APPENDIX B

MBSI LABORATORY ANALYTICAL REPORTS

ANALYTICAL SUMMARY REPORT

December 03, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12100491 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 55 samples for MT DEQ-Site Response on 10/30/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12100491-001	MBSI-22-02	10/22/12 8:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-002	MBSI-22-02	10/22/12 8:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-003	MBSI-22-01	10/22/12 10:00	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-004	MBSI-22-01	10/22/12 10:00	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-005	MBSI-22-03	10/22/12 10:10	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-006	MBSI-22-03	10/22/12 10:10	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-007	MBSI-09-01	10/22/12 12:30 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-008	MBSI-09-01	10/22/12 12:30 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-009	MBSI-09-02	10/22/12 14:05 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-010	MBSI-09-02	10/22/12 14:05 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-011	MBSI-09-02 Sieve Dup	10/22/12 14:05 10/30/12	Soil	Same As Above
H12100491-012	MBSI-42-02	10/22/12 16:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-013	MBSI-42-02	10/22/12 16:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-014	MBSI-42-01	10/22/12 18:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-015	MBSI-42-01	10/22/12 18:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-016	MBSI-39-02	10/23/12 7:50	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-017	MBSI-39-02	10/23/12 7:50	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-018	MBSI-39-01	10/23/12 9:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-019	MBSI-39-01	10/23/12 9:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-020	MBSI-39-01 Sieve Dup	10/23/12 9:15	10/30/12	Soil	Same As Above
H12100491-021	MBSI-52-01	10/23/12 10:20	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-022	MBSI-52-01	10/23/12 10:20	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-023	MBSI-52-02	10/23/12 11:35	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-024	MBSI-52-02	10/23/12 11:35	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-025	MBSI-16-01	10/23/12 13:10 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-026	MBSI-16-01	10/23/12 13:10 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-027	MBSI-16-02	10/23/12 14:20 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-028	MBSI-16-02	10/23/12 14:20 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-029	MBSI-45-02	10/23/12 16:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-030	MBSI-45-02	10/23/12 16:00 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-031	MBSI-45-03	10/23/12 16:10 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-032	MBSI-45-03	10/23/12 16:10 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-033	MBSI-45-01	10/23/12 17:30	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-034	MBSI-45-01	10/23/12 17:30	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-035	MBSI-14-01	10/24/12 8:05	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-036	MBSI-14-01	10/24/12 8:05	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-037	MBSI-14-02	10/24/12 9:55	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-038	MBSI-14-02	10/24/12 9:55	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-039	MBSI-29-02	10/24/12 11:10	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-040	MBSI-29-02	10/24/12 11:10	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-041	MBSI-29-01	10/24/12 17:30	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-042	MBSI-29-01	10/24/12 17:30	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-043	MBSI-33-01	10/25/12 14:40	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-044	MBSI-33-01	10/25/12 14:40	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-045	MBSI-03-01	10/26/12 8:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-046	MBSI-03-01	10/26/12 8:15	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-047	MBSI-03-02	10/26/12 12:25	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-048	MBSI-03-02	10/26/12 12:25	10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12100491-049	MBSI-03-03	10/26/12 12:30 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-050	MBSI-03-03	10/26/12 12:30 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-051	MBSI-23-01	10/26/12 14:15 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-052	MBSI-23-01	10/26/12 14:15 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-053	MBSI-23-02	10/26/12 15:25 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12100491-054	MBSI-23-02	10/26/12 15:25 10/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12100491-055	MBSI-23-02 Sieve Dup	10/26/12 15:25 10/30/12	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.05 15:01:31 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12100491

Report Date: 12/05/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis.

For samples -001, -003, -005, -007, -014 ,-016, -018, -021, -023, -049, -051, -053 the reporting limit for Silver was raised from 0.1 mg/L to 0.2 mg/L. The samples were re-digested and re-analyzed. Method Blanks digested by EPA 3050 and analyzed for Silver show a typical concentration of approximately of 0.1 mg/L. The analytical result for these samples was comparable to the Method Blank concentration. Abb 12/3/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12100491

Report Date: 12/03/12
Date Received: 10/30/12

	Analysis	No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T	Mn-T	Ni-T
	Units	wt% Retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12100491-001	MBSI-22-02		0.3	14400	10.1	142	0.7	0.2	7.2	17.8	12.9	19500	362	14.6
H12100491-002	MBSI-22-02	12.0	< 0.1	14900	8.8	148	0.6	0.2	4.8	18.2	23.2	16600	307	13.3
H12100491-003	MBSI-22-01		< 0.2	22100	6.9	212	0.9	0.4	7.2	23.6	16.2	20500	450	15.6
H12100491-004	MBSI-22-01	46.9	0.1	20700	7.3	224	0.8	0.4	5.7	23.6	31.1	18300	425	16.5
H12100491-005	MBSI-22-03		< 0.2	21700	6.8	218	0.9	0.3	6.9	22.7	16.1	17800	409	14.9
H12100491-006	MBSI-22-03	48.1	0.1	21000	7.2	230	0.8	0.4	4.7	24.0	28.8	18400	413	16.7
H12100491-007	MBSI-09-01		< 0.2	12400	13.8	123	1.1	0.5	12.9	21.4	29.7	42600	642	28.3
H12100491-008	MBSI-09-01	20.3	0.1	16100	11.4	144	0.8	0.4	8.3	27.5	52.8	24800	490	26.8
H12100491-009	MBSI-09-02		< 0.1	9770	6.0	88	0.6	0.2	7.1	15.4	14.2	13700	373	11.2
H12100491-010	MBSI-09-02	4.6	< 0.1	11800	6.1	97	0.6	0.2	4.8	16.3	23.4	14600	381	11.5
H12100491-011	MBSI-09-02 Sieve Dup	1.2	0.2	12300	6.3	97	0.7	0.2	4.3	17.5	37.5	14800	391	11.6
H12100491-012	MBSI-42-02		< 0.1	9940	10.5	131	0.6	< 0.1	5.6	16.6	10.2	14200	107	11.9
H12100491-013	MBSI-42-02	2.4	< 0.1	9740	9.5	136	0.5	< 0.1	3.5	15.7	15.2	13200	112	11.5
H12100491-014	MBSI-42-01		< 0.2	29300	13.1	154	1.0	0.2	15.8	35.2	29.5	30400	246	29.1
H12100491-015	MBSI-42-01	0.3	0.1	31500	13.0	166	1.1	0.2	10.9	39.0	58.6	31800	267	32.1
H12100491-016	MBSI-39-02		< 0.2	8850	6.3	74	0.5	0.1	6.0	15.1	8.7	13500	271	11.9
H12100491-017	MBSI-39-02	9.1	< 0.1	9520	5.7	73	0.5	0.1	3.0	15.0	56.4	12400	261	10.9
H12100491-018	MBSI-39-01		< 0.2	12600	17.0	567	1.0	0.4	13.6	24.2	21.4	59200	1590	28.5
H12100491-019	MBSI-39-01	43.0	< 0.1	17000	8.1	762	0.7	0.3	6.6	24.5	186	26900	798	21.3
H12100491-020	MBSI-39-01 Sieve Dup	43.9	< 0.1	16800	7.5	634	0.7	0.3	6.3	23.5	82.4	25000	739	21.1
H12100491-021	MBSI-52-01		< 0.2	18600	9.4	214	1.0	0.4	10.7	26.3	18.8	19100	452	20.8
H12100491-022	MBSI-52-01	57.2	< 0.1	18400	8.5	218	0.9	0.3	5.9	26.0	195	17800	431	18.1
H12100491-023	MBSI-52-02		< 0.2	12400	6.9	135	0.7	0.3	6.3	16.1	13.5	14600	306	13.6
H12100491-024	MBSI-52-02	42.2	< 0.1	12600	6.5	150	0.7	0.2	5.1	16.6	58.9	15500	335	14.5
H12100491-025	MBSI-16-01		< 0.1	14800	24.6	405	0.8	0.2	8.4	17.7	15.2	19500	372	14.1
H12100491-026	MBSI-16-01	39.1	< 0.1	15000	17.1	533	0.7	0.2	5.5	18.1	118	18000	389	13.3
H12100491-027	MBSI-16-02		< 0.1	12200	7.5	190	0.5	0.2	6.5	18.0	13.0	13600	231	14.8
H12100491-028	MBSI-16-02	39.3	0.1	15200	8.4	228	0.6	0.2	5.8	20.3	127	14800	249	15.4
H12100491-029	MBSI-45-02		< 0.1	12600	6.6	116	0.6	0.2	6.8	17.5	13.2	17800	402	13.1
H12100491-030	MBSI-45-02	23.8	< 0.1	14000	6.4	129	0.6	0.3	5.6	19.3	115	17200	387	14.3
H12100491-031	MBSI-45-03		< 0.1	12400	6.1	114	0.6	0.2	6.8	16.4	12.4	17700	396	13.6
H12100491-032	MBSI-45-03	26.4	< 0.1	13200	6.1	135	0.6	0.2	5.4	18.3	44.4	17000	378	13.8
H12100491-033	MBSI-45-01		< 0.1	12000	18.8	203	0.7	0.3	8.1	20.0	14.2	27900	532	14.4
H12100491-034	MBSI-45-01	46.5	0.1	14200	9.0	227	0.6	0.2	5.8	18.9	114	16800	404	14.1
H12100491-035	MBSI-14-01		< 0.1	4150	2.9	43	0.3	< 0.1	3.7	9.5	3.8	7320	143	5.3
H12100491-036	MBSI-14-01	12.7	< 0.1	5200	2.8	48	0.3	< 0.1	2.8	11.9	42.6	7230	134	6.3
H12100491-037	MBSI-14-02		< 0.1	7320	9.1	505	0.5	0.2	6.9	13.7	11.4	23600	383	13.6
H12100491-038	MBSI-14-02	30.7	< 0.1	12200	7.5	693	0.6	0.2	6.1	18.1	108	18000	252	15.5
H12100491-039	MBSI-29-02		< 0.1	5160	3.7	55	0.3	< 0.1	4.8	8.1	7.4	8060	252	7.5
H12100491-040	MBSI-29-02	11.7	< 0.1	5980	3.8	54	0.4	0.1	4.8	10.2	20.0	7260	218	7.9
H12100491-041	MBSI-29-01		< 0.1	8650	8.0	120	0.5	0.2	5.7	12.2	9.2	12500	234	8.4
H12100491-042	MBSI-29-01	5.3	< 0.1	9190	5.7	125	0.5	0.1	5.1	14.5	64.5	11600	227	9.5

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12100491

Report Date: 12/03/12
Date Received: 10/30/12

	Analysis	No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T	Mn-T	Ni-T
	Units	wt% Retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12100491-043	MBSI-33-01		< 0.1	10700	5.2	175	0.5	0.2	7.3	20.9	11.6	15300	346	14.3
H12100491-044	MBSI-33-01	8.7	< 0.1	11800	5.4	176	0.6	0.2	7.7	22.9	21.3	15600	349	15.7
H12100491-045	MBSI-03-01		< 0.1	16400	10.5	214	0.8	0.3	8.7	26.3	15.1	20100	417	17.3
H12100491-046	MBSI-03-01	26.7	0.2	17500	9.6	213	0.8	0.3	8.1	27.5	37.3	18300	393	17.2
H12100491-047	MBSI-03-02		< 0.1	15000	8.1	136	0.6	0.2	7.4	18.1	13.2	15900	492	13.7
H12100491-048	MBSI-03-02	3.2	0.1	15100	7.4	135	0.6	0.2	7.2	18.4	22.8	15900	505	13.2
H12100491-049	MBSI-03-03		< 0.2	14900	8.4	145	0.6	0.2	7.9	17.9	15.0	16200	544	13.2
H12100491-050	MBSI-03-03	3.8	< 0.1	15700	7.0	148	0.6	0.2	7.4	18.3	25.6	17300	564	14.3
H12100491-051	MBSI-23-01		< 0.2	15700	8.3	125	0.8	0.2	7.3	18.6	14.5	17600	471	13.3
H12100491-052	MBSI-23-01	3.7	< 0.1	16900	8.5	129	0.8	0.2	7.6	19.1	32.7	18800	523	14.3
H12100491-053	MBSI-23-02		< 0.2	17300	13.1	155	0.8	0.3	7.7	19.7	18.8	18100	327	15.6
H12100491-054	MBSI-23-02	19.7	< 0.1	19800	10.8	168	0.8	0.3	7.6	21.4	31.8	18100	335	16.5
H12100491-055	MBSI-23-02 Sieve Dup	22.8	< 0.1	19300	10.4	166	0.7	0.3	7.3	21.3	25.7	17900	329	16.6

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12100491

Report Date: 12/03/12
Date Received: 10/30/12

	Analysis	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium,
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12100491-001	MBSI-22-02	14.5	0.1	0.7	0.27	39.8	61	18	< 0.050	< 0.29
H12100491-002	MBSI-22-02	16	< 0.1	0.7	0.24	38.1	62	18		< 0.29
H12100491-003	MBSI-22-01	12.2	0.2	0.3	0.26	32.1	46	24	< 0.050	< 0.29
H12100491-004	MBSI-22-01	11	0.1	0.3	0.27	31.5	54	24		< 0.29
H12100491-005	MBSI-22-03	12.0	0.2	0.3	0.25	29.4	46	23	< 0.050	< 0.29
H12100491-006	MBSI-22-03	14	0.1	0.3	0.26	31.1	51	24		< 0.29
H12100491-007	MBSI-09-01	20.3	0.3	0.6	0.24	36.1	86	21	< 0.050	< 0.29
H12100491-008	MBSI-09-01	18	0.2	0.4	0.25	34.1	81	28		< 0.29
H12100491-009	MBSI-09-02	13.8	0.1	0.4	0.20	21.9	46	15	< 0.050	< 0.29
H12100491-010	MBSI-09-02	12	< 0.1	0.5	0.21	22.9	45	16		< 0.29
H12100491-011	MBSI-09-02 Sieve Dup	9	0.1	0.5	0.21	23.4	48	18		< 0.29
H12100491-012	MBSI-42-02	10.5	< 0.1	0.6	0.19	38.7	55	17	< 0.050	< 0.29
H12100491-013	MBSI-42-02	15	< 0.1	0.6	0.16	33.9	52	16		< 0.29
H12100491-014	MBSI-42-01	19.9	0.3	1.1	0.30	92.2	93	35	< 0.050	< 0.29
H12100491-015	MBSI-42-01	22	0.2	1.0	0.31	95.4	100	39		< 0.29
H12100491-016	MBSI-39-02	8.7	0.2	0.3	0.11	20.1	37	15	< 0.050	< 0.29
H12100491-017	MBSI-39-02	10	< 0.1	0.2	0.10	16.9	43	15		< 0.29
H12100491-018	MBSI-39-01	16.4	0.4	1.2	0.34	40.9	74	24	< 0.050	< 0.29
H12100491-019	MBSI-39-01	12	0.1	0.8	0.28	29.5	83	24		< 0.29
H12100491-020	MBSI-39-01 Sieve Dup	17	0.1	0.7	0.26	28.6	65	24		< 0.29
H12100491-021	MBSI-52-01	16.1	0.1	0.7	0.32	30.8	69	26	< 0.050	< 0.29
H12100491-022	MBSI-52-01	17	< 0.1	0.7	0.26	28.9	92	26		< 0.29
H12100491-023	MBSI-52-02	12.1	0.2	0.4	0.20	24.0	50	16	< 0.050	< 0.29
H12100491-024	MBSI-52-02	17	0.1	0.5	0.18	23.5	58	17		< 0.29
H12100491-025	MBSI-16-01	15.4	0.4	0.5	0.26	26.2	52	17	< 0.050	0.32
H12100491-026	MBSI-16-01	20	0.3	0.5	0.24	23.8	71	18		< 0.29
H12100491-027	MBSI-16-02	9.4	0.1	0.4	0.14	25.9	38	18	< 0.050	< 0.29
H12100491-028	MBSI-16-02	12	0.1	0.5	0.17	29.1	61	20		< 0.29
H12100491-029	MBSI-45-02	11.5	0.1	0.4	0.19	25.2	46	18	< 0.050	< 0.29
H12100491-030	MBSI-45-02	13	0.1	0.4	0.19	25.1	64	19		< 0.29
H12100491-031	MBSI-45-03	11.0	0.1	0.4	0.18	25.0	45	16	< 0.050	< 0.29
H12100491-032	MBSI-45-03	12	< 0.1	0.4	0.17	23.5	50	18		< 0.29
H12100491-033	MBSI-45-01	14.7	1.2	0.4	0.17	33.2	48	20	< 0.050	< 0.29
H12100491-034	MBSI-45-01	13	0.1	0.5	0.18	24.7	64	19		< 0.29
H12100491-035	MBSI-14-01	6.8	< 0.1	0.3	0.07	10.4	24	10	< 0.050	< 0.29
H12100491-036	MBSI-14-01	8	< 0.1	0.3	0.07	11.9	30	12		< 0.29
H12100491-037	MBSI-14-02	15.3	0.2	0.5	0.11	35.3	43	14	< 0.050	< 0.29
H12100491-038	MBSI-14-02	13	< 0.1	0.4	0.14	31.9	59	18		< 0.29
H12100491-039	MBSI-29-02	8.3	< 0.1	< 0.2	0.10	16.8	24	8	< 0.050	0.43
H12100491-040	MBSI-29-02	7	< 0.1	0.2	0.09	16.0	30	10		< 0.29
H12100491-041	MBSI-29-01	9.7	0.1	0.3	0.13	15.6	32	12	< 0.050	< 0.29
H12100491-042	MBSI-29-01	7	< 0.1	0.3	0.11	15.1	53	14		< 0.29

