



# Laboratory Report

## Report ID: 122764

**Sierra  
Environmental  
Monitoring, Inc.**

Randy L. Messer

1985 Smithridge Lane  
Fernley, NV 89408

**Date:** 8/31/2012  
**Client:** MSR-120817  
**Taken by:** R. Messer  
**PO #:**

Dear Randy L. Messer,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- S201208-1018 - Density: value is for bulk density of crushed sample.
- S201208-1018 - Rb: Sample was analyzed by ICP-MS.

**Approved By:**

A handwritten signature in black ink, appearing to read "John C. Seher", is written over a horizontal line.

Sierra Environmental Monitoring, Inc.

**Date:**

8/31/2012

**This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.**



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### Analysis Report

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received			
S201208-1018	Z and Z	8/15/2012	9:30 AM	8/15/2012			
Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Aluminum - ICP-OES	EPA 200.7	2700	mg/Kg	50	Keller	8/23/2012	
Antimony - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Arsenic - ICP-MS	EPA 200.8	15	mg/Kg	2	Li	8/23/2012	
Ash	SM 2540	98.6	%	1	Seher	8/30/2012	
Barium - ICP-MS	EPA 200.8	660	mg/Kg	8	Li	8/23/2012	B
Beryllium - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Bismuth - ICP-OES	EPA 200.7	<90	mg/Kg	90	Keller	8/23/2012	
Boron - ICP-OES	EPA 200.7	52	mg/Kg	50	Keller	8/23/2012	
Cadmium - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Calcium - ICP-OES	EPA 200.7	340000	mg/Kg	3000	Keller	8/23/2012	C
Chloride - Ion Chromatography	EPA 300.0	78	mg/Kg	10	Faulstich	8/22/2012	
Chromium - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Cobalt - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Copper - ICP-MS	EPA 200.8	5	mg/Kg	2	Li	8/23/2012	
Density	ASTM	1.58	g/cm3	1	Seher	8/29/2012	
Fluoride - Ion Chromatography	EPA 300.0	19	mg/Kg	10	Faulstich	8/22/2012	
Gallium - ICP-OES	EPA 200.7	<90	mg/Kg	90	Keller	8/23/2012	
Gold - ICP-MS	EPA 200.8	<5	mg/Kg	5	Li	8/27/2012	J1
Iron - ICP-OES	EPA 200.7	2100	mg/Kg	50	Keller	8/23/2012	
Kjeldahl Nitrogen - Digestion/Analys	SM 4500 N(org)	130	mg/Kg N	0.1	Pacheco	8/24/2012	
Lanthanum - ICP-OES	EPA 200.7	<50	mg/Kg	50	Keller	8/23/2012	
Lead - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Lithium - ICP-OES	EPA 200.7	<90	mg/Kg	90	Keller	8/23/2012	
Magnesium - ICP-OES	EPA 200.7	16000	mg/Kg	500	Keller	8/23/2012	
Manganese - ICP-MS	EPA 200.8	130	mg/Kg	4	Li	8/23/2012	B
Mercury - AA Cold Vapor	EPA 245.5	<0.05	mg/Kg	0.05	Kleinworth	8/23/2012	
Moisture Content	SM 2540 G	0.2	%	0.1	Seher	8/29/2012	
Molybdenum - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Nickel - ICP-MS	EPA 200.8	11	mg/Kg	2	Li	8/23/2012	
Nitrate-N - Ion Chromatography	EPA 300.0	2.2	mg/Kg N	0.5	Faulstich	8/22/2012	
Nitrite-N - Ion Chromatography	EPA 300.0	<0.5	mg/Kg N	0.5	Faulstich	8/22/2012	
pH - Saturated Paste	SW-846 9045A	9.19	pH Units		Pacheco	8/27/2012	
pH - Temperature	SW-846 9045A	21.1	°C		Pacheco	8/27/2012	
Phosphorus - Total	EPA 365.3	880	mg/Kg	200	Keller	8/23/2012	



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### Analysis Report

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S201208-1018	Z and Z	8/15/2012	9:30 AM	8/15/2012			
Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Potassium - ICP-OES	EPA 200.7	780	mg/Kg	500	Keller	8/23/2012	
Rubidium ICP-MS	EPA 200.8	<5	mg/Kg	5	Li	8/24/2012	
Scandium - ICP-OES	EPA 200.7	<50	mg/Kg	50	Keller	8/23/2012	
Selenium - ICP-MS	EPA 200.8	<10	mg/Kg	10	Li	8/23/2012	
Silver - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Sodium - ICP-OES	EPA 200.7	1900	mg/Kg	500	Keller	8/23/2012	
Strontium - ICP-OES	EPA 200.7	3600	mg/Kg	50	Keller	8/23/2012	
Sulfur, Total - LECO Furnace	LECO	0.08	%	0.01	Kobza	8/31/2012	
Thallium - ICP-MS	EPA 200.8	<2	mg/Kg	2	Li	8/23/2012	
Tin - ICP-OES	EPA 200.7	<90	mg/Kg	90	Keller	8/23/2012	
Titanium ICP-OES	EPA 200.7	120	mg/Kg	50	Keller	8/23/2012	
Total Nitrogen as N	Total by Sum	130	mg/Kg N	1	Seher	8/30/2012	
Total Recoverable Metals - Acid Dig	EPA 200.2	Completed			Kleinworth	8/22/2012	
Tungsten - ICP-MS	EPA 200.8	<10	mg/Kg	10	Li	8/28/2012	B
Uranium - ICP-MS	EPA 200.8	8	mg/Kg	2	Li	8/23/2012	
Vanadium -ICP-MS	EPA 200.8	32	mg/Kg	2	Li	8/23/2012	
Zinc - ICP-MS	EPA 200.8	<20	mg/Kg	20	Li	8/23/2012	

