.0	45.0	55.0	✓
Arsenic	ug/L	51.6	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.5	5.00	4.50	5.50	✓
Bismuth	ug/L	52.2	50.0	45.0	55.0	✓
Boron	ug/L	212	200	180	220	✓
Cadmium	ug/L	4.92	5.00	4.50	5.50	✓
Chromium	ug/L	10.1	10.00	9.00	11.00	✓
Cobalt	ug/L	10.4	10.00	9.00	11.00	✓
Copper	ug/L	11	10.00	9.00	11.00	✓
Lead	ug/L	20.8	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	9.9	10.00	9.00	11.00	✓
Selenium	ug/L	50.1	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	51.8	50.00	45.00	55.00	✓
Titanium	ug/L	5.2	5.00	4.50	5.50	✓
Uranium	ug/L	492	500.0	450.0	550.0	✓
Vanadium	ug/L	9.9	10.00	9.00	11.00	✓
Zinc	ug/L	10	10.00	9.00	11.00	✓
Zirconium	ug/L	11	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Sep 09, 2002
Acquired By: To Thong



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Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

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
Company: Echo bay mines

Quality Control

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

Norwest Labs
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Phone: (780) 438-5522
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NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
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Page: 20 of 22

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	21	20.0	18.0	22.0	✓
Antimony	ug/L	4.9	5.00	4.50	5.50	✓
Arsenic	ug/L	5.4	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	0.49	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	1.1	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	4.8	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	5.14	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	50.6	50.0	45.0	55.0	✓
Vanadium	ug/L	1.0	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: Sep 09, 2002
Acquired By: To Thong



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Methodology and Notes

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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
Company: Echo bay mines

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

NWL Lot ID: 191301
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
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Method of Analysis:

Test	Reference	Method	Date of Analysis	Location	Analyst
(Ortho)Phosphate in Water	APHA	* Automated Ascorbic Acid Reduction Method, 4500-P F	Sep 10, 2002	Norwest Labs Edmonton	Hanmei Li
Alkalinity, pH, and EC in water	APHA	* Conductivity - Laboratory Method, 2510 B	Sep 11, 2002	Norwest Labs Edmonton	Iona McCloughan
		* Electrometric Method, 4500-H+ B	Sep 13, 2002 Sep 11, 2002	Norwest Labs Edmonton Norwest Labs Edmonton	Iona McCloughan Iona McCloughan
		* Laboratory & Field Methods, 2550 B	Sep 13, 2002 Sep 11, 2002	Norwest Labs Edmonton Norwest Labs Edmonton	Iona McCloughan Iona McCloughan
		* Titration Method, 2320 B	Sep 13, 2002 Sep 11, 2002 Sep 13, 2002	Norwest Labs Edmonton Norwest Labs Edmonton Norwest Labs Edmonton	Iona McCloughan Iona McCloughan Iona McCloughan
Ammonium in Water	APHA	* Automated Phenate Method, 4500-NH3 G	Sep 12, 2002	Norwest Labs Edmonton	Gordon Grensmann
Anions (Routine) by Ion Chromatography	APHA	* Single-Column Ion Chromatography with Electronic Suppression, 4110 C	Sep 11, 2002	Norwest Labs Edmonton	Matt Cummings
BOD in water	APHA	* 5 Day, 5210 B	Sep 16, 2002	Norwest Labs Edmonton	Stef Pavlyshyn
Cyanide (Strong Acid Dissociable) in water	APHA	* Total Cyanide after Distillation, 4500-CN- C	Sep 11, 2002	Norwest Labs Edmonton	Gordon Grensmann
Fecal Coliforms - MF	APHA	* Fecal Coliform Membrane Filter Procedure, 9222 D	Sep 12, 2002	Norwest Labs Calgary	Trevor Heck
Kjeldahl Nitrogen & Phosphorus (Total) in Water	APHA	* Automated Ascorbic Acid Reduction Method, 4500-P F	Sep 10, 2002	Norwest Labs Edmonton	Hanmei Li
		* Total Kjeldahl Nitrogen in Soil/Plant, 13-107-6-2-D	Sep 10, 2002	Norwest Labs Edmonton	Hanmei Li
Metals ICP-MS (Total) in water	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Sep 10, 2002	Norwest Labs Edmonton	To Thong
Metals Trace (Dissolved) in water	APHA	* Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 10, 2002	Norwest Labs Edmonton	To Thong
Metals Trace (Total) in water	APHA	* Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 10, 2002	Norwest Labs Edmonton	Jesse Dang
Solids Suspended (Total, Fixed and Volatile)	APHA	* TSS Dried at 103-105 C, 2540 D	Sep 11, 2002	Norwest Labs Edmonton	Stacey Mebs
Total Coliforms - MF	APHA	* Standard Total Coliform Membrane Filter Procedure, 9222 B	Sep 12, 2002	Norwest Labs Calgary	Trevor Heck