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12100491

Report Date: 12/03/12
Date Received: 10/30/12

	Analysis	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium,
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	**Client Sample ID**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**
H12100491-043	MBSI-33-01	11	< 0.1	0.3	0.17	24.9	46	21	< 0.050	< 0.29
H12100491-044	MBSI-33-01	14	< 0.1	0.3	0.17	26.2	59	23		< 0.29
H12100491-045	MBSI-03-01	16	0.1	0.4	0.37	36.6	58	26	< 0.050	< 0.29
H12100491-046	MBSI-03-01	17	< 0.1	0.4	0.36	37.6	74	28		< 0.29
H12100491-047	MBSI-03-02	10	0.2	0.3	0.18	25.0	47	18	< 0.050	< 0.29
H12100491-048	MBSI-03-02	17	0.1	0.3	0.17	25.1	58	18		< 0.29
H12100491-049	MBSI-03-03	22	0.1	0.3	0.18	25.3	46	18	< 0.050	< 0.29
H12100491-050	MBSI-03-03	14	0.1	0.3	0.15	25.9	54	18		< 0.29
H12100491-051	MBSI-23-01	20	0.2	0.3	0.20	22.2	48	19	< 0.050	< 0.29
H12100491-052	MBSI-23-01	21	0.1	0.3	0.19	25.0	55	19		< 0.29
H12100491-053	MBSI-23-02	19	0.2	0.7	0.25	35.5	55	20	< 0.050	< 0.29
H12100491-054	MBSI-23-02	15	< 0.1	0.4	0.23	38.5	62	21		< 0.29
H12100491-055	MBSI-23-02 Sieve Dup	19	< 0.1	0.5	0.23	37.6	60	21		< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121112B		
Sample ID: ICV	10	Initial Calibration Verification Standard							11/12/12 09:07	
Aluminum		4.02	mg/L	0.10	100	90	110			
Barium		0.790	mg/L	0.10	99	90	110			
Chromium		0.788	mg/L	0.010	98	90	110			
Copper		0.802	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.790	mg/L	0.013	99	90	110			
Manganese		4.00	mg/L	0.010	100	90	110			
Nickel		0.783	mg/L	0.010	98	90	110			
Vanadium		0.795	mg/L	0.10	99	90	110			
Zinc		0.797	mg/L	0.010	100	90	110			
Sample ID: ICSA	10	Interference Check Sample A							11/12/12 09:21	
Aluminum		512	mg/L	0.10	102	80	120			
Barium		0.000290	mg/L	0.10		0	0			
Chromium		0.00564	mg/L	0.012		0	0			
Copper		0.00281	mg/L	0.010		0	0			
Iron		186	mg/L	0.030	93	80	120			
Lead		0.0397	mg/L	0.013		0	0			
Manganese		0.00323	mg/L	0.010		0	0			
Nickel		0.00819	mg/L	0.010		0	0			
Vanadium		-0.00320	mg/L	0.10		0	0			
Zinc		0.0133	mg/L	0.010		0	0			
Sample ID: ICSAB	10	Interference Check Sample AB							11/12/12 09:25	
Aluminum		512	mg/L	0.10	102	80	120			
Barium		0.484	mg/L	0.10	97	80	120			
Chromium		0.485	mg/L	0.012	97	80	120			
Copper		0.495	mg/L	0.010	99	80	120			
Iron		187	mg/L	0.030	93	80	120			
Lead		0.951	mg/L	0.013	95	80	120			
Manganese		0.477	mg/L	0.010	95	80	120			
Nickel		0.907	mg/L	0.010	91	80	120			
Vanadium		0.475	mg/L	0.10	95	80	120			
Zinc		0.975	mg/L	0.010	98	80	120			
Method: E200.7								Analytical Run: ICP2-HE_121113B		
Sample ID: ICV		Initial Calibration Verification Standard							11/13/12 11:47	
Iron		4.02	mg/L	0.030	101	90	110			
Sample ID: ICSA		Interference Check Sample A							11/13/12 12:02	
Iron		186	mg/L	0.030	93	80	120			
Sample ID: ICSAB		Interference Check Sample AB							11/13/12 12:06	
Iron		186	mg/L	0.030	93	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121114B		
Sample ID: ICV	11	Initial Calibration Verification Standard							11/14/12 11:58	
Aluminum		4.04	mg/L	0.10	101	90	110			
Barium		0.789	mg/L	0.10	99	90	110			
Chromium		0.812	mg/L	0.010	102	90	110			
Cobalt		0.783	mg/L	0.010	98	90	110			
Copper		0.800	mg/L	0.010	100	90	110			
Iron		4.05	mg/L	0.030	101	90	110			
Lead		0.746	mg/L	0.013	93	90	110			
Manganese		4.01	mg/L	0.010	100	90	110			
Nickel		0.801	mg/L	0.010	100	90	110			
Vanadium		0.803	mg/L	0.10	100	90	110			
Zinc		0.775	mg/L	0.010	97	90	110			
Sample ID: ICSA	11	Interference Check Sample A							11/14/12 12:13	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000510	mg/L	0.10		0	0			
Chromium		0.0102	mg/L	0.010		0	0			
Cobalt		-0.00535	mg/L	0.010		0	0			
Copper		0.00130	mg/L	0.010		0	0			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.0440	mg/L	0.013		0	0			
Manganese		0.000330	mg/L	0.010		0	0			
Nickel		0.00854	mg/L	0.010		0	0			
Vanadium		-0.00141	mg/L	0.10		0	0			
Zinc		0.0105	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							11/14/12 12:17	
Aluminum		515	mg/L	0.10	103	80	120			
Barium		0.486	mg/L	0.10	97	80	120			
Chromium		0.477	mg/L	0.010	95	80	120			
Cobalt		0.429	mg/L	0.010	86	80	120			
Copper		0.494	mg/L	0.010	99	80	120			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.892	mg/L	0.013	89	80	120			
Manganese		0.471	mg/L	0.010	94	80	120			
Nickel		0.920	mg/L	0.010	92	80	120			
Vanadium		0.467	mg/L	0.10	93	80	120			
Zinc		0.947	mg/L	0.010	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121115C		
Sample ID: ICV	11	Initial Calibration Verification Standard							11/15/12 09:38	
Aluminum		4.06	mg/L	0.10	101	90	110			
Barium		0.808	mg/L	0.10	101	90	110			
Chromium		0.795	mg/L	0.010	99	90	110			
Cobalt		0.796	mg/L	0.010	100	90	110			
Copper		0.812	mg/L	0.010	101	90	110			
Iron		4.03	mg/L	0.030	101	90	110			
Lead		0.805	mg/L	0.013	101	90	110			
Manganese		4.01	mg/L	0.010	100	90	110			
Nickel		0.787	mg/L	0.010	98	90	110			
Vanadium		0.804	mg/L	0.10	100	90	110			
Zinc		0.807	mg/L	0.010	101	90	110			
Sample ID: ICSA	11	Interference Check Sample A							11/15/12 09:53	
Aluminum		514	mg/L	0.10	103	80	120			
Barium		0.000320	mg/L	0.10		0	0			
Chromium		0.0260	mg/L	0.010		0	0			
Cobalt		0.0259	mg/L	0.010		0	0			
Copper		0.00508	mg/L	0.010		0	0			
Iron		183	mg/L	0.030	92	80	120			
Lead		0.0188	mg/L	0.013		0	0			
Manganese		0.00327	mg/L	0.010		0	0			
Nickel		0.00637	mg/L	0.010		0	0			
Vanadium		-0.00370	mg/L	0.10		0	0			
Zinc		0.0137	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							11/15/12 09:57	
Aluminum		518	mg/L	0.10	104	80	120			
Barium		0.504	mg/L	0.10	101	80	120			
Chromium		0.485	mg/L	0.010	97	80	120			
Cobalt		0.486	mg/L	0.010	97	80	120			
Copper		0.505	mg/L	0.010	101	80	120			
Iron		186	mg/L	0.030	93	80	120			
Lead		0.928	mg/L	0.013	93	80	120			
Manganese		0.482	mg/L	0.010	96	80	120			
Nickel		0.892	mg/L	0.010	89	80	120			
Vanadium		0.479	mg/L	0.10	96	80	120			
Zinc		0.974	mg/L	0.010	97	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121120B		
Sample ID: ICV		Initial Calibration Verification Standard							11/20/12 10:44	
Lead		0.817	mg/L	0.013	102	90	110			
Sample ID: ICSA		Interference Check Sample A							11/20/12 10:59	
Lead		0.00469	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							11/20/12 11:03	
Lead		0.939	mg/L	0.013	94	80	120			
Method: E200.7								Analytical Run: ICP2-HE_121126B		
Sample ID: ICV		Initial Calibration Verification Standard							11/26/12 10:41	
Lead		0.757	mg/L	0.013	95	90	110			
Sample ID: ICSA		Interference Check Sample A							11/26/12 10:56	
Lead		-0.00941	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							11/26/12 11:00	
Lead		0.961	mg/L	0.013	96	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121112B		
Sample ID: ICV STD	10	Initial Calibration Verification Standard							11/13/12 20:16	
Antimony		0.0520	mg/L	0.050	104	90	110			
Arsenic		0.0510	mg/L	0.0050	102	90	110			
Beryllium		0.0258	mg/L	0.0010	103	90	110			
Cadmium		0.0264	mg/L	0.0010	106	90	110			
Cobalt		0.0519	mg/L	0.010	104	90	110			
Copper		0.0523	mg/L	0.010	105	90	110			
Lead		0.0504	mg/L	0.010	101	90	110			
Selenium		0.0533	mg/L	0.0050	107	90	110			
Silver		0.0261	mg/L	0.0050	104	90	110			
Thallium		0.0506	mg/L	0.10	101	90	110			
Sample ID: ICSA	10	Interference Check Sample A							11/13/12 20:20	
Antimony		0.000571	mg/L	0.050						
Arsenic		0.00116	mg/L	0.0050						
Beryllium		1.10E-05	mg/L	0.0010						
Cadmium		0.000983	mg/L	0.0010						
Cobalt		0.000291	mg/L	0.010						
Copper		0.000180	mg/L	0.010						
Lead		0.000210	mg/L	0.010						
Selenium		0.00186	mg/L	0.0050						
Silver		0.000539	mg/L	0.0050						
Thallium		4.00E-05	mg/L	0.10						
Sample ID: ICSAB	10	Interference Check Sample AB							11/13/12 20:25	
Antimony		0.000348	mg/L	0.050		0	0			
Arsenic		0.0110	mg/L	0.0050	110	70	130			
Beryllium		6.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0108	mg/L	0.0010	108	70	130			
Cobalt		0.0212	mg/L	0.010	106	70	130			
Copper		0.0207	mg/L	0.010	104	70	130			
Lead		0.000157	mg/L	0.010		0	0			
Selenium		0.0108	mg/L	0.0050	108	70	130			
Silver		0.0199	mg/L	0.0050	100	70	130			
Thallium		2.50E-05	mg/L	0.10		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18613
Sample ID: MB-18613	9	Method Blank				Run: ICP2-HE_121112B				11/12/12 11:41
Aluminum		ND	mg/kg	0.8						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18613	9	Laboratory Fortified Blank				Run: ICP2-HE_121112B				11/12/12 11:45
Aluminum		252	mg/kg	5.0	101	80	120			
Barium		49.5	mg/kg	1.0	99	80	120			
Chromium		50.3	mg/kg	1.0	101	80	120			
Copper		50.2	mg/kg	1.0	100	80	120			
Iron		257	mg/kg	5.0	102	80	120			
Manganese		250	mg/kg	1.0	100	80	120			
Nickel		49.8	mg/kg	1.0	100	80	120			
Vanadium		50.3	mg/kg	1.0	101	80	120			
Zinc		50.4	mg/kg	1.0	100	80	120			
Sample ID: LCS-18613	9	Laboratory Control Sample				Run: ICP2-HE_121112B				11/12/12 11:49
Aluminum		12500	mg/kg	5.0	86	50.7	131.3			
Barium		531	mg/kg	1.0	87	80.6	112.2			
Chromium		68.7	mg/kg	1.0	91	72.8	109.1			
Copper		243	mg/kg	1.0	88	77.5	109.6			
Iron		18900	mg/kg	5.0	83	39.6	138.3			
Manganese		355	mg/kg	1.0	97	80.8	115.7			
Nickel		52.8	mg/kg	1.0	87	72.3	103.4			
Vanadium		59.8	mg/kg	1.0	83	66.6	107.3			
Zinc		190	mg/kg	1.0	90	74.2	109.9			
Sample ID: H12100491-041AMS	9	Sample Matrix Spike				Run: ICP2-HE_121112B				11/12/12 13:54
Aluminum		11900	mg/kg	5.0		75	125			A
Barium		173	mg/kg	1.0	108	75	125			
Chromium		62.8	mg/kg	1.0	103	75	125			
Copper		55.5	mg/kg	1.0	95	75	125			
Iron		12500	mg/kg	5.0		75	125			A
Manganese		460	mg/kg	1.0	92	75	125			
Nickel		55.4	mg/kg	1.0	96	75	125			
Vanadium		65.0	mg/kg	1.0	101	75	125			
Zinc		82.4	mg/kg	1.0	102	75	125			
Sample ID: H12100491-041AMSD	9	Sample Matrix Spike Duplicate				Run: ICP2-HE_121112B				11/12/12 13:58
Aluminum		12800	mg/kg	5.0		75	125	6.9	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18613
Sample ID: H12100491-041AMSD	9	Sample Matrix Spike Duplicate				Run: ICP2-HE_121112B				11/12/12 13:58
Barium		174	mg/kg	1.0	111	75	125	0.8	20	
Chromium		62.7	mg/kg	1.0	103	75	125	0.2	20	
Copper		54.4	mg/kg	1.0	92	75	125	2.0	20	
Iron		12200	mg/kg	5.0		75	125	2.9	20	A
Manganese		454	mg/kg	1.0	90	75	125	1.5	20	
Nickel		54.4	mg/kg	1.0	94	75	125	1.8	20	
Vanadium		66.0	mg/kg	1.0	103	75	125	1.6	20	
Zinc		81.4	mg/kg	1.0	100	75	125	1.3	20	
Method: SW6010B										Batch: 18614
Sample ID: MB-18614	10	Method Blank				Run: ICP2-HE_121112B				11/12/12 14:02
Aluminum		0.4	mg/kg	0.3						
Barium		0.04	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18614	10	Laboratory Fortified Blank				Run: ICP2-HE_121112B				11/12/12 14:13
Aluminum		245	mg/kg	5.0	98	80	120			
Barium		49.2	mg/kg	1.0	98	80	120			
Chromium		48.5	mg/kg	1.0	97	80	120			
Copper		48.7	mg/kg	1.0	97	80	120			
Iron		245	mg/kg	5.0	97	80	120			
Lead		46.1	mg/kg	1.0	92	80	120			
Manganese		244	mg/kg	1.0	98	80	120			
Nickel		46.9	mg/kg	1.0	94	80	120			
Vanadium		49.0	mg/kg	1.0	98	80	120			
Zinc		47.1	mg/kg	1.0	94	80	120			
Sample ID: LCS-18614	10	Laboratory Control Sample				Run: ICP2-HE_121112B				11/12/12 14:17
Aluminum		12800	mg/kg	5.0	88	50.7	131.3			
Barium		544	mg/kg	1.0	89	80.6	112.2			
Chromium		71.4	mg/kg	1.0	95	72.8	109.1			
Copper		246	mg/kg	1.0	89	77.5	109.6			
Iron		18900	mg/kg	5.0	83	39.6	138.3			
Lead		172	mg/kg	3.1	93	75.9	108.6			
Manganese		350	mg/kg	1.0	96	80.8	115.7			
Nickel		52.4	mg/kg	1.0	87	72.3	103.4			
Vanadium		60.4	mg/kg	1.0	84	66.6	107.3			
Zinc		186	mg/kg	1.0	88	74.2	109.9			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18614
Sample ID: LCS-18614	10	Laboratory Control Sample				Run: ICP2-HE_121112B				11/12/12 14:17
Sample ID: H12100491-053AMS	10	Sample Matrix Spike				Run: ICP2-HE_121112B				11/12/12 14:57
Aluminum		23100	mg/kg	5.0		75	125			A
Barium		217	mg/kg	1.0	127	75	125			S
Chromium		68.6	mg/kg	1.0	100	75	125			
Copper		59.3	mg/kg	1.0	90	75	125			
Iron		18400	mg/kg	5.0		75	125			A
Lead		54.4	mg/kg	3.0	79	75	125			
Manganese		546	mg/kg	1.0	89	75	125			
Nickel		57.9	mg/kg	1.0	86	75	125			
Vanadium		92.3	mg/kg	1.0	116	75	125			
Zinc		96.6	mg/kg	1.0	85	75	125			
Sample ID: H12100491-053AMSD	10	Sample Matrix Spike Duplicate				Run: ICP2-HE_121112B				11/12/12 15:01
Aluminum		23100	mg/kg	5.0		75	125	0.2	20	A
Barium		222	mg/kg	1.0	136	75	125	2.0	20	S
Chromium		67.0	mg/kg	1.0	96	75	125	2.4	20	
Copper		58.7	mg/kg	1.0	89	75	125	0.9	20	
Iron		19300	mg/kg	5.0		75	125	4.3	20	A
Lead		54.1	mg/kg	3.0	78	75	125	0.5	20	
Manganese		564	mg/kg	1.0	97	75	125	3.3	20	
Nickel		56.9	mg/kg	1.0	84	75	125	1.7	20	
Vanadium		92.2	mg/kg	1.0	116	75	125	0.1	20	
Zinc		95.0	mg/kg	1.0	82	75	125	1.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18613
Sample ID: MB-18613	9	Method Blank				Run: ICP2-HE_121113B				11/13/12 14:32
Aluminum		0.4	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		ND	mg/kg	0.1						
Method: SW6010B										Batch: 18614
Sample ID: MB-18614	10	Method Blank				Run: ICP2-HE_121113B				11/13/12 14:47
Aluminum		ND	mg/kg	0.8						
Barium		0.05	mg/kg	0.02						
Chromium		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		ND	mg/kg	0.1						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: MB-18644	11	Method Blank				Run: ICP2-HE_121114B				11/14/12 13:13
Aluminum		0.5	mg/kg	0.3						
Barium		0.02	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18644	11	Laboratory Fortified Blank				Run: ICP2-HE_121114B				11/14/12 13:21
Aluminum		256	mg/kg	5.0	102	80	120			
Barium		51.5	mg/kg	1.0	103	80	120			
Chromium		49.8	mg/kg	1.0	100	80	120			
Cobalt		46.1	mg/kg	1.0	92	80	120			
Copper		50.6	mg/kg	1.0	101	80	120			
Iron		251	mg/kg	5.0	99	80	120			
Lead		46.2	mg/kg	1.0	92	80	120			
Manganese		248	mg/kg	1.0	99	80	120			
Nickel		48.1	mg/kg	1.0	96	80	120			
Vanadium		50.2	mg/kg	1.0	100	80	120			
Zinc		46.9	mg/kg	1.0	93	80	120			
Method: SW6010B										Batch: 18645
Sample ID: MB-18645	8	Method Blank				Run: ICP2-HE_121114B				11/14/12 15:18
Aluminum		ND	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Sample ID: LFB-18645	8	Laboratory Fortified Blank				Run: ICP2-HE_121114B				11/14/12 15:22
Aluminum		248	mg/kg	5.0	99	80	120			
Barium		49.5	mg/kg	1.0	99	80	120			
Chromium		49.2	mg/kg	1.0	98	80	120			
Copper		49.1	mg/kg	1.0	98	80	120			
Iron		247	mg/kg	5.0	98	80	120			
Manganese		244	mg/kg	1.0	98	80	120			
Nickel		48.0	mg/kg	1.0	96	80	120			
Vanadium		48.8	mg/kg	1.0	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18645
Sample ID: LFB-18645	8	Laboratory Fortified Blank				Run: ICP2-HE_121114B				11/14/12 15:22
Sample ID: LCS-18645	8	Laboratory Control Sample				Run: ICP2-HE_121114B				11/14/12 15:26
Aluminum		12500	mg/kg	5.0	86	50.7	131.3			
Barium		542	mg/kg	1.0	89	80.6	112.2			
Chromium		69.9	mg/kg	1.0	93	72.8	109.1			
Copper		242	mg/kg	1.0	87	77.5	109.6			
Iron		18900	mg/kg	5.0	83	39.6	138.3			
Manganese		339	mg/kg	1.0	93	80.8	115.7			
Nickel		52.4	mg/kg	1.0	87	72.3	103.4			
Vanadium		60.0	mg/kg	1.0	83	66.6	107.3			
Sample ID: H12100491-055AMS	10	Sample Matrix Spike				Run: ICP2-HE_121114B				11/14/12 16:44
Aluminum		24400	mg/kg	5.0		75	125			A
Barium		227	mg/kg	1.0	124	75	125			
Chromium		70.1	mg/kg	1.0	99	75	125			
Copper		67.6	mg/kg	1.0	86	75	125			
Iron		18600	mg/kg	5.0		75	125			A
Lead		57.8	mg/kg	3.0	80	75	125			
Manganese		552	mg/kg	1.0	91	75	125			
Nickel		61.0	mg/kg	1.0	90	75	125			
Vanadium		91.9	mg/kg	1.0	111	75	125			
Zinc		105	mg/kg	1.0	92	75	125			
Sample ID: H12100491-055AMSD	10	Sample Matrix Spike Duplicate				Run: ICP2-HE_121114B				11/14/12 16:48
Aluminum		24700	mg/kg	5.0		75	125	1.4	20	A
Barium		227	mg/kg	1.0	124	75	125	0.0	20	
Chromium		69.3	mg/kg	1.0	98	75	125	1.2	20	
Copper		66.9	mg/kg	1.0	84	75	125	1.1	20	
Iron		18500	mg/kg	5.0		75	125	0.4	20	A
Lead		61.9	mg/kg	3.0	88	75	125	6.9	20	
Manganese		539	mg/kg	1.0	85	75	125	2.4	20	
Nickel		59.2	mg/kg	1.0	87	75	125	3.0	20	
Vanadium		93.4	mg/kg	1.0	114	75	125	1.6	20	
Zinc		103	mg/kg	1.0	87	75	125	2.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: MB-18644	11	Method Blank				Run: ICP2-HE_121115C				11/16/12 03:09
Aluminum		ND	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: LFB-18644	11	Laboratory Fortified Blank				Run: ICP2-HE_121115C				11/16/12 03:13
Aluminum		246	mg/kg	5.0	98	80	120			
Barium		50.1	mg/kg	1.0	100	80	120			
Chromium		47.8	mg/kg	1.0	96	80	120			
Cobalt		47.1	mg/kg	1.0	94	80	120			
Copper		49.1	mg/kg	1.0	98	80	120			
Iron		244	mg/kg	5.0	97	80	120			
Lead		45.5	mg/kg	1.0	91	80	120			
Manganese		242	mg/kg	1.0	97	80	120			
Nickel		46.5	mg/kg	1.0	93	80	120			
Vanadium		48.7	mg/kg	1.0	97	80	120			
Zinc		47.7	mg/kg	1.0	95	80	120			
Sample ID: LCS-18644	11	Laboratory Control Sample				Run: ICP2-HE_121115C				11/16/12 03:17
Aluminum		13100	mg/kg	5.0	90	50.7	131.3			
Barium		565	mg/kg	1.0	93	80.6	112.2			
Chromium		72.2	mg/kg	1.0	96	72.8	109.1			
Cobalt		49.6	mg/kg	1.0	87	73.3	103.7			
Copper		252	mg/kg	1.0	91	77.5	109.6			
Iron		19500	mg/kg	5.0	86	39.6	138.3			
Lead		178	mg/kg	3.1	96	75.9	108.6			
Manganese		363	mg/kg	1.0	99	80.8	115.7			
Nickel		54.5	mg/kg	1.0	90	72.3	103.4			
Vanadium		63.3	mg/kg	1.0	88	66.6	107.3			
Zinc		195	mg/kg	1.0	92	74.2	109.9			
Sample ID: H12100491-038AMS	11	Sample Matrix Spike				Run: ICP2-HE_121115C				11/16/12 04:12
Aluminum		18500	mg/kg	5.0		75	125			A
Barium		787	mg/kg	1.0		75	125			A
Chromium		65.5	mg/kg	1.0	98	75	125			
Cobalt		48.9	mg/kg	1.0	86	75	125			
Copper		155	mg/kg	1.0	92	75	125			
Iron		18300	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: H12100491-038AMS	11	Sample Matrix Spike				Run: ICP2-HE_121115C				11/16/12 04:12
Lead		61.0	mg/kg	3.1	99	75	125			
Manganese		474	mg/kg	1.0	89	75	125			
Nickel		57.7	mg/kg	1.0	87	75	125			
Vanadium		84.7	mg/kg	1.0	106	75	125			
Zinc		104	mg/kg	1.0	91	75	125			
Sample ID: H12100491-038AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121115C				11/16/12 04:16
Aluminum		18200	mg/kg	5.0		75	125	1.7	20	A
Barium		774	mg/kg	1.0		75	125	1.6	20	A
Chromium		64.8	mg/kg	1.0	97	75	125	1.1	20	
Cobalt		48.9	mg/kg	1.0	86	75	125	0.0	20	
Copper		153	mg/kg	1.0	87	75	125	1.3	20	
Iron		18400	mg/kg	5.0		75	125	0.6	20	A
Lead		57.3	mg/kg	3.1	92	75	125	6.3	20	
Manganese		472	mg/kg	1.0	88	75	125	0.4	20	
Nickel		57.1	mg/kg	1.0	86	75	125	1.0	20	
Vanadium		84.1	mg/kg	1.0	104	75	125	0.7	20	
Zinc		103	mg/kg	1.0	90	75	125	0.6	20	
Method: SW6010B										Batch: 18645
Sample ID: MB-18645	5	Method Blank				Run: ICP2-HE_121115C				11/16/12 04:27
Aluminum		ND	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Vanadium		ND	mg/kg	0.10						
Sample ID: LFB-18645	5	Laboratory Fortified Blank				Run: ICP2-HE_121115C				11/16/12 04:31
Aluminum		243	mg/kg	5.0	97	80	120			
Barium		50.1	mg/kg	1.0	100	80	120			
Copper		48.9	mg/kg	1.0	98	80	120			
Iron		234	mg/kg	5.0	93	80	120			
Vanadium		47.2	mg/kg	1.0	94	80	120			
Sample ID: LCS-18645	5	Laboratory Control Sample				Run: ICP2-HE_121115C				11/16/12 04:35
Aluminum		12200	mg/kg	5.0	84	50.7	131.3			
Barium		541	mg/kg	1.0	89	80.6	112.2			
Copper		238	mg/kg	1.0	86	77.5	109.6			
Iron		17700	mg/kg	5.0	78	39.6	138.3			
Vanadium		57.7	mg/kg	1.0	80	66.6	107.3			
Sample ID: H12100491-055AMS	5	Sample Matrix Spike				Run: ICP2-HE_121115C				11/16/12 05:27
Aluminum		23400	mg/kg	5.0		75	125			A
Barium		222	mg/kg	1.0	118	75	125			
Copper		65.4	mg/kg	1.0	82	75	125			
Iron		16900	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18645	
Sample ID: H12100491-055AMS	5	Sample Matrix Spike				Run: ICP2-HE_121115C			11/16/12 05:27	
Vanadium		86.3	mg/kg	1.0	105	75	125			
Sample ID: H12100491-055AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121115C			11/16/12 05:30	
Aluminum		23900	mg/kg	5.0		75	125	2.2	20	A
Barium		225	mg/kg	1.0	123	75	125	1.2	20	
Copper		65.9	mg/kg	1.0	83	75	125	0.8	20	
Iron		17000	mg/kg	5.0		75	125	0.4	20	A
Vanadium		86.9	mg/kg	1.0	106	75	125	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: MB-18644	10	Method Blank				Run: ICP2-HE_121120B				11/21/12 06:55
Aluminum		ND	mg/kg	0.8						
Barium		0.09	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Lead		ND	mg/kg	1						
Manganese		0.1	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18644	10	Laboratory Fortified Blank				Run: ICP2-HE_121120B				11/21/12 06:58
Aluminum		246	mg/kg	5.0	98	80	120			
Barium		49.3	mg/kg	1.0	98	80	120			
Chromium		49.5	mg/kg	1.0	99	80	120			
Cobalt		48.6	mg/kg	1.0	97	80	120			
Copper		49.3	mg/kg	1.0	99	80	120			
Lead		47.3	mg/kg	1.0	95	80	120			
Manganese		247	mg/kg	1.0	99	80	120			
Nickel		49.4	mg/kg	1.0	99	80	120			
Vanadium		49.2	mg/kg	1.0	98	80	120			
Zinc		49.3	mg/kg	1.0	98	80	120			
Sample ID: LCS-18644	10	Laboratory Control Sample				Run: ICP2-HE_121120B				11/21/12 07:02
Aluminum		13400	mg/kg	5.0	92	50.7	131.3			
Barium		567	mg/kg	1.0	93	80.6	112.2			
Chromium		73.4	mg/kg	1.0	98	72.8	109.1			
Cobalt		50.9	mg/kg	1.0	89	73.3	103.7			
Copper		256	mg/kg	1.0	92	77.5	109.6			
Lead		186	mg/kg	3.1	101	75.9	108.6			
Manganese		375	mg/kg	1.0	103	80.8	115.7			
Nickel		56.8	mg/kg	1.0	94	72.3	103.4			
Vanadium		66.1	mg/kg	1.0	91	66.6	107.3			
Zinc		200	mg/kg	1.0	95	74.2	109.9			
Sample ID: H12100491-038AMS	10	Sample Matrix Spike				Run: ICP2-HE_121120B				11/21/12 08:24
Aluminum		19000	mg/kg	5.0		75	125			A
Barium		811	mg/kg	1.0		75	125			A
Chromium		68.1	mg/kg	1.0	104	75	125			
Cobalt		51.0	mg/kg	1.0	91	75	125			
Copper		157	mg/kg	1.0	93	75	125			
Lead		66.7	mg/kg	3.1	108	75	125			
Manganese		497	mg/kg	1.0	93	75	125			
Nickel		62.5	mg/kg	1.0	94	75	125			
Vanadium		88.7	mg/kg	1.0	111	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: H12100491-038AMS	10	Sample Matrix Spike				Run: ICP2-HE_121120B				11/21/12 08:24
Zinc		106	mg/kg	1.0	91	75	125			
Sample ID: H12100491-038AMSD	10	Sample Matrix Spike Duplicate				Run: ICP2-HE_121120B				11/21/12 08:28
Aluminum		18700	mg/kg	5.0		75	125	1.4	20	A
Barium		786	mg/kg	1.0		75	125	3.2	20	A
Chromium		69.6	mg/kg	1.0	107	75	125	2.3	20	
Cobalt		52.5	mg/kg	1.0	94	75	125	2.8	20	
Copper		156	mg/kg	1.0	91	75	125	0.5	20	
Lead		70.2	mg/kg	3.1	114	75	125	5.0	20	
Manganese		511	mg/kg	1.0	99	75	125	2.7	20	
Nickel		65.0	mg/kg	1.0	99	75	125	3.9	20	
Vanadium		91.0	mg/kg	1.0	115	75	125	2.5	20	
Zinc		110	mg/kg	1.0	99	75	125	3.4	20	
Method: SW6010B										Batch: 18645
Sample ID: MB-18645	9	Method Blank				Run: ICP2-HE_121120B				11/21/12 08:31
Aluminum		0.7	mg/kg	0.3						
Barium		0.2	mg/kg	0.02						
Chromium		ND	mg/kg	0.7						
Copper		ND	mg/kg	0.2						
Lead		ND	mg/kg	1						
Manganese		0.05	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: LFB-18645	9	Laboratory Fortified Blank				Run: ICP2-HE_121120B				11/21/12 08:35
Aluminum		248	mg/kg	5.0	99	80	120			
Barium		48.9	mg/kg	1.0	97	80	120			
Chromium		49.5	mg/kg	1.0	99	80	120			
Copper		49.1	mg/kg	1.0	98	80	120			
Lead		49.0	mg/kg	1.0	98	80	120			
Manganese		253	mg/kg	1.0	101	80	120			
Nickel		49.3	mg/kg	1.0	99	80	120			
Vanadium		49.8	mg/kg	1.0	100	80	120			
Zinc		48.1	mg/kg	1.0	96	80	120			
Sample ID: LCS-18645	9	Laboratory Control Sample				Run: ICP2-HE_121120B				11/21/12 08:39
Aluminum		13500	mg/kg	5.0	92	50.7	131.3			
Barium		569	mg/kg	1.0	94	80.6	112.2			
Chromium		73.1	mg/kg	1.0	97	72.8	109.1			
Copper		259	mg/kg	1.0	93	77.5	109.6			
Lead		196	mg/kg	3.1	106	75.9	108.6			
Manganese		375	mg/kg	1.0	103	80.8	115.7			
Nickel		57.7	mg/kg	1.0	96	72.3	103.4			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18645
Sample ID: LCS-18645	9	Laboratory Control Sample				Run: ICP2-HE_121120B				11/21/12 08:39
Vanadium		66.5	mg/kg	1.0	92	66.6	107.3			
Zinc		199	mg/kg	1.0	94	74.2	109.9			
Method: SW6010B										Batch: 18727
Sample ID: H12100491-053AMS		Sample Matrix Spike				Run: ICP2-HE_121121B				11/21/12 21:14
Lead		64.8	mg/kg	3.1	91	75	125			
Sample ID: H12100491-053AMSD		Sample Matrix Spike Duplicate				Run: ICP2-HE_121121B				11/21/12 21:18
Lead		77.6	mg/kg	3.1	117	75	125	18	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18644
Sample ID: MB-18644	11	Method Blank				Run: ICP2-HE_121126B				11/26/12 18:00
Aluminum		ND	mg/kg	0.8						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Method: SW6010B										Batch: 18645
Sample ID: MB-18645	10	Method Blank				Run: ICP2-HE_121126B				11/26/12 18:07
Aluminum		ND	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		0.2	mg/kg	0.08						
Vanadium		0.2	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: H12100491-055AMS	10	Sample Matrix Spike				Run: ICP2-HE_121126B				11/26/12 18:48
Aluminum		24500	mg/kg	5.0		75	125			A
Barium		223	mg/kg	1.0	121	75	125			
Chromium		71.0	mg/kg	1.0	99	75	125			
Copper		68.8	mg/kg	1.0	88	75	125			
Iron		18700	mg/kg	5.0		75	125			A
Lead		57.3	mg/kg	3.0	78	75	125			
Manganese		554	mg/kg	1.0	90	75	125			
Nickel		60.9	mg/kg	1.0	89	75	125			
Vanadium		92.1	mg/kg	1.0	109	75	125			
Zinc		101	mg/kg	1.0	84	75	125			
Sample ID: H12100491-055AMSD	10	Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/26/12 18:52
Aluminum		24900	mg/kg	5.0		75	125	1.6	20	A
Barium		224	mg/kg	1.0	122	75	125	0.2	20	
Chromium		70.6	mg/kg	1.0	98	75	125	0.6	20	
Copper		66.9	mg/kg	1.0	84	75	125	2.7	20	
Iron		18600	mg/kg	5.0		75	125	0.6	20	A
Lead		57.6	mg/kg	3.0	78	75	125	0.5	20	
Manganese		541	mg/kg	1.0	84	75	125	2.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18645
Sample ID: H12100491-055AMSD	10	Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/26/12 18:52
Nickel		60.9	mg/kg	1.0	89	75	125	0.1	20	
Vanadium		93.5	mg/kg	1.0	112	75	125	1.5	20	
Zinc		99.5	mg/kg	1.0	81	75	125	1.2	20	
Method: SW6010B										Batch: 18727
Sample ID: MB-18727		Method Blank				Run: ICP2-HE_121126B				11/26/12 18:55
Lead		ND	mg/kg	1						
Sample ID: LFB-18727		Laboratory Fortified Blank				Run: ICP2-HE_121126B				11/26/12 18:59
Lead		48.3	mg/kg	1.0	97	80	120			
Sample ID: LCS-18727		Laboratory Control Sample				Run: ICP2-HE_121126B				11/26/12 19:03
Lead		170	mg/kg	3.1	92	75.9	108.6			
Sample ID: H12100491-053AMS		Sample Matrix Spike				Run: ICP2-HE_121126B				11/26/12 20:10
Lead		63.4	mg/kg	3.1	89	75	125			
Sample ID: H12100491-053AMSD		Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/26/12 20:14
Lead		60.2	mg/kg	3.1	83	75	125	5.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121112B		
Sample ID: ICV STD	10	Initial Calibration Verification Standard							11/12/12 22:36	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0490	mg/L	0.0010	98	90	110			
Beryllium		0.0257	mg/L	0.0010	103	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Cobalt		0.0509	mg/L	0.0010	102	90	110			
Copper		0.0513	mg/L	0.0010	103	90	110			
Lead		0.0502	mg/L	0.0010	100	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0254	mg/L	0.0010	102	90	110			
Thallium		0.0504	mg/L	0.0010	101	90	110			
Method: SW6020									Batch: 18613	
Sample ID: MB-18613	10	Method Blank				Run: ICPMS204-B_121112B			11/12/12 23:13	
Antimony		0.03	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.006	mg/kg	0.004						
Cobalt		ND	mg/kg	0.003						
Copper		0.2	mg/kg	0.01						
Lead		0.01	mg/kg	0.003						
Selenium		0.05	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Sample ID: LCS-18613	10	Laboratory Control Sample				Run: ICPMS204-B_121112B			11/12/12 23:17	
Antimony		49.4	mg/kg	1.0	40	2.2	92.9			
Arsenic		316	mg/kg	1.0	93	72.3	106.4			
Beryllium		46.2	mg/kg	1.0	92	76.3	108.6			
Cadmium		118	mg/kg	1.0	87	73	105.1			
Cobalt		57.2	mg/kg	1.0	101	73.3	103.7			
Copper		286	mg/kg	1.0	103	77.5	109.6			
Lead		197	mg/kg	1.0	106	75.9	108.6			
Selenium		205	mg/kg	1.0	105	72.5	112.2			
Silver		72.9	mg/kg	1.0	107	67.8	112.8			
Thallium		93.0	mg/kg	1.0	103	71.7	109.5			
Sample ID: LFB-18613	10	Laboratory Fortified Blank				Run: ICPMS204-B_121112B			11/12/12 23:22	
Antimony		54.8	mg/kg	1.0	110	80	120			
Arsenic		52.0	mg/kg	1.0	104	80	120			
Beryllium		26.2	mg/kg	1.0	105	80	120			
Cadmium		26.4	mg/kg	1.0	105	80	120			
Cobalt		53.2	mg/kg	1.0	106	80	120			
Copper		54.6	mg/kg	1.0	109	80	120			
Lead		54.3	mg/kg	1.0	109	80	120			
Selenium		54.9	mg/kg	1.0	110	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18613
Sample ID: LFB-18613	10	Laboratory Fortified Blank				Run: ICPMS204-B_121112B				11/12/12 23:22
Silver		28.6	mg/kg	1.0	114	80	120			
Thallium		53.7	mg/kg	1.0	107	80	120			
Sample ID: H12100491-041AMS	10	Sample Matrix Spike				Run: ICPMS204-B_121112B				11/13/12 01:46
Antimony		20.6	mg/kg	1.0	42	75	125			S
Arsenic		56.3	mg/kg	1.0	99	75	125			
Beryllium		23.7	mg/kg	1.0	95	75	125			
Cadmium		24.0	mg/kg	1.0	97	75	125			
Cobalt		55.3	mg/kg	1.0	101	75	125			
Copper		61.5	mg/kg	1.0	105	75	125			
Lead		62.1	mg/kg	1.0	107	75	125			
Selenium		51.2	mg/kg	1.0	104	75	125			
Silver		28.2	mg/kg	1.0	115	75	125			
Thallium		52.6	mg/kg	1.0	107	75	125			
Sample ID: H12100491-041AMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121112B				11/13/12 01:50
Antimony		20.9	mg/kg	1.0	42	75	125	1.7	20	S
Arsenic		56.5	mg/kg	1.0	99	75	125	0.3	20	
Beryllium		23.7	mg/kg	1.0	95	75	125	0.1	20	
Cadmium		24.4	mg/kg	1.0	99	75	125	1.4	20	
Cobalt		55.5	mg/kg	1.0	101	75	125	0.3	20	
Copper		62.2	mg/kg	1.0	106	75	125	1.1	20	
Lead		61.6	mg/kg	1.0	106	75	125	0.7	20	
Selenium		51.5	mg/kg	1.0	104	75	125	0.5	20	
Silver		27.8	mg/kg	1.0	114	75	125	1.2	20	
Thallium		52.1	mg/kg	1.0	106	75	125	1.0	20	
Method: SW6020										Batch: 18614
Sample ID: MB-18614	8	Method Blank				Run: ICPMS204-B_121112B				11/13/12 02:13
Antimony		0.02	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Beryllium		0.003	mg/kg	0.003						
Cadmium		ND	mg/kg	0.004						
Cobalt		ND	mg/kg	0.003						
Copper		0.1	mg/kg	0.01						
Selenium		0.02	mg/kg	0.007						
Thallium		0.002	mg/kg	0.002						
Sample ID: LCS-18614	8	Laboratory Control Sample				Run: ICPMS204-B_121112B				11/13/12 02:18
Antimony		51.4	mg/kg	1.0	41	2.2	92.9			
Arsenic		334	mg/kg	1.0	98	72.3	106.4			
Beryllium		46.0	mg/kg	1.0	91	76.3	108.6			
Cadmium		129	mg/kg	1.0	95	73	105.1			
Cobalt		57.7	mg/kg	1.0	102	73.3	103.7			
Copper		301	mg/kg	1.0	108	77.5	109.6			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18614
Sample ID: LCS-18614	8	Laboratory Control Sample				Run: ICPMS204-B_121112B				11/13/12 02:18
Selenium		205	mg/kg	1.0	106	72.5	112.2			
Thallium		97.9	mg/kg	1.0	109	71.7	109.5			
Sample ID: LFB-18614	8	Laboratory Fortified Blank				Run: ICPMS204-B_121112B				11/13/12 02:22
Antimony		54.6	mg/kg	1.0	109	80	120			
Arsenic		53.1	mg/kg	1.0	106	80	120			
Beryllium		25.1	mg/kg	1.0	100	80	120			
Cadmium		26.7	mg/kg	1.0	107	80	120			
Cobalt		51.4	mg/kg	1.0	103	80	120			
Copper		54.8	mg/kg	1.0	109	80	120			
Selenium		53.9	mg/kg	1.0	108	80	120			
Thallium		53.8	mg/kg	1.0	107	80	120			
Sample ID: H12100491-053AMS	8	Sample Matrix Spike				Run: ICPMS204-B_121112B				11/13/12 03:25
Antimony		15.9	mg/kg	1.0	32	75	125			S
Arsenic		62.8	mg/kg	1.0	101	75	125			
Beryllium		23.0	mg/kg	1.0	91	75	125			
Cadmium		22.7	mg/kg	1.0	91	75	125			
Cobalt		56.6	mg/kg	1.0	100	75	125			
Copper		70.3	mg/kg	1.0	105	75	125			
Selenium		52.1	mg/kg	1.0	105	75	125			
Thallium		53.2	mg/kg	1.0	108	75	125			
Sample ID: H12100491-053AMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121112B				11/13/12 03:30
Antimony		15.4	mg/kg	1.0	31	75	125	3.5	20	S
Arsenic		61.8	mg/kg	1.0	99	75	125	1.6	20	
Beryllium		22.9	mg/kg	1.0	90	75	125	0.6	20	
Cadmium		22.7	mg/kg	1.0	91	75	125	0.3	20	
Cobalt		57.3	mg/kg	1.0	101	75	125	1.2	20	
Copper		68.6	mg/kg	1.0	102	75	125	2.5	20	
Selenium		51.5	mg/kg	1.0	104	75	125	1.0	20	
Thallium		52.3	mg/kg	1.0	106	75	125	1.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18644
Sample ID: LCS-18644	7	Laboratory Control Sample				Run: ICPMS204-B_121115B				11/15/12 22:16
Antimony		58.2	mg/kg	1.0	47	2.2	92.9			
Arsenic		317	mg/kg	1.0	93	72.3	106.4			
Beryllium		46.4	mg/kg	1.0	92	76.3	108.6			
Cadmium		124	mg/kg	1.0	91	73	105.1			
Selenium		202	mg/kg	1.0	104	72.5	112.2			
Silver		73.7	mg/kg	1.0	107	67.8	112.8			
Thallium		95.8	mg/kg	1.0	106	71.7	109.5			
Sample ID: LFB-18644	7	Laboratory Fortified Blank				Run: ICPMS204-B_121115B				11/15/12 22:20
Antimony		53.8	mg/kg	1.0	108	80	120			
Arsenic		52.2	mg/kg	1.0	104	80	120			
Beryllium		24.8	mg/kg	1.0	99	80	120			
Cadmium		27.1	mg/kg	1.0	108	80	120			
Selenium		55.2	mg/kg	1.0	110	80	120			
Silver		27.7	mg/kg	1.0	109	80	120			
Thallium		52.6	mg/kg	1.0	105	80	120			
Sample ID: H12100491-038AMS	7	Sample Matrix Spike				Run: ICPMS204-B_121115B				11/16/12 00:08
Antimony		19.8	mg/kg	1.0	40	75	125			S
Arsenic		59.5	mg/kg	1.0	105	75	125			
Beryllium		24.3	mg/kg	1.0	96	75	125			
Cadmium		24.1	mg/kg	1.0	96	75	125			
Selenium		54.9	mg/kg	1.0	110	75	125			
Silver		27.6	mg/kg	1.0	112	75	125			
Thallium		53.8	mg/kg	1.0	108	75	125			
Sample ID: H12100491-038AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121115B				11/16/12 00:13
Antimony		20.3	mg/kg	1.0	41	75	125	2.4	20	S
Arsenic		59.1	mg/kg	1.0	104	75	125	0.6	20	
Beryllium		23.7	mg/kg	1.0	93	75	125	2.6	20	
Cadmium		23.9	mg/kg	1.0	95	75	125	0.9	20	
Selenium		55.2	mg/kg	1.0	111	75	125	0.7	20	
Silver		28.1	mg/kg	1.0	113	75	125	1.7	20	
Thallium		54.1	mg/kg	1.0	109	75	125	0.6	20	
Method: SW6020										Batch: 18645
Sample ID: LCS-18645	9	Laboratory Control Sample				Run: ICPMS204-B_121115B				11/16/12 00:26
Antimony		55.5	mg/kg	1.0	44	2.2	92.9			
Arsenic		314	mg/kg	1.0	92	72.3	106.4			
Beryllium		44.8	mg/kg	1.0	89	76.3	108.6			
Cadmium		123	mg/kg	1.0	91	73	105.1			
Cobalt		56.4	mg/kg	1.0	99	73.3	103.7			
Selenium		198	mg/kg	1.0	102	72.5	112.2			
Silver		73.6	mg/kg	1.0	108	67.8	112.8			
Thallium		95.4	mg/kg	1.0	106	71.7	109.5			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18645
Sample ID: LCS-18645	9	Laboratory Control Sample				Run: ICPMS204-B_121115B				11/16/12 00:26
Zinc		220	mg/kg	1.0	104	74.2	109.9			
Sample ID: LFB-18645	9	Laboratory Fortified Blank				Run: ICPMS204-B_121115B				11/16/12 00:31
Antimony		54.2	mg/kg	1.0	108	80	120			
Arsenic		51.4	mg/kg	1.0	103	80	120			
Beryllium		24.3	mg/kg	1.0	97	80	120			
Cadmium		27.0	mg/kg	1.0	108	80	120			
Cobalt		52.0	mg/kg	1.0	104	80	120			
Selenium		54.2	mg/kg	1.0	108	80	120			
Silver		27.9	mg/kg	1.0	111	80	120			
Thallium		53.6	mg/kg	1.0	107	80	120			
Zinc		54.3	mg/kg	1.0	108	80	120			
Sample ID: H12100491-055AMS	9	Sample Matrix Spike				Run: ICPMS204-B_121115B				11/16/12 01:29
Antimony		15.3	mg/kg	1.0	31	75	125			S
Arsenic		63.8	mg/kg	1.0	108	75	125			
Beryllium		23.2	mg/kg	1.0	92	75	125			
Cadmium		23.1	mg/kg	1.0	93	75	125			
Cobalt		59.1	mg/kg	1.0	105	75	125			
Selenium		54.3	mg/kg	1.0	110	75	125			
Silver		27.1	mg/kg	1.0	110	75	125			
Thallium		53.4	mg/kg	1.0	109	75	125			
Zinc		124	mg/kg	1.0	110	75	125			
Sample ID: H12100491-055AMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121115B				11/16/12 01:34
Antimony		14.6	mg/kg	1.0	30	75	125	4.6	20	S
Arsenic		62.0	mg/kg	1.0	104	75	125	2.9	20	
Beryllium		22.9	mg/kg	1.0	90	75	125	1.4	20	
Cadmium		23.0	mg/kg	1.0	93	75	125	0.2	20	
Cobalt		58.4	mg/kg	1.0	104	75	125	1.2	20	
Selenium		52.7	mg/kg	1.0	107	75	125	2.9	20	
Silver		26.8	mg/kg	1.0	109	75	125	0.9	20	
Thallium		52.3	mg/kg	1.0	106	75	125	2.1	20	
Zinc		120	mg/kg	1.0	103	75	125	2.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121116B		
Sample ID: ICV STD	9	Initial Calibration Verification Standard							11/16/12 10:41	
Antimony		0.0488	mg/L	0.0010	98	90	110			
Arsenic		0.0502	mg/L	0.0010	100	90	110			
Beryllium		0.0248	mg/L	0.0010	99	90	110			
Cadmium		0.0255	mg/L	0.0010	102	90	110			
Cobalt		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0496	mg/L	0.0010	99	90	110			
Zinc		0.0521	mg/L	0.0010	104	90	110			
Sample ID: ICV STD	9	Initial Calibration Verification Standard							11/16/12 20:51	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0512	mg/L	0.0010	102	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0254	mg/L	0.0010	102	90	110			
Cobalt		0.0503	mg/L	0.0010	101	90	110			
Selenium		0.0517	mg/L	0.0010	103	90	110			
Silver		0.0248	mg/L	0.0010	99	90	110			
Thallium		0.0491	mg/L	0.0010	98	90	110			
Zinc		0.0536	mg/L	0.0010	107	90	110			
Method: SW6020									Batch: 18644	
Sample ID: MB-18644	7	Method Blank				Run: ICPMS204-B_121116B			11/16/12 16:34	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Selenium		0.03	mg/kg	0.007						
Silver		0.06	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Method: SW6020									Batch: 18645	
Sample ID: MB-18645	9	Method Blank				Run: ICPMS204-B_121116B			11/16/12 18:51	
Antimony		0.003	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Cobalt		ND	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.03	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Zinc		0.3	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121121A	
Sample ID: ICV STD		Initial Calibration Verification Standard							11/21/12 11:21	
Silver		0.0248	mg/L	0.0010	99	90	110			
Sample ID: ICV STD		Initial Calibration Verification Standard							11/21/12 23:06	
Silver		0.0249	mg/L	0.0010	100	90	110			
Method: SW6020									Batch: 18727	
Sample ID: MB-18727		Method Blank				Run: ICPMS204-B_121121A			11/21/12 23:44	
Silver		0.1	mg/kg	0.02						
Sample ID: LCS-18727		Laboratory Control Sample				Run: ICPMS204-B_121121A			11/21/12 23:49	
Silver		71.8	mg/kg	1.0	105	67.8	112.8			
Sample ID: LFB-18727		Laboratory Fortified Blank				Run: ICPMS204-B_121121A			11/21/12 23:53	
Silver		27.2	mg/kg	1.0	109	80	120			
Sample ID: H12100491-053AMS		Sample Matrix Spike				Run: ICPMS204-B_121121A			11/22/12 02:07	
Silver		26.9	mg/kg	1.0	108	75	125			
Sample ID: H12100491-053AMSD		Sample Matrix Spike Duplicate				Run: ICPMS204-B_121121A			11/22/12 02:11	
Silver		26.4	mg/kg	1.0	107	75	125	1.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67106
Sample ID: MB-67106		Method Blank				Run: SUB-B195304				11/15/12 14:50
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12100491-009B		Sample Matrix Spike				Run: SUB-B195304				11/15/12 14:50
Chromium, Hexavalent - Soluble		0.39	mg/kg	5.0	104	70	130			
Sample ID: H12100491-009B		Sample Matrix Spike Duplicate				Run: SUB-B195304				11/15/12 14:50
Chromium, Hexavalent - Soluble		0.38	mg/kg	5.0	101	70	130		20	
Sample ID: H12100491-011A		Sample Duplicate				Run: SUB-B195304				11/15/12 14:50
Chromium, Hexavalent - Soluble		0.11	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67148
Sample ID: MB-R195399		Method Blank				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12100491-013A		Sample Matrix Spike				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		0.39	mg/kg	0.10	102	70	130			
Sample ID: H12100491-013A		Sample Matrix Spike Duplicate				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		0.37	mg/kg	0.10	98	70	130	3.7	20	
Sample ID: H12100491-031B		Sample Matrix Spike				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		0.40	mg/kg	0.10	106	70	130			
Sample ID: H12100491-031B		Sample Matrix Spike Duplicate				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		0.38	mg/kg	0.10	99	70	130	6.2	20	
Sample ID: H12100491-031B		Sample Duplicate				Run: SUB-B195399				11/16/12 14:00
Chromium, Hexavalent - Soluble		0.031	mg/kg	0.10					30	
Method: SW7196A										Batch: B_67227
Sample ID: MB-67227		Method Blank				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12100491-053B		Sample Matrix Spike				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.43	mg/kg	0.010	113	70	130			
Sample ID: H12100491-053B		Sample Matrix Spike Duplicate				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130	2.8	20	
Sample ID: H12110065-001A		Sample Matrix Spike				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.43	mg/kg	0.010	112	70	130			
Sample ID: H12110065-001A		Sample Matrix Spike Duplicate				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	111	70	130	1.2	20	
Sample ID: H12110065-033A		Sample Duplicate				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.11	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67149
Sample ID: MB-67149		Method Blank				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12100491-032A		Sample Matrix Spike				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		0.037	mg/kg	0.010	96	70	130			
Sample ID: H12100491-032A		Sample Matrix Spike Duplicate				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		0.036	mg/kg	0.010	94	70	130	2.8	20	
Sample ID: H12100491-042A		Sample Matrix Spike				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		0.036	mg/kg	0.010	96	70	130			
Sample ID: H12100491-042A		Sample Matrix Spike Duplicate				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		0.036	mg/kg	0.010	95	70	130	1.1	20	
Sample ID: H12100491-051B		Sample Duplicate				Run: SUB-B195524				11/16/12 14:30
Chromium, Hexavalent - Soluble		0.20	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121109A	
Sample ID: ICV		Initial Calibration Verification Standard							11/09/12 12:43	
Mercury		0.0010	mg/kg	0.50	105	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/09/12 13:11	
Mercury		0.0025	mg/kg	0.50	100	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/09/12 13:46	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/09/12 14:22	
Mercury		0.0026	mg/kg	0.50	103	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/09/12 15:34	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/09/12 16:12	
Mercury		0.0025	mg/kg	0.50	100	90	110			
Method: SW7471A									Batch: 18621	
Sample ID: MB-18621		Method Blank				Run: HGCV201-H_121109A			11/09/12 12:57	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18621		Laboratory Control Sample				Run: HGCV201-H_121109A			11/09/12 13:08	
Mercury		5.6	mg/kg	0.50	115	80	120			
Sample ID: H12100404-001AMS		Sample Matrix Spike				Run: HGCV201-H_121109A			11/09/12 13:25	
Mercury		1.3	mg/kg	0.50	132	80	120			S
Sample ID: H12100404-001AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121109A			11/09/12 13:27	
Mercury		1.2	mg/kg	0.50	117	80	120	10	20	
Sample ID: H12100491-014AMS		Sample Matrix Spike				Run: HGCV201-H_121109A			11/09/12 14:00	
Mercury		1.1	mg/kg	0.50	111	80	120			
Sample ID: H12100491-014AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121109A			11/09/12 14:03	
Mercury		1.1	mg/kg	0.50	116	80	120	3.4	20	
Method: SW7471A									Batch: 18623	
Sample ID: MB-18623		Method Blank				Run: HGCV201-H_121109A			11/09/12 15:39	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18623		Laboratory Control Sample				Run: HGCV201-H_121109A			11/09/12 15:41	
Mercury		5.2	mg/kg	0.50	106	80	120			
Sample ID: H12100491-033AMS		Sample Matrix Spike				Run: HGCV201-H_121109A			11/09/12 15:48	
Mercury		1.1	mg/kg	0.50	110	80	120			
Sample ID: H12100491-033AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121109A			11/09/12 15:50	
Mercury		1.2	mg/kg	0.50	113	80	120	5.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/03/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12100491

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A										Batch: 18623
Sample ID: H12100491-053AMS		Sample Matrix Spike				Run: HGCV201-H_121109A				11/09/12 16:26
Mercury		1.1	mg/kg	0.50	107	80	120			
Sample ID: H12100491-053AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121109A				11/09/12 16:29
Mercury		1.1	mg/kg	0.50	109	80	120	3.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12100491

Login completed by: Tracy L. Lorash
Date Received: 10/30/2012
Reviewed by: BL2000\sdull
Received by: elm
Reviewed Date: 11/7/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

Cooler 1 was received at 3.0℃, Cooler 2 at 3.7℃ and Cooler 3 at 5.0℃. All temperatures were taken from temperature blanks and the samples were not received on ice. TI 10/31/12.

Hydrometrics, Inc.

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* J Pull

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - 60 mesh)	Total Metals - Sieve Duplicate	REMARKS
10/22/12	0815	X		MBSI-22-02x	01									X	X						H12100491
	1000	X		-22-01x																	
	1010	X		-22-03x																	
	1230	X		-09-01x																	
	1405	X		-09-02x												X					
	1600	X		-42-02x																	
10/22/12	1800	X		-42-01x																	
10/23/12	0750	X		-39-02x																	
	0915	X		-39-01x												X					
	1020	X		-52-01x																	
	1135	X		-52-02x																	
	1310	X		-16-01x																	
	1420	X		-16-02x																	
	1600	X		-45-02x																	
10/23/12	1610	X		MBSI-45-03x	01									X	X						

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
J Pull	10/30/12 0800	Ellen Walker	ELI Helena	Direct Bill MDEQ	Other hand-delivered
					Air Bill #
Relinquished *(Signature)*	**Date/Time**	**Received by: *(Signature)***	**Remarks**		
Ellen Walker	10/30/12 1426		Bill MDEQ - ATTN: Jason Seyler Reference ORG# 484422 - Inorganic Background Study		
Relinquished *(Signature)*	**Date/Time**	**Received for Laboratory by: *(Signature)***	**Date/Time**	**Enclosed:**	
		Esther A DeWitt	10/30/12 14:20	☒ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☒ Cover letter ☐ Other	

HFORM-1-5/99

Return results & electronic copy to: C1→3.0 TB 11

Split Samples:
[] Accepted [] Declined
Signature

Hydrometrics, Inc.