**Data Flag Legend:**

- B - Element or compound also found in associated Method Blank.**
- C - Sample concentration is at least 5 times greater than spike contribution. Spike recovery criteria do not apply.**
- J1 - The batch MS and/or MSD were outside acceptance limits. The batch LCS was acceptable.**



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### *Quality Control Report*

<i>Parameter</i>	<i>LCS, % Recovery</i>	<i>MS, % Recovery</i>	<i>MSD, % Recovery</i>	<i>RPD, %</i>	<i>Method Blank</i>
Aluminum - ICP-OES	98.0	127.0	129.0	1.17	<50 mg/L
Antimony - ICP-MS	102.0	100.0	97.0	2.34	<1 mg/Kg
Arsenic - ICP-MS	97.0	99.0	96.0	2.97	<1 mg/Kg
Barium - ICP-MS	100.0	77.0	98.0	24.27	<4 mg/Kg
Beryllium - ICP-MS	98.0	101.0	98.0	2.23	<1 mg/Kg
Bismuth - ICP-OES	101.0	109.0	106.0	2.10	<90 mg/L
Boron - ICP-OES	100.0	101.0	97.0	4.63	<50 mg/L
Cadmium - ICP-MS	97.0	101.0	98.0	3.11	<1 mg/Kg
Calcium - ICP-OES	99.0	148.0	161.0	8.09	<500 mg/L
Chloride - Ion Chromatography	92.0	82.0	84.0	1.31	<10 mg/Kg
Chromium - ICP-MS	99.0	99.0	97.0	2.39	<1 mg/Kg
Cobalt - ICP-MS	99.0	97.0	95.0	2.90	<1 mg/Kg
Copper - ICP-MS	99.0	99.0	95.0	3.87	<1 mg/Kg
Density	100.0			1.70	
Fluoride - Ion Chromatography	95.0	98.0	100.0	2.02	<10 mg/Kg
Gallium - ICP-OES	101.0	114.0	108.0	5.90	<90 mg/L
Gold - ICP-MS	97.0	1.0	0.0	200.00	<5 mg/Kg
Iron - ICP-OES	100.0	96.0	91.0	5.43	<50 mg/L
Kjeldahl Nitrogen - Digestion/Anal	99.0	101.0	104.0	2.93	<0.1 mg/L
Lanthanum - ICP-OES	100.0	107.0	103.0	4.34	<50 mg/L
Lead - ICP-MS	100.0	103.0	100.0	2.64	<1 mg/Kg
Lithium - ICP-OES	101.0	119.0	113.0	4.67	<90 mg/L
Magnesium - ICP-OES	101.0	106.0	95.0	10.68	<500 mg/L
Manganese - ICP-MS	99.0	99.0	91.0	8.49	<2 mg/Kg
Mercury - AA Cold Vapor	106.0	113.0	102.0	9.87	
Molybdenum - ICP-MS	98.0	103.0	99.0	4.05	<1 mg/Kg
Nickel - ICP-MS	100.0	98.0	95.0	3.53	<1 mg/Kg
Nitrate-N - Ion Chromatography	98.0	98.0	99.0	1.02	<0.5 mg/Kg
Nitrite-N - Ion Chromatography	97.0	101.0	102.0	0.99	<0.5 mg/Kg
pH - Saturated Paste				0.43	



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## Quality Control Report

<i>Parameter</i>	<i>LCS, % Recovery</i>	<i>MS, % Recovery</i>	<i>MSD, % Recovery</i>	<i>RPD, %</i>	<i>Method Blank</i>
pH - Temperature				0.48	
Phosphorus - Total	93.0	100.0	100.0	0.50	<0.02 mg/L
Potassium - ICP-OES	100.0	106.0	101.0	4.83	<500 mg/L
Rubidium ICP-MS	100.0	104.0	100.0	4.05	<5 mg/Kg
Scandium - ICP-OES	105.0	114.0	109.0	4.46	<50 mg/L
Selenium - ICP-MS	97.0	99.0	96.0	3.15	<5 mg/Kg
Silver - ICP-MS	99.0	98.0	94.0	4.68	<1 mg/Kg
Sodium - ICP-OES	100.0	107.0	105.0	2.56	<500 mg/L
Strontium - ICP-OES	102.0	114.0	105.0	8.75	<50 mg/L
Sulfur, Total - LECO Furnace	106.0			3.92	
Thallium - ICP-MS	100.0	107.0	104.0	2.19	<1 mg/Kg
Tin - ICP-OES	100.0	117.0	114.0	3.11	<90 mg/L
Titanium ICP-OES	101.0	125.0	119.0	4.79	<50 mg/L
Tungsten - ICP-MS	103.0	115.0	115.0	0.43	<10 mg/Kg
Uranium - ICP-MS	102.0	113.0	111.0	1.68	<1 mg/Kg
Vanadium - ICP-MS	99.0	100.0	100.0	0.23	<1 mg/Kg
Zinc - ICP-MS	98.0	100.0	97.0	2.80	<10 mg/Kg

**Legend:** LCS- Laboratory Control Standard      MS- Matrix Spike      MSD- Matrix Spike Duplicate  
 RPD- Relative Percent Difference