* Norwest method(s) is based on reference method



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Methodology and Notes

Norwest Labs
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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
Company: Echo bay mines

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

NWL Lot ID: **191301**
Control Number:
Date Received: Sep 09, 2002
Date Reported: Sep 17, 2002
Report Number: 300204

Page: 22 of 22

References:

APHA
QuikChem Method
US EPA

Standard Methods for the Examination of Water and Wastewater
Lachat Instruments
US Environmental Protection Agency Test Methods

Comments:

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Phone: (780) 438-5522
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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 Mines

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

NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 11 of 19

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: Sep 05, 2002
Acquired By:

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	14.0	14.0	10.00	0.10	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 04, 2002
Acquired By:

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	2.81	3.00	2.70	3.30	✓
Cyanide	mg/L	0.079	0.0750	0.0680	0.0870	✓

Material Used: Water High
Date Acquired: Sep 05, 2002
Acquired By:

Ammonium - N	mg/L	0.88	0.800	0.720	0.880	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓

Material Used: Water Low
Date Acquired: Sep 05, 2002
Acquired By: Gordon Grensmann



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9818 International Airport
Edmonton, AB, Canada
T5J2T2

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

Quality Control

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

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Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
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NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 12 of 19

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	47	46	10.0	5.0	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 04, 2002
Acquired By: Hanmei Li



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Company: Echo Bay Mines

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

NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 13 of 19

Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.13	7.03	10.00	0.10	✓
Calcium	mg/L	30.7	30.6	10.0	0.6	✓
Magnesium	mg/L	3.5	3.5	10.0	0.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 04, 2002
Acquired By:



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9818 International Airport
Edmonton, AB, Canada
T5J2T2

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

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

NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 14 of 19

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	50.2	50.0	45.0	55.0	✓
Material Used: Metals High						
Date Acquired: Sep 04, 2002						
Acquired By: Jesse Dang						
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.5	0.500	0.400	0.600	✓
Material Used: Metals Low						
Date Acquired: Sep 04, 2002						
Acquired By: Jesse Dang						
pH		9.26	9.18	8.73	9.67	✓
Conductivity	dS/m	2.75	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	531		490	557	✓
T-Alkalinity	mg/L	1010	1000	972	1035	✓
Material Used: Water High						
Date Acquired: Sep 04, 2002						
Acquired By: Tina Knott						
pH		6.92	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	59		46.8	71.0	✓
T-Alkalinity	mg/L	129	125	121	133	✓
Material Used: Water Low						
Date Acquired: Sep 04, 2002						
Acquired By: Tina Knott						



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9818 International Airport
Edmonton, AB, Canada
T5J2T2

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

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

NWL Lot ID: **190191**
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 15 of 19