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* J Bull

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - brown)	Total Metals - Sieve Duplicate	REMARKS
10/23/12	1730	X		MBSI-45-01x	01									X	X		H12100491
10/24/12	0805	X		-14-01x													
↓	0955	X		-14-02x													
↓	1110	X		-29-02x													
10/24/12	1730	X		-29-01x													
10/25/12	1440	X		-33-01x													
10/26/12	0815	X		-03-01x													
↓	1225	X		-03-02x													
	1230	X		-03-03x													
↓	1415	X		↓ -23-01x	↓									↓	↓		
10/26/12	1525	X		MBSI -23-02x	01									X	X	X	

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
J Bull	10/30/12 0800		ELI Helena	Direct Bill MDEQ	Other hand-delivered
					Air Bill #
Relinquished *(Signature)*	**Date/Time**	**Received by: *(Signature)***	**Remarks**		
	10/30/12 1426		Bill MDEQ- ATTN: Jason Seyler		
			Reference ORG # 484422 - Inorganic Background Study		
Relinquished *(Signature)*	**Date/Time**	**Received for Laboratory by: *(Signature)***	**Date/Time**	**Enclosed:** ☒ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☒ Cover letter ☐ Other	
		Esther Mearit	10/30/12 1426		

HFORM-1-5/99

Return results & electronic copy to: C1→30 TB all

Split Samples: [] Accepted [] Declined _____ Signature

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

October 30, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are twenty-six (26) soil samples collected from October 22 through 26, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. Selected samples (shown on COC) are to be run as "laboratory sieve duplicates" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis						
Parameter[1]	**Digestion Method[2]**	**Analytical Method[2]**	**Required Reporting Limit (mg/kg)**	**EPA Regional Screening Level (RSL)[3] (mg/kg)**	**Maximum Holding Time (days)**	**Preservation**
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 05, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12110065 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 63 samples for MT DEQ-Site Response on 11/5/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12110065-001	MBSI-10-01	11/01/12 8:20	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-002	MBSI-10-01	11/01/12 8:20	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-003	MBSI-10-02	11/01/12 10:05	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-004	MBSI-10-02	11/01/12 10:05	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-005	MBSI-10-04	11/01/12 10:30	11/05/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA
H12110065-006	MBSI-32-01	11/01/12 11:50	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110065-007	MBSI-32-01	11/01/12 11:50	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-008	MBSI-32-02	11/01/12 14:05	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-009	MBSI-32-02	11/01/12 14:05	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-010	MBSI-40-01	11/01/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-011	MBSI-40-01	11/01/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-012	MBSI-49-02	11/02/12 8:30	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-013	MBSI-49-02	11/02/12 8:30	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-014	MBSI-49-01	11/02/12 9:50	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110065-015	MBSI-49-01	11/02/12 9:50	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-016	MBSI-49-01 Sieve Dup	11/02/12 9:50	11/05/12	Soil	Same As Above
H12110065-017	MBSI-47-01	11/02/12 11:20	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-018	MBSI-47-01	11/02/12 11:20	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-019	MBSI-47-02	11/02/12 15:10	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-020	MBSI-47-02	11/02/12 15:10	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-021	MBSI-44-02	11/03/12 9:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-022	MBSI-44-02	11/03/12 9:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-023	MBSI-53-02	11/03/12 10:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110065-024	MBSI-53-02	11/03/12 10:25 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-025	MBSI-53-03	11/03/12 10:35 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-026	MBSI-53-03	11/03/12 10:35 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-027	MBSI-53-01	11/03/12 11:50 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-028	MBSI-53-01	11/03/12 11:50 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-029	MBSI-44-01	11/03/12 13:40 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-030	MBSI-44-01	11/03/12 13:40 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-031	MBSI-40-02	11/03/12 14:35 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110065-032	MBSI-40-02	11/03/12 14:35	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-033	MBSI-06-02	11/04/12 9:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-034	MBSI-06-02	11/04/12 9:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-035	MBSI-43-02	11/04/12 10:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-036	MBSI-43-02	11/04/12 10:25	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-037	MBSI-43-02 Sieve Dup	11/04/12 10:25	11/05/12	Soil	Same As Above
H12110065-038	MBSI-01-01	11/04/12 12:40	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-039	MBSI-01-01	11/04/12 12:40	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-040	MBSI-01-02	11/04/12 13:55	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110065-041	MBSI-01-02	11/04/12 13:55	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-042	MBSI-51-01	11/04/12 15:40	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-043	MBSI-51-01	11/04/12 15:40	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-044	MBSI-51-02	11/04/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-045	MBSI-51-02	11/04/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-046	MBSI-51-04	11/04/12 17:30	11/05/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA
H12110065-047	MBSI-08-02	11/01/12 9:30	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-048	MBSI-08-02	11/01/12 9:30	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110065-049	MBSI-08-01	11/01/12 12:15	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-050	MBSI-08-01	11/01/12 12:15	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-051	MBSI-36-02	11/01/12 15:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-052	MBSI-36-02	11/01/12 15:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-053	MBSI-36-02 Sieve Dup	11/01/12 15:00	11/05/12	Soil	Same As Above
H12110065-054	MBSI-36-01	11/01/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-055	MBSI-36-01	11/01/12 17:00	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-056	MBSI-19-02	11/02/12 8:45	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-057	MBSI-19-02	11/02/12 8:45	11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110065-058	MBSI-19-01	11/02/12 11:30 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-059	MBSI-19-01	11/02/12 11:30 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-060	MBSI-02-02	11/02/12 14:30 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-061	MBSI-02-02	11/02/12 14:30 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110065-062	MBSI-02-01	11/02/12 16:45 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110065-063	MBSI-02-01	11/02/12 16:45 11/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.05 15:56:41 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12110065

Report Date: 12/05/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Abb 12/5/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

	Analysis	No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T	Mn-T	Ni-T
	Units	wt% Retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110065-001	MBSI-10-01		< 0.1	9360	4.3	81	0.4	0.2	3.9	17.1	8.2	9550	176	10.9
H12110065-002	MBSI-10-01	19.7	0.2	10400	4.1	84	0.4	0.2	3.4	19.2	113	9800	177	10.0
H12110065-003	MBSI-10-02		< 0.1	5770	1.5	32	0.1	< 0.1	3.1	12.8	4.0	8550	102	7.3
H12110065-004	MBSI-10-02	65.5	0.2	10000	3.0	59	0.2	< 0.1	4.5	26.0	298	13700	178	12.4
H12110065-005	MBSI-10-04													
H12110065-006	MBSI-32-01		< 0.1	15400	8.8	111	0.7	0.4	8.0	20.6	13.3	16300	470	15.4
H12110065-007	MBSI-32-01	47.7	0.2	16500	8.2	107	0.8	0.4	5.2	25.5	251	15100	358	17.4
H12110065-008	MBSI-32-02		0.2	20100	8.0	171	0.8	0.3	8.7	23.2	15.0	20100	429	17.3
H12110065-009	MBSI-32-02	14.3	0.1	18500	8.0	171	0.8	0.2	6.0	24.4	143	19000	404	15.6
H12110065-010	MBSI-40-01		< 0.1	33700	4.0	126	0.4	0.3	13.6	29.6	23.8	18000	529	41.3
H12110065-011	MBSI-40-01	42.8	0.1	38400	6.1	161	0.5	0.4	9.8	34.3	533	18300	490	44.0
H12110065-012	MBSI-49-02		< 0.1	24500	7.4	172	1.4	0.3	12.0	32.8	19.4	23500	726	21.9
H12110065-013	MBSI-49-02	40.5	0.2	24300	8.9	191	1.3	0.3	9.4	34.8	307	22900	796	20.9
H12110065-014	MBSI-49-01		0.1	27300	7.9	225	0.9	0.3	12.1	31.0	26.4	25000	735	21.8
H12110065-015	MBSI-49-01	18.1	0.2	27500	7.7	231	1.0	0.3	8.7	35.0	173	24600	717	21.0
H12110065-016	MBSI-49-01 Sieve Dup	19.8	0.2	26400	8.0	227	1.0	0.3	8.8	33.9	52.4	24400	716	21.1
H12110065-017	MBSI-47-01		< 0.1	20400	8.3	249	0.9	0.5	8.7	13.8	19.1	17600	760	9.4
H12110065-018	MBSI-47-01	13.7	< 0.1	21600	8.1	255	1.0	0.3	6.1	17.3	40.9	17700	712	10.0
H12110065-019	MBSI-47-02		< 0.1	22800	11.3	98	1.4	0.2	12.7	26.7	18.1	25300	640	21.9
H12110065-020	MBSI-47-02	18.3	< 0.1	26300	9.4	104	1.6	0.2	8.8	32.9	36.1	25100	581	19.9
H12110065-021	MBSI-44-02		< 0.1	17200	8.2	121	0.7	0.3	6.6	19.5	14.5	15800	329	13.4
H12110065-022	MBSI-44-02	23.0	< 0.1	18500	8.1	129	0.7	0.3	5.1	22.4	29.8	16000	336	13.2
H12110065-023	MBSI-53-02		0.1	21700	9.6	137	0.8	0.4	7.6	23.5	15.8	18000	418	15.9
H12110065-024	MBSI-53-02	19.9	0.1	22100	9.3	140	0.8	0.4	5.7	26.9	54.9	18100	425	15.7
H12110065-025	MBSI-53-03		< 0.1	20500	9.5	130	0.8	0.4	7.5	22.7	15.3	17600	414	16.4
H12110065-026	MBSI-53-03	25.0	0.1	21600	9.5	139	0.9	0.4	6.2	25.5	69.7	18000	433	16.0
H12110065-027	MBSI-53-01		< 0.1	21900	10.7	201	0.8	0.2	9.8	22.4	16.5	22200	257	19.5
H12110065-028	MBSI-53-01	16.2	0.1	23900	11.2	211	0.9	0.2	7.2	27.3	165	22000	264	18.8
H12110065-029	MBSI-44-01		0.1	13200	9.5	111	0.6	0.3	6.9	16.5	12.4	17900	388	11.5
H12110065-030	MBSI-44-01	40.8	0.2	15700	9.7	126	0.7	0.3	4.9	21.6	52.6	17600	415	12.1
H12110065-031	MBSI-40-02		0.1	23500	6.9	227	0.9	0.3	12.5	29.2	26.6	23900	497	28.1
H12110065-032	MBSI-40-02	16.5	0.1	25900	7.2	231	0.9	0.3	8.6	35.4	37.4	23100	455	26.5
H12110065-033	MBSI-06-02		0.1	15500	6.3	132	1.1	0.4	6.6	18.7	19.0	15500	591	12.4
H12110065-034	MBSI-06-02	5.3	0.1	17600	6.5	139	1.2	0.3	5.0	23.3	32.1	16800	615	12.8
H12110065-035	MBSI-43-02		0.1	18000	10.8	163	0.9	0.4	7.7	20.2	37.9	17000	466	13.6
H12110065-036	MBSI-43-02	18.8	0.2	20000	12.0	157	1.0	0.5	6.1	24.8	59.8	17900	491	14.9
H12110065-037	MBSI-43-02 Sieve Dup	19.8	0.2	19500	12.2	157	0.9	0.5	6.2	24.3	59.2	18000	491	14.6
H12110065-038	MBSI-01-01		< 0.1	7080	8.7	116	0.2	0.2	2.1	3.2	6.2	10600	805	1.6
H12110065-039	MBSI-01-01	77.1	0.2	15600	19.7	293	0.6	0.4	3.0	8.5	50.3	21700	1560	6.1
H12110065-040	MBSI-01-02		0.2	16100	29.0	374	0.6	1.1	6.1	25.9	43.6	12000	344	13.9
H12110065-041	MBSI-01-02	64.9	0.6	21500	40.5	496	1.0	1.6	7.5	36.0	103	15700	387	19.2
H12110065-042	MBSI-51-01		0.1	18100	33.3	161	0.6	0.6	6.8	11.8	25.7	17000	620	5.7

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

		Analysis	No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T	Mn-T	Ni-T
		Units	wt% Retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID		Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110065-043	MBSI-51-01		46.3	0.4	22800	43.3	210	0.8	0.9	7.7	13.8	77.3	19200	640	6.5
H12110065-044	MBSI-51-02			0.4	19600	23.3	198	0.9	0.9	9.2	23.2	45.2	21000	678	20.7
H12110065-045	MBSI-51-02		29.6	0.5	20900	21.8	178	0.9	0.9	9.0	22.4	60.5	19000	581	15.8
H12110065-046	MBSI-51-04														
H12110065-047	MBSI-08-02			0.1	7960	5.1	108	0.4	0.4	3.9	14.5	14.0	8210	171	7.6
H12110065-048	MBSI-08-02		36.2	0.2	10400	6.1	124	0.5	0.5	4.9	17.3	34.1	8640	177	7.8
H12110065-049	MBSI-08-01			0.2	22700	8.3	207	0.9	0.3	8.2	21.5	18.8	20800	501	17.5
H12110065-050	MBSI-08-01		< 0.1	0.1	20600	8.2	206	0.8	0.3	8.0	17.2	29.6	19700	526	17.4
H12110065-051	MBSI-36-02			0.1	16800	11.6	185	1.1	0.6	8.9	29.3	15.7	20100	520	28.2
H12110065-052	MBSI-36-02		46.6	0.2	19500	12.6	204	1.1	0.7	9.4	29.2	34.0	21000	585	29.9
H12110065-053	MBSI-36-02 Sieve Dup		42.2	0.1	19500	13.0	207	1.2	0.7	9.7	29.9	34.3	21400	597	30.4
H12110065-054	MBSI-36-01			0.1	17600	13.5	199	0.8	0.4	8.2	23.0	19.0	20300	454	20.0
H12110065-055	MBSI-36-01		26.7	0.2	18500	13.0	204	0.9	0.4	8.7	20.9	33.8	20000	522	20.7
H12110065-056	MBSI-19-02			< 0.1	12900	6.0	136	0.5	0.3	7.0	16.7	13.9	15600	388	15.4
H12110065-057	MBSI-19-02		15.5	0.1	14600	6.9	147	0.6	0.3	7.8	16.5	36.7	17000	447	16.8
H12110065-058	MBSI-19-01			< 0.1	18300	10.0	176	0.7	0.2	8.0	22.3	17.0	19700	316	20.0
H12110065-059	MBSI-19-01		26.0	< 0.1	21300	10.9	188	0.9	0.2	8.8	22.0	31.9	21100	353	23.4
H12110065-060	MBSI-02-02			< 0.1	18800	16.6	213	1.0	0.3	6.8	18.0	18.1	18000	372	18.7
H12110065-061	MBSI-02-02		4.8	0.1	22100	15.4	229	1.1	0.4	7.1	18.0	108	18100	401	19.2
H12110065-062	MBSI-02-01			0.2	18800	17.0	458	0.9	0.5	12.9	25.4	27.2	24000	773	27.4
H12110065-063	MBSI-02-01		9.1	< 0.1	19200	14.0	475	0.9	0.5	11.4	21.9	47.6	22000	840	24.2

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

		Analysis	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Al-T	Sb-T	As-T	Ba-T	Be-T	Cd-T
		Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID		Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110065-001	MBSI-10-01		7	< 0.1	0.2	0.11	21.4	30	17						
H12110065-002	MBSI-10-01		15	< 0.1	0.2	0.14	21.6	47	19						
H12110065-003	MBSI-10-02		11	< 0.1	< 0.2	0.08	11.3	22	13						
H12110065-004	MBSI-10-02		19	< 0.1	< 0.2	0.15	20.6	86	26						
H12110065-005	MBSI-10-04									< 0.03	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001
H12110065-006	MBSI-32-01		27	0.2	0.3	0.23	27.3	61	21						
H12110065-007	MBSI-32-01		32	0.2	0.4	0.25	25.3	105	26						
H12110065-008	MBSI-32-02		18	0.2	0.4	0.27	37.3	69	23						
H12110065-009	MBSI-32-02		15	0.1	0.4	0.25	33.9	86	24						
H12110065-010	MBSI-40-01		11	< 0.1	< 0.2	0.10	29.6	56	30						
H12110065-011	MBSI-40-01		16	< 0.1	0.3	0.15	30.9	153	34						
H12110065-012	MBSI-49-02		24	0.2	0.3	0.30	29.6	84	33						
H12110065-013	MBSI-49-02		33	0.2	0.3	0.31	28.5	135	35						
H12110065-014	MBSI-49-01		21	0.2	0.3	0.25	46.4	69	31						
H12110065-015	MBSI-49-01		23	0.2	0.3	0.27	47.8	92	35						
H12110065-016	MBSI-49-01 Sieve Dup		19	0.2	0.3	0.25	45.2	70	34						
H12110065-017	MBSI-47-01		18	0.2	0.3	0.35	24.9	57	14						
H12110065-018	MBSI-47-01		21	0.2	0.3	0.36	26.2	61	17						
H12110065-019	MBSI-47-02		27	0.2	0.4	0.24	26.8	51	26						
H12110065-020	MBSI-47-02		28	0.1	0.4	0.27	30.5	53	33						
H12110065-021	MBSI-44-02		18	0.2	0.4	0.19	25.8	53	19						
H12110065-022	MBSI-44-02		24	0.2	0.4	0.21	25.7	56	22						
H12110065-023	MBSI-53-02		24	0.1	0.4	0.29	33.4	68	24						
H12110065-024	MBSI-53-02		27	0.1	0.3	0.28	33.7	73	27						
H12110065-025	MBSI-53-03		14	0.1	0.4	0.27	31.4	68	23						
H12110065-026	MBSI-53-03		24	0.1	0.4	0.29	32.4	75	26						
H12110065-027	MBSI-53-01		22	0.2	0.5	0.28	42.4	73	22						
H12110065-028	MBSI-53-01		23	0.2	0.5	0.31	47.7	95	27						
H12110065-029	MBSI-44-01		20	0.2	0.4	0.16	30.7	54	16						
H12110065-030	MBSI-44-01		25	0.2	0.4	0.21	34.1	64	22						
H12110065-031	MBSI-40-02		22	0.1	0.3	0.21	36.4	64	29						
H12110065-032	MBSI-40-02		25	0.1	0.3	0.24	41.2	63	35						
H12110065-033	MBSI-06-02		19	0.2	0.2	0.31	29.6	57	19						
H12110065-034	MBSI-06-02		23	0.3	0.2	0.36	33.9	59	23						
H12110065-035	MBSI-43-02		21	0.2	0.2	0.28	27.7	67	20						
H12110065-036	MBSI-43-02		30	0.2	0.3	0.31	29.8	72	25						
H12110065-037	MBSI-43-02 Sieve Dup		22	0.2	0.3	0.30	29.1	72	24						
H12110065-038	MBSI-01-01		6	< 0.1	< 0.2	0.20	6.7	34	< 5						
H12110065-039	MBSI-01-01		24	0.2	0.2	0.42	18.0	89	8						
H12110065-040	MBSI-01-02		28	0.3	< 0.2	0.35	18.7	67	26						
H12110065-041	MBSI-01-02		36.5	0.6	0.2	0.53	29.6	121	36						
H12110065-042	MBSI-51-01		20	0.2	< 0.2	0.23	31.5	99	12						

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

		Analysis	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Al-T	Sb-T	As-T	Ba-T	Be-T	Cd-T
		Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	**Client Sample ID**		**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**
H12110065-043	MBSI-51-01		23.2	0.3	< 0.2	0.25	44.6	132	14						
H12110065-044	MBSI-51-02		36.9	0.8	0.4	0.29	39.6	107	23						
H12110065-045	MBSI-51-02		38.6	0.6	0.3	0.36	41.7	112	22						
H12110065-046	MBSI-51-04									< 0.03	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001
H12110065-047	MBSI-08-02		8.7	0.1	0.6	0.12	42.6	51	14						
H12110065-048	MBSI-08-02		11.5	0.1	0.6	0.17	58.4	63	17						
H12110065-049	MBSI-08-01		14.5	0.2	0.5	0.33	39.7	84	22						
H12110065-050	MBSI-08-01		14.4	0.1	0.5	0.31	33.6	82	17						
H12110065-051	MBSI-36-02		16.9	0.2	0.6	0.28	37.7	76	29						
H12110065-052	MBSI-36-02		18.9	0.2	0.7	0.33	44.8	83	29						
H12110065-053	MBSI-36-02 Sieve Dup		19.0	0.2	0.7	0.32	44.6	82	30						
H12110065-054	MBSI-36-01		14.5	0.2	0.6	0.24	40.2	89	23						
H12110065-055	MBSI-36-01		14.9	0.3	0.6	0.26	39.6	93	21						
H12110065-056	MBSI-19-02		9.3	0.1	0.4	0.22	28.9	62	17						
H12110065-057	MBSI-19-02		10.4	0.1	0.3	0.25	32.7	70	16						
H12110065-058	MBSI-19-01		11.5	0.2	0.8	0.27	48.1	60	22						
H12110065-059	MBSI-19-01		12.7	0.2	0.8	0.31	55.8	69	22						
H12110065-060	MBSI-02-02		13.5	0.2	0.6	0.39	35.3	80	18						
H12110065-061	MBSI-02-02		14.2	0.2	0.6	0.44	42.5	94	18						
H12110065-062	MBSI-02-01		17.2	0.4	0.6	0.27	54.8	101	25						
H12110065-063	MBSI-02-01		15.4	0.3	0.5	0.28	52.0	98	22						

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

	Analysis	Cr-T	Co-T	Cu-T	Fe-T	Pb-T	Mn-T	Hg-T	Ni-T	Se-T	Ag-T	Tl-T	V-T	Zn-T
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110065-001	MBSI-10-01													
H12110065-002	MBSI-10-01													
H12110065-003	MBSI-10-02													
H12110065-004	MBSI-10-02													
H12110065-005	MBSI-10-04	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	< 0.001	< 0.0001	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01
H12110065-006	MBSI-32-01													
H12110065-007	MBSI-32-01													
H12110065-008	MBSI-32-02													
H12110065-009	MBSI-32-02													
H12110065-010	MBSI-40-01													
H12110065-011	MBSI-40-01													
H12110065-012	MBSI-49-02													
H12110065-013	MBSI-49-02													
H12110065-014	MBSI-49-01													
H12110065-015	MBSI-49-01													
H12110065-016	MBSI-49-01 Sieve Dup													
H12110065-017	MBSI-47-01													
H12110065-018	MBSI-47-01													
H12110065-019	MBSI-47-02													
H12110065-020	MBSI-47-02													
H12110065-021	MBSI-44-02													
H12110065-022	MBSI-44-02													
H12110065-023	MBSI-53-02													
H12110065-024	MBSI-53-02													
H12110065-025	MBSI-53-03													
H12110065-026	MBSI-53-03													
H12110065-027	MBSI-53-01													
H12110065-028	MBSI-53-01													
H12110065-029	MBSI-44-01													
H12110065-030	MBSI-44-01													
H12110065-031	MBSI-40-02													
H12110065-032	MBSI-40-02													
H12110065-033	MBSI-06-02													
H12110065-034	MBSI-06-02													
H12110065-035	MBSI-43-02													
H12110065-036	MBSI-43-02													
H12110065-037	MBSI-43-02 Sieve Dup													
H12110065-038	MBSI-01-01													
H12110065-039	MBSI-01-01													
H12110065-040	MBSI-01-02													
H12110065-041	MBSI-01-02													
H12110065-042	MBSI-51-01													

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

	Analysis	Cr-T	Co-T	Cu-T	Fe-T	Pb-T	Mn-T	Hg-T	Ni-T	Se-T	Ag-T	Tl-T	V-T	Zn-T
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	**Client Sample ID**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**
H12110065-043	MBSI-51-01													
H12110065-044	MBSI-51-02													
H12110065-045	MBSI-51-02													
H12110065-046	MBSI-51-04	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	< 0.001	< 0.0001	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01
H12110065-047	MBSI-08-02													
H12110065-048	MBSI-08-02													
H12110065-049	MBSI-08-01													
H12110065-050	MBSI-08-01													
H12110065-051	MBSI-36-02													
H12110065-052	MBSI-36-02													
H12110065-053	MBSI-36-02 Sieve Dup													
H12110065-054	MBSI-36-01													
H12110065-055	MBSI-36-01													
H12110065-056	MBSI-19-02													
H12110065-057	MBSI-19-02													
H12110065-058	MBSI-19-01													
H12110065-059	MBSI-19-01													
H12110065-060	MBSI-02-02													
H12110065-061	MBSI-02-02													
H12110065-062	MBSI-02-01													
H12110065-063	MBSI-02-01													

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

	Analysis	Hg, Total	Chromium,
	Units	mg/kg	mg/kg
Sample ID	**Client Sample ID**	**Results**	**Results**
H12110065-001	MBSI-10-01	< 0.050	< 0.29
H12110065-002	MBSI-10-01		< 0.29
H12110065-003	MBSI-10-02	< 0.050	< 0.29
H12110065-004	MBSI-10-02		< 0.29
H12110065-005	MBSI-10-04		
H12110065-006	MBSI-32-01	< 0.050	< 0.29
H12110065-007	MBSI-32-01		< 0.29
H12110065-008	MBSI-32-02	< 0.050	< 0.29
H12110065-009	MBSI-32-02		< 0.29
H12110065-010	MBSI-40-01	< 0.050	< 0.29
H12110065-011	MBSI-40-01		< 0.29
H12110065-012	MBSI-49-02	< 0.050	< 0.29
H12110065-013	MBSI-49-02		< 0.29
H12110065-014	MBSI-49-01	< 0.050	< 0.29
H12110065-015	MBSI-49-01		< 0.29
H12110065-016	MBSI-49-01 Sieve Dup		< 0.29
H12110065-017	MBSI-47-01	< 0.050	< 0.29
H12110065-018	MBSI-47-01		< 0.29
H12110065-019	MBSI-47-02	< 0.050	0.90
H12110065-020	MBSI-47-02		< 0.29
H12110065-021	MBSI-44-02	< 0.050	0.37
H12110065-022	MBSI-44-02		< 0.29
H12110065-023	MBSI-53-02	< 0.050	< 0.29
H12110065-024	MBSI-53-02		< 0.29
H12110065-025	MBSI-53-03	< 0.050	< 0.29
H12110065-026	MBSI-53-03		< 0.29
H12110065-027	MBSI-53-01	< 0.050	< 0.29
H12110065-028	MBSI-53-01		< 0.29
H12110065-029	MBSI-44-01	< 0.050	< 0.29
H12110065-030	MBSI-44-01		< 0.29
H12110065-031	MBSI-40-02	< 0.050	< 0.29
H12110065-032	MBSI-40-02		< 0.29
H12110065-033	MBSI-06-02	< 0.050	< 0.29
H12110065-034	MBSI-06-02		< 0.29
H12110065-035	MBSI-43-02	< 0.050	< 0.29
H12110065-036	MBSI-43-02		< 0.29
H12110065-037	MBSI-43-02 Sieve Dup		< 0.29
H12110065-038	MBSI-01-01	< 0.050	< 0.29
H12110065-039	MBSI-01-01		< 0.29
H12110065-040	MBSI-01-02	< 0.050	< 0.29
H12110065-041	MBSI-01-02		< 0.29
H12110065-042	MBSI-51-01	< 0.050	< 0.29

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110065

Report Date: 12/05/12
Date Received: 11/05/12

		Analysis	Hg, Total	Chromium,
		Units	mg/kg	mg/kg
Sample ID	Client Sample ID		Results	Results
H12110065-043	MBSI-51-01			< 0.29
H12110065-044	MBSI-51-02		< 0.050	< 0.29
H12110065-045	MBSI-51-02			< 0.29
H12110065-046	MBSI-51-04			
H12110065-047	MBSI-08-02		< 0.050	< 0.29
H12110065-048	MBSI-08-02			< 0.29
H12110065-049	MBSI-08-01		< 0.050	< 0.29
H12110065-050	MBSI-08-01			< 0.29
H12110065-051	MBSI-36-02		< 0.050	< 0.29
H12110065-052	MBSI-36-02			< 0.29
H12110065-053	MBSI-36-02 Sieve Dup			< 0.29
H12110065-054	MBSI-36-01		< 0.050	< 0.29
H12110065-055	MBSI-36-01			< 0.29
H12110065-056	MBSI-19-02		< 0.050	< 0.29
H12110065-057	MBSI-19-02			< 0.29
H12110065-058	MBSI-19-01		< 0.050	< 0.29
H12110065-059	MBSI-19-01			< 0.29
H12110065-060	MBSI-02-02		< 0.050	< 0.29
H12110065-061	MBSI-02-02			< 0.29
H12110065-062	MBSI-02-01		< 0.050	< 0.29
H12110065-063	MBSI-02-01			< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121114B		
Sample ID: ICV	10	Initial Calibration Verification Standard							11/14/12 11:58	
Aluminum		4.04	mg/L	0.10	101	90	110			
Barium		0.789	mg/L	0.10	99	90	110			
Chromium		0.812	mg/L	0.010	102	90	110			
Copper		0.800	mg/L	0.010	100	90	110			
Iron		4.05	mg/L	0.030	101	90	110			
Lead		0.746	mg/L	0.013	93	90	110			
Manganese		4.01	mg/L	0.010	100	90	110			
Nickel		0.801	mg/L	0.010	100	90	110			
Vanadium		0.803	mg/L	0.10	100	90	110			
Zinc		0.775	mg/L	0.010	97	90	110			
Sample ID: ICSA	10	Interference Check Sample A							11/14/12 12:13	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000510	mg/L	0.10		0	0			
Chromium		0.0102	mg/L	0.010		0	0			
Copper		0.00130	mg/L	0.010		0	0			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.0440	mg/L	0.013		0	0			
Manganese		0.000330	mg/L	0.010		0	0			
Nickel		0.00854	mg/L	0.010		0	0			
Vanadium		-0.00141	mg/L	0.10		0	0			
Zinc		0.0105	mg/L	0.010		0	0			
Sample ID: ICSAB	10	Interference Check Sample AB							11/14/12 12:17	
Aluminum		515	mg/L	0.10	103	80	120			
Barium		0.486	mg/L	0.10	97	80	120			
Chromium		0.477	mg/L	0.010	95	80	120			
Copper		0.494	mg/L	0.010	99	80	120			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.892	mg/L	0.013	89	80	120			
Manganese		0.471	mg/L	0.010	94	80	120			
Nickel		0.920	mg/L	0.010	92	80	120			
Vanadium		0.467	mg/L	0.10	93	80	120			
Zinc		0.947	mg/L	0.010	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121115C	
Sample ID: ICV	3	Initial Calibration Verification Standard							11/15/12 09:38	
Barium		0.808	mg/L	0.10	101	90	110			
Copper		0.812	mg/L	0.010	101	90	110			
Vanadium		0.804	mg/L	0.10	100	90	110			
Sample ID: ICSA	3	Interference Check Sample A							11/15/12 09:53	
Barium		0.000320	mg/L	0.10		0	0			
Copper		0.00508	mg/L	0.010		0	0			
Vanadium		-0.00370	mg/L	0.10		0	0			
Sample ID: ICSAB	3	Interference Check Sample AB							11/15/12 09:57	
Barium		0.504	mg/L	0.10	101	80	120			
Copper		0.505	mg/L	0.010	101	80	120			
Vanadium		0.479	mg/L	0.10	96	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121119B	
Sample ID: ICV	2	Initial Calibration Verification Standard							11/19/12 10:01	
Aluminum		4.08	mg/L	0.10	102	90	110			
Iron		4.07	mg/L	0.030	102	90	110			
Sample ID: ICSA	2	Interference Check Sample A							11/19/12 10:15	
Aluminum		513	mg/L	0.10	103	80	120			
Iron		187	mg/L	0.030	94	80	120			
Sample ID: ICSAB	2	Interference Check Sample AB							11/19/12 10:19	
Aluminum		516	mg/L	0.10	103	80	120			
Iron		190	mg/L	0.030	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121121B		
Sample ID: ICV	11	Initial Calibration Verification Standard							11/21/12 12:18	
Aluminum		4.01	mg/L	0.10	100	90	110			
Barium		0.785	mg/L	0.10	98	90	110			
Chromium		0.777	mg/L	0.010	97	90	110			
Cobalt		0.799	mg/L	0.010	100	90	110			
Copper		0.793	mg/L	0.010	99	90	110			
Iron		4.09	mg/L	0.030	102	90	110			
Lead		0.782	mg/L	0.013	98	90	110			
Manganese		4.00	mg/L	0.010	100	90	110			
Nickel		0.772	mg/L	0.010	96	90	110			
Vanadium		0.796	mg/L	0.10	99	90	110			
Zinc		0.789	mg/L	0.010	99	90	110			
Sample ID: ICSA	11	Interference Check Sample A							11/21/12 12:33	
Aluminum		505	mg/L	0.10	101	80	120			
Barium		0.000220	mg/L	0.10		0	0			
Chromium		0.00230	mg/L	0.012		0	0			
Cobalt		-0.00379	mg/L	0.010		0	0			
Copper		0.00604	mg/L	0.010		0	0			
Iron		192	mg/L	0.030	96	80	120			
Lead		0.0354	mg/L	0.013		0	0			
Manganese		-0.00308	mg/L	0.010		0	0			
Nickel		0.00463	mg/L	0.010		0	0			
Vanadium		0.00447	mg/L	0.10		0	0			
Zinc		0.0110	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							11/21/12 12:37	
Aluminum		512	mg/L	0.10	102	80	120			
Barium		0.487	mg/L	0.10	97	80	120			
Chromium		0.455	mg/L	0.012	91	80	120			
Cobalt		0.447	mg/L	0.010	89	80	120			
Copper		0.498	mg/L	0.010	100	80	120			
Iron		192	mg/L	0.030	96	80	120			
Lead		0.927	mg/L	0.013	93	80	120			
Manganese		0.474	mg/L	0.010	95	80	120			
Nickel		0.900	mg/L	0.010	90	80	120			
Vanadium		0.477	mg/L	0.10	95	80	120			
Zinc		0.974	mg/L	0.010	97	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121126B	
Sample ID: ICV	8	Initial Calibration Verification Standard							11/26/12 10:41	
Aluminum		4.03	mg/L	0.10	101	90	110			
Barium		0.789	mg/L	0.10	99	90	110			
Chromium		0.787	mg/L	0.010	98	90	110			
Cobalt		0.786	mg/L	0.010	98	90	110			
Iron		4.06	mg/L	0.030	101	90	110			
Lead		0.757	mg/L	0.013	95	90	110			
Manganese		3.99	mg/L	0.010	100	90	110			
Nickel		0.783	mg/L	0.010	98	90	110			
Sample ID: ICSA	8	Interference Check Sample A							11/26/12 10:56	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000230	mg/L	0.10		0	0			
Chromium		0.00694	mg/L	0.010		0	0			
Cobalt		-0.00736	mg/L	0.010		0	0			
Iron		188	mg/L	0.030	94	80	120			
Lead		-0.00941	mg/L	0.013		0	0			
Manganese		0.00521	mg/L	0.010		0	0			
Nickel		0.00836	mg/L	0.010		0	0			
Sample ID: ICSAB	8	Interference Check Sample AB							11/26/12 11:00	
Aluminum		515	mg/L	0.10	103	80	120			
Barium		0.487	mg/L	0.10	97	80	120			
Chromium		0.476	mg/L	0.010	95	80	120			
Cobalt		0.457	mg/L	0.010	91	80	120			
Iron		187	mg/L	0.030	94	80	120			
Lead		0.961	mg/L	0.013	96	80	120			
Manganese		0.476	mg/L	0.010	95	80	120			
Nickel		0.905	mg/L	0.010	90	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121127A	
Sample ID: ICV	3	Initial Calibration Verification Standard							11/27/12 11:36	
Aluminum		4.03	mg/L	0.10	101	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.790	mg/L	0.013	99	90	110			
Sample ID: ICSA	3	Interference Check Sample A							11/27/12 11:50	
Aluminum		506	mg/L	0.10	101	80	120			
Iron		186	mg/L	0.030	93	80	120			
Lead		0.0608	mg/L	0.013		0	0			
Sample ID: ICSAB	3	Interference Check Sample AB							11/27/12 11:55	
Aluminum		486	mg/L	0.10	97	80	120			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.960	mg/L	0.013	96	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121107A		
Sample ID: ICV STD	18	Initial Calibration Verification Standard							11/07/12 13:05	
Aluminum		0.262	mg/L	0.10	105	90	110			
Antimony		0.0509	mg/L	0.050	102	90	110			
Arsenic		0.0507	mg/L	0.0050	101	90	110			
Barium		0.0513	mg/L	0.10	103	90	110			
Beryllium		0.0255	mg/L	0.0010	102	90	110			
Cadmium		0.0261	mg/L	0.0010	104	90	110			
Chromium		0.0499	mg/L	0.010	100	90	110			
Cobalt		0.0513	mg/L	0.010	103	90	110			
Copper		0.0518	mg/L	0.010	104	90	110			
Iron		0.269	mg/L	0.030	108	90	110			
Lead		0.0500	mg/L	0.010	100	90	110			
Manganese		0.250	mg/L	0.010	100	90	110			
Nickel		0.0508	mg/L	0.010	102	90	110			
Selenium		0.0515	mg/L	0.0050	103	90	110			
Silver		0.0256	mg/L	0.0050	103	90	110			
Thallium		0.0504	mg/L	0.10	101	90	110			
Vanadium		0.0501	mg/L	0.10	100	90	110			
Zinc		0.0521	mg/L	0.010	104	90	110			
Sample ID: ICSA	18	Interference Check Sample A							11/07/12 13:10	
Aluminum		44.7	mg/L	0.10	112	70	130			
Antimony		0.000593	mg/L	0.050						
Arsenic		0.00109	mg/L	0.0050						
Barium		0.000132	mg/L	0.10						
Beryllium		-5.00E-06	mg/L	0.0010						
Cadmium		0.00107	mg/L	0.0010						
Chromium		0.00122	mg/L	0.010						
Cobalt		0.000384	mg/L	0.010						
Copper		0.000268	mg/L	0.010						
Iron		102	mg/L	0.030	102	70	130			
Lead		0.000230	mg/L	0.010						
Manganese		0.000339	mg/L	0.010						
Nickel		0.000687	mg/L	0.010						
Selenium		0.00187	mg/L	0.0050						
Silver		0.000306	mg/L	0.0050						
Thallium		4.30E-05	mg/L	0.10						
Vanadium		0.000291	mg/L	0.10						
Zinc		0.00134	mg/L	0.010						
Sample ID: ICSAB	18	Interference Check Sample AB							11/07/12 13:14	
Aluminum		44.2	mg/L	0.10	110	70	130			
Antimony		0.000399	mg/L	0.050		0	0			
Arsenic		0.0111	mg/L	0.0050	111	70	130			
Barium		0.000354	mg/L	0.10		0	0			
Beryllium		-1.80E-05	mg/L	0.0010		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121107A		
Sample ID: ICSAB	18	Interference Check Sample AB							11/07/12 13:14	
Cadmium		0.0114	mg/L	0.0010	114	70	130			
Chromium		0.0225	mg/L	0.010	112	70	130			
Cobalt		0.0221	mg/L	0.010	110	70	130			
Copper		0.0211	mg/L	0.010	105	70	130			
Iron		101	mg/L	0.030	101	70	130			
Lead		0.000146	mg/L	0.010		0	0			
Manganese		0.0217	mg/L	0.010	109	70	130			
Nickel		0.0222	mg/L	0.010	111	70	130			
Selenium		0.0110	mg/L	0.0050	110	70	130			
Silver		0.0223	mg/L	0.0050	111	70	130			
Thallium		1.70E-05	mg/L	0.10		0	0			
Vanadium		0.0224	mg/L	0.10	112	70	130			
Zinc		0.0119	mg/L	0.010	119	70	130			
Sample ID: ICV STD	18	Initial Calibration Verification Standard							11/07/12 15:47	
Aluminum		0.260	mg/L	0.10	104	90	110			
Antimony		0.0507	mg/L	0.050	101	90	110			
Arsenic		0.0483	mg/L	0.0050	97	90	110			
Barium		0.0502	mg/L	0.10	100	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0260	mg/L	0.0010	104	90	110			
Chromium		0.0482	mg/L	0.010	96	90	110			
Cobalt		0.0501	mg/L	0.010	100	90	110			
Copper		0.0506	mg/L	0.010	101	90	110			
Iron		0.267	mg/L	0.030	107	90	110			
Lead		0.0491	mg/L	0.010	98	90	110			
Manganese		0.251	mg/L	0.010	101	90	110			
Nickel		0.0500	mg/L	0.010	100	90	110			
Selenium		0.0512	mg/L	0.0050	102	90	110			
Silver		0.0250	mg/L	0.0050	100	90	110			
Thallium		0.0500	mg/L	0.10	100	90	110			
Vanadium		0.0488	mg/L	0.10	98	90	110			
Zinc		0.0509	mg/L	0.010	102	90	110			
Sample ID: ICSA	18	Interference Check Sample A							11/07/12 15:52	
Aluminum		42.7	mg/L	0.10	107	70	130			
Antimony		0.000646	mg/L	0.050						
Arsenic		0.000974	mg/L	0.0050						
Barium		0.000193	mg/L	0.10						
Beryllium		9.00E-06	mg/L	0.0010						
Cadmium		0.00102	mg/L	0.0010						
Chromium		0.00110	mg/L	0.010						
Cobalt		0.000361	mg/L	0.010						
Copper		0.000281	mg/L	0.010						
Iron		100	mg/L	0.030	100	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121107A		
Sample ID: ICSA	18	Interference Check Sample A							11/07/12 15:52	
Lead		0.000239	mg/L	0.010						
Manganese		0.000175	mg/L	0.010						
Nickel		0.000672	mg/L	0.010						
Selenium		0.00176	mg/L	0.0050						
Silver		0.000247	mg/L	0.0050						
Thallium		4.80E-05	mg/L	0.10						
Vanadium		0.000273	mg/L	0.10						
Zinc		0.00128	mg/L	0.010						
Sample ID: ICSAB	18	Interference Check Sample AB							11/07/12 15:56	
Aluminum		42.2	mg/L	0.10	105	70	130			
Antimony		0.000437	mg/L	0.050		0	0			
Arsenic		0.0108	mg/L	0.0050	108	70	130			
Barium		0.000385	mg/L	0.10		0	0			
Beryllium		4.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0113	mg/L	0.0010	113	70	130			
Chromium		0.0216	mg/L	0.010	108	70	130			
Cobalt		0.0216	mg/L	0.010	108	70	130			
Copper		0.0209	mg/L	0.010	105	70	130			
Iron		104	mg/L	0.030	104	70	130			
Lead		0.000158	mg/L	0.010		0	0			
Manganese		0.0207	mg/L	0.010	103	70	130			
Nickel		0.0215	mg/L	0.010	107	70	130			
Selenium		0.0109	mg/L	0.0050	109	70	130			
Silver		0.0215	mg/L	0.0050	107	70	130			
Thallium		1.70E-05	mg/L	0.10		0	0			
Vanadium		0.0215	mg/L	0.10	107	70	130			
Zinc		0.0116	mg/L	0.010	116	70	130			
Sample ID: ICV STD	18	Initial Calibration Verification Standard							11/08/12 17:14	
Aluminum		0.267	mg/L	0.10	107	90	110			
Antimony		0.0515	mg/L	0.050	103	90	110			
Arsenic		0.0498	mg/L	0.0050	100	90	110			
Barium		0.0507	mg/L	0.10	101	90	110			
Beryllium		0.0259	mg/L	0.0010	104	90	110			
Cadmium		0.0264	mg/L	0.0010	106	90	110			
Chromium		0.0496	mg/L	0.010	99	90	110			
Cobalt		0.0515	mg/L	0.010	103	90	110			
Copper		0.0512	mg/L	0.010	102	90	110			
Iron		0.258	mg/L	0.030	103	90	110			
Lead		0.0507	mg/L	0.010	101	90	110			
Manganese		0.259	mg/L	0.010	104	90	110			
Nickel		0.0511	mg/L	0.010	102	90	110			
Selenium		0.0504	mg/L	0.0050	101	90	110			
Silver		0.0258	mg/L	0.0050	103	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121107A		
Sample ID: ICV STD	18	Initial Calibration Verification Standard							11/08/12 17:14	
Thallium		0.0514	mg/L	0.10	103	90	110			
Vanadium		0.0500	mg/L	0.10	100	90	110			
Zinc		0.0512	mg/L	0.010	102	90	110			
Sample ID: ICSA	18	Interference Check Sample A							11/08/12 17:19	
Aluminum		42.5	mg/L	0.10	106	70	130			
Antimony		0.000618	mg/L	0.050						
Arsenic		0.00100	mg/L	0.0050						
Barium		9.90E-05	mg/L	0.10						
Beryllium		2.00E-06	mg/L	0.0010						
Cadmium		0.00109	mg/L	0.0010						
Chromium		0.00111	mg/L	0.010						
Cobalt		0.000344	mg/L	0.010						
Copper		0.000182	mg/L	0.010						
Iron		100	mg/L	0.030	100	70	130			
Lead		0.000249	mg/L	0.010						
Manganese		0.000184	mg/L	0.010						
Nickel		0.000662	mg/L	0.010						
Selenium		0.00158	mg/L	0.0050						
Silver		0.000476	mg/L	0.0050						
Thallium		4.40E-05	mg/L	0.10						
Vanadium		0.000273	mg/L	0.10						
Zinc		0.00115	mg/L	0.010						
Sample ID: ICSAB	18	Interference Check Sample AB							11/08/12 17:24	
Aluminum		41.4	mg/L	0.10	103	70	130			
Antimony		0.000394	mg/L	0.050		0	0			
Arsenic		0.0111	mg/L	0.0050	111	70	130			
Barium		0.000327	mg/L	0.10		0	0			
Beryllium		4.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0108	mg/L	0.0010	108	70	130			
Chromium		0.0217	mg/L	0.010	108	70	130			
Cobalt		0.0213	mg/L	0.010	106	70	130			
Copper		0.0204	mg/L	0.010	102	70	130			
Iron		99.3	mg/L	0.030	99	70	130			
Lead		0.000152	mg/L	0.010		0	0			
Manganese		0.0202	mg/L	0.010	101	70	130			
Nickel		0.0210	mg/L	0.010	105	70	130			
Selenium		0.0102	mg/L	0.0050	102	70	130			
Silver		0.0199	mg/L	0.0050	100	70	130			
Thallium		1.80E-05	mg/L	0.10		0	0			
Vanadium		0.0214	mg/L	0.10	107	70	130			
Zinc		0.0107	mg/L	0.010	107	70	130			
Method: E200.8									Batch: 18624	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18624
Sample ID: MB-18624	18	Method Blank				Run: ICPMS204-B_121107A				11/08/12 17:54
Aluminum		ND	mg/L	0.002						
Antimony		0.0002	mg/L	3E-05						
Arsenic		8E-05	mg/L	3E-05						
Barium		ND	mg/L	0.00010						
Beryllium		ND	mg/L	3E-05						
Cadmium		ND	mg/L	2E-05						
Chromium		ND	mg/L	6E-05						
Cobalt		ND	mg/L	3E-05						
Copper		0.0009	mg/L	0.0003						
Iron		0.001	mg/L	0.0007						
Lead		3E-05	mg/L	2E-05						
Manganese		ND	mg/L	5E-05						
Nickel		ND	mg/L	0.0001						
Selenium		ND	mg/L	0.0001						
Silver		0.0004	mg/L	6E-05						
Thallium		ND	mg/L	3E-05						
Vanadium		0.0001	mg/L	5E-05						
Zinc		0.001	mg/L	0.0007						
Sample ID: LCS-18624	18	Laboratory Control Sample				Run: ICPMS204-B_121107A				11/08/12 17:59
Aluminum		2.65	mg/L	0.030	106	85	115			
Antimony		0.554	mg/L	0.0010	111	85	115			
Arsenic		0.538	mg/L	0.0010	108	85	115			
Barium		0.529	mg/L	0.050	106	85	115			
Beryllium		0.258	mg/L	0.0010	103	85	115			
Cadmium		0.275	mg/L	0.0010	110	85	115			
Chromium		0.533	mg/L	0.0050	107	85	115			
Cobalt		0.541	mg/L	0.0050	108	85	115			
Copper		0.525	mg/L	0.0050	105	85	115			
Iron		2.61	mg/L	0.030	104	85	115			
Lead		0.556	mg/L	0.0010	111	85	115			
Manganese		2.67	mg/L	0.0010	107	85	115			
Nickel		0.531	mg/L	0.0050	106	85	115			
Selenium		0.547	mg/L	0.0010	109	85	115			
Silver		0.0549	mg/L	0.0010	109	85	115			
Thallium		0.565	mg/L	0.00050	113	85	115			
Vanadium		0.536	mg/L	0.010	107	85	115			
Zinc		0.532	mg/L	0.010	106	85	115			
Sample ID: H12110065-005AMS3	18	Sample Matrix Spike				Run: ICPMS204-B_121107A				11/08/12 18:17
Aluminum		2.65	mg/L	0.030	106	70	130			
Antimony		0.556	mg/L	0.0010	111	70	130			
Arsenic		0.538	mg/L	0.0010	108	70	130			
Barium		0.535	mg/L	0.050	107	70	130			
Beryllium		0.255	mg/L	0.0010	102	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18624
Sample ID: H12110065-005AMS3	18	Sample Matrix Spike				Run: ICPMS204-B_121107A				11/08/12 18:17
Cadmium		0.275	mg/L	0.0010	110	70	130			
Chromium		0.539	mg/L	0.0050	108	70	130			
Cobalt		0.538	mg/L	0.0050	108	70	130			
Copper		0.532	mg/L	0.0050	106	70	130			
Iron		2.64	mg/L	0.030	106	70	130			
Lead		0.555	mg/L	0.0010	111	70	130			
Manganese		2.65	mg/L	0.0010	106	70	130			
Nickel		0.534	mg/L	0.0050	107	70	130			
Selenium		0.549	mg/L	0.0010	110	70	130			
Silver		0.0555	mg/L	0.0010	110	70	130			
Thallium		0.563	mg/L	0.00050	113	70	130			
Vanadium		0.541	mg/L	0.010	108	70	130			
Zinc		0.534	mg/L	0.010	106	70	130			
Sample ID: H12110065-005AMSD3	18	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121107A				11/08/12 18:21
Aluminum		2.62	mg/L	0.030	105	70	130	1.2	20	
Antimony		0.556	mg/L	0.0010	111	70	130	0.1	20	
Arsenic		0.523	mg/L	0.0010	105	70	130	2.9	20	
Barium		0.531	mg/L	0.050	106	70	130	0.8	20	
Beryllium		0.251	mg/L	0.0010	100	70	130	1.7	20	
Cadmium		0.274	mg/L	0.0010	110	70	130	0.4	20	
Chromium		0.527	mg/L	0.0050	105	70	130	2.3	20	
Cobalt		0.544	mg/L	0.0050	109	70	130	1.2	20	
Copper		0.521	mg/L	0.0050	104	70	130	2.2	20	
Iron		2.58	mg/L	0.030	103	70	130	2.3	20	
Lead		0.552	mg/L	0.0010	110	70	130	0.7	20	
Manganese		2.67	mg/L	0.0010	107	70	130	0.7	20	
Nickel		0.521	mg/L	0.0050	104	70	130	2.4	20	
Selenium		0.532	mg/L	0.0010	106	70	130	3.0	20	
Silver		0.0556	mg/L	0.0010	110	70	130	0.1	20	
Thallium		0.563	mg/L	0.00050	113	70	130	0.0	20	
Vanadium		0.529	mg/L	0.010	106	70	130	2.1	20	
Zinc		0.522	mg/L	0.010	104	70	130	2.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E245.1									Analytical Run: HGCV201-H_121113A	
Sample ID: ICV	Initial Calibration Verification Standard								11/13/12 12:04	
Mercury		0.00021	mg/L	0.00010	106	90	110			
Sample ID: ICV	Initial Calibration Verification Standard								11/13/12 12:44	
Mercury		0.00021	mg/L	0.00010	103	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/13/12 12:47	
Mercury		0.00021	mg/L	0.00010	103	95	105			
Method: E245.1									Batch: 18662	
Sample ID: MB-18662	Method Blank				Run: HGCV201-H_121113A				11/13/12 12:51	
Mercury		7E-06	mg/L	6E-06						
Sample ID: LCS-18662	Laboratory Control Sample				Run: HGCV201-H_121113A				11/13/12 12:59	
Mercury		0.00023	mg/L	0.00010	110	90	110			
Sample ID: H12110065-005AMS	Sample Matrix Spike				Run: HGCV201-H_121113A				11/13/12 13:14	
Mercury		0.00023	mg/L	0.00010	111	70	130			
Sample ID: H12110065-005AMSD	Sample Matrix Spike Duplicate				Run: HGCV201-H_121113A				11/13/12 13:16	
Mercury		0.00023	mg/L	0.00010	111	70	130	0.2	30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18642
Sample ID: MB-18642	10	Method Blank				Run: ICP2-HE_121114B				11/14/12 16:51
Aluminum		0.7	mg/kg	0.3						
Barium		0.02	mg/kg	0.02						
Chromium		ND	mg/kg	0.7						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.05	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: LFB-18642	10	Laboratory Fortified Blank				Run: ICP2-HE_121114B				11/14/12 16:55
Aluminum		250	mg/kg	5.0	100	80	120			
Barium		49.7	mg/kg	1.0	99	80	120			
Chromium		49.3	mg/kg	1.0	99	80	120			
Copper		49.7	mg/kg	1.0	99	80	120			
Iron		250	mg/kg	5.0	99	80	120			
Lead		48.2	mg/kg	1.0	96	80	120			
Manganese		246	mg/kg	1.0	98	80	120			
Nickel		48.4	mg/kg	1.0	97	80	120			
Vanadium		48.7	mg/kg	1.0	97	80	120			
Zinc		49.3	mg/kg	1.0	98	80	120			
Sample ID: LCS-18642	10	Laboratory Control Sample				Run: ICP2-HE_121114B				11/14/12 17:06
Aluminum		12800	mg/kg	5.0	88	50.7	131.3			
Barium		542	mg/kg	1.0	89	80.6	112.2			
Chromium		71.7	mg/kg	1.0	95	72.8	109.1			
Copper		243	mg/kg	1.0	88	77.5	109.6			
Iron		19400	mg/kg	5.0	85	39.6	138.3			
Lead		180	mg/kg	3.1	97	75.9	108.6			
Manganese		347	mg/kg	1.0	95	80.8	115.7			
Nickel		52.9	mg/kg	1.0	88	72.3	103.4			
Vanadium		60.3	mg/kg	1.0	83	66.6	107.3			
Zinc		191	mg/kg	1.0	90	74.2	109.9			
Sample ID: H12110065-042AMS	3	Sample Matrix Spike				Run: ICP2-HE_121114B				11/14/12 18:46
Aluminum		20400	mg/kg	5.0		75	125			A
Iron		17300	mg/kg	5.0		75	125			A
Lead		64.0	mg/kg	3.1	87	75	125			
Sample ID: H12110065-042AMSD	3	Sample Matrix Spike Duplicate				Run: ICP2-HE_121114B				11/14/12 18:49
Aluminum		21000	mg/kg	5.0		75	125	2.6	20	A
Iron		17300	mg/kg	5.0		75	125	0.3	20	A
Lead		70.9	mg/kg	3.1	101	75	125	10	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18642
Sample ID: MB-18642	5	Method Blank				Run: ICP2-HE_121115C				11/16/12 05:34
Aluminum		ND	mg/kg	0.8						
Barium		ND	mg/kg	0.02						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Vanadium		ND	mg/kg	0.10						
Sample ID: H12110065-042AMS	4	Sample Matrix Spike				Run: ICP2-HE_121115C				11/16/12 06:19
Aluminum		20400	mg/kg	5.0		75	125			A
Barium		208	mg/kg	1.0	94	75	125			
Copper		70.8	mg/kg	1.0	90	75	125			
Vanadium		76.2	mg/kg	1.0	89	75	125			
Sample ID: H12110065-042AMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-HE_121115C				11/16/12 06:22
Aluminum		20800	mg/kg	5.0		75	125	1.9	20	A
Barium		208	mg/kg	1.0	95	75	125	0.4	20	
Copper		70.4	mg/kg	1.0	90	75	125	0.5	20	
Vanadium		74.7	mg/kg	1.0	86	75	125	2.1	20	
Method: SW6010B										Batch: 18643
Sample ID: MB-18643	2	Method Blank				Run: ICP2-HE_121119B				11/19/12 23:19
Aluminum		ND	mg/kg	0.3						
Iron		2	mg/kg	0.7						
Sample ID: LFB-18643	2	Laboratory Fortified Blank				Run: ICP2-HE_121119B				11/19/12 23:22
Aluminum		242	mg/kg	5.0	97	80	120			
Iron		240	mg/kg	5.0	95	80	120			
Sample ID: LCS-18643	2	Laboratory Control Sample				Run: ICP2-HE_121119B				11/19/12 23:26
Aluminum		12400	mg/kg	5.0	85	50.7	131.3			
Iron		18900	mg/kg	5.0	83	39.6	138.3			
Sample ID: H12110065-062AMS	2	Sample Matrix Spike				Run: ICP2-HE_121119B				11/20/12 00:18
Aluminum		27200	mg/kg	5.0		75	125			A
Iron		22700	mg/kg	5.0		75	125			A
Sample ID: H12110065-062AMSD	2	Sample Matrix Spike Duplicate				Run: ICP2-HE_121119B				11/20/12 00:22
Aluminum		25900	mg/kg	5.0		75	125	5.1	20	A
Iron		25000	mg/kg	5.0		75	125	9.7	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18642	
Sample ID: H12110065-042AMS	4	Sample Matrix Spike				Run: ICP2-HE_121120B			11/21/12 10:19	
Barium		238	mg/kg	1.0	120	75	125			
Copper		83.1	mg/kg	1.0	107	75	125			
Manganese		931	mg/kg	1.0	117	75	125			
Vanadium		90.0	mg/kg	1.0	107	75	125			
Sample ID: H12110065-042AMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-HE_121120B			11/21/12 10:23	
Barium		244	mg/kg	1.0	131	75	125	2.4	20	S
Copper		84.1	mg/kg	1.0	109	75	125	1.2	20	
Manganese		943	mg/kg	1.0	121	75	125	1.3	20	
Vanadium		89.7	mg/kg	1.0	106	75	125	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18646
Sample ID: MB-18646	11	Method Blank				Run: ICP2-HE_121121B				11/21/12 21:22
Aluminum		1	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.1	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: LFB-18646	11	Laboratory Fortified Blank				Run: ICP2-HE_121121B				11/21/12 21:25
Aluminum		246	mg/kg	5.0	98	80	120			
Barium		49.4	mg/kg	1.0	99	80	120			
Chromium		47.6	mg/kg	1.0	95	80	120			
Cobalt		46.5	mg/kg	1.0	93	80	120			
Copper		48.6	mg/kg	1.0	97	80	120			
Iron		242	mg/kg	5.0	96	80	120			
Lead		45.3	mg/kg	1.0	91	80	120			
Manganese		241	mg/kg	1.0	96	80	120			
Nickel		46.1	mg/kg	1.0	92	80	120			
Vanadium		48.8	mg/kg	1.0	98	80	120			
Zinc		46.7	mg/kg	1.0	93	80	120			
Sample ID: LCS-18646	11	Laboratory Control Sample				Run: ICP2-HE_121121B				11/21/12 21:37
Aluminum		12700	mg/kg	5.0	88	50.7	131.3			
Barium		555	mg/kg	1.0	91	80.6	112.2			
Chromium		73.7	mg/kg	1.0	98	72.8	109.1			
Cobalt		49.3	mg/kg	1.0	87	73.3	103.7			
Copper		245	mg/kg	1.0	88	77.5	109.6			
Iron		19300	mg/kg	5.0	85	39.6	138.3			
Lead		176	mg/kg	3.1	95	75.9	108.6			
Manganese		356	mg/kg	1.0	97	80.8	115.7			
Nickel		52.0	mg/kg	1.0	86	72.3	103.4			
Vanadium		61.7	mg/kg	1.0	85	66.6	107.3			
Zinc		185	mg/kg	1.0	88	74.2	109.9			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18646
Sample ID: MB-18646	11	Method Blank				Run: ICP2-HE_121126B				11/27/12 00:42
Aluminum		2	mg/kg	0.8						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		0.3	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.05	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						
Sample ID: H12110065-039AMS	11	Sample Matrix Spike				Run: ICP2-HE_121126B				11/27/12 02:37
Aluminum		18000	mg/kg	5.0		75	125			A
Barium		284	mg/kg	1.0		75	125			A
Chromium		57.0	mg/kg	1.0	97	75	125			
Cobalt		46.0	mg/kg	1.0	87	75	125			
Copper		95.7	mg/kg	1.0	93	75	125			
Iron		21300	mg/kg	5.0		75	125			A
Lead		66.7	mg/kg	3.1	84	75	125			
Manganese		1750	mg/kg	1.0		75	125			A
Nickel		51.9	mg/kg	1.0	96	75	125			
Vanadium		60.2	mg/kg	1.0	87	75	125			
Zinc		123	mg/kg	1.0	87	75	125			
Sample ID: H12110065-039AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/27/12 02:41
Aluminum		18100	mg/kg	5.0		75	125	0.4	20	A
Barium		283	mg/kg	1.0		75	125	0.2	20	A
Chromium		56.3	mg/kg	1.0	96	75	125	1.2	20	
Cobalt		45.8	mg/kg	1.0	87	75	125	0.5	20	
Copper		93.7	mg/kg	1.0	89	75	125	2.2	20	
Iron		21300	mg/kg	5.0		75	125	0.1	20	A
Lead		61.9	mg/kg	3.1	75	75	125	7.5	20	
Manganese		1750	mg/kg	1.0		75	125	0.1	20	A
Nickel		51.5	mg/kg	1.0	95	75	125	0.8	20	
Vanadium		59.9	mg/kg	1.0	87	75	125	0.6	20	
Zinc		122	mg/kg	1.0	85	75	125	0.8	20	
Method: SW6010B										Batch: 18647
Sample ID: MB-18647	6	Method Blank				Run: ICP2-HE_121126B				11/26/12 20:40
Aluminum		0.5	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Iron		2	mg/kg	0.7						
Manganese		0.09	mg/kg	0.04						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18647
Sample ID: MB-18647	6	Method Blank				Run: ICP2-HE_121126B				11/26/12 20:40
Nickel		0.10	mg/kg	0.08						
Sample ID: LFB-18647	6	Laboratory Fortified Blank				Run: ICP2-HE_121126B				11/26/12 20:44
Aluminum		237	mg/kg	5.0	95	80	120			
Barium		47.8	mg/kg	1.0	96	80	120			
Chromium		47.0	mg/kg	1.0	94	80	120			
Iron		231	mg/kg	5.0	92	80	120			
Manganese		225	mg/kg	1.0	90	80	120			
Nickel		45.1	mg/kg	1.0	90	80	120			
Sample ID: LCS-18647	6	Laboratory Control Sample				Run: ICP2-HE_121126B				11/26/12 20:47
Aluminum		11500	mg/kg	5.0	80	50.7	131.3			
Barium		514	mg/kg	1.0	85	80.6	112.2			
Chromium		64.7	mg/kg	1.0	87	72.8	109.1			
Iron		17500	mg/kg	5.0	78	39.6	138.3			
Manganese		312	mg/kg	1.0	86	80.8	115.7			
Nickel		47.2	mg/kg	1.0	79	72.3	103.4			
Sample ID: H12110065-063AMS	6	Sample Matrix Spike				Run: ICP2-HE_121126B				11/26/12 22:36
Aluminum		28500	mg/kg	5.0		75	125			A
Barium		485	mg/kg	1.0		75	125			A
Chromium		79.5	mg/kg	1.0	115	75	125			
Iron		23800	mg/kg	5.0		75	125			A
Manganese		912	mg/kg	1.0	109	75	125			
Nickel		69.5	mg/kg	1.0	102	75	125			
Sample ID: H12110065-063AMSD	6	Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/26/12 22:39
Aluminum		28200	mg/kg	5.0		75	125	1.2	20	A
Barium		483	mg/kg	1.0		75	125	0.4	20	A
Chromium		76.7	mg/kg	1.0	109	75	125	3.6	20	
Iron		23400	mg/kg	5.0		75	125	1.4	20	A
Manganese		908	mg/kg	1.0	108	75	125	0.4	20	
Nickel		67.0	mg/kg	1.0	97	75	125	3.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18646
Sample ID: MB-18646	8	Method Blank				Run: ICP2-HE_121127A				11/27/12 12:32
Aluminum		1.0	mg/kg	0.8						
Barium		0.04	mg/kg	0.02						
Chromium		ND	mg/kg	0.7						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Manganese		0.08	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Method: SW6010B										Batch: 18647
Sample ID: MB-18647	6	Method Blank				Run: ICP2-HE_121127A				11/27/12 12:58
Aluminum		ND	mg/kg	0.3						
Barium		0.04	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Iron		2	mg/kg	0.7						
Manganese		0.04	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18642
Sample ID: LCS-18642	13	Laboratory Control Sample				Run: ICPMS204-B_121115B				11/16/12 01:47
Antimony		55.4	mg/kg	1.0	44	2.2	92.9			
Arsenic		324	mg/kg	1.0	95	72.3	106.4			
Beryllium		44.2	mg/kg	1.0	87	76.3	108.6			
Cadmium		124	mg/kg	1.0	91	73	105.1			
Chromium		82.0	mg/kg	1.0	109	72.8	109.1			
Cobalt		58.8	mg/kg	1.0	103	73.3	103.7			
Copper		299	mg/kg	1.0	108	77.5	109.6			
Manganese		402	mg/kg	1.0	110	80.8	115.7			
Nickel		63.8	mg/kg	1.0	106	72.3	103.4			S
Selenium		205	mg/kg	1.0	106	72.5	112.2			
Silver		76.8	mg/kg	1.0	112	67.8	112.8			
Thallium		96.8	mg/kg	1.0	107	71.7	109.5			
Zinc		225	mg/kg	1.0	107	74.2	109.9			
Sample ID: LFB-18642	13	Laboratory Fortified Blank				Run: ICPMS204-B_121115B				11/16/12 01:52
Antimony		54.2	mg/kg	1.0	108	80	120			
Arsenic		51.8	mg/kg	1.0	104	80	120			
Beryllium		24.0	mg/kg	1.0	96	80	120			
Cadmium		27.1	mg/kg	1.0	108	80	120			
Chromium		51.8	mg/kg	1.0	104	80	120			
Cobalt		52.8	mg/kg	1.0	106	80	120			
Copper		55.0	mg/kg	1.0	110	80	120			
Manganese		261	mg/kg	1.0	104	80	120			
Nickel		53.5	mg/kg	1.0	107	80	120			
Selenium		54.7	mg/kg	1.0	109	80	120			
Silver		28.0	mg/kg	1.0	111	80	120			
Thallium		53.4	mg/kg	1.0	107	80	120			
Zinc		55.0	mg/kg	1.0	109	80	120			
Sample ID: H12110065-042AMS	13	Sample Matrix Spike				Run: ICPMS204-B_121115B				11/16/12 03:40
Antimony		12.9	mg/kg	1.0	25	75	125			S
Arsenic		86.8	mg/kg	1.0	104	75	125			
Beryllium		24.4	mg/kg	1.0	95	75	125			
Cadmium		24.4	mg/kg	1.0	93	75	125			
Chromium		65.6	mg/kg	1.0	105	75	125			
Cobalt		60.0	mg/kg	1.0	105	75	125			
Copper		84.8	mg/kg	1.0	108	75	125			
Manganese		930	mg/kg	1.0	106	75	125			
Nickel		60.4	mg/kg	1.0	108	75	125			
Selenium		55.4	mg/kg	1.0	111	75	125			
Silver		28.0	mg/kg	1.0	111	75	125			
Thallium		53.6	mg/kg	1.0	107	75	125			
Zinc		159	mg/kg	1.0	109	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 18642	
Sample ID: H12110065-042AMSD	13	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121115B			11/16/12 03:44	
Antimony		11.9	mg/kg	1.0	23	75	125	8.4	20	S
Arsenic		90.6	mg/kg	1.0	111	75	125	4.4	20	
Beryllium		24.0	mg/kg	1.0	94	75	125	1.7	20	
Cadmium		24.4	mg/kg	1.0	93	75	125	0.0	20	
Chromium		67.5	mg/kg	1.0	109	75	125	2.8	20	
Cobalt		60.4	mg/kg	1.0	106	75	125	0.7	20	
Copper		88.4	mg/kg	1.0	115	75	125	4.2	20	
Manganese		943	mg/kg	1.0	111	75	125	1.4	20	
Nickel		62.0	mg/kg	1.0	111	75	125	2.8	20	
Selenium		55.6	mg/kg	1.0	111	75	125	0.4	20	
Silver		27.6	mg/kg	1.0	110	75	125	1.5	20	
Thallium		53.7	mg/kg	1.0	107	75	125	0.2	20	
Zinc		165	mg/kg	1.0	122	75	125	4.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121116B		
Sample ID: ICV STD	17	Initial Calibration Verification Standard							11/16/12 10:41	
Antimony		0.0488	mg/L	0.0010	98	90	110			
Arsenic		0.0502	mg/L	0.0010	100	90	110			
Barium		0.0495	mg/L	0.0010	99	90	110			
Beryllium		0.0248	mg/L	0.0010	99	90	110			
Cadmium		0.0255	mg/L	0.0010	102	90	110			
Chromium		0.0497	mg/L	0.0010	99	90	110			
Cobalt		0.0501	mg/L	0.0010	100	90	110			
Copper		0.0517	mg/L	0.0010	103	90	110			
Iron		0.256	mg/L	0.0010	102	90	110			
Lead		0.0491	mg/L	0.0010	98	90	110			
Manganese		0.246	mg/L	0.0010	99	90	110			
Nickel		0.0515	mg/L	0.0010	103	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0496	mg/L	0.0010	99	90	110			
Vanadium		0.0503	mg/L	0.0010	101	90	110			
Zinc		0.0521	mg/L	0.0010	104	90	110			
Sample ID: ICV STD	17	Initial Calibration Verification Standard							11/16/12 20:51	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0512	mg/L	0.0010	102	90	110			
Barium		0.0496	mg/L	0.0010	99	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0254	mg/L	0.0010	102	90	110			
Chromium		0.0508	mg/L	0.0010	102	90	110			
Cobalt		0.0503	mg/L	0.0010	101	90	110			
Copper		0.0527	mg/L	0.0010	105	90	110			
Iron		0.257	mg/L	0.0010	103	90	110			
Lead		0.0485	mg/L	0.0010	97	90	110			
Manganese		0.253	mg/L	0.0010	101	90	110			
Nickel		0.0518	mg/L	0.0010	104	90	110			
Selenium		0.0517	mg/L	0.0010	103	90	110			
Silver		0.0248	mg/L	0.0010	99	90	110			
Thallium		0.0491	mg/L	0.0010	98	90	110			
Vanadium		0.0510	mg/L	0.0010	102	90	110			
Zinc		0.0536	mg/L	0.0010	107	90	110			
Method: SW6020									Batch: 18642	
Sample ID: MB-18642	13	Method Blank				Run: ICPMS204-B_121116B			11/16/12 21:27	
Antimony		0.03	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18642
Sample ID: MB-18642	13	Method Blank				Run: ICPMS204-B_121116B				11/16/12 21:27
Cobalt		ND	mg/kg	0.003						
Copper		0.1	mg/kg	0.01						
Manganese		0.03	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.01	mg/kg	0.007						
Silver		0.05	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Zinc		0.3	mg/kg	0.06						
Method: SW6020										Batch: 18643
Sample ID: MB-18643	17	Method Blank				Run: ICPMS204-B_121116B				11/16/12 23:45
Antimony		0.01	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Barium		0.04	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.08	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Lead		0.005	mg/kg	0.003						
Manganese		0.03	mg/kg	0.008						
Nickel		0.04	mg/kg	0.01						
Selenium		ND	mg/kg	0.007						
Silver		0.02	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.3	mg/kg	0.06						
Sample ID: LCS-18643	17	Laboratory Control Sample				Run: ICPMS204-B_121116B				11/16/12 23:50
Antimony		56.0	mg/kg	1.0	45	2.2	92.9			
Arsenic		320	mg/kg	1.0	94	72.3	106.4			
Barium		619	mg/kg	1.0	102	80.6	112.2			
Beryllium		43.3	mg/kg	1.0	86	76.3	108.6			
Cadmium		118	mg/kg	1.0	87	73	105.1			
Chromium		76.1	mg/kg	1.0	101	72.8	109.1			
Cobalt		55.6	mg/kg	1.0	98	73.3	103.7			
Copper		285	mg/kg	1.0	103	77.5	109.6			
Iron		20900	mg/kg	5.0	92	39.6	138.3			
Lead		196	mg/kg	1.0	106	75.9	108.6			
Manganese		387	mg/kg	1.0	106	80.8	115.7			
Nickel		61.3	mg/kg	1.0	101	72.3	103.4			
Selenium		198	mg/kg	1.0	102	72.5	112.2			
Silver		70.7	mg/kg	1.0	103	67.8	112.8			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18643
Sample ID: LCS-18643	17	Laboratory Control Sample				Run: ICPMS204-B_121116B				11/16/12 23:50
Thallium		88.3	mg/kg	1.0	98	71.7	109.5			
Vanadium		69.3	mg/kg	1.0	96	66.6	107.3			
Zinc		221	mg/kg	1.0	105	74.2	109.9			
Sample ID: LFB-18643	17	Laboratory Fortified Blank				Run: ICPMS204-B_121116B				11/16/12 23:54
Antimony		53.3	mg/kg	1.0	107	80	120			
Arsenic		52.1	mg/kg	1.0	104	80	120			
Barium		53.0	mg/kg	1.0	106	80	120			
Beryllium		24.6	mg/kg	1.0	99	80	120			
Cadmium		26.5	mg/kg	1.0	106	80	120			
Chromium		50.6	mg/kg	1.0	101	80	120			
Cobalt		50.8	mg/kg	1.0	102	80	120			
Copper		53.2	mg/kg	1.0	106	80	120			
Iron		262	mg/kg	5.0	104	80	120			
Lead		52.4	mg/kg	1.0	105	80	120			
Manganese		254	mg/kg	1.0	102	80	120			
Nickel		52.5	mg/kg	1.0	105	80	120			
Selenium		52.2	mg/kg	1.0	104	80	120			
Silver		27.3	mg/kg	1.0	109	80	120			
Thallium		51.7	mg/kg	1.0	103	80	120			
Vanadium		50.8	mg/kg	1.0	101	80	120			
Zinc		54.1	mg/kg	1.0	108	80	120			
Sample ID: H12110065-062AMS	17	Sample Matrix Spike				Run: ICPMS204-B_121116B				11/17/12 01:26
Antimony		17.5	mg/kg	1.0	34	75	125			S
Arsenic		67.2	mg/kg	1.0	101	75	125			
Barium		600	mg/kg	1.0		75	125			A
Beryllium		23.8	mg/kg	1.0	93	75	125			
Cadmium		22.4	mg/kg	1.0	89	75	125			
Chromium		84.6	mg/kg	1.0	120	75	125			
Cobalt		63.7	mg/kg	1.0	103	75	125			
Copper		77.1	mg/kg	1.0	101	75	125			
Iron		27500	mg/kg	5.0		75	125			A
Lead		68.0	mg/kg	1.0	102	75	125			
Manganese		1060	mg/kg	1.0	114	75	125			
Nickel		77.5	mg/kg	1.0	101	75	125			
Selenium		53.9	mg/kg	1.0	108	75	125			
Silver		27.3	mg/kg	1.0	109	75	125			
Thallium		51.4	mg/kg	1.0	103	75	125			
Vanadium		123	mg/kg	1.0	138	75	125			S
Zinc		150	mg/kg	1.0	99	75	125			
Sample ID: H12110065-062AMSD	17	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121116B				11/17/12 01:31
Antimony		17.1	mg/kg	1.0	34	75	125	2.2	20	S
Arsenic		77.8	mg/kg	1.0	123	75	125	15	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18643
Sample ID: H12110065-062AMSD	17	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121116B				11/17/12 01:31
Barium		598	mg/kg	1.0		75	125	0.3	20	A
Beryllium		23.7	mg/kg	1.0	92	75	125	0.7	20	
Cadmium		22.4	mg/kg	1.0	89	75	125	0.1	20	
Chromium		83.2	mg/kg	1.0	117	75	125	1.7	20	
Cobalt		63.5	mg/kg	1.0	102	75	125	0.2	20	
Copper		80.8	mg/kg	1.0	108	75	125	4.8	20	
Iron		29000	mg/kg	5.0		75	125	5.2	20	A
Lead		67.7	mg/kg	1.0	102	75	125	0.4	20	
Manganese		1060	mg/kg	1.0	118	75	125	0.7	20	
Nickel		79.0	mg/kg	1.0	104	75	125	1.9	20	
Selenium		51.0	mg/kg	1.0	102	75	125	5.5	20	
Silver		26.8	mg/kg	1.0	108	75	125	1.6	20	
Thallium		51.1	mg/kg	1.0	103	75	125	0.7	20	
Vanadium		126	mg/kg	1.0	145	75	125	2.9	20	S
Zinc		172	mg/kg	1.0	144	75	125	14	20	S
Method: SW6020										Analytical Run: ICPMS204-B_121120B
Sample ID: ICV STD		Initial Calibration Verification Standard								11/20/12 20:07
Cadmium		0.0256	mg/L	0.0010	102	90	110			
Method: SW6020										Batch: 18642
Sample ID: MB-18642	13	Method Blank				Run: ICPMS204-B_121120B				11/20/12 20:43
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.1	mg/kg	0.01						
Manganese		0.05	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.03	mg/kg	0.007						
Silver		0.09	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Zinc		0.4	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121121A		
Sample ID: ICV STD	13	Initial Calibration Verification Standard							11/21/12 11:21	
Antimony		0.0484	mg/L	0.0010	97	90	110			
Arsenic		0.0497	mg/L	0.0010	99	90	110			
Barium		0.0498	mg/L	0.0010	100	90	110			
Beryllium		0.0244	mg/L	0.0010	97	90	110			
Cadmium		0.0249	mg/L	0.0010	100	90	110			
Chromium		0.0493	mg/L	0.0010	99	90	110			
Copper		0.0516	mg/L	0.0010	103	90	110			
Nickel		0.0507	mg/L	0.0010	101	90	110			
Selenium		0.0533	mg/L	0.0010	107	90	110			
Silver		0.0248	mg/L	0.0010	99	90	110			
Thallium		0.0490	mg/L	0.0010	98	90	110			
Vanadium		0.0497	mg/L	0.0010	99	90	110			
Zinc		0.0517	mg/L	0.0010	103	90	110			
Sample ID: ICV STD	13	Initial Calibration Verification Standard							11/21/12 23:06	
Antimony		0.0491	mg/L	0.0010	98	90	110			
Arsenic		0.0497	mg/L	0.0010	99	90	110			
Barium		0.0497	mg/L	0.0010	99	90	110			
Beryllium		0.0246	mg/L	0.0010	98	90	110			
Cadmium		0.0255	mg/L	0.0010	102	90	110			
Chromium		0.0495	mg/L	0.0010	99	90	110			
Copper		0.0518	mg/L	0.0010	103	90	110			
Nickel		0.0510	mg/L	0.0010	102	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0249	mg/L	0.0010	100	90	110			
Thallium		0.0490	mg/L	0.0010	98	90	110			
Vanadium		0.0499	mg/L	0.0010	100	90	110			
Zinc		0.0518	mg/L	0.0010	104	90	110			
Method: SW6020									Batch: 18646	
Sample ID: MB-18646	13	Method Blank				Run: ICPMS204-B_121121A			11/22/12 02:45	
Antimony		0.04	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.07	mg/kg	0.01						
Beryllium		0.004	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.1	mg/kg	0.01						
Nickel		0.03	mg/kg	0.01						
Selenium		0.02	mg/kg	0.007						
Silver		0.07	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18646
Sample ID: LCS-18646	13	Laboratory Control Sample				Run: ICPMS204-B_121121A				11/22/12 02:49
Antimony		59.3	mg/kg	1.0	48	2.2	92.9			
Arsenic		326	mg/kg	1.0	96	72.3	106.4			
Barium		650	mg/kg	1.0	107	80.6	112.2			
Beryllium		46.9	mg/kg	1.0	93	76.3	108.6			
Cadmium		122	mg/kg	1.0	90	73	105.1			
Chromium		80.3	mg/kg	1.0	107	72.8	109.1			
Copper		291	mg/kg	1.0	105	77.5	109.6			
Nickel		62.5	mg/kg	1.0	103	72.3	103.4			
Selenium		191	mg/kg	1.0	99	72.5	112.2			
Silver		73.4	mg/kg	1.0	107	67.8	112.8			
Thallium		91.2	mg/kg	1.0	101	71.7	109.5			
Vanadium		71.7	mg/kg	1.0	99	66.6	107.3			
Zinc		222	mg/kg	1.0	105	74.2	109.9			
Sample ID: LFB-18646	13	Laboratory Fortified Blank				Run: ICPMS204-B_121121A				11/22/12 02:54
Antimony		52.7	mg/kg	1.0	105	80	120			
Arsenic		51.8	mg/kg	1.0	104	80	120			
Barium		52.6	mg/kg	1.0	105	80	120			
Beryllium		25.3	mg/kg	1.0	101	80	120			
Cadmium		26.5	mg/kg	1.0	106	80	120			
Chromium		50.8	mg/kg	1.0	102	80	120			
Copper		52.9	mg/kg	1.0	106	80	120			
Nickel		52.3	mg/kg	1.0	105	80	120			
Selenium		52.6	mg/kg	1.0	105	80	120			
Silver		27.6	mg/kg	1.0	110	80	120			
Thallium		51.0	mg/kg	1.0	102	80	120			
Vanadium		51.2	mg/kg	1.0	102	80	120			
Zinc		52.9	mg/kg	1.0	105	80	120			
Sample ID: H12110065-039AMS	13	Sample Matrix Spike				Run: ICPMS204-B_121121A				11/22/12 05:23
Antimony		11.2	mg/kg	1.0	22	75	125			S
Arsenic		69.4	mg/kg	1.0	100	75	125			
Barium		347	mg/kg	1.0		75	125			A
Beryllium		23.0	mg/kg	1.0	91	75	125			
Cadmium		21.1	mg/kg	1.0	84	75	125			
Chromium		59.4	mg/kg	1.0	103	75	125			
Copper		104	mg/kg	1.0	109	75	125			
Nickel		57.1	mg/kg	1.0	103	75	125			
Selenium		48.2	mg/kg	1.0	97	75	125			
Silver		27.2	mg/kg	1.0	109	75	125			
Thallium		51.4	mg/kg	1.0	103	75	125			
Vanadium		69.5	mg/kg	1.0	104	75	125			
Zinc		140	mg/kg	1.0	102	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 18646	
Sample ID: H12110065-039AMSD	13	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121121A			11/22/12 05:46	
Antimony		11.3	mg/kg	1.0	22	75	125	1.1	20	S
Arsenic		70.6	mg/kg	1.0	103	75	125	1.8	20	
Barium		352	mg/kg	1.0		75	125	1.3	20	A
Beryllium		23.2	mg/kg	1.0	92	75	125	1.1	20	
Cadmium		21.3	mg/kg	1.0	84	75	125	0.6	20	
Chromium		60.0	mg/kg	1.0	104	75	125	1.0	20	
Copper		103	mg/kg	1.0	107	75	125	1.1	20	
Nickel		57.9	mg/kg	1.0	105	75	125	1.5	20	
Selenium		49.9	mg/kg	1.0	100	75	125	3.4	20	
Silver		27.1	mg/kg	1.0	109	75	125	0.5	20	
Thallium		51.1	mg/kg	1.0	102	75	125	0.5	20	
Vanadium		70.4	mg/kg	1.0	106	75	125	1.3	20	
Zinc		140	mg/kg	1.0	103	75	125	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121126B		
Sample ID: ICV STD	15 Initial Calibration Verification Standard									11/26/12 23:20
Antimony		0.0480	mg/L	0.0010	96	90	110			
Arsenic		0.0474	mg/L	0.0010	95	90	110			
Barium		0.0496	mg/L	0.0010	99	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cobalt		0.0490	mg/L	0.0010	98	90	110			
Copper		0.0502	mg/L	0.0010	100	90	110			
Iron		0.248	mg/L	0.0010	99	90	110			
Lead		0.0485	mg/L	0.0010	97	90	110			
Manganese		0.245	mg/L	0.0010	98	90	110			
Nickel		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0468	mg/L	0.0010	94	90	110			
Silver		0.0245	mg/L	0.0010	98	90	110			
Thallium		0.0488	mg/L	0.0010	98	90	110			
Vanadium		0.0488	mg/L	0.0010	98	90	110			
Zinc		0.0499	mg/L	0.0010	100	90	110			
Method: SW6020									Batch: 18647	
Sample ID: MB-18647	15 Method Blank					Run: ICPMS204-B_121126B				11/27/12 00:50
Arsenic		0.1	mg/kg	0.006						
Barium		0.07	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Cobalt		ND	mg/kg	0.003						
Copper		0.3	mg/kg	0.01						
Iron		2	mg/kg	0.1						
Lead		0.01	mg/kg	0.003						
Manganese		0.02	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.03	mg/kg	0.007						
Silver		0.05	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						
Sample ID: LCS-18647	16 Laboratory Control Sample					Run: ICPMS204-B_121126B				11/27/12 00:55
Antimony		51.3	mg/kg	1.0	41	2.2	92.9			
Arsenic		301	mg/kg	1.0	89	72.3	106.4			
Barium		594	mg/kg	1.0	99	80.6	112.2			
Beryllium		45.7	mg/kg	1.0	91	76.3	108.6			
Cadmium		115	mg/kg	1.0	86	73	105.1			
Cobalt		56.1	mg/kg	1.0	100	73.3	103.7			
Copper		270	mg/kg	1.0	98	77.5	109.6			
Iron		20600	mg/kg	5.0	91	39.6	138.3			
Lead		190	mg/kg	1.0	104	75.9	108.6			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18647
Sample ID: LCS-18647	16	Laboratory Control Sample				Run: ICPMS204-B_121126B				11/27/12 00:55
Manganese		385	mg/kg	1.0	107	80.8	115.7			
Nickel		58.9	mg/kg	1.0	98	72.3	103.4			
Selenium		188	mg/kg	1.0	98	72.5	112.2			
Silver		69.9	mg/kg	1.0	103	67.8	112.8			
Thallium		87.7	mg/kg	1.0	98	71.7	109.5			
Vanadium		66.6	mg/kg	1.0	93	66.6	107.3			
Zinc		207	mg/kg	1.0	99	74.2	109.9			
Sample ID: LFB-18647	16	Laboratory Fortified Blank				Run: ICPMS204-B_121126B				11/27/12 01:00
Antimony		52.3	mg/kg	1.0	104	80	120			
Arsenic		51.8	mg/kg	1.0	103	80	120			
Barium		51.9	mg/kg	1.0	104	80	120			
Beryllium		26.3	mg/kg	1.0	105	80	120			
Cadmium		26.5	mg/kg	1.0	106	80	120			
Cobalt		53.8	mg/kg	1.0	107	80	120			
Copper		53.3	mg/kg	1.0	106	80	120			
Iron		270	mg/kg	5.0	107	80	120			
Lead		52.8	mg/kg	1.0	105	80	120			
Manganese		270	mg/kg	1.0	108	80	120			
Nickel		53.1	mg/kg	1.0	106	80	120			
Selenium		52.4	mg/kg	1.0	105	80	120			
Silver		27.1	mg/kg	1.0	108	80	120			
Thallium		52.0	mg/kg	1.0	104	80	120			
Vanadium		52.0	mg/kg	1.0	104	80	120			
Zinc		54.1	mg/kg	1.0	107	80	120			
Sample ID: H12110065-063AMS	16	Sample Matrix Spike				Run: ICPMS204-B_121126B				11/27/12 02:34
Antimony		15.0	mg/kg	1.0	29	75	125			S
Arsenic		65.2	mg/kg	1.0	102	75	125			
Barium		592	mg/kg	1.0		75	125			A
Beryllium		24.2	mg/kg	1.0	93	75	125			
Cadmium		22.2	mg/kg	1.0	87	75	125			
Cobalt		65.6	mg/kg	1.0	108	75	125			
Copper		99.2	mg/kg	1.0	103	75	125			
Iron		28100	mg/kg	5.0		75	125			A
Lead		69.2	mg/kg	1.0	107	75	125			
Manganese		1120	mg/kg	1.0	111	75	125			
Nickel		79.0	mg/kg	1.0	110	75	125			
Selenium		55.0	mg/kg	1.0	109	75	125			
Silver		27.7	mg/kg	1.0	110	75	125			
Thallium		52.4	mg/kg	1.0	104	75	125			
Vanadium		128	mg/kg	1.0	152	75	125			S
Zinc		154	mg/kg	1.0	112	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 18647	
Sample ID: H12110065-063AMSD	16	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121126B			11/27/12 02:38	
Antimony		14.5	mg/kg	1.0	28	75	125	3.4	20	S
Arsenic		63.6	mg/kg	1.0	99	75	125	2.3	20	
Barium		584	mg/kg	1.0		75	125	1.4	20	A
Beryllium		24.0	mg/kg	1.0	92	75	125	1.1	20	
Cadmium		22.1	mg/kg	1.0	86	75	125	0.2	20	
Cobalt		65.1	mg/kg	1.0	107	75	125	0.8	20	
Copper		96.5	mg/kg	1.0	98	75	125	2.7	20	
Iron		27700	mg/kg	5.0		75	125	1.3	20	A
Lead		68.2	mg/kg	1.0	106	75	125	1.3	20	
Manganese		1110	mg/kg	1.0	107	75	125	0.9	20	
Nickel		77.2	mg/kg	1.0	106	75	125	2.4	20	
Selenium		52.0	mg/kg	1.0	103	75	125	5.7	20	
Silver		26.9	mg/kg	1.0	107	75	125	2.6	20	
Thallium		51.8	mg/kg	1.0	103	75	125	1.2	20	
Vanadium		124	mg/kg	1.0	143	75	125	3.7	20	S
Zinc		150	mg/kg	1.0	103	75	125	3.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121128B		
Sample ID: ICV STD	2	Initial Calibration Verification Standard							11/28/12 10:18	
Beryllium		0.0238	mg/L	0.0010	95	90	110			
Cadmium		0.0249	mg/L	0.0010	99	90	110			
Method: SW6020									Batch: 18646	
Sample ID: MB-18646	13	Method Blank				Run: ICPMS204-B_121128B			11/28/12 12:54	
Antimony		0.05	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Barium		0.04	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.08	mg/kg	0.01						
Nickel		0.03	mg/kg	0.01						
Selenium		0.05	mg/kg	0.007						
Silver		0.07	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.07	mg/kg	0.003						
Zinc		0.3	mg/kg	0.06						
Method: SW6020									Batch: 18647	
Sample ID: MB-18647	16	Method Blank				Run: ICPMS204-B_121128B			11/28/12 13:12	
Antimony		0.007	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.03	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.03	mg/kg	0.003						
Cobalt		ND	mg/kg	0.003						
Copper		0.07	mg/kg	0.01						
Iron		2	mg/kg	0.1						
Lead		0.006	mg/kg	0.003						
Manganese		0.03	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.02	mg/kg	0.007						
Silver		0.03	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.3	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67227
Sample ID: MB-67227		Method Blank				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110065-001A		Sample Matrix Spike				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.43	mg/kg	0.010	112	70	130			
Sample ID: H12110065-001A		Sample Matrix Spike Duplicate				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	111	70	130	1.2	20	
Sample ID: H12110065-033A		Sample Duplicate				Run: SUB-B195505				11/19/12 16:45
Chromium, Hexavalent - Soluble		0.11	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67228
Sample ID: MB-67228		Method Blank				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110065-035A		Sample Matrix Spike				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		0.41	mg/kg	0.010	108	70	130			
Sample ID: H12110065-035A		Sample Matrix Spike Duplicate				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		0.40	mg/kg	0.010	105	70	130	2.7	20	
Sample ID: H12110065-044A		Sample Matrix Spike				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	111	70	130			
Sample ID: H12110065-044A		Sample Matrix Spike Duplicate				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130	1.2	20	
Sample ID: H12110065-062A		Sample Duplicate				Run: SUB-B195532				11/20/12 09:30
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67321
Sample ID: MB-67321		Method Blank				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110065-002A		Sample Matrix Spike				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		0.34	mg/kg	0.010	91	70	130			
Sample ID: H12110065-002A		Sample Matrix Spike Duplicate				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	91	70	130	0.6	20	
Sample ID: H12110065-011A		Sample Matrix Spike				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		0.38	mg/kg	0.010	101	70	130			
Sample ID: H12110065-011A		Sample Matrix Spike Duplicate				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		0.39	mg/kg	0.010	103	70	130	2.1	20	
Sample ID: H12110065-037A		Sample Duplicate				Run: SUB-B195827				11/27/12 14:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67350
Sample ID: MB-67350		Method Blank				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110065-041A		Sample Matrix Spike				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.029	mg/kg	0.010	76	70	130			
Sample ID: H12110065-041A		Sample Matrix Spike Duplicate				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.030	mg/kg	0.010	79	70	130	4.1	20	
Sample ID: H12110151-002A		Sample Matrix Spike				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.030	mg/kg	0.010	80	70	130			
Sample ID: H12110151-002A		Sample Matrix Spike Duplicate				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.030	mg/kg	0.010	80	70	130	0.0	20	
Sample ID: H12110151-015A		Sample Duplicate				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121114A	
Sample ID: ICV	Initial Calibration Verification Standard								11/14/12 13:22	
Mercury		0.0010	mg/kg	0.50	104	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/14/12 13:24	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/14/12 14:05	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/14/12 14:31	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/14/12 15:27	
Mercury		0.0026	mg/kg	0.50	102	90	110			
Sample ID: CCV	Continuing Calibration Verification Standard								11/14/12 15:58	
Mercury		0.0025	mg/kg	0.50	101	90	110			
Method: SW7471A									Batch: 18664	
Sample ID: MB-18664	Method Blank					Run: HGCV201-H_121114A			11/14/12 13:34	
Mercury		0.0010	mg/kg	0.0004						
Sample ID: LCS-18664	Laboratory Control Sample					Run: HGCV201-H_121114A			11/14/12 13:36	
Mercury		5.4	mg/kg	0.50	111	80	120			
Sample ID: H12110065-001AMS	Sample Matrix Spike					Run: HGCV201-H_121114A			11/14/12 13:43	
Mercury		1.1	mg/kg	0.50	111	80	120			
Sample ID: H12110065-001AMSD	Sample Matrix Spike Duplicate					Run: HGCV201-H_121114A			11/14/12 13:46	
Mercury		1.1	mg/kg	0.50	108	80	120	3.6	20	
Sample ID: H12110065-023AMS	Sample Matrix Spike					Run: HGCV201-H_121114A			11/14/12 14:19	
Mercury		1.1	mg/kg	0.50	107	80	120			
Sample ID: H12110065-023AMSD	Sample Matrix Spike Duplicate					Run: HGCV201-H_121114A			11/14/12 14:22	
Mercury		1.1	mg/kg	0.50	106	80	120	4.0	20	
Method: SW7471A									Batch: 18665	
Sample ID: MB-18665	Method Blank					Run: HGCV201-H_121114A			11/14/12 15:44	
Mercury		0.001	mg/kg	0.0004						
Sample ID: LCS-18665	Laboratory Control Sample					Run: HGCV201-H_121114A			11/14/12 15:46	
Mercury		5.2	mg/kg	0.50	104	80	120			
Sample ID: H12110065-042AMS	Sample Matrix Spike					Run: HGCV201-H_121114A			11/14/12 15:53	
Mercury		1.1	mg/kg	0.50	109	80	120			
Sample ID: H12110065-042AMSD	Sample Matrix Spike Duplicate					Run: HGCV201-H_121114A			11/14/12 15:55	
Mercury		1.1	mg/kg	0.50	105	80	120	7.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Report Date: 12/05/12
Project: ORG #484422 - Inorganic Background Study
Work Order: H12110065