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	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Sep 04, 2002
Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	260	264	10.0	0.6	✓
Iron	mg/L	21.3	21.3	10.0	0.0	✓
Magnesium	mg/L	50.8	51.9	10.0	0.2	✓
Manganese	mg/L	2.21	2.15	10.000	0.001	✓
Potassium	mg/L	4.0	3.9	10.0	1.2	✓
Silicon	mg/L	27.7	27.4	10.00	0.01	✓
Sodium	mg/L	40.0	39.9	10.0	1.2	✓
Sulphur	mg/L	6.52	6.56	10.00	0.03	✓
Arsenic	ug/L	19.1	19.0	10.0	0.4	✓
Copper	ug/L	8	6	10.0	2.2	✓
Zinc	ug/L	187	182	10.0	2.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 04, 2002
Acquired By: To Thong



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Attn: David Hohnstein

Sampled By: M. Sawyer

Company: Echo Bay Mines

Project
ID: Lupin Reference
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Acct. Code:

NWL Lot ID: **190191**
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 16 of 19

Metals Total (Continued...)

Control Sample	Unit	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.9	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	4.9	5.00	4.48	5.19	✓
Manganese	mg/L	0.052	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	1.96	2.00	1.70	2.16	✓
Sodium	mg/L	4.9	5.00	4.08	5.25	✓
Sulphur	mg/L	1.74	2.00	1.73	2.11	✓

Material Used: Edmonton Digestion Check

Date Acquired: Sep 04, 2002

Acquired By: Jesse Dang

Calcium	mg/L	9.4	10.00	9.00	11.00	✓
Iron	mg/L	5.0	5.00	4.50	5.50	✓
Magnesium	mg/L	49.1	50.0	45.0	55.0	✓
Manganese	mg/L	0.503	0.500	0.450	0.550	✓
Potassium	mg/L	46.0	50.0	45.0	55.0	✓
Silicon	mg/L	23.0	20.00	16.00	24.00	✓
Sodium	mg/L	47.7	50.0	45.0	55.0	✓
Sulphur	mg/L	19.9	20.00	18.00	22.00	✓

Material Used: Metals High

Date Acquired: Sep 04, 2002

Acquired By: Jesse Dang



**NORWEST
LABS**

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 Mines

Project

ID: Lupin Reference

Name:

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 190191

Control Number:

Date Received: Sep 03, 2002

Date Reported: Sep 09, 2002

Report Number: 297824

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	207	200	180	220	✓
Antimony	ug/L	50.3	50.0	45.0	55.0	✓
Arsenic	ug/L	51.8	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	52.2	50.0	45.0	55.0	✓
Boron	ug/L	201	200	180	220	✓
Cadmium	ug/L	4.90	5.00	4.50	5.50	✓
Chromium	ug/L	9.8	10.00	9.00	11.00	✓
Cobalt	ug/L	10.5	10.00	9.00	11.00	✓
Copper	ug/L	11	10.00	9.00	11.00	✓
Lead	ug/L	20.9	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	9.8	10.00	9.00	11.00	✓
Selenium	ug/L	50.4	50.0	45.0	55.0	✓
Silver	ug/L	10.0	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	52.1	50.00	45.00	55.00	✓
Titanium	ug/L	5.1	5.00	4.50	5.50	✓
Uranium	ug/L	495	500.0	450.0	550.0	✓
Vanadium	ug/L	9.9	10.00	9.00	11.00	✓
Zinc	ug/L	11	10.00	9.00	11.00	✓
Zirconium	ug/L	10	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Sep 04, 2002
Acquired By: To Thong



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

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 Mines

Quality Control

Project

ID: Lupin Reference

Name:

Location:

LSD:

P.O.:

Acct. Code:

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

NWL Lot ID: 190191

Control Number:

Date Received: Sep 03, 2002

Date Reported: Sep 09, 2002

Report Number: 297824

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	22	20.0	18.0	22.0	✓
Antimony	ug/L	5.0	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	20	20.0	18.0	22.0	✓
Cadmium	ug/L	0.49	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	1.0	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	5.2	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	5.11	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	50.6	50.0	45.0	55.0	✓
Vanadium	ug/L	1.0	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: Sep 04, 2002
Acquired By: To Thong