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A										Batch: 18665
Sample ID: H12110148-007AMS	Sample Matrix Spike					Run: HGCV201-H_121114A				11/14/12 16:34
Mercury		1.1	mg/kg	0.50	108	80	120			
Sample ID: H12110148-007AMSD	Sample Matrix Spike Duplicate					Run: HGCV201-H_121114A				11/14/12 16:36
Mercury		1.1	mg/kg	0.50	110	80	120	2.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12110065

Login completed by: Tracy L. Lorash
Date Received: 11/5/2012
Reviewed by: BL2000\sdull
Received by: TLL
Reviewed Date: 11/13/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Cooler 1 was received at 2.4℃, Cooler 2 at 1.6℃, Cooler 3 at 2.0℃ and Cooler 4 at 3.0℃. Samples were received on wet ice. TI 11/8/12.

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO. 12042 | PROJECT NAME: Montana Background Soils Investigation

SAMPLERS: *(Signature)* JPM

	DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - 60mesh)	Total Metals - Sieve Duplicate	REMARKS
2	11/1/12	0820	X		MBSI-10-01 X	1 soil									X	X			H12110065
2		1005			-10-02 X	1 soil									X	X			
2		1030			-10-04 X	1 water					X								
2		1150			-32-01 X	1 soil									X	X			
2		1405			-32-02 X										X	X			
2	11/1/12	1700			-40-01 X										X	X			
1	11/2/12	0830			-49-02 X										X	X			
1		0950			-49-01 X										X	X	X		
1		1120			-47-01 X										X	X			
1	11/2/12	1510			-47-02 X										X	X			
1	11/3/12	0925			-44-02 X										X	X			
1		1025			-53-02 X										X	X			
1		1035			-53-03 X										X	X			
1	11/3/12	1150	X		MBSI-53-01 X										X	X			

Relinquished *(Signature)* JPM	Date / Time 11/5/12 0830	Received by *(Signature)*	Lab: ELI Helena
Relinquished *(Signature)*	Date / Time 11/5/12 1200	Received by *(Signature)*	Remarks: Bill MDEQ ATTN: Jason Seyler Reference ORG # 484422 - Inorganic Background Study
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time 11/5/12 12:00

P.O. # Direct Bill MDEQ

Shipped via: Bus FedEx UPS Other hand-delivered

Air Bill # _____

Enclosed: ☒ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other _____

Split Samples: ☐ Accepted ☐ Declined _____ Signature

C1 - 2.4° All
C2 - 1.6° TB
C3 - 3.0° on ice

Return results & electronic copy to: QA / QC Dept. at address at top of page

HFORM-1 07/11
TNO 406-443-8550

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* JPull

	DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - 60 mesh)	Total Metals - Sieve Duplicate	REMARKS
1	11/3/12	1340	X		MBSI-44-01	1 soil									X	X			H12110065
1	11/3/12	1435			-40-02										X	X			
3	11/4/12	0925			-06-02										X	X			
3		1025			-43-02										X	X	X		
3		1240			-01-01										X	X			
3		1355			-01-02										X	X			
3		1540			-51-01										X	X			
3		1700			-51-02										X	X			
3	11/4/12	1730	X		MBSI-51-04	1 water					X								

Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Lab	P.O. #	Shipped via: Bus FedEx UPS
JPull	11/5/12 0830		ELI Helena	Direct Bill MDEQ	Other hand-delivered
					Air Bill #
Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Remarks		
	11/5/12 1200		Bill MDEQ ATTN: Jason Seyler		
			Reference ORG # 484422 - Inorganic Background Study		
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time	Enclosed: ☒ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other	
			11/5/12 12:00		
			C1 2.4° AH	Split Samples:	
			C2 1.6° TB	☐ Accepted ☐ Declined	
			C3 1.0° ON ice	Signature	

Return results & electronic copy to:
QA / QC Dept. at address at top of page

HFORM-1 07/11
TNO 406-443-8550

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

③ of ③

PROJ. NO.: 12042

PROJECT NAME: MBSI

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals, MBSI List (Bulk)	Total Metals (<250µm-60 mesh)		Total Metals - Sieve Duplicate	REMARKS
11/1/12	0930	X		MBSI-08-02*	1									X	X			H12110065
11/1/12	1215	X		MBSI-08-01*	1									X	X			
11/1/12	1500	X		MBSI-36-02*	1									X	X		X	
11/1/12	1700	X		MBSI-36-01*	1									X	X			
11/2/12	0845	X		MBSI-19-02*	1									X	X			
11/2/12	1130	X		MBSI-19-01*	1									X	X			
11/2/12	1430	X		MBSI-02-02*	1									X	X			
11/2/12	1645	X		MBSI-02-01*	1									X	X			

Relinquished (Signature)	Date / Time	Received by (Signature)	Lab	P.O. #	Shipped via
[signature]	11/5/12 1030	[signature]	ELI Helena	Direct Bill MDEQ	Bus FedEx UPS Other Hand Delivered; Air Bill #
[signature]	11/5/12 1200		Remarks: Bill MDEQ ATTN: Jason Seyler Reference ORG #484422- Inorganic Background Study		
		Received for Laboratory by (Signature) [signature]	Date / Time 11/5/12 12:00		

Enclosed: ☒ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other

Split Samples: ☐ Accepted ☐ Declined

Signature

C4- 3.0° TB
No Ice

Return results & electronic copy to: QA / QC Dept. at address at top of page

HFORM-1 07/11

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 5, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are twenty-nine (29) soil samples and two (2) water samples collected from ONovember 1 through 4, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. Selected samples (shown on COC) are to be run as "laboratory sieve duplicates" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.
4. **Water samples** to be analyzed for total metals, using the same parameter list and routine analytical reporting limits.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis						
Parameter[1]	**Digestion Method[2]**	**Analytical Method[2]**	**Required Reporting Limit (mg/kg)**	**EPA Regional Screening Level (RSL)[3] (mg/kg)**	**Maximum Holding Time (days)**	**Preservation**
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 05, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12110151 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 31 samples for MT DEQ-Site Response on 11/8/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12110151-001	MBSI-38-01	11/07/12 7:40	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-002	MBSI-38-01	11/07/12 7:40	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-003	MBSI-26-01	11/07/12 9:40	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-004	MBSI-26-01	11/07/12 9:40	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-005	MBSI-26-03	11/07/12 9:50	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-006	MBSI-26-03	11/07/12 9:50	11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110151-007	MBSI-31-01	11/07/12 11:05 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-008	MBSI-31-01	11/07/12 11:05 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-009	MBSI-31-01 Sieve Dup	11/07/12 11:05 11/08/12	Soil	Same As Above
H12110151-010	MBSI-31-02	11/07/12 13:05 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-011	MBSI-31-02	11/07/12 13:05 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-012	MBSI-31-03	11/07/12 13:15 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-013	MBSI-31-03	11/07/12 13:15 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-014	MBSI-38-02	11/07/12 14:45 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-015	MBSI-38-02	11/07/12 14:45 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110151-016	MBSI-21-01	11/07/12 15:45 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-017	MBSI-21-01	11/07/12 15:45 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-018	MBSI-21-02	11/07/12 16:25 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-019	MBSI-21-02	11/07/12 16:25 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-020	MBSI-26-02	11/07/12 17:20 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-021	MBSI-26-02	11/07/12 17:20 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-022	MBSI-06-01	11/06/12 12:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-023	MBSI-06-01	11/06/12 12:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110151-024	MBSI-25-02	11/06/12 16:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-025	MBSI-25-02	11/06/12 16:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-026	MBSI-25-02 Sieve Dup	11/06/12 16:30 11/08/12	Soil	Same As Above
H12110151-027	MBSI-25-01	11/07/12 10:00 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-028	MBSI-25-01	11/07/12 10:00 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-029	MBSI-25-03	11/07/12 10:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110151-030	MBSI-25-03	11/07/12 10:30 11/08/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110151-031	MBSI-25-04	11/07/12 9:30 11/08/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.05 16:15:56 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12110151

Report Date: 12/05/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Abb 12/5/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110151

Report Date: 12/05/12
Date Received: 11/08/12

	Analysis	No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T	Mn-T	Ni-T
	Units	wt% Retainec	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110151-001	MBSI-38-01		0.2	13200	5.2	216	0.7	0.8	8.8	17.2	19.6	21600	499	19.9
H12110151-002	MBSI-38-01	46.3	0.1	17000	5.8	237	0.8	1.0	6.8	18.9	42.2	21200	418	19.0
H12110151-003	MBSI-26-01		0.2	16500	8.8	177	0.6	0.3	6.1	19.9	14.9	15800	406	15.7
H12110151-004	MBSI-26-01	9.7	< 0.1	18800	8.7	166	0.6	0.4	5.3	20.7	24.5	15100	372	15.0
H12110151-005	MBSI-26-03		0.2	17500	8.8	178	0.7	0.3	6.4	19.9	15.7	16300	422	16.7
H12110151-006	MBSI-26-03	6.6	< 0.1	18500	8.7	165	0.6	0.4	4.7	19.9	23.3	15100	372	14.3
H12110151-007	MBSI-31-01		0.2	21700	12.5	285	0.7	0.3	6.9	19.6	16.4	17700	375	17.6
H12110151-008	MBSI-31-01	42.2	0.2	22600	12.7	264	0.8	0.4	5.3	19.8	68.1	16900	326	15.8
H12110151-009	MBSI-31-01 Sieve Dup	45.3	0.1	24600	13.0	271	0.8	0.4	5.6	21.2	36.5	17200	324	15.8
H12110151-010	MBSI-31-02		0.1	28100	10.8	273	1.0	0.3	10.7	37.4	25.2	22100	446	30.0
H12110151-011	MBSI-31-02	37.4	0.1	29000	10.2	230	1.0	0.3	7.1	32.4	32.9	22200	340	23.2
H12110151-012	MBSI-31-03		0.1	28000	10.3	274	1.0	0.3	10.5	36.3	24.6	22100	447	28.9
H12110151-013	MBSI-31-03	30.1	0.1	28700	10.3	230	1.0	0.3	7.4	32.9	31.9	22400	344	23.9
H12110151-014	MBSI-38-02		< 0.1	15000	5.5	229	0.5	0.4	7.2	18.4	16.0	16100	658	13.8
H12110151-015	MBSI-38-02	11.8	< 0.1	14800	5.2	211	0.5	0.5	4.9	17.2	42.9	15200	599	11.3
H12110151-016	MBSI-21-01		0.1	10900	20.8	281	0.7	0.1	5.4	22.3	27.4	24900	84	19.7
H12110151-017	MBSI-21-01	28.1	0.1	12400	16.6	273	0.6	0.1	3.5	21.1	69.7	21000	80	15.1
H12110151-018	MBSI-21-02		0.2	15200	11.9	339	0.7	0.1	5.6	25.8	28.1	23200	74	18.9
H12110151-019	MBSI-21-02	4.5	0.2	17400	11.6	312	0.8	0.1	3.5	26.9	46.3	23900	61	15.2
H12110151-020	MBSI-26-02		0.1	13800	9.5	219	0.6	0.3	7.7	19.9	19.0	18000	375	22.5
H12110151-021	MBSI-26-02	0.9	0.1	15600	9.5	205	0.6	0.3	5.6	21.0	36.5	17300	331	19.4
H12110151-022	MBSI-06-01		< 0.1	10600	8.0	160	0.6	0.4	5.5	22.2	11.1	14900	858	13.9
H12110151-023	MBSI-06-01	22.4	< 0.1	9920	6.5	138	0.5	0.4	4.1	21.0	50.4	13700	739	10.9
H12110151-024	MBSI-25-02		0.2	13200	8.8	169	0.6	0.3	9.1	27.0	24.7	17600	674	25.0
H12110151-025	MBSI-25-02	32.5	< 0.1	15800	8.9	168	0.7	0.3	5.8	30.8	70.0	18100	525	21.7
H12110151-026	MBSI-25-02 Sieve Dup	32.6	0.2	15700	8.8	167	0.7	0.3	6.0	30.8	40.3	18100	525	21.4
H12110151-027	MBSI-25-01		0.1	18200	6.3	308	0.7	0.6	8.3	17.2	19.9	18500	800	19.5
H12110151-028	MBSI-25-01	23.1	0.1	18600	6.3	308	0.8	0.7	5.2	16.7	34.3	16300	682	12.2
H12110151-029	MBSI-25-03		0.1	19700	6.7	349	0.8	0.6	8.4	17.5	18.6	18300	813	18.5
H12110151-030	MBSI-25-03	35.5	0.1	20900	6.4	304	0.9	0.7	4.7	18.8	49.0	17000	643	12.4
H12110151-031	MBSI-25-04													

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110151

Report Date: 12/05/12
Date Received: 11/08/12

	Analysis	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Al-T	Sb-T	As-T	Ba-T	Be-T	Cd-T
	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110151-001	MBSI-38-01	14.8	0.2	0.3	0.20	33.4	107	17						
H12110151-002	MBSI-38-01	12	< 0.1	0.4	0.23	31.3	109	19						
H12110151-003	MBSI-26-01	10.7	0.1	0.4	0.24	32.5	60	20						
H12110151-004	MBSI-26-01	15	< 0.1	0.4	0.23	29.1	58	21						
H12110151-005	MBSI-26-03	10.9	0.2	0.4	0.24	32.0	61	20						
H12110151-006	MBSI-26-03	15	< 0.1	0.5	0.22	28.7	56	20						
H12110151-007	MBSI-31-01	13.2	0.2	0.4	0.25	38.0	61	20						
H12110151-008	MBSI-31-01	15	< 0.1	0.4	0.22	31.1	68	20						
H12110151-009	MBSI-31-01 Sieve Dup	16	< 0.1	0.4	0.27	35.7	64	21						
H12110151-010	MBSI-31-02	15.8	0.2	0.5	0.32	75.6	89	37						
H12110151-011	MBSI-31-02	12	< 0.1	0.5	0.30	61.2	74	32						
H12110151-012	MBSI-31-03	15.5	0.2	0.5	0.33	74.7	89	36						
H12110151-013	MBSI-31-03	14.8	0.2	0.5	0.30	60.3	76	33						
H12110151-014	MBSI-38-02	10.1	0.1	0.5	0.21	32.4	82	18						
H12110151-015	MBSI-38-02	10.2	< 0.1	0.6	0.20	26.2	82	17						
H12110151-016	MBSI-21-01	14.2	0.1	1.6	0.33	48.8	94	21						
H12110151-017	MBSI-21-01	13.6	< 0.1	1.3	0.28	41.3	83	21						
H12110151-018	MBSI-21-02	19.4	< 0.1	0.7	0.37	48.4	94	25						
H12110151-019	MBSI-21-02	19.1	< 0.1	0.7	0.36	49.2	84	27						
H12110151-020	MBSI-26-02	12.8	0.1	0.5	0.26	40.7	86	20						
H12110151-021	MBSI-26-02	12.7	< 0.1	0.5	0.26	40.3	82	21						
H12110151-022	MBSI-06-01	9.8	0.1	0.3	0.46	22.9	74	22						
H12110151-023	MBSI-06-01	8.6	< 0.1	0.3	0.25	19.8	64	21						
H12110151-024	MBSI-25-02	9.2	0.2	0.3	0.22	31.6	48	27						
H12110151-025	MBSI-25-02	12	< 0.1	0.3	0.23	31.1	58	31						
H12110151-026	MBSI-25-02 Sieve Dup	18	< 0.1	0.3	0.22	31.3	53	31						
H12110151-027	MBSI-25-01	12.8	0.2	< 0.2	0.25	30.4	83	17						
H12110151-028	MBSI-25-01	21	< 0.1	0.2	0.26	24.4	83	17						
H12110151-029	MBSI-25-03	14.1	0.1	0.2	0.29	30.1	87	17						
H12110151-030	MBSI-25-03	20	0.1	0.3	0.30	26.5	87	19						
H12110151-031	MBSI-25-04								< 0.03	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110151

Report Date: 12/05/12
Date Received: 11/08/12

	Analysis	Cr-T	Co-T	Cu-T	Fe-T	Pb-T	Mn-T	Hg-T	Ni-T	Se-T	Ag-T	Tl-T	V-T	Zn-T
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110151-001	MBSI-38-01													
H12110151-002	MBSI-38-01													
H12110151-003	MBSI-26-01													
H12110151-004	MBSI-26-01													
H12110151-005	MBSI-26-03													
H12110151-006	MBSI-26-03													
H12110151-007	MBSI-31-01													
H12110151-008	MBSI-31-01													
H12110151-009	MBSI-31-01 Sieve Dup													
H12110151-010	MBSI-31-02													
H12110151-011	MBSI-31-02													
H12110151-012	MBSI-31-03													
H12110151-013	MBSI-31-03													
H12110151-014	MBSI-38-02													
H12110151-015	MBSI-38-02													
H12110151-016	MBSI-21-01													
H12110151-017	MBSI-21-01													
H12110151-018	MBSI-21-02													
H12110151-019	MBSI-21-02													
H12110151-020	MBSI-26-02													
H12110151-021	MBSI-26-02													
H12110151-022	MBSI-06-01													
H12110151-023	MBSI-06-01													
H12110151-024	MBSI-25-02													
H12110151-025	MBSI-25-02													
H12110151-026	MBSI-25-02 Sieve Dup													
H12110151-027	MBSI-25-01													
H12110151-028	MBSI-25-01													
H12110151-029	MBSI-25-03													
H12110151-030	MBSI-25-03													
H12110151-031	MBSI-25-04	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	0.001	< 0.0001	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110151

Report Date: 12/05/12
Date Received: 11/08/12

		Analysis	Hg, Total	Chromium,
		Units	mg/kg	mg/kg
Sample ID	Client Sample ID		Results	Results
H12110151-001	MBSI-38-01		< 0.050	< 0.29
H12110151-002	MBSI-38-01			< 0.29
H12110151-003	MBSI-26-01		< 0.050	< 0.29
H12110151-004	MBSI-26-01			< 0.29
H12110151-005	MBSI-26-03		< 0.050	< 0.29
H12110151-006	MBSI-26-03			< 0.29
H12110151-007	MBSI-31-01		< 0.050	< 0.29
H12110151-008	MBSI-31-01			< 0.29
H12110151-009	MBSI-31-01 Sieve Dup			< 0.29
H12110151-010	MBSI-31-02		< 0.050	< 0.29
H12110151-011	MBSI-31-02			< 0.29
H12110151-012	MBSI-31-03		< 0.050	< 0.29
H12110151-013	MBSI-31-03			< 0.29
H12110151-014	MBSI-38-02		< 0.050	< 0.29
H12110151-015	MBSI-38-02			< 0.29
H12110151-016	MBSI-21-01		< 0.050	1.0
H12110151-017	MBSI-21-01			< 0.29
H12110151-018	MBSI-21-02		< 0.050	0.97
H12110151-019	MBSI-21-02			< 0.29
H12110151-020	MBSI-26-02		< 0.050	< 0.29
H12110151-021	MBSI-26-02			< 0.29
H12110151-022	MBSI-06-01		< 0.050	< 0.29
H12110151-023	MBSI-06-01			< 0.29
H12110151-024	MBSI-25-02		< 0.050	< 0.29
H12110151-025	MBSI-25-02			< 0.29
H12110151-026	MBSI-25-02 Sieve Dup			< 0.29
H12110151-027	MBSI-25-01		< 0.050	< 0.29
H12110151-028	MBSI-25-01			< 0.29
H12110151-029	MBSI-25-03		< 0.050	0.36
H12110151-030	MBSI-25-03			< 0.29
H12110151-031	MBSI-25-04			

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121121B	
Sample ID: ICV		Initial Calibration Verification Standard							11/21/12 12:18	
Aluminum		4.01	mg/L	0.10	100	90	110			
Sample ID: ICSA		Interference Check Sample A							11/21/12 12:33	
Aluminum		505	mg/L	0.10	101	80	120			
Sample ID: ICSAB		Interference Check Sample AB							11/21/12 12:37	
Aluminum		512	mg/L	0.10	102	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121126B	
Sample ID: ICV	2	Initial Calibration Verification Standard							11/26/12 10:41	
Aluminum		4.03	mg/L	0.10	101	90	110			
Iron		4.06	mg/L	0.030	101	90	110			
Sample ID: ICSA	2	Interference Check Sample A							11/26/12 10:56	
Aluminum		516	mg/L	0.10	103	80	120			
Iron		188	mg/L	0.030	94	80	120			
Sample ID: ICSAB	2	Interference Check Sample AB							11/26/12 11:00	
Aluminum		515	mg/L	0.10	103	80	120			
Iron		187	mg/L	0.030	94	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121127A		
Sample ID: ICV	11	Initial Calibration Verification Standard							11/27/12 11:36	
Aluminum		4.03	mg/L	0.10	101	90	110			
Barium		0.795	mg/L	0.10	99	90	110			
Chromium		0.830	mg/L	0.010	104	90	110			
Cobalt		0.796	mg/L	0.010	100	90	110			
Copper		0.800	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.790	mg/L	0.013	99	90	110			
Manganese		3.99	mg/L	0.010	100	90	110			
Nickel		0.809	mg/L	0.010	101	90	110			
Vanadium		0.805	mg/L	0.10	101	90	110			
Zinc		0.805	mg/L	0.010	101	90	110			
Sample ID: ICSA	11	Interference Check Sample A							11/27/12 11:50	
Aluminum		506	mg/L	0.10	101	80	120			
Barium		0.000620	mg/L	0.10		0	0			
Chromium		0.00901	mg/L	0.012		0	0			
Cobalt		-0.00370	mg/L	0.010		0	0			
Copper		0.000990	mg/L	0.010		0	0			
Iron		186	mg/L	0.030	93	80	120			
Lead		0.0608	mg/L	0.013		0	0			
Manganese		0.00259	mg/L	0.010		0	0			
Nickel		0.00535	mg/L	0.010		0	0			
Vanadium		0.000840	mg/L	0.10		0	0			
Zinc		0.0112	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							11/27/12 11:55	
Aluminum		486	mg/L	0.10	97	80	120			
Barium		0.490	mg/L	0.10	98	80	120			
Chromium		0.489	mg/L	0.012	98	80	120			
Cobalt		0.455	mg/L	0.010	91	80	120			
Copper		0.489	mg/L	0.010	98	80	120			
Iron		185	mg/L	0.030	93	80	120			
Lead		0.960	mg/L	0.013	96	80	120			
Manganese		0.471	mg/L	0.010	94	80	120			
Nickel		0.934	mg/L	0.010	93	80	120			
Vanadium		0.475	mg/L	0.10	95	80	120			
Zinc		0.990	mg/L	0.010	99	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121115A		
Sample ID: ICV STD	16	Initial Calibration Verification Standard							11/14/12 15:21	
Aluminum		0.243	mg/L	0.10	97	90	110			
Antimony		0.0488	mg/L	0.050	98	90	110			
Barium		0.0490	mg/L	0.10	98	90	110			
Beryllium		0.0243	mg/L	0.0010	97	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Chromium		0.0499	mg/L	0.010	100	90	110			
Cobalt		0.0496	mg/L	0.010	99	90	110			
Iron		0.263	mg/L	0.030	105	90	110			
Lead		0.0482	mg/L	0.010	96	90	110			
Manganese		0.253	mg/L	0.010	101	90	110			
Nickel		0.0513	mg/L	0.010	103	90	110			
Selenium		0.0520	mg/L	0.0050	104	90	110			
Silver		0.0246	mg/L	0.0050	99	90	110			
Thallium		0.0487	mg/L	0.10	97	90	110			
Vanadium		0.0503	mg/L	0.10	101	90	110			
Zinc		0.0522	mg/L	0.010	104	90	110			
Sample ID: ICSA	16	Interference Check Sample A							11/14/12 15:26	
Aluminum		38.7	mg/L	0.10	97	70	130			
Antimony		0.000448	mg/L	0.050						
Barium		0.000286	mg/L	0.10						
Beryllium		3.00E-06	mg/L	0.0010						
Cadmium		0.000955	mg/L	0.0010						
Chromium		0.00108	mg/L	0.010						
Cobalt		0.000274	mg/L	0.010						
Iron		96.9	mg/L	0.030	97	70	130			
Lead		0.000196	mg/L	0.010						
Manganese		0.000113	mg/L	0.010						
Nickel		0.000518	mg/L	0.010						
Selenium		0.00170	mg/L	0.0050						
Silver		0.000199	mg/L	0.0050						
Thallium		3.60E-05	mg/L	0.10						
Vanadium		0.000252	mg/L	0.10						
Zinc		0.00118	mg/L	0.010						
Sample ID: ICSAB	16	Interference Check Sample AB							11/14/12 15:30	
Aluminum		38.5	mg/L	0.10	96	70	130			
Antimony		0.000245	mg/L	0.050		0	0			
Barium		0.000505	mg/L	0.10		0	0			
Beryllium		-4.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0108	mg/L	0.0010	108	70	130			
Chromium		0.0210	mg/L	0.010	105	70	130			
Cobalt		0.0205	mg/L	0.010	102	70	130			
Iron		98.4	mg/L	0.030	98	70	130			
Lead		0.000147	mg/L	0.010		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121115A		
Sample ID: ICSAB	16	Interference Check Sample AB							11/14/12 15:30	
Manganese		0.0197	mg/L	0.010	98	70	130			
Nickel		0.0206	mg/L	0.010	103	70	130			
Selenium		0.0110	mg/L	0.0050	110	70	130			
Silver		0.0197	mg/L	0.0050	98	70	130			
Thallium		1.50E-05	mg/L	0.10		0	0			
Vanadium		0.0207	mg/L	0.10	103	70	130			
Zinc		0.0114	mg/L	0.010	114	70	130			
Method: E200.8									Batch: 18684	
Sample ID: MB-18684	16	Method Blank				Run: ICPMS204-B_121115A			11/14/12 17:19	
Aluminum		ND	mg/L	0.002						
Antimony		ND	mg/L	3E-05						
Barium		ND	mg/L	0.00010						
Beryllium		ND	mg/L	3E-05						
Cadmium		ND	mg/L	2E-05						
Chromium		ND	mg/L	6E-05						
Cobalt		5E-05	mg/L	3E-05						
Iron		0.01	mg/L	0.0007						
Lead		ND	mg/L	2E-05						
Manganese		0.0004	mg/L	5E-05						
Nickel		ND	mg/L	0.0001						
Selenium		ND	mg/L	0.0001						
Silver		0.0001	mg/L	6E-05						
Thallium		ND	mg/L	3E-05						
Vanadium		0.00010	mg/L	5E-05						
Zinc		0.001	mg/L	0.0007						
Sample ID: LCS-18684	16	Laboratory Control Sample				Run: ICPMS204-B_121115A			11/14/12 17:24	
Aluminum		2.45	mg/L	0.030	98	85	115			
Antimony		0.548	mg/L	0.0010	110	85	115			
Barium		0.520	mg/L	0.050	104	85	115			
Beryllium		0.252	mg/L	0.0010	101	85	115			
Cadmium		0.264	mg/L	0.0010	106	85	115			
Chromium		0.498	mg/L	0.0050	100	85	115			
Cobalt		0.516	mg/L	0.0050	103	85	115			
Iron		2.47	mg/L	0.030	98	85	115			
Lead		0.529	mg/L	0.0010	106	85	115			
Manganese		2.58	mg/L	0.0010	103	85	115			
Nickel		0.500	mg/L	0.0050	100	85	115			
Selenium		0.510	mg/L	0.0010	102	85	115			
Silver		0.0533	mg/L	0.0010	106	85	115			
Thallium		0.528	mg/L	0.00050	106	85	115			
Vanadium		0.504	mg/L	0.010	101	85	115			
Zinc		0.512	mg/L	0.010	102	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18684
Sample ID: H12110149-001CMS3	16	Sample Matrix Spike				Run: ICPMS204-B_121115A				11/14/12 18:01
Aluminum		2.38	mg/L	0.030	95	70	130			
Antimony		0.563	mg/L	0.0010	113	70	130			
Barium		0.534	mg/L	0.050	107	70	130			
Beryllium		0.236	mg/L	0.0010	94	70	130			
Cadmium		0.264	mg/L	0.0010	105	70	130			
Chromium		0.503	mg/L	0.0050	101	70	130			
Cobalt		0.517	mg/L	0.0050	103	70	130			
Iron		2.46	mg/L	0.030	98	70	130			
Lead		0.541	mg/L	0.0010	108	70	130			
Manganese		2.69	mg/L	0.0010	104	70	130			
Nickel		0.500	mg/L	0.0050	99	70	130			
Selenium		0.532	mg/L	0.0010	106	70	130			
Silver		0.0511	mg/L	0.0010	102	70	130			
Thallium		0.538	mg/L	0.00050	108	70	130			
Vanadium		0.518	mg/L	0.010	104	70	130			
Zinc		0.496	mg/L	0.010	97	70	130			
Sample ID: H12110149-001CMSD3	16	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121115A				11/14/12 18:05
Aluminum		2.32	mg/L	0.030	93	70	130	2.7	20	
Antimony		0.553	mg/L	0.0010	111	70	130	1.9	20	
Barium		0.526	mg/L	0.050	105	70	130	1.5	20	
Beryllium		0.223	mg/L	0.0010	89	70	130	5.5	20	
Cadmium		0.255	mg/L	0.0010	102	70	130	3.3	20	
Chromium		0.488	mg/L	0.0050	97	70	130	3.1	20	
Cobalt		0.496	mg/L	0.0050	99	70	130	4.3	20	
Iron		2.58	mg/L	0.030	103	70	130	4.8	20	
Lead		0.523	mg/L	0.0010	105	70	130	3.4	20	
Manganese		2.60	mg/L	0.0010	101	70	130	3.2	20	
Nickel		0.488	mg/L	0.0050	97	70	130	2.4	20	
Selenium		0.528	mg/L	0.0010	106	70	130	0.8	20	
Silver		0.0518	mg/L	0.0010	103	70	130	1.4	20	
Thallium		0.518	mg/L	0.00050	104	70	130	3.6	20	
Vanadium		0.503	mg/L	0.010	101	70	130	3.1	20	
Zinc		0.488	mg/L	0.010	96	70	130	1.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS204-B_121120A	
Sample ID: ICV STD	2	Initial Calibration Verification Standard							11/20/12 10:10	
Arsenic		0.0491	mg/L	0.0050	98	90	110			
Copper		0.0508	mg/L	0.010	102	90	110			
Sample ID: ICSA	2	Interference Check Sample A							11/20/12 10:14	
Arsenic		0.00113	mg/L	0.0050						
Copper		0.000141	mg/L	0.010						
Sample ID: ICSAB	2	Interference Check Sample AB							11/20/12 10:19	
Arsenic		0.0109	mg/L	0.0050	109	70	130			
Copper		0.0209	mg/L	0.010	105	70	130			
Method: E200.8										Batch: 18725
Sample ID: MB-18725	2	Method Blank				Run: ICPMS204-B_121120A			11/20/12 13:20	
Arsenic		9E-05	mg/L	3E-05						
Copper		ND	mg/L	0.0003						
Sample ID: LCS-18725	2	Laboratory Control Sample				Run: ICPMS204-B_121120A			11/20/12 13:24	
Arsenic		0.524	mg/L	0.0010	105	85	115			
Copper		0.508	mg/L	0.0050	102	85	115			
Sample ID: H12110149-002CMS3	2	Sample Matrix Spike				Run: ICPMS204-B_121120A			11/20/12 14:18	
Arsenic		0.529	mg/L	0.0010	104	70	130			
Copper		0.691	mg/L	0.0050	98	70	130			
Sample ID: H12110149-002CMSD3	2	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121120A			11/20/12 14:22	
Arsenic		0.529	mg/L	0.0010	104	70	130	0.0	20	
Copper		0.686	mg/L	0.0050	97	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E245.1									Analytical Run: HGCV201-H_121126A	
Sample ID: ICV		Initial Calibration Verification Standard							11/26/12 15:03	
Mercury		0.00020	mg/L	0.00010	101	90	110			
New Calibration. SBK										
Sample ID: CCV		Continuing Calibration Verification Standard							11/26/12 15:05	
Mercury		0.00021	mg/L	0.00010	104	95	105			
Method: E245.1									Batch: 18765	
Sample ID: MB-18765		Method Blank				Run: HGCV201-H_121126A			11/26/12 15:10	
Mercury		ND	mg/L	6E-06						
Sample ID: LCS-18765		Laboratory Control Sample				Run: HGCV201-H_121126A			11/26/12 15:15	
Mercury		0.00021	mg/L	0.00010	104	90	110			
Sample ID: H12110229-003BMS		Sample Matrix Spike				Run: HGCV201-H_121126A			11/26/12 15:27	
Mercury		0.00022	mg/L	0.00010	108	70	130			
Sample ID: H12110229-003BMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121126A			11/26/12 15:29	
Mercury		0.00022	mg/L	0.00010	106	70	130	1.5	30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18733
Sample ID: MB-18733		Method Blank				Run: ICP2-HE_121121B				11/21/12 23:24
Aluminum		ND	mg/kg	0.8						
Method: SW6010B										Batch: 18733
Sample ID: MB-18733	2	Method Blank				Run: ICP2-HE_121126B				11/26/12 22:43
Aluminum		ND	mg/kg	0.8						
Iron		2	mg/kg	0.7						
Sample ID: LFB-18733	2	Laboratory Fortified Blank				Run: ICP2-HE_121126B				11/26/12 22:47
Aluminum		249	mg/kg	5.0	100	80	120			
Iron		251	mg/kg	5.0	100	80	120			
Sample ID: LCS-18733	2	Laboratory Control Sample				Run: ICP2-HE_121126B				11/26/12 22:51
Aluminum		12300	mg/kg	5.0	84	50.7	131.3			
Iron		18300	mg/kg	5.0	80	39.6	138.3			
Sample ID: H12110151-029AMS	2	Sample Matrix Spike				Run: ICP2-HE_121126B				11/27/12 00:35
Aluminum		23400	mg/kg	5.0		75	125			A
Iron		19500	mg/kg	5.0		75	125			A
Sample ID: H12110151-029AMSD	2	Sample Matrix Spike Duplicate				Run: ICP2-HE_121126B				11/27/12 00:39
Aluminum		23800	mg/kg	5.0		75	125	1.6	20	A
Iron		17500	mg/kg	5.0		75	125	11	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18762
Sample ID: MB-18762	11	Method Blank				Run: ICP2-HE_121127A				11/27/12 15:04
Aluminum		ND	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18762	11	Laboratory Fortified Blank				Run: ICP2-HE_121127A				11/27/12 15:08
Aluminum		253	mg/kg	5.0	101	80	120			
Barium		50.6	mg/kg	1.0	101	80	120			
Chromium		50.7	mg/kg	1.0	101	80	120			
Cobalt		48.2	mg/kg	1.0	96	80	120			
Copper		50.1	mg/kg	1.0	100	80	120			
Iron		250	mg/kg	5.0	99	80	120			
Lead		47.3	mg/kg	1.0	95	80	120			
Manganese		248	mg/kg	1.0	99	80	120			
Nickel		50.0	mg/kg	1.0	100	80	120			
Vanadium		49.5	mg/kg	1.0	99	80	120			
Zinc		48.7	mg/kg	1.0	97	80	120			
Sample ID: LCS-18762	11	Laboratory Control Sample				Run: ICP2-HE_121127A				11/27/12 15:12
Aluminum		13100	mg/kg	5.0	90	50.7	131.3			
Barium		551	mg/kg	1.0	91	80.6	112.2			
Chromium		72.6	mg/kg	1.0	97	72.8	109.1			
Cobalt		48.3	mg/kg	1.0	85	73.3	103.7			
Copper		245	mg/kg	1.0	88	77.5	109.6			
Iron		19300	mg/kg	5.0	85	39.6	138.3			
Lead		167	mg/kg	3.1	90	75.9	108.6			
Manganese		353	mg/kg	1.0	97	80.8	115.7			
Nickel		53.5	mg/kg	1.0	89	72.3	103.4			
Vanadium		61.5	mg/kg	1.0	85	66.6	107.3			
Zinc		187	mg/kg	1.0	89	74.2	109.9			
Sample ID: H12110151-030AMS	11	Sample Matrix Spike				Run: ICP2-HE_121127A				11/27/12 17:22
Aluminum		25600	mg/kg	5.0		75	125			A
Barium		359	mg/kg	1.0		75	125			A
Chromium		66.4	mg/kg	1.0	96	75	125			
Cobalt		49.1	mg/kg	1.0	90	75	125			
Copper		93.6	mg/kg	1.0	90	75	125			
Iron		17800	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18762
Sample ID: H12110151-030AMS	11	Sample Matrix Spike				Run: ICP2-HE_121127A			11/27/12 17:22	
Lead		62.9	mg/kg	3.1	87	75	125			
Manganese		860	mg/kg	1.0	88	75	125			
Nickel		57.5	mg/kg	1.0	91	75	125			
Vanadium		78.6	mg/kg	1.0	105	75	125			
Zinc		133	mg/kg	1.0	93	75	125			
Sample ID: H12110151-030AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121127A			11/27/12 17:25	
Aluminum		25100	mg/kg	5.0		75	125	1.9	20	A
Barium		358	mg/kg	1.0		75	125	0.3	20	A
Chromium		65.3	mg/kg	1.0	94	75	125	1.6	20	
Cobalt		48.5	mg/kg	1.0	88	75	125	1.1	20	
Copper		94.3	mg/kg	1.0	91	75	125	0.8	20	
Iron		17700	mg/kg	5.0		75	125	0.4	20	A
Lead		65.3	mg/kg	3.1	92	75	125	3.7	20	
Manganese		861	mg/kg	1.0	88	75	125	0.1	20	
Nickel		56.0	mg/kg	1.0	88	75	125	2.7	20	
Vanadium		76.6	mg/kg	1.0	101	75	125	2.6	20	
Zinc		132	mg/kg	1.0	91	75	125	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121121A		
Sample ID: ICV STD	17	Initial Calibration Verification Standard							11/21/12 11:21	
Antimony		0.0484	mg/L	0.0010	97	90	110			
Arsenic		0.0497	mg/L	0.0010	99	90	110			
Barium		0.0498	mg/L	0.0010	100	90	110			
Beryllium		0.0244	mg/L	0.0010	97	90	110			
Cadmium		0.0249	mg/L	0.0010	100	90	110			
Chromium		0.0493	mg/L	0.0010	99	90	110			
Cobalt		0.0500	mg/L	0.0010	100	90	110			
Copper		0.0516	mg/L	0.0010	103	90	110			
Iron		0.272	mg/L	0.0010	109	90	110			
Lead		0.0481	mg/L	0.0010	96	90	110			
Manganese		0.252	mg/L	0.0010	101	90	110			
Nickel		0.0507	mg/L	0.0010	101	90	110			
Selenium		0.0533	mg/L	0.0010	107	90	110			
Silver		0.0248	mg/L	0.0010	99	90	110			
Thallium		0.0490	mg/L	0.0010	98	90	110			
Vanadium		0.0497	mg/L	0.0010	99	90	110			
Zinc		0.0517	mg/L	0.0010	103	90	110			
Sample ID: ICV STD	17	Initial Calibration Verification Standard							11/21/12 23:06	
Antimony		0.0491	mg/L	0.0010	98	90	110			
Arsenic		0.0497	mg/L	0.0010	99	90	110			
Barium		0.0497	mg/L	0.0010	99	90	110			
Beryllium		0.0246	mg/L	0.0010	98	90	110			
Cadmium		0.0255	mg/L	0.0010	102	90	110			
Chromium		0.0495	mg/L	0.0010	99	90	110			
Cobalt		0.0495	mg/L	0.0010	99	90	110			
Copper		0.0518	mg/L	0.0010	103	90	110			
Iron		0.258	mg/L	0.0010	103	90	110			
Lead		0.0483	mg/L	0.0010	97	90	110			
Manganese		0.254	mg/L	0.0010	102	90	110			
Nickel		0.0510	mg/L	0.0010	102	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0249	mg/L	0.0010	100	90	110			
Thallium		0.0490	mg/L	0.0010	98	90	110			
Vanadium		0.0499	mg/L	0.0010	100	90	110			
Zinc		0.0518	mg/L	0.0010	104	90	110			
Method: SW6020									Batch: 18733	
Sample ID: MB-18733	17	Method Blank				Run: ICPMS204-B_121121A			11/22/12 06:00	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		0.003	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18733
Sample ID: MB-18733	17	Method Blank				Run: ICPMS204-B_121121A				11/22/12 06:00
Chromium		0.02	mg/kg	0.009						
Cobalt		0.006	mg/kg	0.003						
Copper		0.09	mg/kg	0.01						
Iron		2	mg/kg	0.1						
Lead		0.008	mg/kg	0.003						
Manganese		0.05	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.01	mg/kg	0.007						
Silver		0.07	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Vanadium		0.09	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						
Sample ID: LCS-18733	17	Laboratory Control Sample				Run: ICPMS204-B_121121A				11/22/12 06:05
Antimony		51.3	mg/kg	1.0	41	2.2	92.9			
Arsenic		295	mg/kg	1.0	87	72.3	106.4			
Barium		597	mg/kg	1.0	98	80.6	112.2			
Beryllium		41.6	mg/kg	1.0	82	76.3	108.6			
Cadmium		111	mg/kg	1.0	82	73	105.1			
Chromium		74.1	mg/kg	1.0	98	72.8	109.1			
Cobalt		53.8	mg/kg	1.0	95	73.3	103.7			
Copper		277	mg/kg	1.0	100	77.5	109.6			
Iron		20200	mg/kg	5.0	89	39.6	138.3			
Lead		189	mg/kg	1.0	102	75.9	108.6			
Manganese		383	mg/kg	1.0	105	80.8	115.7			
Nickel		58.6	mg/kg	1.0	97	72.3	103.4			
Selenium		180	mg/kg	1.0	93	72.5	112.2			
Silver		68.3	mg/kg	1.0	100	67.8	112.8			
Thallium		84.6	mg/kg	1.0	94	71.7	109.5			
Vanadium		66.8	mg/kg	1.0	92	66.6	107.3			
Zinc		203	mg/kg	1.0	96	74.2	109.9			
Sample ID: LFB-18733	17	Laboratory Fortified Blank				Run: ICPMS204-B_121121A				11/22/12 06:09
Antimony		52.2	mg/kg	1.0	104	80	120			
Arsenic		49.9	mg/kg	1.0	100	80	120			
Barium		52.9	mg/kg	1.0	106	80	120			
Beryllium		23.7	mg/kg	1.0	95	80	120			
Cadmium		25.6	mg/kg	1.0	102	80	120			
Chromium		51.6	mg/kg	1.0	103	80	120			
Cobalt		51.6	mg/kg	1.0	103	80	120			
Copper		53.8	mg/kg	1.0	107	80	120			
Iron		268	mg/kg	5.0	106	80	120			
Lead		52.8	mg/kg	1.0	105	80	120			
Manganese		268	mg/kg	1.0	107	80	120			
Nickel		53.0	mg/kg	1.0	106	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18733
Sample ID: LFB-18733	17	Laboratory Fortified Blank				Run: ICPMS204-B_121121A				11/22/12 06:09
Selenium		49.8	mg/kg	1.0	100	80	120			
Silver		27.0	mg/kg	1.0	108	80	120			
Thallium		51.7	mg/kg	1.0	103	80	120			
Vanadium		51.8	mg/kg	1.0	104	80	120			
Zinc		52.0	mg/kg	1.0	103	80	120			
Sample ID: H12110151-029AMS	17	Sample Matrix Spike				Run: ICPMS204-B_121121A				11/22/12 08:11
Antimony		15.9	mg/kg	1.0	32	75	125			S
Arsenic		56.6	mg/kg	1.0	101	75	125			
Barium		383	mg/kg	1.0		75	125			A
Beryllium		22.8	mg/kg	1.0	89	75	125			
Cadmium		22.2	mg/kg	1.0	87	75	125			
Chromium		71.0	mg/kg	1.0	108	75	125			
Cobalt		59.8	mg/kg	1.0	104	75	125			
Copper		71.9	mg/kg	1.0	108	75	125			
Iron		20200	mg/kg	5.0		75	125			A
Lead		65.6	mg/kg	1.0	104	75	125			
Manganese		1040	mg/kg	1.0	90	75	125			
Nickel		69.9	mg/kg	1.0	104	75	125			
Selenium		50.2	mg/kg	1.0	101	75	125			
Silver		26.7	mg/kg	1.0	108	75	125			
Thallium		51.4	mg/kg	1.0	103	75	125			
Vanadium		85.9	mg/kg	1.0	113	75	125			
Zinc		141	mg/kg	1.0	108	75	125			
Sample ID: H12110151-029AMSD	17	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121121A				11/22/12 08:16
Antimony		15.1	mg/kg	1.0	30	75	125	5.4	20	S
Arsenic		58.1	mg/kg	1.0	104	75	125	2.6	20	
Barium		395	mg/kg	1.0		75	125	3.2	20	A
Beryllium		22.6	mg/kg	1.0	88	75	125	0.7	20	
Cadmium		22.1	mg/kg	1.0	87	75	125	0.3	20	
Chromium		72.7	mg/kg	1.0	112	75	125	2.3	20	
Cobalt		60.1	mg/kg	1.0	105	75	125	0.7	20	
Copper		71.8	mg/kg	1.0	108	75	125	0.1	20	
Iron		19000	mg/kg	5.0		75	125	6.1	20	A
Lead		67.3	mg/kg	1.0	107	75	125	2.5	20	
Manganese		1060	mg/kg	1.0	98	75	125	2.0	20	
Nickel		67.8	mg/kg	1.0	100	75	125	3.0	20	
Selenium		51.4	mg/kg	1.0	103	75	125	2.3	20	
Silver		26.7	mg/kg	1.0	107	75	125	0.2	20	
Thallium		51.8	mg/kg	1.0	104	75	125	0.9	20	
Vanadium		89.2	mg/kg	1.0	119	75	125	3.7	20	
Zinc		142	mg/kg	1.0	110	75	125	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121127B		
Sample ID: ICV STD	7	Initial Calibration Verification Standard							11/27/12 11:38	
Antimony		0.0487	mg/L	0.0010	97	90	110			
Arsenic		0.0496	mg/L	0.0010	99	90	110			
Beryllium		0.0247	mg/L	0.0010	99	90	110			
Cadmium		0.0253	mg/L	0.0010	101	90	110			
Lead		0.0480	mg/L	0.0010	96	90	110			
Selenium		0.0521	mg/L	0.0010	104	90	110			
Thallium		0.0484	mg/L	0.0010	97	90	110			
Method: SW6020									Batch: 18762	
Sample ID: MB-18762	8	Method Blank				Run: ICPMS204-B_121127B			11/27/12 18:15	
Antimony		0.06	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Lead		0.008	mg/kg	0.003						
Selenium		0.02	mg/kg	0.007						
Silver		0.3	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Sample ID: LCS-18762	8	Laboratory Control Sample				Run: ICPMS204-B_121127B			11/27/12 18:24	
Antimony		56.0	mg/kg	1.0	45	2.2	92.9			
Arsenic		301	mg/kg	1.0	89	72.3	106.4			
Beryllium		45.0	mg/kg	1.0	89	76.3	108.6			
Cadmium		120	mg/kg	1.0	89	73	105.1			
Lead		194	mg/kg	1.0	105	75.9	108.6			
Selenium		191	mg/kg	1.0	98	72.5	112.2			
Silver		68.1	mg/kg	1.0	99	67.8	112.8			
Thallium		85.7	mg/kg	1.0	95	71.7	109.5			
Sample ID: LFB-18762	8	Laboratory Fortified Blank				Run: ICPMS204-B_121127B			11/27/12 18:29	
Antimony		50.7	mg/kg	1.0	102	80	120			
Arsenic		49.8	mg/kg	1.0	101	80	120			
Beryllium		24.0	mg/kg	1.0	97	80	120			
Cadmium		25.2	mg/kg	1.0	102	80	120			
Lead		50.5	mg/kg	1.0	102	80	120			
Selenium		52.0	mg/kg	1.0	105	80	120			
Silver		25.7	mg/kg	1.0	103	80	120			
Thallium		49.6	mg/kg	1.0	100	80	120			
Sample ID: H12110151-030AMS	8	Sample Matrix Spike				Run: ICPMS204-B_121127B			11/27/12 20:36	
Antimony		14.5	mg/kg	1.0	29	75	125			S
Arsenic		55.1	mg/kg	1.0	98	75	125			
Beryllium		24.6	mg/kg	1.0	96	75	125			
Cadmium		23.3	mg/kg	1.0	91	75	125			
Lead		65.4	mg/kg	1.0	103	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 18762	
Sample ID: H12110151-030AMS	8	Sample Matrix Spike				Run: ICPMS204-B_121127B			11/27/12 20:36	
Selenium		50.4	mg/kg	1.0	101	75	125			
Silver		27.5	mg/kg	1.0	110	75	125			
Thallium		50.5	mg/kg	1.0	101	75	125			
Sample ID: H12110151-030AMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121127B			11/27/12 20:40	
Antimony		15.1	mg/kg	1.0	30	75	125	4.5	20	S
Arsenic		57.1	mg/kg	1.0	102	75	125	3.5	20	
Beryllium		24.3	mg/kg	1.0	95	75	125	1.1	20	
Cadmium		23.3	mg/kg	1.0	91	75	125	0.2	20	
Lead		65.0	mg/kg	1.0	102	75	125	0.6	20	
Selenium		50.7	mg/kg	1.0	102	75	125	0.7	20	
Silver		26.4	mg/kg	1.0	105	75	125	4.2	20	
Thallium		50.1	mg/kg	1.0	101	75	125	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121128B		
Sample ID: ICV STD	2	Initial Calibration Verification Standard							11/28/12 10:18	
Beryllium		0.0238	mg/L	0.0010	95	90	110			
Silver		0.0246	mg/L	0.0010	98	90	110			
Method: SW6020									Batch: 18733	
Sample ID: MB-18733	17	Method Blank				Run: ICPMS204-B_121128B			11/28/12 16:31	
Antimony		0.008	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.03	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.04	mg/kg	0.01						
Iron		2	mg/kg	0.1						
Lead		0.006	mg/kg	0.003						
Manganese		0.03	mg/kg	0.008						
Nickel		0.02	mg/kg	0.01						
Selenium		0.010	mg/kg	0.007						
Silver		0.03	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.3	mg/kg	0.06						
Method: SW6020									Batch: 18762	
Sample ID: MB-18762	8	Method Blank				Run: ICPMS204-B_121128B			11/28/12 14:34	
Antimony		0.003	mg/kg	0.002						
Arsenic		0.02	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.03	mg/kg	0.003						
Lead		0.006	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.03	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67250
Sample ID: MB-67250		Method Blank				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110151-003A		Sample Matrix Spike				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		0.31	mg/kg	0.010	82	70	130			
Sample ID: H12110151-003A		Sample Matrix Spike Duplicate				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		0.31	mg/kg	0.010	83	70	130	0.3	20	
Sample ID: H12110151-014A		Sample Matrix Spike				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		0.46	mg/kg	0.010	86	70	130			
Sample ID: H12110151-014A		Sample Matrix Spike Duplicate				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		0.46	mg/kg	0.010	86	70	130	0.7	20	
Sample ID: H12110151-029A		Sample Duplicate				Run: SUB-B195594				11/20/12 16:30
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67350
Sample ID: MB-67350		Method Blank				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110151-002A		Sample Matrix Spike				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.030	mg/kg	0.010	80	70	130			
Sample ID: H12110151-002A		Sample Matrix Spike Duplicate				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		0.030	mg/kg	0.010	80	70	130	0.0	20	
Sample ID: H12110151-015A		Sample Duplicate				Run: SUB-B195836				11/27/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67357
Sample ID: MB-67357		Method Blank				Run: SUB-B195902				11/28/12 13:50
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110151-030A		Sample Matrix Spike				Run: SUB-B195902				11/28/12 13:50
Chromium, Hexavalent - Soluble		0.28	mg/kg	0.010	75	70	130			
Sample ID: H12110151-030A		Sample Matrix Spike Duplicate				Run: SUB-B195902				11/28/12 13:50
Chromium, Hexavalent - Soluble		0.27	mg/kg	0.010	71	70	130	5.4	20	
Sample ID: H12110151-030A		Sample Duplicate				Run: SUB-B195902				11/28/12 13:50
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/05/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110151

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121121A	
Sample ID: ICV		Initial Calibration Verification Standard							11/21/12 10:15	
Mercury		0.0010	mg/kg	0.50	103	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/21/12 10:17	
Mercury		0.0026	mg/kg	0.50	102	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							11/21/12 11:04	
Mercury		0.0025	mg/kg	0.50	100	90	110			
Method: SW7471A									Batch: 18743	
Sample ID: MB-18743		Method Blank				Run: HGCV201-H_121121A			11/21/12 10:22	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18743		Laboratory Control Sample				Run: HGCV201-H_121121A			11/21/12 10:30	
Mercury		5.7	mg/kg	0.50	115	80	120			
Sample ID: H12110151-007AMS		Sample Matrix Spike				Run: HGCV201-H_121121A			11/21/12 10:42	
Mercury		1.0	mg/kg	0.50	99	80	120			
Sample ID: H12110151-007AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121121A			11/21/12 10:45	
Mercury		1.2	mg/kg	0.50	120	80	120	18	20	
Sample ID: H12110151-022AMS		Sample Matrix Spike				Run: HGCV201-H_121121A			11/21/12 11:11	
Mercury		1.3	mg/kg	0.50	130	80	120			S
Sample ID: H12110151-022AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121121A			11/21/12 11:13	
Mercury		1.2	mg/kg	0.50	121	80	120	7.4	20	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12110151

Login completed by: Tracy L. Lorash
Date Received: 11/8/2012
Reviewed by: BL2000\sdull
Received by: TLL
Reviewed Date: 11/19/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Cooler 1 was received at 1.6℃, Cooler 2 at 1.6℃ and Cooler 3 at 2.0℃. Samples were received on wet ice. TI 11/12/12

Hydrometrics, Inc.

CHAIN OF CUSTODY RECORD

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* JPM

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	Total metals	Total metals (Bulk)	Total Metals (<250um - 60mesh)	Total Metals - Sieve Duplica	REMARKS
2 11/7/12	0740	X		MBSI-38-01	01									X	X			H12110151
2	0940	X		-26-01														
2	0950	X		-26-03														
2	1105	X		-31-01												X		
2	1305	X		-31-02														
2	1315	X		-31-03														
3	1445	X		-38-02														
3	1545	X		-21-01														
3	1625	X		-21-02														
3 11/7/12	1720	X		MBSI-26-02	01													

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
JPM	11/8/12 1400		ELI Helena	Bill MDEQ Directly	Other hand-delivered
					Air Bill #
Relinquished (Signature)	Date/Time	Received by: *(Signature)*	Remarks Bill MDEQ ATTN Jason Seylon		
	11/8/12 1420		Reference # 484427		
Relinquished (Signature)	Date/Time	Received for Laboratory by: *(Signature)*	Date/Time	Enclosed: ☒ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other	
			11/8/12 14:20		

HEQRM-1-5/99

Return results & electronic copy to: C-3 2.00 C-2 1.6°

Split Samples: [] Accepted [] Declined Signature

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
120412	Montana Background Soils Investigation

SAMPLERS: *(Signature)*

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250um - 60mesh)	Total Metals - Sieve Duplicate	REMARKS
11/6/12	1230	X		MBSI-06-01	1 soil									X	X		H12110151
↓	1630			25-02										X	X	X	
11/7/12	1000			25-01										X	X		
	1030	↓		25-03	↓									X	X		
↓	0930		X	↓	1 water					X							

Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Lab	P.O. #	Shipped via: Bus FedEx UPS
	11/8/12 1420		ECI Helena	Direct Bill MDEQ	Other Hand delivered
					Air Bill #
Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Remarks Bill MDEQ ATTN Jason Seyler		
			Reference # 484422		
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time	Enclosed: X Parameter sheet w/detection limits	
		Tracy Lovas	11/8/12 14:20	☐ QA / AC standard mixing instructions X Cover letter	
				☐ Other	

C-1 1.6° TB

Split Samples:

☐ Accepted ☐ Declined _____ Signature

Return results & electronic copy to:
QA / QC Dept. at address at top of page Hand del.

HFORM-1 07/11

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 8, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are fourteen (14) soil samples and one (1) water sample collected from November 6 through 7, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. Selected samples (shown on COC) are to be run as "laboratory sieve duplicates" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.
4. **Water samples** to be analyzed for total metals, using the same parameter list and routine analytical reporting limits.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis						
Parameter[1]	**Digestion Method[2]**	**Analytical Method[2]**	**Required Reporting Limit (mg/kg)**	**EPA Regional Screening Level (RSL)[3] (mg/kg)**	**Maximum Holding Time (days)**	**Preservation**
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 27, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12110308 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 36 samples for MT DEQ-Site Response on 11/21/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12110308-001	MBSI-07-02	11/14/12 14:00	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-002	MBSI-07-02	11/14/12 14:00	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-003	MBSI-56-01	11/15/12 12:20	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-004	MBSI-56-01	11/15/12 12:20	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-005	MBSI-56-02	11/15/12 15:54	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-006	MBSI-56-02	11/15/12 15:54	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110308-007	MBSI-07-01	11/16/12 12:47	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-008	MBSI-07-01	11/16/12 12:47	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-009	MBSI-07-01 Sieve Dup	11/16/12 12:47	11/21/12	Soil	Same As Above
H12110308-010	MBSI-33-02	11/14/12 7:30	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-011	MBSI-33-02	11/14/12 7:30	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-012	MBSI-50-01	11/16/12 8:10	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-013	MBSI-50-01	11/16/12 8:10	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-014	MBSI-50-03	11/16/12 8:20	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-015	MBSI-50-03	11/16/12 8:20	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110308-016	MBSI-50-02	11/16/12 9:40	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-017	MBSI-50-02	11/16/12 9:40	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-018	MBSI-41-01	11/16/12 10:50	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-019	MBSI-41-01	11/16/12 10:50	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-020	MBSI-41-02	11/16/12 12:45	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-021	MBSI-41-02	11/16/12 12:45	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-022	MBSI-41-02 Sieve Dup	11/16/12 12:45	11/21/12	Soil	Same As Above
H12110308-023	MBSI-27-02	11/16/12 14:15	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-024	MBSI-27-02	11/16/12 14:15	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110308-025	MBSI-27-01	11/16/12 15:40	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-026	MBSI-27-01	11/16/12 15:40	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-027	MBSI-27-04	11/16/12 16:00	11/21/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA
H12110308-028	MBSI-12-01	11/19/12 9:15	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-029	MBSI-12-01	11/19/12 9:15	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-030	MBSI-12-02	11/19/12 14:00	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-031	MBSI-12-02	11/19/12 14:00	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-032	MBSI-48-01	11/19/12 12:00	11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA

ANALYTICAL SUMMARY REPORT

H12110308-033	MBSI-48-01	11/19/12 12:00 11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-034	MBSI-48-02	11/19/12 15:30 11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110308-035	MBSI-48-02	11/19/12 15:30 11/21/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110308-036	MBSI-48-04	11/19/12 15:30 11/21/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.27 10:56:31 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12110308

Report Date: 12/27/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 12/26/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110308

Report Date: 12/27/12
Date Received: 11/21/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110308-001	MBSI-07-02	0	0		< 0.2	29800	6.1	279	0.8	0.1	5.7	13.7	14.5	20600
H12110308-002	MBSI-07-02	0	0	61.8	0.2	32700	6.4	360	0.8	0.2	6.1	14.0	48.7	18700
H12110308-003	MBSI-56-01	0	0		< 0.2	14500	3.6	197	0.5	< 0.1	6.2	12.6	10.1	17100
H12110308-004	MBSI-56-01	0	0	42.9	< 0.5	15600	2.6	252	0.4	0.1	5.0	11.7	35.5	14000
H12110308-005	MBSI-56-02	0	0		< 0.2	19500	5.0	335	0.6	0.3	10.0	12.9	18.9	23800
H12110308-006	MBSI-56-02	0	0	44.0	< 0.5	17900	3.2	249	0.4	0.2	6.8	14.1	52.1	19000
H12110308-007	MBSI-07-01	0	0		< 0.2	25600	5.1	157	1.0	< 0.1	6.6	14.2	31.7	18000
H12110308-008	MBSI-07-01	0	0	2.8	< 0.5	25400	5.1	164	0.9	< 0.1	6.8	15.7	71.9	17700
H12110308-009	MBSI-07-01 Sieve Dup	0	0	2.3	< 0.5	25800	5.0	165	0.9	< 0.1	7.1	16.2	99.1	17800
H12110308-010	MBSI-33-02	0	0		< 0.1	12200	6.0	251	0.4	< 0.1	3.6	14.6	7.6	11600
H12110308-011	MBSI-33-02	0	0	13.0	< 0.5	18100	9.1	304	0.6	0.2	5.2	22.2	27.3	16300
H12110308-012	MBSI-50-01	0	0		< 0.1	20900	6.0	533	0.9	0.3	16.4	29.5	18.9	24300
H12110308-013	MBSI-50-01	0	0	16.3	< 0.5	18600	5.9	531	0.7	0.2	9.7	27.9	55.2	20300
H12110308-014	MBSI-50-03	0	0		< 0.1	19700	6.4	532	0.8	0.2	11.1	27.9	19.0	20600
H12110308-015	MBSI-50-03	0	0	20.3	0.1	19200	5.6	504	0.8	0.2	9.3	27.1	53.5	20000
H12110308-016	MBSI-50-02	0	0		< 0.5	15000	8.3	470	0.8	0.2	10.4	26.5	21.2	30100
H12110308-017	MBSI-50-02	0	0	39.0	< 0.5	18300	7.1	795	0.7	0.2	9.1	30.1	60.7	21700
H12110308-018	MBSI-41-01	0	0		< 0.5	12100	9.5	81	0.7	0.2	6.1	16.5	16.2	22600
H12110308-019	MBSI-41-01	0	0	14.1	< 0.5	11700	8.7	89	0.6	0.2	5.6	17.3	43.3	18400
H12110308-020	MBSI-41-02	0	0		< 0.5	18200	10.1	115	0.8	0.3	7.2	21.5	18.3	19600
H12110308-021	MBSI-41-02	0	0	11.9	< 0.5	16400	8.8	110	0.7	0.3	7.2	20.0	45.4	18100
H12110308-022	MBSI-41-02 Sieve Dup	0	0	16.1	< 0.5	16300	8.5	110	0.7	0.3	6.8	20.3	44.6	17800
H12110308-023	MBSI-27-02	0	0		< 0.5	13600	10.3	304	0.7	0.2	7.0	18.6	18.8	18000
H12110308-024	MBSI-27-02	0	0	41.3	< 0.5	12700	9.3	434	0.6	0.3	6.3	18.3	43.5	16800
H12110308-025	MBSI-27-01	0	0		< 0.1	9150	12.6	206	0.5	0.1	4.8	14.1	8.4	15500
H12110308-026	MBSI-27-01	0	0	56.3	< 0.5	11000	10.0	268	0.5	0.2	4.8	17.0	28.4	15400
H12110308-027	MBSI-27-04	0	0											
H12110308-028	MBSI-12-01	0	0		< 0.1	10900	5.5	112	0.5	0.2	5.6	13.3	8.0	12200
H12110308-029	MBSI-12-01	0	0	16.0	< 0.5	11000	5.6	122	0.4	0.2	5.1	14.3	22.0	12700
H12110308-030	MBSI-12-02	0	0		< 0.2	17100	9.7	138	0.7	0.2	7.8	22.5	17.4	18000
H12110308-031	MBSI-12-02	0	0	45.1	< 0.5	17900	10.2	153	0.7	0.3	6.8	22.5	43.2	18500
H12110308-032	MBSI-48-01	0	0		< 0.1	15600	9.7	157	0.6	0.3	7.4	19.3	13.6	17600
H12110308-033	MBSI-48-01	0	0	12.8	< 0.5	16800	9.6	171	0.6	0.3	7.4	21.4	36.2	18400
H12110308-034	MBSI-48-02	0	0		< 0.1	22300	8.5	186	1.0	0.3	8.1	25.2	17.8	19500
H12110308-035	MBSI-48-02	0	0	49.2	< 0.5	24600	8.4	207	0.9	0.3	7.6	27.0	55.8	20600
H12110308-036	MBSI-48-04	0	0											

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110308

Report Date: 12/27/12
Date Received: 11/21/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Al-T	Sb-T
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110308-001	MBSI-07-02	0	0	639	13.8	11.3	0.1	0.3	0.24	26.3	94	14		
H12110308-002	MBSI-07-02	0	0	731	13.2	23	0.1	< 0.2	0.21	23.0	98	14		
H12110308-003	MBSI-56-01	0	0	961	10.0	13.6	0.1	< 0.2	0.24	24.8	46	13		
H12110308-004	MBSI-56-01	0	0	834	11.2	14	0.1	< 0.2	0.22	18.9	52	12		
H12110308-005	MBSI-56-02	0	0	1600	21.4	10.7	< 0.1	< 0.2	0.41	20.0	133	13		
H12110308-006	MBSI-56-02	0	0	475	19.5	11	< 0.1	< 0.2	0.34	15.6	129	14		
H12110308-007	MBSI-07-01	0	0	212	22.6	19.8	< 0.1	0.6	0.45	19.4	55	14		
H12110308-008	MBSI-07-01	0	0	229	21.8	18	0.1	0.4	0.43	15.9	57	16		
H12110308-009	MBSI-07-01 Sieve Dup	0	0	229	22.1	23	< 0.1	0.4	0.46	16.6	63	16		
H12110308-010	MBSI-33-02	0	0	153	9.9	7.9	< 0.1	0.3	0.18	29.5	37	15		
H12110308-011	MBSI-33-02	0	0	183	12.8	13	0.1	0.3	0.21	35.3	51	22		
H12110308-012	MBSI-50-01	0	0	1680	36.8	29	0.1	0.3	0.35	40.4	64	30		
H12110308-013	MBSI-50-01	0	0	980	23.1	16	0.1	0.3	0.23	30.3	61	28		
H12110308-014	MBSI-50-03	0	0	1020	26.4	25	0.1	0.3	0.26	35.3	62	28		
H12110308-015	MBSI-50-03	0	0	852	22.1	15.2	0.2	0.3	0.23	30.0	61	27		
H12110308-016	MBSI-50-02	0	0	773	27.1	21	0.2	0.5	0.20	41.1	56	26		
H12110308-017	MBSI-50-02	0	0	512	24.1	18	0.2	0.3	0.19	37.6	59	30		
H12110308-018	MBSI-41-01	0	0	506	13.9	25	0.2	0.4	0.24	29.7	50	16		
H12110308-019	MBSI-41-01	0	0	427	14.1	13	0.2	0.4	0.20	22.8	50	17		
H12110308-020	MBSI-41-02	0	0	542	19.1	25	0.2	0.6	0.32	36.4	64	22		
H12110308-021	MBSI-41-02	0	0	466	16.4	19	0.2	0.5	0.25	29.6	61	20		
H12110308-022	MBSI-41-02 Sieve Dup	0	0	460	16.7	16	0.2	0.4	0.26	28.9	61	20		
H12110308-023	MBSI-27-02	0	0	436	20.9	12.0	0.2	0.5	0.26	33.1	53	19		
H12110308-024	MBSI-27-02	0	0	402	17.8	27	0.1	0.6	0.23	26.4	50	18		
H12110308-025	MBSI-27-01	0	0	248	9.6	11	0.3	0.5	0.14	26.0	35	14		
H12110308-026	MBSI-27-01	0	0	273	10.1	15	0.2	0.5	0.15	24.6	39	17		
H12110308-027	MBSI-27-04	0	0										< 0.03	< 0.001
H12110308-028	MBSI-12-01	0	0	337	12.1	8.0	0.1	0.2	0.20	22.5	47	13		
H12110308-029	MBSI-12-01	0	0	356	11.0	12	0.1	0.2	0.18	19.4	50	14		
H12110308-030	MBSI-12-02	0	0	326	23.7	10.4	0.2	0.5	0.29	40.5	60	22		
H12110308-031	MBSI-12-02	0	0	323	19.9	11	0.2	0.5	0.27	37.3	58	22		
H12110308-032	MBSI-48-01	0	0	423	19.4	21	0.1	0.5	0.26	36.6	71	19		
H12110308-033	MBSI-48-01	0	0	417	18.8	13	0.1	0.4	0.25	35.6	72	21		
H12110308-034	MBSI-48-02	0	0	386	23.2	13.2	0.3	0.3	0.32	48.8	70	25		
H12110308-035	MBSI-48-02	0	0	371	21.5	20	0.3	0.4	0.32	47.7	74	27		
H12110308-036	MBSI-48-04	0	0										< 0.03	< 0.001

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110308

Report Date: 12/27/12
Date Received: 11/21/12

		Analysis		As-T	Ba-T	Be-T	Cd-T	Cr-T	Co-T	Cu-T	Fe-T	Pb-T	Mn-T	Hg-T
		Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110308-001	MBSI-07-02	0	0											
H12110308-002	MBSI-07-02	0	0											
H12110308-003	MBSI-56-01	0	0											
H12110308-004	MBSI-56-01	0	0											
H12110308-005	MBSI-56-02	0	0											
H12110308-006	MBSI-56-02	0	0											
H12110308-007	MBSI-07-01	0	0											
H12110308-008	MBSI-07-01	0	0											
H12110308-009	MBSI-07-01 Sieve Dup	0	0											
H12110308-010	MBSI-33-02	0	0											
H12110308-011	MBSI-33-02	0	0											
H12110308-012	MBSI-50-01	0	0											
H12110308-013	MBSI-50-01	0	0											
H12110308-014	MBSI-50-03	0	0											
H12110308-015	MBSI-50-03	0	0											
H12110308-016	MBSI-50-02	0	0											
H12110308-017	MBSI-50-02	0	0											
H12110308-018	MBSI-41-01	0	0											
H12110308-019	MBSI-41-01	0	0											
H12110308-020	MBSI-41-02	0	0											
H12110308-021	MBSI-41-02	0	0											
H12110308-022	MBSI-41-02 Sieve Dup	0	0											
H12110308-023	MBSI-27-02	0	0											
H12110308-024	MBSI-27-02	0	0											
H12110308-025	MBSI-27-01	0	0											
H12110308-026	MBSI-27-01	0	0											
H12110308-027	MBSI-27-04	0	0	< 0.001	< 0.05	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	< 0.001	< 0.0001
H12110308-028	MBSI-12-01	0	0											
H12110308-029	MBSI-12-01	0	0											
H12110308-030	MBSI-12-02	0	0											
H12110308-031	MBSI-12-02	0	0											
H12110308-032	MBSI-48-01	0	0											
H12110308-033	MBSI-48-01	0	0											
H12110308-034	MBSI-48-02	0	0											
H12110308-035	MBSI-48-02	0	0											
H12110308-036	MBSI-48-04	0	0	< 0.001	< 0.05	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	< 0.001	< 0.0001

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110308

Report Date: 12/27/12
Date Received: 11/21/12

		Analysis		Ni-T	Se-T	Ag-T	Tl-T	V-T	Zn-T	Hg, Total	Chromium, Hexavalent
		Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results
H12110308-001	MBSI-07-02	0	0							< 0.050	< 0.29
H12110308-002	MBSI-07-02	0	0								< 0.29
H12110308-003	MBSI-56-01	0	0							< 0.050	< 0.29
H12110308-004	MBSI-56-01	0	0								< 0.29
H12110308-005	MBSI-56-02	0	0							< 0.050	< 0.29
H12110308-006	MBSI-56-02	0	0								< 0.29
H12110308-007	MBSI-07-01	0	0							< 0.050	< 0.29
H12110308-008	MBSI-07-01	0	0								< 0.29
H12110308-009	MBSI-07-01 Sieve Dup	0	0								< 0.29
H12110308-010	MBSI-33-02	0	0							< 0.050	< 0.29
H12110308-011	MBSI-33-02	0	0								< 0.29
H12110308-012	MBSI-50-01	0	0							< 0.050	< 0.29
H12110308-013	MBSI-50-01	0	0								< 0.29
H12110308-014	MBSI-50-03	0	0							< 0.050	< 0.29
H12110308-015	MBSI-50-03	0	0								< 0.29
H12110308-016	MBSI-50-02	0	0							< 0.050	< 0.29
H12110308-017	MBSI-50-02	0	0								< 0.29
H12110308-018	MBSI-41-01	0	0							< 0.050	< 0.29
H12110308-019	MBSI-41-01	0	0								< 0.29
H12110308-020	MBSI-41-02	0	0							< 0.050	< 0.29
H12110308-021	MBSI-41-02	0	0								< 0.29
H12110308-022	MBSI-41-02 Sieve Dup	0	0								< 0.29
H12110308-023	MBSI-27-02	0	0							< 0.050	< 0.29
H12110308-024	MBSI-27-02	0	0								< 0.29
H12110308-025	MBSI-27-01	0	0							< 0.050	< 0.29
H12110308-026	MBSI-27-01	0	0								< 0.29
H12110308-027	MBSI-27-04	0	0	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01		
H12110308-028	MBSI-12-01	0	0							< 0.050	< 0.29
H12110308-029	MBSI-12-01	0	0								< 0.29
H12110308-030	MBSI-12-02	0	0							< 0.050	< 0.29
H12110308-031	MBSI-12-02	0	0								< 0.29
H12110308-032	MBSI-48-01	0	0							< 0.050	< 0.29
H12110308-033	MBSI-48-01	0	0								< 0.29
H12110308-034	MBSI-48-02	0	0							< 0.050	< 0.29
H12110308-035	MBSI-48-02	0	0								< 0.29
H12110308-036	MBSI-48-04	0	0	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01		

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121205A		
Sample ID: ICV	9	Initial Calibration Verification Standard							12/05/12 11:14	
Aluminum		4.07	mg/L	0.10	102	90	110			
Barium		0.804	mg/L	0.10	100	90	110			
Chromium		0.793	mg/L	0.010	99	90	110			
Copper		0.804	mg/L	0.010	100	90	110			
Iron		3.96	mg/L	0.030	99	90	110			
Manganese		4.06	mg/L	0.010	101	90	110			
Nickel		0.786	mg/L	0.010	98	90	110			
Vanadium		0.813	mg/L	0.10	102	90	110			
Zinc		0.796	mg/L	0.010	99	90	110			
Sample ID: ICSA	9	Interference Check Sample A							12/05/12 11:29	
Aluminum		524	mg/L	0.10	105	80	120			
Barium		0.000470	mg/L	0.10		0	0			
Chromium		0.00829	mg/L	0.010		0	0			
Copper		-0.00101	mg/L	0.010		0	0			
Iron		187	mg/L	0.030	93	80	120			
Manganese		-0.00374	mg/L	0.010		0	0			
Nickel		0.00995	mg/L	0.010		0	0			
Vanadium		ND	mg/L	0.10		0	0			
Zinc		0.0105	mg/L	0.010		0	0			
Sample ID: ICSAB	9	Interference Check Sample AB							12/05/12 11:33	
Aluminum		523	mg/L	0.10	105	80	120			
Barium		0.498	mg/L	0.10	100	80	120			
Chromium		0.485	mg/L	0.010	97	80	120			
Copper		0.509	mg/L	0.010	102	80	120			
Iron		187	mg/L	0.030	93	80	120			
Manganese		0.485	mg/L	0.010	97	80	120			
Nickel		0.934	mg/L	0.010	93	80	120			
Vanadium		0.496	mg/L	0.10	99	80	120			
Zinc		1.01	mg/L	0.010	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121206B		
Sample ID: ICV	4	Initial Calibration Verification Standard							12/06/12 10:37	
Cobalt		0.801	mg/L	0.010	100	90	110			
Copper		0.810	mg/L	0.010	101	90	110			
Lead		0.797	mg/L	0.013	100	90	110			
Nickel		0.809	mg/L	0.010	101	90	110			
Sample ID: ICSA	4	Interference Check Sample A							12/06/12 10:52	
Cobalt		-0.00508	mg/L	0.010		0	0			
Copper		0.00148	mg/L	0.010		0	0			
Lead		0.0278	mg/L	0.013		0	0			
Nickel		0.0105	mg/L	0.010		0	0			
Sample ID: ICSAB	4	Interference Check Sample AB							12/06/12 10:56	
Cobalt		0.471	mg/L	0.010	94	80	120			
Copper		0.513	mg/L	0.010	103	80	120			
Lead		0.950	mg/L	0.013	95	80	120			
Nickel		0.925	mg/L	0.010	92	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121212B		
Sample ID: ICV	11	Initial Calibration Verification Standard							12/12/12 13:33	
Aluminum		4.05	mg/L	0.10	101	90	110			
Barium		0.797	mg/L	0.10	100	90	110			
Chromium		0.792	mg/L	0.010	99	90	110			
Cobalt		0.815	mg/L	0.010	102	90	110			
Copper		0.797	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.803	mg/L	0.013	100	90	110			
Manganese		4.07	mg/L	0.010	102	90	110			
Nickel		0.782	mg/L	0.010	98	90	110			
Vanadium		0.815	mg/L	0.10	102	90	110			
Zinc		0.809	mg/L	0.010	101	90	110			
Sample ID: ICSA	11	Interference Check Sample A							12/12/12 13:48	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000320	mg/L	0.10		0	0			
Chromium		0.00238	mg/L	0.012		0	0			
Cobalt		-0.00868	mg/L	0.010		0	0			
Copper		-0.000580	mg/L	0.010		0	0			
Iron		192	mg/L	0.030	96	80	120			
Lead		0.0568	mg/L	0.013		0	0			
Manganese		-0.00276	mg/L	0.010		0	0			
Nickel		0.00778	mg/L	0.010		0	0			
Vanadium		-0.000230	mg/L	0.10		0	0			
Zinc		0.00900	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							12/12/12 13:52	
Aluminum		521	mg/L	0.10	104	80	120			
Barium		0.495	mg/L	0.10	99	80	120			
Chromium		0.477	mg/L	0.012	95	80	120			
Cobalt		0.478	mg/L	0.010	96	80	120			
Copper		0.498	mg/L	0.010	100	80	120			
Iron		193	mg/L	0.030	96	80	120			
Lead		1.05	mg/L	0.013	105	80	120			
Manganese		0.490	mg/L	0.010	98	80	120			
Nickel		0.942	mg/L	0.010	94	80	120			
Vanadium		0.497	mg/L	0.10	99	80	120			
Zinc		1.03	mg/L	0.010	103	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Analytical Run: ICP2-HE_121217C	
Sample ID: **ICV**		Initial Calibration Verification Standard							12/17/12 14:19	
Lead		0.796	mg/L	0.013	100	90	110			
Sample ID: **ICSA**		Interference Check Sample A							12/17/12 14:34	
Lead		0.0187	mg/L	0.013		0	0			
Sample ID: **ICSAB**		Interference Check Sample AB							12/17/12 14:38	
Lead		0.975	mg/L	0.013	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121127A		
Sample ID: ICV STD	18	Initial Calibration Verification Standard							11/27/12 11:38	
Aluminum		0.246	mg/L	0.10	98	90	110			
Antimony		0.0487	mg/L	0.050	97	90	110			
Arsenic		0.0496	mg/L	0.0050	99	90	110			
Barium		0.0503	mg/L	0.10	101	90	110			
Beryllium		0.0247	mg/L	0.0010	99	90	110			
Cadmium		0.0253	mg/L	0.0010	101	90	110			
Chromium		0.0487	mg/L	0.010	97	90	110			
Cobalt		0.0499	mg/L	0.010	100	90	110			
Copper		0.0508	mg/L	0.010	102	90	110			
Iron		0.264	mg/L	0.030	106	90	110			
Lead		0.0480	mg/L	0.010	96	90	110			
Manganese		0.252	mg/L	0.010	101	90	110			
Nickel		0.0501	mg/L	0.010	100	90	110			
Selenium		0.0521	mg/L	0.0050	104	90	110			
Silver		0.0250	mg/L	0.0050	100	90	110			
Thallium		0.0484	mg/L	0.10	97	90	110			
Vanadium		0.0493	mg/L	0.10	99	90	110			
Zinc		0.0513	mg/L	0.010	103	90	110			
Sample ID: ICSA	18	Interference Check Sample A							11/27/12 11:42	
Aluminum		42.4	mg/L	0.10	106	70	130			
Antimony		0.000456	mg/L	0.050						
Arsenic		0.00110	mg/L	0.0050						
Barium		0.000181	mg/L	0.10						
Beryllium		-9.00E-06	mg/L	0.0010						
Cadmium		0.000950	mg/L	0.0010						
Chromium		0.00117	mg/L	0.010						
Cobalt		0.000256	mg/L	0.010						
Copper		0.000220	mg/L	0.010						
Iron		105	mg/L	0.030	105	70	130			
Lead		0.000198	mg/L	0.010						
Manganese		8.20E-05	mg/L	0.010						
Nickel		0.000633	mg/L	0.010						
Selenium		0.00182	mg/L	0.0050						
Silver		0.000246	mg/L	0.0050						
Thallium		4.00E-05	mg/L	0.10						
Vanadium		0.000277	mg/L	0.10						
Zinc		0.00127	mg/L	0.010						
Sample ID: ICSAB	18	Interference Check Sample AB							11/27/12 11:47	
Aluminum		42.3	mg/L	0.10	106	70	130			
Antimony		0.000276	mg/L	0.050		0	0			
Arsenic		0.0112	mg/L	0.0050	112	70	130			
Barium		0.000432	mg/L	0.10		0	0			
Beryllium		-2.50E-05	mg/L	0.0010		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121127A		
Sample ID: ICSAB	18	Interference Check Sample AB							11/27/12 11:47	
Cadmium		0.0114	mg/L	0.0010	114	70	130			
Chromium		0.0226	mg/L	0.010	113	70	130			
Cobalt		0.0222	mg/L	0.010	111	70	130			
Copper		0.0217	mg/L	0.010	108	70	130			
Iron		104	mg/L	0.030	104	70	130			
Lead		0.000148	mg/L	0.010		0	0			
Manganese		0.0218	mg/L	0.010	109	70	130			
Nickel		0.0225	mg/L	0.010	113	70	130			
Selenium		0.0110	mg/L	0.0050	110	70	130			
Silver		0.0208	mg/L	0.0050	104	70	130			
Thallium		3.00E-06	mg/L	0.10		0	0			
Vanadium		0.0227	mg/L	0.10	114	70	130			
Zinc		0.0122	mg/L	0.010	122	70	130			
Method: E200.8									Batch: 18769	
Sample ID: MB-18769	18	Method Blank				Run: ICPMS204-B_121127A			11/27/12 13:39	
Aluminum		ND	mg/L	0.002						
Antimony		5E-05	mg/L	3E-05						
Arsenic		ND	mg/L	3E-05						
Barium		ND	mg/L	0.00010						
Beryllium		ND	mg/L	3E-05						
Cadmium		ND	mg/L	2E-05						
Chromium		ND	mg/L	6E-05						
Cobalt		ND	mg/L	3E-05						
Copper		0.002	mg/L	0.0003						
Iron		0.0009	mg/L	0.0007						
Lead		3E-05	mg/L	2E-05						
Manganese		ND	mg/L	5E-05						
Nickel		ND	mg/L	0.0001						
Selenium		ND	mg/L	0.0001						
Silver		7E-05	mg/L	6E-05						
Thallium		ND	mg/L	3E-05						
Vanadium		9E-05	mg/L	5E-05						
Zinc		0.002	mg/L	0.0007						
Sample ID: LCS-18769	18	Laboratory Control Sample				Run: ICPMS204-B_121127A			11/27/12 13:43	
Aluminum		2.43	mg/L	0.030	97	85	115			
Antimony		0.543	mg/L	0.0010	109	85	115			
Arsenic		0.510	mg/L	0.0010	102	85	115			
Barium		0.515	mg/L	0.050	103	85	115			
Beryllium		0.260	mg/L	0.0010	104	85	115			
Cadmium		0.265	mg/L	0.0010	106	85	115			
Chromium		0.509	mg/L	0.0050	102	85	115			
Cobalt		0.515	mg/L	0.0050	103	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18769
Sample ID: LCS-18769	18	Laboratory Control Sample				Run: ICPMS204-B_121127A				11/27/12 13:43
Copper		0.507	mg/L	0.0050	101	85	115			
Iron		2.52	mg/L	0.030	101	85	115			
Lead		0.537	mg/L	0.0010	107	85	115			
Manganese		2.58	mg/L	0.0010	103	85	115			
Nickel		0.509	mg/L	0.0050	102	85	115			
Selenium		0.523	mg/L	0.0010	105	85	115			
Silver		0.0519	mg/L	0.0010	104	85	115			
Thallium		0.539	mg/L	0.00050	108	85	115			
Vanadium		0.515	mg/L	0.010	103	85	115			
Zinc		0.511	mg/L	0.010	102	85	115			
Sample ID: H12110308-036AMS3	18	Sample Matrix Spike				Run: ICPMS204-B_121127A				11/27/12 16:17
Aluminum		2.39	mg/L	0.030	95	70	130			
Antimony		0.553	mg/L	0.0010	111	70	130			
Arsenic		0.511	mg/L	0.0010	102	70	130			
Barium		0.519	mg/L	0.050	104	70	130			
Beryllium		0.255	mg/L	0.0010	102	70	130			
Cadmium		0.267	mg/L	0.0010	107	70	130			
Chromium		0.507	mg/L	0.0050	101	70	130			
Cobalt		0.486	mg/L	0.0050	97	70	130			
Copper		0.504	mg/L	0.0050	101	70	130			
Iron		2.54	mg/L	0.030	101	70	130			
Lead		0.539	mg/L	0.0010	108	70	130			
Manganese		2.49	mg/L	0.0010	100	70	130			
Nickel		0.503	mg/L	0.0050	101	70	130			
Selenium		0.522	mg/L	0.0010	104	70	130			
Silver		0.0519	mg/L	0.0010	104	70	130			
Thallium		0.538	mg/L	0.00050	108	70	130			
Vanadium		0.513	mg/L	0.010	103	70	130			
Zinc		0.515	mg/L	0.010	103	70	130			
Sample ID: H12110308-036AMSD3	18	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121127A				11/27/12 16:21
Aluminum		2.39	mg/L	0.030	95	70	130	0.1	20	
Antimony		0.544	mg/L	0.0010	109	70	130	1.8	20	
Arsenic		0.512	mg/L	0.0010	102	70	130	0.2	20	
Barium		0.521	mg/L	0.050	104	70	130	0.3	20	
Beryllium		0.254	mg/L	0.0010	101	70	130	0.4	20	
Cadmium		0.266	mg/L	0.0010	107	70	130	0.1	20	
Chromium		0.506	mg/L	0.0050	101	70	130	0.2	20	
Cobalt		0.490	mg/L	0.0050	98	70	130	0.9	20	
Copper		0.503	mg/L	0.0050	101	70	130	0.1	20	
Iron		2.59	mg/L	0.030	103	70	130	1.9	20	
Lead		0.533	mg/L	0.0010	107	70	130	1.2	20	
Manganese		2.50	mg/L	0.0010	100	70	130	0.5	20	
Nickel		0.504	mg/L	0.0050	101	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18769
Sample ID: H12110308-036AMSD3	18	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121127A				11/27/12 16:21
Selenium		0.529	mg/L	0.0010	106	70	130	1.3	20	
Silver		0.0524	mg/L	0.0010	105	70	130	1.0	20	
Thallium		0.533	mg/L	0.00050	107	70	130	1.0	20	
Vanadium		0.514	mg/L	0.010	103	70	130	0.2	20	
Zinc		0.510	mg/L	0.010	102	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E245.1									Analytical Run: HGCV201-H_121126A	
Sample ID: ICV		Initial Calibration Verification Standard							11/26/12 15:03	
Mercury		0.00020	mg/L	0.00010	101	90	110			
New Calibration. SBK										
Sample ID: CCV		Continuing Calibration Verification Standard							11/26/12 15:05	
Mercury		0.00021	mg/L	0.00010	104	95	105			
Sample ID: CCV		Continuing Calibration Verification Standard							11/26/12 16:19	
Mercury		0.00021	mg/L	0.00010	104	90	110			
Method: E245.1									Batch: 18766	
Sample ID: MB-18766		Method Blank				Run: HGCV201-H_121126A			11/26/12 16:24	
Mercury		ND	mg/L	6E-06						
Sample ID: LCS-18766		Laboratory Control Sample				Run: HGCV201-H_121126A			11/26/12 16:31	
Mercury		0.00021	mg/L	0.00010	107	90	110			
Sample ID: H12110252-010BMS		Sample Matrix Spike				Run: HGCV201-H_121126A			11/26/12 16:41	
Mercury		0.00022	mg/L	0.00010	110	70	130			
Sample ID: H12110252-010BMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121126A			11/26/12 16:43	
Mercury		0.00026	mg/L	0.00010	131	70	130	17	30	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18871
Sample ID: MB-18871	11	Method Blank				Run: ICP2-HE_121205A				12/05/12 13:14
Aluminum		ND	mg/kg	0.8						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		2	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18871	11	Laboratory Fortified Blank				Run: ICP2-HE_121205A				12/05/12 13:18
Aluminum		264	mg/kg	5.0	105	80	120			
Barium		51.5	mg/kg	1.0	103	80	120			
Chromium		53.8	mg/kg	1.0	108	80	120			
Cobalt		53.7	mg/kg	1.0	107	80	120			
Copper		52.6	mg/kg	1.0	105	80	120			
Iron		260	mg/kg	5.0	103	80	120			
Lead		54.3	mg/kg	1.0	105	80	120			
Manganese		265	mg/kg	1.0	106	80	120			
Nickel		53.4	mg/kg	1.0	107	80	120			
Vanadium		54.3	mg/kg	1.0	109	80	120			
Zinc		54.5	mg/kg	1.0	108	80	120			
Sample ID: LCS-18871	11	Laboratory Control Sample				Run: ICP2-HE_121205A				12/05/12 13:22
Aluminum		13300	mg/kg	5.0	92	50.7	131.3			
Barium		548	mg/kg	1.0	90	80.6	112.2			
Chromium		72.8	mg/kg	1.0	97	72.8	109.1			
Cobalt		51.1	mg/kg	1.0	90	73.3	103.7			
Copper		253	mg/kg	1.0	91	77.5	109.6			
Iron		19900	mg/kg	5.0	87	39.6	138.3			
Lead		197	mg/kg	3.1	106	75.9	108.6			
Manganese		366	mg/kg	1.0	100	80.8	115.7			
Nickel		55.8	mg/kg	1.0	92	72.3	103.4			
Vanadium		67.7	mg/kg	1.0	94	66.6	107.3			
Zinc		201	mg/kg	1.0	95	74.2	109.9			
Sample ID: H12110308-034AMS	11	Sample Matrix Spike				Run: ICP2-HE_121205A				12/05/12 14:54
Aluminum		33900	mg/kg	5.0		75	125			A
Barium		279	mg/kg	1.0	188	75	125			S
Chromium		79.4	mg/kg	1.0	111	75	125			
Cobalt		51.2	mg/kg	1.0	89	75	125			
Copper		61.8	mg/kg	1.0	90	75	125			
Iron		21900	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18871
Sample ID: H12110308-034AMS	11	Sample Matrix Spike				Run: ICP2-HE_121205A				12/05/12 14:54
Lead		63.9	mg/kg	3.0	86	75	125			
Manganese		576	mg/kg	1.0	77	75	125			
Nickel		67.5	mg/kg	1.0	90	75	125			
Vanadium		118	mg/kg	1.0	142	75	125			S
Zinc		118	mg/kg	1.0	98	75	125			
Sample ID: H12110308-034AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121205A				12/05/12 14:58
Aluminum		33700	mg/kg	5.0		75	125	0.5	20	A
Barium		277	mg/kg	1.0	185	75	125	0.5	20	S
Chromium		78.8	mg/kg	1.0	109	75	125	0.8	20	
Cobalt		50.7	mg/kg	1.0	89	75	125	0.8	20	
Copper		61.3	mg/kg	1.0	89	75	125	0.9	20	
Iron		21700	mg/kg	5.0		75	125	1.0	20	A
Lead		66.6	mg/kg	3.0	91	75	125	4.1	20	
Manganese		578	mg/kg	1.0	78	75	125	0.4	20	
Nickel		66.7	mg/kg	1.0	89	75	125	1.1	20	
Vanadium		119	mg/kg	1.0	144	75	125	0.8	20	S
Zinc		117	mg/kg	1.0	97	75	125	0.3	20	
Method: SW6010B										Batch: 18871
Sample ID: MB-18871	11	Method Blank				Run: ICP2-HE_121206B				12/06/12 18:08
Aluminum		ND	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18969
Sample ID: MB-18969	11	Method Blank				Run: ICP2-HE_121212B				12/13/12 02:36
Aluminum		0.5	mg/kg	0.3						
Barium		ND	mg/kg	0.02						
Chromium		ND	mg/kg	0.7						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18969	11	Laboratory Fortified Blank				Run: ICP2-HE_121212B				12/13/12 02:40
Aluminum		261	mg/kg	5.0	104	80	120			
Barium		52.8	mg/kg	1.0	106	80	120			
Chromium		49.1	mg/kg	1.0	98	80	120			
Cobalt		47.3	mg/kg	1.0	95	80	120			
Copper		51.5	mg/kg	1.0	103	80	120			
Iron		250	mg/kg	5.0	99	80	120			
Lead		44.3	mg/kg	1.0	89	80	120			
Manganese		250	mg/kg	1.0	100	80	120			
Nickel		46.8	mg/kg	1.0	93	80	120			
Vanadium		50.4	mg/kg	1.0	101	80	120			
Zinc		47.0	mg/kg	1.0	94	80	120			
Sample ID: LCS-18969	11	Laboratory Control Sample				Run: ICP2-HE_121212B				12/13/12 02:43
Aluminum		13000	mg/kg	5.0	89	50.7	131.3			
Barium		590	mg/kg	1.0	97	80.6	112.2			
Chromium		72.0	mg/kg	1.0	96	72.8	109.1			
Cobalt		48.0	mg/kg	1.0	84	73.3	103.7			
Copper		262	mg/kg	1.0	95	77.5	109.6			
Iron		19000	mg/kg	5.0	83	39.6	138.3			
Lead		163	mg/kg	3.1	88	75.9	108.6			
Manganese		368	mg/kg	1.0	101	80.8	115.7			
Nickel		52.1	mg/kg	1.0	86	72.3	103.4			
Vanadium		62.1	mg/kg	1.0	86	66.6	107.3			
Zinc		185	mg/kg	1.0	88	74.2	109.9			
Sample ID: H12110308-035AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B				12/13/12 04:16
Aluminum		34000	mg/kg	5.0		75	125			A
Barium		292	mg/kg	1.0		75	125			A
Chromium		79.3	mg/kg	1.0	106	75	125			
Cobalt		50.1	mg/kg	1.0	86	75	125			
Copper		108	mg/kg	1.0	106	75	125			
Iron		22000	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18969
Sample ID: H12110308-035AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B				12/13/12 04:16
Lead		52.8	mg/kg	3.1	90	75	125			
Manganese		597	mg/kg	1.0	91	75	125			
Nickel		64.0	mg/kg	1.0	86	75	125			
Vanadium		116	mg/kg	1.0	139	75	125			S
Zinc		117	mg/kg	1.0	88	75	125			
Sample ID: H12110308-035AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121212B				12/13/12 04:20
Aluminum		32600	mg/kg	5.0		75	125	4.0	20	A
Barium		281	mg/kg	1.0		75	125	3.9	20	A
Chromium		77.4	mg/kg	1.0	104	75	125	2.3	20	
Cobalt		52.0	mg/kg	1.0	92	75	125	3.7	20	
Copper		86.3	mg/kg	1.0	63	75	125	23	20	SR
Iron		22000	mg/kg	5.0		75	125	0.3	20	A
Lead		56.0	mg/kg	3.0	98	75	125	5.8	20	
Manganese		593	mg/kg	1.0	91	75	125	0.6	20	
Nickel		66.9	mg/kg	1.0	93	75	125	4.5	20	
Vanadium		111	mg/kg	1.0	130	75	125	5.1	20	S
Zinc		118	mg/kg	1.0	92	75	125	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18969
Sample ID: MB-18969	11	Method Blank				Run: ICP2-HE_121217C				12/17/12 23:57
Aluminum		0.9	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		0.2	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: H12110308-035AMS	11	Sample Matrix Spike				Run: ICP2-HE_121217C				12/18/12 01:30
Aluminum		33600	mg/kg	5.0		75	125			A
Barium		283	mg/kg	1.0		75	125			A
Chromium		83.1	mg/kg	1.0	109	75	125			
Cobalt		54.4	mg/kg	1.0	95	75	125			
Copper		107	mg/kg	1.0	104	75	125			
Iron		22200	mg/kg	5.0		75	125			A
Lead		67.9	mg/kg	3.1	97	75	125			
Manganese		609	mg/kg	1.0	93	75	125			
Nickel		66.1	mg/kg	1.0	93	75	125			
Vanadium		118	mg/kg	1.0	139	75	125			S
Zinc		127	mg/kg	1.0	106	75	125			
Sample ID: H12110308-035AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121217C				12/18/12 01:33
Aluminum		32300	mg/kg	5.0		75	125	4.0	20	A
Barium		273	mg/kg	1.0		75	125	3.7	20	A
Chromium		90.7	mg/kg	1.0	127	75	125	8.7	20	S
Cobalt		52.8	mg/kg	1.0	94	75	125	2.8	20	
Copper		89.8	mg/kg	1.0	70	75	125	18	20	S
Iron		21800	mg/kg	5.0		75	125	1.9	20	A
Lead		66.8	mg/kg	3.0	97	75	125	1.5	20	
Manganese		611	mg/kg	1.0	96	75	125	0.3	20	
Nickel		69.4	mg/kg	1.0	102	75	125	4.9	20	
Vanadium		113	mg/kg	1.0	130	75	125	4.8	20	S
Zinc		135	mg/kg	1.0	125	75	125	6.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121205B		
Sample ID: ICV STD	10	Initial Calibration Verification Standard							12/05/12 17:16	
Antimony		0.0510	mg/L	0.0010	102	90	110			
Arsenic		0.0508	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Cobalt		0.0505	mg/L	0.0010	101	90	110			
Copper		0.0530	mg/L	0.0010	106	90	110			
Lead		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0526	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	10	Initial Calibration Verification Standard							12/06/12 13:58	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0508	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0258	mg/L	0.0010	103	90	110			
Cobalt		0.0510	mg/L	0.0010	102	90	110			
Copper		0.0514	mg/L	0.0010	103	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Selenium		0.0511	mg/L	0.0010	102	90	110			
Silver		0.0227	mg/L	0.0010	91	90	110			
Thallium		0.0504	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	10	Initial Calibration Verification Standard							12/07/12 11:06	
Antimony		0.0527	mg/L	0.0010	105	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0254	mg/L	0.0010	102	90	110			
Cadmium		0.0256	mg/L	0.0010	102	90	110			
Cobalt		0.0502	mg/L	0.0010	100	90	110			
Copper		0.0516	mg/L	0.0010	103	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0251	mg/L	0.0010	100	90	110			
Thallium		0.0500	mg/L	0.0010	100	90	110			
Method: SW6020									Batch: 18871	
Sample ID: LCS-18871	10	Laboratory Control Sample				Run: ICPMS204-B_121205B			12/06/12 16:04	
Antimony		53.8	mg/kg	1.0	43	2.2	92.9			
Arsenic		307	mg/kg	1.0	90	72.3	106.4			
Beryllium		45.5	mg/kg	1.0	90	76.3	108.6			
Cadmium		115	mg/kg	1.0	84	73	105.1			
Cobalt		57.7	mg/kg	1.0	101	73.3	103.7			
Copper		279	mg/kg	1.0	101	77.5	109.6			
Lead		189	mg/kg	1.0	102	75.9	108.6			
Selenium		182	mg/kg	1.0	94	72.5	112.2			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18871
Sample ID: LCS-18871	10	Laboratory Control Sample				Run: ICPMS204-B_121205B				12/06/12 16:04
Silver		76.4	mg/kg	1.0	111	67.8	112.8			
Thallium		87.7	mg/kg	1.0	97	71.7	109.5			
Sample ID: LFB-18871	10	Laboratory Fortified Blank				Run: ICPMS204-B_121205B				12/06/12 16:08
Antimony		51.8	mg/kg	1.0	104	80	120			
Arsenic		50.4	mg/kg	1.0	101	80	120			
Beryllium		24.7	mg/kg	1.0	99	80	120			
Cadmium		26.5	mg/kg	1.0	106	80	120			
Cobalt		50.8	mg/kg	1.0	102	80	120			
Copper		52.0	mg/kg	1.0	104	80	120			
Lead		51.9	mg/kg	1.0	104	80	120			
Selenium		50.2	mg/kg	1.0	100	80	120			
Silver		30.0	mg/kg	1.0	119	80	120			
Thallium		50.7	mg/kg	1.0	101	80	120			
Sample ID: H12110308-034AMS	10	Sample Matrix Spike				Run: ICPMS204-B_121205B				12/06/12 18:14
Antimony		17.0	mg/kg	1.0	34	75	125			S
Arsenic		57.9	mg/kg	1.0	101	75	125			
Beryllium		23.6	mg/kg	1.0	92	75	125			
Cadmium		21.6	mg/kg	1.0	87	75	125			
Cobalt		62.3	mg/kg	1.0	107	75	125			
Copper		72.0	mg/kg	1.0	106	75	125			
Lead		65.1	mg/kg	1.0	106	75	125			
Selenium		46.9	mg/kg	1.0	95	75	125			
Silver		31.5	mg/kg	1.0	127	75	125			S
Thallium		50.7	mg/kg	1.0	103	75	125			
Sample ID: H12110308-034AMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121205B				12/06/12 18:19
Antimony		17.0	mg/kg	1.0	34	75	125	0.2	20	S
Arsenic		57.2	mg/kg	1.0	99	75	125	1.4	20	
Beryllium		22.8	mg/kg	1.0	89	75	125	3.6	20	
Cadmium		21.7	mg/kg	1.0	87	75	125	0.4	20	
Cobalt		60.8	mg/kg	1.0	104	75	125	2.3	20	
Copper		69.9	mg/kg	1.0	101	75	125	3.0	20	
Lead		64.7	mg/kg	1.0	105	75	125	0.6	20	
Selenium		47.9	mg/kg	1.0	97	75	125	2.1	20	
Silver		29.9	mg/kg	1.0	121	75	125	5.1	20	
Thallium		50.6	mg/kg	1.0	103	75	125	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 03:37	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0233	mg/L	0.0010	93	90	110			
Thallium		0.0488	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 10:49	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0500	mg/L	0.0010	100	90	110			
Beryllium		0.0261	mg/L	0.0010	104	90	110			
Cadmium		0.0266	mg/L	0.0010	106	90	110			
Selenium		0.0535	mg/L	0.0010	107	90	110			
Silver		0.0252	mg/L	0.0010	101	90	110			
Thallium		0.0506	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 10:57	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0511	mg/L	0.0010	102	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0265	mg/L	0.0010	106	90	110			
Selenium		0.0543	mg/L	0.0010	109	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 18:01	
Antimony		0.0510	mg/L	0.0010	102	90	110			
Arsenic		0.0516	mg/L	0.0010	103	90	110			
Beryllium		0.0256	mg/L	0.0010	102	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0509	mg/L	0.0010	102	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/14/12 01:49	
Antimony		0.0505	mg/L	0.0010	101	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0260	mg/L	0.0010	104	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0244	mg/L	0.0010	98	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/15/12 03:36	
Antimony		0.0508	mg/L	0.0010	102	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/15/12 03:36	
Arsenic		0.0509	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0246	mg/L	0.0010	98	90	110			
Thallium		0.0503	mg/L	0.0010	101	90	110			
Method: SW6020									Batch: 18871	
Sample ID: MB-18871	9	Method Blank				Run: ICPMS204-B_121210A			12/10/12 19:08	
Antimony		0.07	mg/kg	0.002						
Arsenic		0.05	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.05	mg/kg	0.003						
Cobalt		ND	mg/kg	0.003						
Copper		0.08	mg/kg	0.01						
Lead		0.02	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Thallium		ND	mg/kg	0.002						
Method: SW6020									Batch: 18969	
Sample ID: MB-18969	8	Method Blank				Run: ICPMS204-B_121210A			12/14/12 02:26	
Antimony		0.05	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Lead		0.01	mg/kg	0.003						
Selenium		0.02	mg/kg	0.007						
Silver		0.2	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Sample ID: LCS-18969	8	Laboratory Control Sample				Run: ICPMS204-B_121210A			12/14/12 02:31	
Antimony		47.4	mg/kg	1.0	38	2.2	92.9			
Arsenic		315	mg/kg	1.0	93	72.3	106.4			
Beryllium		44.1	mg/kg	1.0	87	76.3	108.6			
Cadmium		127	mg/kg	1.0	93	73	105.1			
Lead		211	mg/kg	1.0	114	75.9	108.6			S
Selenium		195	mg/kg	1.0	100	72.5	112.2			
Silver		76.5	mg/kg	1.0	112	67.8	112.8			
Thallium		93.5	mg/kg	1.0	104	71.7	109.5			
Sample ID: LFB-18969	8	Laboratory Fortified Blank				Run: ICPMS204-B_121210A			12/14/12 02:35	
Antimony		55.8	mg/kg	1.0	112	80	120			
Arsenic		50.1	mg/kg	1.0	100	80	120			
Beryllium		23.0	mg/kg	1.0	92	80	120			
Cadmium		28.4	mg/kg	1.0	113	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18969
Sample ID: LFB-18969	8	Laboratory Fortified Blank				Run: ICPMS204-B_121210A				12/14/12 02:35
Lead		54.6	mg/kg	1.0	109	80	120			
Selenium		51.2	mg/kg	1.0	102	80	120			
Silver		29.3	mg/kg	1.0	116	80	120			
Thallium		53.0	mg/kg	1.0	106	80	120			
Sample ID: H12110308-035AMS	8	Sample Matrix Spike				Run: ICPMS204-B_121210A				12/14/12 04:53
Antimony		15.1	mg/kg	1.0	30	75	125			S
Arsenic		59.6	mg/kg	1.0	103	75	125			
Beryllium		20.9	mg/kg	1.0	81	75	125			
Cadmium		23.9	mg/kg	1.0	95	75	125			
Lead		69.7	mg/kg	1.0	113	75	125			
Selenium		52.6	mg/kg	1.0	106	75	125			
Silver		29.6	mg/kg	1.0	117	75	125			
Thallium		54.7	mg/kg	1.0	110	75	125			
Sample ID: H12110308-035AMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121210A				12/14/12 04:57
Antimony		14.8	mg/kg	1.0	30	75	125	2.6	20	S
Arsenic		57.3	mg/kg	1.0	101	75	125	3.8	20	
Beryllium		20.8	mg/kg	1.0	82	75	125	0.3	20	
Cadmium		23.5	mg/kg	1.0	95	75	125	2.0	20	
Lead		68.4	mg/kg	1.0	112	75	125	1.7	20	
Selenium		48.9	mg/kg	1.0	100	75	125	7.3	20	
Silver		28.6	mg/kg	1.0	116	75	125	3.3	20	
Thallium		52.9	mg/kg	1.0	108	75	125	3.3	20	
Method: SW6020										Batch: 18990
Sample ID: MB-18990		Method Blank				Run: ICPMS204-B_121210A				12/14/12 05:11
Silver		0.3	mg/kg	0.02						
Sample ID: LCS-18990		Laboratory Control Sample				Run: ICPMS204-B_121210A				12/14/12 05:15
Silver		82.4	mg/kg	1.0	119	67.8	112.8			S
Sample ID: LFB-18990		Laboratory Fortified Blank				Run: ICPMS204-B_121210A				12/14/12 05:20
Silver		29.9	mg/kg	1.0	119	80	120			
Sample ID: H12110308-030AMS		Sample Matrix Spike				Run: ICPMS204-B_121210A				12/14/12 06:10
Silver		29.5	mg/kg	1.0	118	75	125			
Sample ID: H12110308-030AMSD		Sample Matrix Spike Duplicate				Run: ICPMS204-B_121210A				12/14/12 06:15
Silver		29.1	mg/kg	1.0	115	75	125	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121218B	
Sample ID: ICV STD	2	Initial Calibration Verification Standard							12/18/12 17:25	
Lead		0.0480	mg/L	0.0010	96	90	110			
Silver		0.0241	mg/L	0.0010	96	90	110			
Sample ID: ICV STD	2	Initial Calibration Verification Standard							12/19/12 05:35	
Lead		0.0487	mg/L	0.0010	97	90	110			
Silver		0.0241	mg/L	0.0010	96	90	110			
Method: SW6020									Batch: 18969	
Sample ID: MB-18969	8	Method Blank				Run: ICPMS204-B_121218B			12/19/12 04:07	
Antimony		0.01	mg/kg	0.002						
Arsenic		0.04	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Lead		0.02	mg/kg	0.003						
Selenium		0.02	mg/kg	0.007						
Silver		0.04	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Sample ID: LCS-18969	8	Laboratory Control Sample				Run: ICPMS204-B_121218B			12/19/12 04:12	
Antimony		42.5	mg/kg	1.0	34	2.2	92.9			
Arsenic		317	mg/kg	1.0	93	72.3	106.4			
Beryllium		42.9	mg/kg	1.0	85	76.3	108.6			
Cadmium		119	mg/kg	1.0	87	73	105.1			
Lead		193	mg/kg	1.0	104	75.9	108.6			
Selenium		188	mg/kg	1.0	97	72.5	112.2			
Silver		71.2	mg/kg	1.0	104	67.8	112.8			
Thallium		92.1	mg/kg	1.0	102	71.7	109.5			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121220C	
Sample ID: ICV STD		Initial Calibration Verification Standard							12/20/12 17:30	
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020									Batch: 19061	
Sample ID: MB-19061		Method Blank				Run: ICPMS204-B_121220C			12/20/12 18:12	
Silver		0.2	mg/kg	0.02						
Sample ID: LCS-19061		Laboratory Control Sample				Run: ICPMS204-B_121220C			12/20/12 18:16	
Silver		74.5	mg/kg	1.0	109	67.8	112.8			
Sample ID: LFB-19061		Laboratory Fortified Blank				Run: ICPMS204-B_121220C			12/20/12 18:21	
Silver		27.3	mg/kg	1.0	109	80	120			
Sample ID: H12110308-034AMS		Sample Matrix Spike				Run: ICPMS204-B_121220C			12/20/12 20:07	
Silver		27.0	mg/kg	1.0	111	75	125			
Sample ID: H12110308-034AMSD		Sample Matrix Spike Duplicate				Run: ICPMS204-B_121220C			12/20/12 20:12	
Silver		27.2	mg/kg	1.0	110	75	125	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67502
Sample ID: MB-67502		Method Blank				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110308-001A		Sample Matrix Spike				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.43	mg/kg	0.010	113	70	130			
Sample ID: H12110308-001A		Sample Matrix Spike Duplicate				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.43	mg/kg	0.010	112	70	130	0.9	20	
Sample ID: B12120032-032AMS		Sample Matrix Spike				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.33	mg/kg	0.010	87	70	130			
Sample ID: B12120032-032AMSD		Sample Matrix Spike Duplicate				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	91	70	130	5.3	20	
Sample ID: H12110322-007A		Sample Duplicate				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: LCS-R196208		Laboratory Control Sample				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent		0.0967	mg/L	0.010	97	90	110			
Method: SW7196A										Batch: B_67751
Sample ID: MB-67751		Method Blank				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110308-002A		Sample Matrix Spike				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		0.040	mg/kg	0.010	105	70	130			
Sample ID: H12110308-002A		Sample Matrix Spike Duplicate				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		0.038	mg/kg	0.010	101	70	130	3.8	20	
Sample ID: H12110308-015A		Sample Duplicate				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: H12110308-017A		Sample Matrix Spike				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		0.027	mg/kg	0.010	71	70	130			
Sample ID: H12110308-017A		Sample Matrix Spike Duplicate				Run: SUB-B196770				12/13/12 14:00
Chromium, Hexavalent - Soluble		0.029	mg/kg	0.010	76	70	130	6.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110308

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121207A	
Sample ID: ICV		Initial Calibration Verification Standard							12/07/12 11:17	
Mercury		0.0010	mg/kg	0.50	101	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/07/12 11:20	
Mercury		0.0026	mg/kg	0.50	103	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/07/12 12:00	
Mercury		0.0027	mg/kg	0.50	107	90	110			
Method: SW7471A									Batch: 18868	
Sample ID: MB-18868		Method Blank				Run: HGCV201-H_121207A			12/07/12 11:24	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18868		Laboratory Control Sample				Run: HGCV201-H_121207A			12/07/12 11:27	
Mercury		5.5	mg/kg	0.50	110	80	120			
Sample ID: H12110308-003AMS		Sample Matrix Spike				Run: HGCV201-H_121207A			12/07/12 11:39	
Mercury		1.2	mg/kg	0.50	123	80	120			S
Sample ID: H12110308-003AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121207A			12/07/12 11:41	
Mercury		1.1	mg/kg	0.50	113	80	120	8.3	20	
Sample ID: H12110308-003ADIL		Serial Dilution				Run: HGCV201-H_121207A			12/07/12 11:43	
Mercury		0.0019	mg/kg	0.50		0	0		20	
Sample ID: H12110308-028AMS		Sample Matrix Spike				Run: HGCV201-H_121207A			12/07/12 12:17	
Mercury		1.2	mg/kg	0.50	121	80	120			S
Sample ID: H12110308-028AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121207A			12/07/12 12:19	
Mercury		1.3	mg/kg	0.50	130	80	120	7.0	20	S
Sample ID: H12110308-028ADIL		Serial Dilution				Run: HGCV201-H_121207A			12/07/12 12:22	
Mercury		0.0023	mg/kg	0.50		0	0		20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12110308

Login completed by: Tracy L. Lorash
Date Received: 11/21/2012
Reviewed by: BL2000\sdull
Received by: TLL
Reviewed Date: 11/28/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

Sample ID on page 1 of the COC includes MBSI - ID on sample bags 2-4 do not. Logged in with ID from COC.
Collection date on COC for MBSI-48-02 and 48-04 is 11/19/12 - date on containers is 11/16/12. Logged in with date from COC.
Cooler 1 was received at 6.4℃, Cooler 2 at 0.9℃ and Cooler 3 at -0.6℃. Samples were received on wet ice.
Temperature of Coolers 2 & 3 were taken from temperature blanks. TI 11/21/12.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Hydrometrics, Inc.	Project Name, PWS, Permit, Etc.: Montana Background Soils Investigation	Sample Origin State: MT	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: 3020 Bozeman Ave Helena MT 59601	Contact Name: Mark Walker Phone/Fax: (406) 443-4150 (406) 443-4155 Email: mwalker@hydrometrics.com		Sampler: (Please Print) Carlo Arendt
Invoice Address: 3020 Bozeman Ave Helena MT 59601	Invoice Contact & Phone: Marta Peters (406) 443-4150	~~Purchase Order:~~ Project # 12042	Quote/Bottle Order:

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Total Metals (Bulk)	Total Metals (<250µm - Sieved)	Total Metals - Sieve Duplicate	SEE ATTACHED
1 MBSI-07-02	11/14/2012	14:00	1-S	X	X		
2 MBSI-56-01	11/15/2012	12:20	1-S	X	X		
3 MBSI-56-02	11/15/2012	15:54	1-S	X	X		
4 MBSI-07-01	11/16/2012	12:47	1-S	X	X	X	
5							
6							
7							
8							
9							
10							

Standard Turnaround (TAT) — RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

* Bill to MDEQ
ATTN: Jason Seyler
Reference # ORG 484422
Inorganic Background Study

Shipped by: Hand
Cooler ID(s): Y
Receipt Temp: 6.4 °C
On Ice: (Y) N
Custody Seal On Bottle Y N / On Cooler Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY H12110308

Custody Record MUST be Signed

Relinquished by (print): Carlo Arendt	Date/Time: 11/19/2012 10:30	Signature:	Received by (print): MARK WALKER Date/Time: 11/20/12 1300 Signature:
Relinquished by (print): MARK WALKER	Date/Time: 11/20/12 15:40	Signature:	Received by (print): Date/Time: Signature:
Sample Disposal: Return to Client: _____	Lab Disposal: _____		Received by Laboratory: Date/Time: 11/20/12 15:40 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

(2) of (3)

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: (Signature) J Bill

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm -60 mesh)		Total Metals - Sieve Duplicate	REMARKS
11/14/12	0730	X		MBSI-33-02	01 soil									X	X			H12110308
11/16/12	0810	X		-50-01	↓									X	X			
↓	0820	X		-50-03	↓									X	X			
↓	0940	X		-50-02	↓									X	X			
↓	1050	X		-41-01	↓									X	X			
↓	1245	X		-41-02	↓									X	X		X	
↓	1415	X		-27-02	↓									X	X			
↓	1540	X		-27-01	01 soil									X	X			
11/16/12	1600		X	MBSI-27-04	01 water					X								

Relinquished (Signature)	Date / Time	Received by (Signature)	Lab	P.O. #	Shipped via: Bus FedEx UPS
J Bill	11/19/12 0800	[signature]	ELI Helena	Bill to MDEQ	Other hand-delivered; Air Bill #
[signature]	11/20/12 1540		Remarks: Bill MDEQ ATTN: Jason Seyler. Reference ORG #48442Z - Inorganic Background Study		

Relinquished (Signature)	Date / Time	Received for Laboratory by (Signature)	Date / Time	
		[signature]	11/20/12 1540	Enclosed: ☑ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other

0.9° TB On Ice
Hand del

Split Samples: ☐ Accepted ☐ Declined ________ Signature

HFORM-1 07/11
TNO 406-443-8550

Return results & electronic copy to: QA / QC Dept. at address at top of page

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* Mat Wick

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm -60mesh)	REMARKS
11/14/12	0915	X		MBSI-12-01	1									X	X	HH2110308
	1400	X		-12-02	1									X	X	
	1200	X		-48-01	1									X	X	
	1530	X		-48-02	1									X	X	
11/14/12	1530		X	MBSI-48-04	1 (water)				X							

Relinquished *(Signature)* Mat Wick	Date / Time 11/20/12 1420	Received by *(Signature)*	Lab ELI Helena	P.O. # Bill to MDEQ	Shipped via: Bus FedEx UPS Other Hand Delivered Air Bill #
Relinquished *(Signature)*	Date / Time 11/20/12 1540	Received by *(Signature)*	Remarks Bill MDEQ ATTN: Jason Seyler Reference ORG # 484422 - Inorganic Background Study		
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time 11/20/12 15:40	Enclosed: ☒ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other	

Return results & electronic copy to: **QA / QC Dept. at address at top of page**

-0.6°C TB on Ice Hand del.

Split Samples: ☐ Accepted ☐ Declined _____ Signature

HFORM-1 07/11
TNO 406-443-8550

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 20, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are sixteen (16) soil samples and two (2) water samples collected from November 14 through 19, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. Selected samples (shown on COC) are to be run as "laboratory sieve duplicates" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.
4. **Water samples** to be analyzed for total metals, using the same parameter list and routine analytical reporting limits.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis						
Parameter[1]	**Digestion Method[2]**	**Analytical Method[2]**	**Required Reporting Limit (mg/kg)**	**EPA Regional Screening Level (RSL)[3] (mg/kg)**	**Maximum Holding Time (days)**	**Preservation**
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 27, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12110322 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 38 samples for MT DEQ-Site Response on 11/27/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12110322-001	MBSI-24-01	11/18/12 14:45	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-002	MBSI-24-01	11/18/12 14:45	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-003	MBSI-24-02	11/18/12 16:35	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-004	MBSI-24-02	11/18/12 16:35	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-005	MBSI-11-01	11/19/12 9:15	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-006	MBSI-11-01	11/19/12 9:15	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110322-007	MBSI-11-02	11/19/12 11:00 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-008	MBSI-11-02	11/19/12 11:00 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-009	MBSI-11-02 Sieve Dup	11/19/12 11:00 11/27/12	Soil	Same As Above
H12110322-010	MBSI-20-01	11/19/12 13:15 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-011	MBSI-20-01	11/19/12 13:15 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-012	MBSI-20-02	11/19/12 14:50 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-013	MBSI-20-02	11/19/12 14:50 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-014	MBSI-37-02	11/19/12 16:15 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-015	MBSI-37-02	11/19/12 16:15 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110322-016	MBSI-37-01	11/20/12 7:30	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-017	MBSI-37-01	11/20/12 7:30	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-018	MBSI-34-01	11/20/12 9:40	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-019	MBSI-34-01	11/20/12 9:40	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-020	MBSI-34-02	11/20/12 11:35	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-021	MBSI-34-02	11/20/12 11:35	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-022	MBSI-34-03	11/20/12 11:45	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-023	MBSI-34-03	11/20/12 11:45	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110322-024	MBSI-17-02	11/20/12 13:50	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-025	MBSI-17-02	11/20/12 13:50	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-026	MBSI-17-01	11/20/12 15:05	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-027	MBSI-17-01	11/20/12 15:05	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-028	MBSI-17-01 Sieve Dup	11/20/12 15:05	11/27/12	Soil	Same As Above
H12110322-029	MBSI-55-01	11/21/12 8:10	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-030	MBSI-55-01	11/21/12 8:10	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-031	MBSI-55-02	11/21/12 9:25	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-032	MBSI-55-02	11/21/12 9:25	11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110322-033	MBSI-15-01	11/19/12 13:40 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-034	MBSI-15-01	11/19/12 13:40 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-035	MBSI-15-03	11/19/12 13:55 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-036	MBSI-15-03	11/19/12 13:55 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110322-037	MBSI-15-02	11/20/12 11:12 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110322-038	MBSI-15-02	11/20/12 11:12 11/27/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.27 13:34:08 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12110322

Report Date: 12/27/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 12/27/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110322

Report Date: 12/27/12
Date Received: 11/27/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	**Client Sample ID**	**Up**	**Low**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**
H12110322-001	MBSI-24-01	0	0		< 0.2	7880	2.3	186	0.6	< 0.1	14.6	130	42.8	27700
H12110322-002	MBSI-24-01	0	0	51.6	0.3	9500	2.8	229	0.7	0.1	18.2	160	82.6	29900
H12110322-003	MBSI-24-02	0	0		< 0.2	12600	9.2	153	0.6	0.2	6.3	15.4	13.6	16100
H12110322-004	MBSI-24-02	0	0	46.2	0.2	14600	8.5	172	0.6	0.2	8.0	33.6	37.9	19100
H12110322-005	MBSI-11-01	0	0		< 0.2	9980	8.9	241	0.5	0.2	4.8	13.3	9.7	13300
H12110322-006	MBSI-11-01	0	0	48.0	0.3	15600	10.0	300	0.7	0.2	7.6	34.5	33.1	19300
H12110322-007	MBSI-11-02	0	0		< 0.1	13300	9.6	165	0.5	0.2	5.4	16.0	10.5	14800
H12110322-008	MBSI-11-02	0	0	31.8	< 0.2	16400	9.8	206	0.6	0.2	7.5	29.9	32.2	18400
H12110322-009	MBSI-11-02 Sieve Dup	0	0	35.2	< 0.2	15100	9.6	197	0.6	0.2	7.4	29.1	43.7	17600
H12110322-010	MBSI-20-01	0	0		< 0.1	10400	10.2	318	0.5	0.1	5.1	17.2	7.2	13500
H12110322-011	MBSI-20-01	0	0	75.3	< 0.2	16200	14.6	524	0.6	0.2	8.2	46.1	67.2	20300
H12110322-012	MBSI-20-02	0	0		< 0.1	7740	4.3	118	0.3	0.2	4.6	11.3	8.1	10200
H12110322-013	MBSI-20-02	0	0	24.6	< 0.2	9490	4.6	147	0.3	0.2	6.3	15.5	19.6	12000
H12110322-014	MBSI-37-02	0	0		< 0.1	13100	6.2	133	0.5	0.2	6.5	19.9	10.9	16500
H12110322-015	MBSI-37-02	0	0	26.7	< 0.1	13700	6.2	150	0.5	0.2	8.7	24.9	29.9	19000
H12110322-016	MBSI-37-01	0	0		< 0.1	9380	6.5	145	0.4	0.3	4.3	12.6	9.1	13700
H12110322-017	MBSI-37-01	0	0	57.4	< 0.2	12100	7.3	194	0.5	0.3	6.4	31.7	28.7	17100
H12110322-018	MBSI-34-01	0	0		< 0.1	9950	6.6	132	0.4	0.3	5.5	13.3	9.1	13500
H12110322-019	MBSI-34-01	0	0	44.4	< 0.2	13100	6.1	198	0.5	0.4	7.3	26.6	29.5	16800
H12110322-020	MBSI-34-02	0	0		< 0.1	9510	5.6	89	0.4	0.2	4.1	13.6	8.4	11500
H12110322-021	MBSI-34-02	0	0	42.4	< 0.1	11800	6.3	115	0.4	0.3	6.1	21.9	20.3	15200
H12110322-022	MBSI-34-03	0	0		< 0.1	9430	5.4	91	0.4	0.2	4.4	13.2	8.8	11800
H12110322-023	MBSI-34-03	0	0	37.5	< 0.2	12100	6.4	118	0.5	0.3	6.4	21.8	32.2	15900
H12110322-024	MBSI-17-02	0	0		< 0.1	6850	6.0	77	0.3	0.2	3.9	9.9	5.7	9600
H12110322-025	MBSI-17-02	0	0	18.5	< 0.1	7790	6.3	91	0.3	0.2	4.8	13.8	15.4	11700
H12110322-026	MBSI-17-01	0	0		< 0.1	11400	7.1	225	0.5	0.2	7.5	18.4	15.1	15100
H12110322-027	MBSI-17-01	0	0	34.2	< 0.2	12600	6.9	282	0.5	0.3	9.1	26.6	22.9	18400
H12110322-028	MBSI-17-01 Sieve Dup	0	0	34.2	< 0.2	12700	6.9	273	0.5	0.3	8.9	26.4	23.0	18400
H12110322-029	MBSI-55-01	0	0		< 0.2	20200	21.0	575	1.3	0.8	9.5	23.4	20.4	27200
H12110322-030	MBSI-55-01	0	0	56.3	< 0.2	19900	16.4	303	0.9	0.3	7.7	29.5	34.0	22100
H12110322-031	MBSI-55-02	0	0		< 0.1	15300	8.3	138	0.6	< 0.1	6.2	12.7	8.0	13800
H12110322-032	MBSI-55-02	0	0	34.1	< 0.1	19000	8.6	171	0.6	0.1	6.8	22.9	18.1	17600
H12110322-033	MBSI-15-01	0	0		< 0.1	23300	4.0	182	0.7	0.1	4.5	8.1	13.7	13400
H12110322-034	MBSI-15-01	0	0	48.7	< 0.2	23100	4.5	198	0.6	0.2	6.4	13.8	44.6	16100
H12110322-035	MBSI-15-03	0	0		< 0.1	23300	4.0	183	0.7	0.2	6.6	8.2	14.1	13500
H12110322-036	MBSI-15-03	0	0	15.1	< 0.1	24400	4.4	207	0.6	0.2	6.7	13.3	23.8	16900
H12110322-037	MBSI-15-02	0	0		< 0.2	16300	4.9	107	0.4	< 0.1	4.2	9.4	8.5	13900
H12110322-038	MBSI-15-02	0	0	35.7	< 0.1	16900	4.5	122	0.4	< 0.1	4.7	13.7	29.4	15500

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110322

Report Date: 12/27/12
Date Received: 11/27/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium, Hexavalent
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110322-001	MBSI-24-01	0	0	364	81.5	6	< 0.1	< 0.2	0.20	88.0	51	130	< 0.050	< 0.29
H12110322-002	MBSI-24-01	0	0	409	114	7.1	< 0.1	< 0.2	0.18	99.0	67	160		< 0.29
H12110322-003	MBSI-24-02	0	0	287	16.5	16	0.1	0.4	0.24	32.5	49	15	< 0.050	< 0.29
H12110322-004	MBSI-24-02	0	0	309	27.5	10.7	0.1	0.4	0.22	41.3	62	34		< 0.29
H12110322-005	MBSI-11-01	0	0	250	12.7	15	0.2	0.4	0.21	30.9	43	12	< 0.050	1.2
H12110322-006	MBSI-11-01	0	0	283	27.8	11.2	0.2	0.4	0.22	45.7	63	34		< 0.29
H12110322-007	MBSI-11-02	0	0	289	12.9	16	0.1	0.4	0.23	29.9	39	16	< 0.050	< 0.29
H12110322-008	MBSI-11-02	0	0	333	20.8	9.3	0.2	0.5	0.21	39.2	53	30		< 0.29
H12110322-009	MBSI-11-02 Sieve Dup	0	0	328	21.0	9.1	0.2	0.5	0.19	35.3	56	29		< 0.29
H12110322-010	MBSI-20-01	0	0	291	9.2	11	0.1	0.4	0.16	32.5	31	17	< 0.050	< 0.29
H12110322-011	MBSI-20-01	0	0	406	25.3	13.8	0.2	0.5	0.19	48.2	60	46		< 0.29
H12110322-012	MBSI-20-02	0	0	298	7.5	6.1	< 0.1	0.4	0.14	21.3	44	11	< 0.050	< 0.29
H12110322-013	MBSI-20-02	0	0	350	10.6	6.9	< 0.1	0.4	0.13	24.7	57	16		< 0.29
H12110322-014	MBSI-37-02	0	0	514	16.5	10	0.1	0.4	0.18	30.5	52	20	< 0.050	< 0.29
H12110322-015	MBSI-37-02	0	0	563	21.4	8.5	< 0.1	0.4	0.14	32.3	65	25		< 0.29
H12110322-016	MBSI-37-01	0	0	490	9.7	9	0.1	0.5	0.16	21.3	47	13	< 0.050	< 0.29
H12110322-017	MBSI-37-01	0	0	622	20.9	10.6	0.1	0.6	0.18	25.6	69	32		< 0.29
H12110322-018	MBSI-34-01	0	0	572	11.6	9	< 0.1	0.6	0.19	25.1	52	13	< 0.050	< 0.29
H12110322-019	MBSI-34-01	0	0	917	20.4	8.9	0.1	0.6	0.21	32.2	71	27		< 0.29
H12110322-020	MBSI-34-02	0	0	345	11.1	10	< 0.1	0.6	0.20	26.9	41	14	< 0.050	< 0.29
H12110322-021	MBSI-34-02	0	0	405	16.9	7.6	< 0.1	0.6	0.19	35.6	55	22		< 0.29
H12110322-022	MBSI-34-03	0	0	341	11.4	7	< 0.1	0.5	0.19	27.7	40	13	< 0.050	< 0.29
H12110322-023	MBSI-34-03	0	0	418	17.7	7.8	0.1	0.6	0.19	35.7	59	22		< 0.29
H12110322-024	MBSI-17-02	0	0	286	9.1	8	< 0.1	0.3	0.15	19.2	34	10	< 0.050	< 0.29
H12110322-025	MBSI-17-02	0	0	327	13.2	6.2	0.1	0.3	0.12	22.3	43	14		< 0.29
H12110322-026	MBSI-17-01	0	0	353	22.6	13	0.2	0.5	0.20	29.4	49	18	< 0.050	< 0.29
H12110322-027	MBSI-17-01	0	0	400	30.6	9.4	0.1	0.5	0.18	35.4	59	27		< 0.29
H12110322-028	MBSI-17-01 Sieve Dup	0	0	395	30.2	9.6	0.1	0.6	0.18	35.6	59	26		< 0.29
H12110322-029	MBSI-55-01	0	0	2920	32.2	20	0.2	0.8	0.84	64.2	83	23	< 0.050	0.60
H12110322-030	MBSI-55-01	0	0	351	26.5	15.8	0.2	0.7	0.34	58.8	93	30		< 0.29
H12110322-031	MBSI-55-02	0	0	304	12.0	9	0.1	0.3	0.18	23.6	42	13	< 0.050	< 0.29
H12110322-032	MBSI-55-02	0	0	322	17.7	9.8	0.1	0.3	0.17	32.7	54	23		< 0.29
H12110322-033	MBSI-15-01	0	0	524	7.4	17	< 0.1	< 0.2	0.18	17.4	51	8	< 0.050	0.39
H12110322-034	MBSI-15-01	0	0	558	11.4	13.0	< 0.1	< 0.2	0.14	19.7	65	14		< 0.29
H12110322-035	MBSI-15-03	0	0	526	6.8	19	< 0.1	< 0.2	0.18	18.3	50	8	< 0.050	0.36
H12110322-036	MBSI-15-03	0	0	582	11.2	13.5	< 0.1	< 0.2	0.16	20.5	63	13		< 0.29
H12110322-037	MBSI-15-02	0	0	230	9.2	17	< 0.1	< 0.2	0.14	19.4	48	9	< 0.050	< 0.29
H12110322-038	MBSI-15-02	0	0	167	12.3	9.2	< 0.1	< 0.2	0.13	21.6	58	14		< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121205A		
Sample ID: ICV	10	Initial Calibration Verification Standard							12/05/12 11:14	
Aluminum		4.07	mg/L	0.10	102	90	110			
Barium		0.804	mg/L	0.10	100	90	110			
Chromium		0.793	mg/L	0.010	99	90	110			
Copper		0.804	mg/L	0.010	100	90	110			
Iron		3.96	mg/L	0.030	99	90	110			
Lead		0.762	mg/L	0.013	95	90	110			
Manganese		4.06	mg/L	0.010	101	90	110			
Nickel		0.786	mg/L	0.010	98	90	110			
Vanadium		0.813	mg/L	0.10	102	90	110			
Zinc		0.796	mg/L	0.010	99	90	110			
Sample ID: ICSA	10	Interference Check Sample A							12/05/12 11:29	
Aluminum		524	mg/L	0.10	105	80	120			
Barium		0.000470	mg/L	0.10		0	0			
Chromium		0.00829	mg/L	0.010		0	0			
Copper		-0.00101	mg/L	0.010		0	0			
Iron		187	mg/L	0.030	93	80	120			
Lead		0.0222	mg/L	0.013		0	0			
Manganese		-0.00374	mg/L	0.010		0	0			
Nickel		0.00995	mg/L	0.010		0	0			
Vanadium		ND	mg/L	0.10		0	0			
Zinc		0.0105	mg/L	0.010		0	0			
Sample ID: ICSAB	10	Interference Check Sample AB							12/05/12 11:33	
Aluminum		523	mg/L	0.10	105	80	120			
Barium		0.498	mg/L	0.10	100	80	120			
Chromium		0.485	mg/L	0.010	97	80	120			
Copper		0.509	mg/L	0.010	102	80	120			
Iron		187	mg/L	0.030	93	80	120			
Lead		0.954	mg/L	0.013	95	80	120			
Manganese		0.485	mg/L	0.010	97	80	120			
Nickel		0.934	mg/L	0.010	93	80	120			
Vanadium		0.496	mg/L	0.10	99	80	120			
Zinc		1.01	mg/L	0.010	101	80	120			
Method: E200.7								Analytical Run: ICP2-HE_121206B		
Sample ID: ICV		Initial Calibration Verification Standard							12/06/12 10:37	
Cobalt		0.801	mg/L	0.010	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/06/12 10:52	
Cobalt		-0.00508	mg/L	0.010		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/06/12 10:56	
Cobalt		0.471	mg/L	0.010	94	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121219A		
Sample ID: ICV	2	Initial Calibration Verification Standard							12/19/12 12:36	
Aluminum		4.06	mg/L	0.10	101	90	110			
Iron		4.00	mg/L	0.030	100	90	110			
Sample ID: ICSA	2	Interference Check Sample A							12/19/12 12:51	
Aluminum		525	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Sample ID: ICSAB	2	Interference Check Sample AB							12/19/12 12:55	
Aluminum		526	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18872
Sample ID: MB-18872	11	Method Blank				Run: ICP2-HE_121205A				12/05/12 15:35
Aluminum		ND	mg/kg	0.8						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.7						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.04	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18872	11	Laboratory Fortified Blank				Run: ICP2-HE_121205A				12/05/12 15:39
Aluminum		261	mg/kg	5.0	104	80	120			
Barium		51.8	mg/kg	1.0	104	80	120			
Chromium		49.0	mg/kg	1.0	98	80	120			
Cobalt		48.7	mg/kg	1.0	97	80	120			
Copper		50.7	mg/kg	1.0	101	80	120			
Iron		246	mg/kg	5.0	98	80	120			
Lead		47.2	mg/kg	1.0	94	80	120			
Manganese		250	mg/kg	1.0	100	80	120			
Nickel		47.2	mg/kg	1.0	94	80	120			
Vanadium		50.5	mg/kg	1.0	101	80	120			
Zinc		48.7	mg/kg	1.0	97	80	120			
Sample ID: LCS-18872	11	Laboratory Control Sample				Run: ICP2-HE_121205A				12/05/12 15:43
Aluminum		13400	mg/kg	5.0	93	50.7	131.3			
Barium		565	mg/kg	1.0	94	80.6	112.2			
Chromium		68.0	mg/kg	1.0	91	72.8	109.1			
Cobalt		48.7	mg/kg	1.0	87	73.3	103.7			
Copper		256	mg/kg	1.0	93	77.5	109.6			
Iron		19000	mg/kg	5.0	84	39.6	138.3			
Lead		167	mg/kg	3.0	91	75.9	108.6			
Manganese		363	mg/kg	1.0	100	80.8	115.7			
Nickel		50.3	mg/kg	1.0	84	72.3	103.4			
Vanadium		63.1	mg/kg	1.0	88	66.6	107.3			
Zinc		190	mg/kg	1.0	91	74.2	109.9			
Sample ID: H12110322-037AMS	11	Sample Matrix Spike				Run: ICP2-HE_121205A				12/05/12 17:18
Aluminum		18600	mg/kg	5.0		75	125			A
Barium		174	mg/kg	1.0	138	75	125			S
Chromium		57.7	mg/kg	1.0	98	75	125			
Cobalt		51.3	mg/kg	1.0	97	75	125			
Copper		56.0	mg/kg	1.0	97	75	125			
Iron		13700	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18872	
Sample ID: H12110322-037AMS	11	Sample Matrix Spike				Run: ICP2-HE_121205A			12/05/12 17:18	
Lead		62.1	mg/kg	3.0	92	75	125			
Manganese		529	mg/kg	1.0	122	75	125			
Nickel		53.9	mg/kg	1.0	91	75	125			
Vanadium		70.1	mg/kg	1.0	103	75	125			
Zinc		95.6	mg/kg	1.0	97	75	125			
Sample ID: H12110322-037AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121205A			12/05/12 17:22	
Aluminum		18000	mg/kg	5.0		75	125	3.1	20	A
Barium		167	mg/kg	1.0	123	75	125	4.0	20	
Chromium		56.2	mg/kg	1.0	95	75	125	2.5	20	
Cobalt		49.8	mg/kg	1.0	94	75	125	2.9	20	
Copper		56.0	mg/kg	1.0	97	75	125	0.1	20	
Iron		13600	mg/kg	5.0		75	125	1.2	20	A
Lead		53.0	mg/kg	3.0	73	75	125	16	20	S
Manganese		465	mg/kg	1.0	95	75	125	13	20	
Nickel		53.5	mg/kg	1.0	91	75	125	0.6	20	
Vanadium		71.2	mg/kg	1.0	106	75	125	1.6	20	
Zinc		93.4	mg/kg	1.0	93	75	125	2.3	20	
Method: SW6010B									Batch: 18872	
Sample ID: LFB-18872	11	Laboratory Fortified Blank				Run: ICP2-HE_121206B			12/06/12 13:58	
Aluminum		258	mg/kg	5.0	103	80	120			
Barium		52.7	mg/kg	1.0	105	80	120			
Chromium		49.6	mg/kg	1.0	99	80	120			
Cobalt		48.7	mg/kg	1.0	97	80	120			
Copper		51.0	mg/kg	1.0	102	80	120			
Iron		244	mg/kg	5.0	98	80	120			
Lead		45.6	mg/kg	1.0	91	80	120			
Manganese		257	mg/kg	1.0	103	80	120			
Nickel		48.1	mg/kg	1.0	96	80	120			
Vanadium		49.9	mg/kg	1.0	100	80	120			
Zinc		49.3	mg/kg	1.0	99	80	120			
Sample ID: MB-18872	9	Method Blank				Run: ICP2-HE_121206B			12/06/12 19:52	
Aluminum		ND	mg/kg	0.8						
Barium		0.04	mg/kg	0.02						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Vanadium		ND	mg/kg	0.10						
Zinc		0.2	mg/kg	0.1						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19050
Sample ID: MB-19050	2	Method Blank				Run: ICP2-HE_121219A				12/19/12 17:21
Aluminum		0.5	mg/kg	0.3						
Iron		3	mg/kg	0.7						
Sample ID: LFB-19050	2	Laboratory Fortified Blank				Run: ICP2-HE_121219A				12/19/12 17:25
Aluminum		261	mg/kg	5.0	104	80	120			
Iron		263	mg/kg	5.0	104	80	120			
Sample ID: LCS-19050	2	Laboratory Control Sample				Run: ICP2-HE_121219A				12/19/12 17:28
Aluminum		12800	mg/kg	5.0	88	50.7	131.3			
Iron		19500	mg/kg	5.0	86	39.6	138.3			
Sample ID: H12110322-038AMS	2	Sample Matrix Spike				Run: ICP2-HE_121219A				12/19/12 19:15
Aluminum		19600	mg/kg	5.0		75	125			A
Iron		14300	mg/kg	5.0		75	125			A
Sample ID: H12110322-038AMSD	2	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 19:19
Aluminum		19100	mg/kg	5.0		75	125	2.5	20	A
Iron		14200	mg/kg	5.0		75	125	0.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121205B		
Sample ID: ICV STD	11	Initial Calibration Verification Standard							12/05/12 17:16	
Antimony		0.0510	mg/L	0.0010	102	90	110			
Arsenic		0.0508	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Chromium		0.0509	mg/L	0.0010	102	90	110			
Cobalt		0.0505	mg/L	0.0010	101	90	110			
Copper		0.0530	mg/L	0.0010	106	90	110			
Lead		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0526	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	11	Initial Calibration Verification Standard							12/06/12 13:58	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0508	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0258	mg/L	0.0010	103	90	110			
Chromium		0.0499	mg/L	0.0010	100	90	110			
Cobalt		0.0510	mg/L	0.0010	102	90	110			
Copper		0.0514	mg/L	0.0010	103	90	110			
Lead		0.0497	mg/L	0.0010	99	90	110			
Selenium		0.0511	mg/L	0.0010	102	90	110			
Silver		0.0227	mg/L	0.0010	91	90	110			
Thallium		0.0504	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	11	Initial Calibration Verification Standard							12/07/12 11:06	
Antimony		0.0527	mg/L	0.0010	105	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0254	mg/L	0.0010	102	90	110			
Cadmium		0.0256	mg/L	0.0010	102	90	110			
Chromium		0.0500	mg/L	0.0010	100	90	110			
Cobalt		0.0502	mg/L	0.0010	100	90	110			
Copper		0.0516	mg/L	0.0010	103	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0251	mg/L	0.0010	100	90	110			
Thallium		0.0500	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	11	Initial Calibration Verification Standard							12/08/12 15:23	
Antimony		0.0508	mg/L	0.0010	102	90	110			
Arsenic		0.0500	mg/L	0.0010	100	90	110			
Beryllium		0.0251	mg/L	0.0010	101	90	110			
Cadmium		0.0257	mg/L	0.0010	103	90	110			
Chromium		0.0503	mg/L	0.0010	101	90	110			
Cobalt		0.0499	mg/L	0.0010	100	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121205B		
Sample ID: ICV STD	11	Initial Calibration Verification Standard							12/08/12 15:23	
Copper		0.0524	mg/L	0.0010	105	90	110			
Lead		0.0498	mg/L	0.0010	100	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Method: SW6020									Batch: 18872	
Sample ID: MB-18872	10	Method Blank				Run: ICPMS204-B_121205B			12/06/12 18:23	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		0.005	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.03	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.1	mg/kg	0.01						
Lead		0.03	mg/kg	0.003						
Selenium		ND	mg/kg	0.007						
Thallium		0.02	mg/kg	0.002						
Sample ID: LFB-18872	11	Laboratory Fortified Blank				Run: ICPMS204-B_121205B			12/06/12 18:32	
Antimony		52.6	mg/kg	1.0	105	80	120			
Arsenic		51.8	mg/kg	1.0	103	80	120			
Beryllium		25.0	mg/kg	1.0	100	80	120			
Cadmium		26.8	mg/kg	1.0	107	80	120			
Chromium		53.2	mg/kg	1.0	106	80	120			
Cobalt		53.3	mg/kg	1.0	107	80	120			
Copper		54.0	mg/kg	1.0	108	80	120			
Lead		52.6	mg/kg	1.0	105	80	120			
Selenium		50.5	mg/kg	1.0	101	80	120			
Silver		30.7	mg/kg	1.0	122	80	120			S
Thallium		51.9	mg/kg	1.0	104	80	120			
Sample ID: H12110322-037AMS	11	Sample Matrix Spike				Run: ICPMS204-B_121205B			12/06/12 20:47	
Antimony		16.6	mg/kg	1.0	34	75	125			S
Arsenic		54.8	mg/kg	1.0	102	75	125			
Beryllium		24.6	mg/kg	1.0	98	75	125			
Cadmium		24.8	mg/kg	1.0	101	75	125			
Chromium		63.8	mg/kg	1.0	108	75	125			
Cobalt		58.5	mg/kg	1.0	108	75	125			
Copper		59.2	mg/kg	1.0	102	75	125			
Lead		63.6	mg/kg	1.0	106	75	125			
Selenium		48.7	mg/kg	1.0	99	75	125			
Silver		32.1	mg/kg	1.0	131	75	125			S
Thallium		51.3	mg/kg	1.0	104	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 18872	
Sample ID: H12110322-037AMSD	11	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121205B			12/06/12 20:51	
Antimony		16.9	mg/kg	1.0	34	75	125	1.6	20	S
Arsenic		55.6	mg/kg	1.0	104	75	125	1.6	20	
Beryllium		25.1	mg/kg	1.0	101	75	125	2.2	20	
Cadmium		25.6	mg/kg	1.0	104	75	125	3.0	20	
Chromium		64.6	mg/kg	1.0	109	75	125	1.3	20	
Cobalt		58.9	mg/kg	1.0	109	75	125	0.6	20	
Copper		60.5	mg/kg	1.0	105	75	125	2.2	20	
Lead		63.5	mg/kg	1.0	105	75	125	0.2	20	
Selenium		49.3	mg/kg	1.0	100	75	125	1.2	20	
Silver		31.0	mg/kg	1.0	126	75	125	3.6	20	S
Thallium		52.4	mg/kg	1.0	107	75	125	2.0	20	
Sample ID: MB-18872	11	Method Blank				Run: ICPMS204-B_121205B			12/07/12 13:46	
Antimony		0.08	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.08	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.1	mg/kg	0.01						
Lead		0.05	mg/kg	0.003						
Selenium		0.03	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.005	mg/kg	0.002						
Sample ID: LCS-18872	11	Laboratory Control Sample				Run: ICPMS204-B_121205B			12/07/12 13:51	
Antimony		52.1	mg/kg	1.0	42	2.2	92.9			
Arsenic		300	mg/kg	1.0	89	72.3	106.4			
Beryllium		45.2	mg/kg	1.0	90	76.3	108.6			
Cadmium		120	mg/kg	1.0	89	73	105.1			
Chromium		78.1	mg/kg	1.0	105	72.8	109.1			
Cobalt		56.9	mg/kg	1.0	101	73.3	103.7			
Copper		280	mg/kg	1.0	102	77.5	109.6			
Lead		202	mg/kg	1.0	110	75.9	108.6			S
Selenium		185	mg/kg	1.0	96	72.5	112.2			
Silver		72.2	mg/kg	1.0	106	67.8	112.8			
Thallium		91.9	mg/kg	1.0	103	71.7	109.5			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121219B		
Sample ID: ICV STD	17	Initial Calibration Verification Standard							12/19/12 15:17	
Antimony		0.0500	mg/L	0.0010	100	90	110			
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Barium		0.0505	mg/L	0.0010	101	90	110			
Beryllium		0.0249	mg/L	0.0010	100	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Chromium		0.0507	mg/L	0.0010	101	90	110			
Cobalt		0.0500	mg/L	0.0010	100	90	110			
Copper		0.0526	mg/L	0.0010	105	90	110			
Iron		0.273	mg/L	0.0010	109	90	110			
Lead		0.0488	mg/L	0.0010	98	90	110			
Manganese		0.246	mg/L	0.0010	98	90	110			
Nickel		0.0525	mg/L	0.0010	105	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0255	mg/L	0.0010	102	90	110			
Thallium		0.0497	mg/L	0.0010	99	90	110			
Vanadium		0.0506	mg/L	0.0010	101	90	110			
Zinc		0.0545	mg/L	0.0010	109	90	110			
Method: SW6020									Batch: 19050	
Sample ID: MB-19050	17	Method Blank				Run: ICPMS204-B_121219B			12/19/12 21:50	
Antimony		0.01	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.04	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.09	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Lead		0.01	mg/kg	0.003						
Manganese		0.05	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.02	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LCS-19050	17	Laboratory Control Sample				Run: ICPMS204-B_121219B			12/19/12 21:55	
Antimony		52.4	mg/kg	1.0	42	2.2	92.9			
Arsenic		300	mg/kg	1.0	88	72.3	106.4			
Barium		599	mg/kg	1.0	99	80.6	112.2			
Beryllium		41.3	mg/kg	1.0	82	76.3	108.6			
Cadmium		115	mg/kg	1.0	85	73	105.1			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19050
Sample ID: LCS-19050	17	Laboratory Control Sample				Run: ICPMS204-B_121219B				12/19/12 21:55
Chromium		76.7	mg/kg	1.0	102	72.8	109.1			
Cobalt		57.5	mg/kg	1.0	101	73.3	103.7			
Copper		280	mg/kg	1.0	101	77.5	109.6			
Iron		21200	mg/kg	5.0	93	39.6	138.3			
Lead		195	mg/kg	1.0	105	75.9	108.6			
Manganese		403	mg/kg	1.0	110	80.8	115.7			
Nickel		60.8	mg/kg	1.0	101	72.3	103.4			
Selenium		182	mg/kg	1.0	94	72.5	112.2			
Silver		68.8	mg/kg	1.0	101	67.8	112.8			
Thallium		88.0	mg/kg	1.0	98	71.7	109.5			
Vanadium		67.7	mg/kg	1.0	93	66.6	107.3			
Zinc		211	mg/kg	1.0	100	74.2	109.9			
Sample ID: LFB-19050	17	Laboratory Fortified Blank				Run: ICPMS204-B_121219B				12/19/12 21:59
Antimony		53.4	mg/kg	1.0	107	80	120			
Arsenic		51.6	mg/kg	1.0	103	80	120			
Barium		53.1	mg/kg	1.0	106	80	120			
Beryllium		23.5	mg/kg	1.0	94	80	120			
Cadmium		27.1	mg/kg	1.0	108	80	120			
Chromium		52.6	mg/kg	1.0	105	80	120			
Cobalt		53.0	mg/kg	1.0	106	80	120			
Copper		54.4	mg/kg	1.0	109	80	120			
Iron		283	mg/kg	5.0	112	80	120			
Lead		53.0	mg/kg	1.0	106	80	120			
Manganese		259	mg/kg	1.0	103	80	120			
Nickel		53.6	mg/kg	1.0	107	80	120			
Selenium		49.7	mg/kg	1.0	99	80	120			
Silver		27.8	mg/kg	1.0	111	80	120			
Thallium		51.9	mg/kg	1.0	104	80	120			
Vanadium		51.6	mg/kg	1.0	103	80	120			
Zinc		54.8	mg/kg	1.0	109	80	120			
Sample ID: H12110322-038AMS	17	Sample Matrix Spike				Run: ICPMS204-B_121219B				12/20/12 00:55
Antimony		14.3	mg/kg	1.0	29	75	125			S
Arsenic		55.0	mg/kg	1.0	104	75	125			
Barium		199	mg/kg	1.0	157	75	125			S
Beryllium		22.4	mg/kg	1.0	91	75	125			
Cadmium		25.2	mg/kg	1.0	103	75	125			
Chromium		67.7	mg/kg	1.0	111	75	125			
Cobalt		56.4	mg/kg	1.0	106	75	125			
Copper		81.6	mg/kg	1.0	107	75	125			
Iron		15200	mg/kg	5.0		75	125			A
Lead		61.4	mg/kg	1.0	107	75	125			
Manganese		416	mg/kg	1.0	103	75	125			
Nickel		65.1	mg/kg	1.0	109	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 19050	
Sample ID: H12110322-038AMS	17	Sample Matrix Spike				Run: ICPMS204-B_121219B			12/20/12 00:55	
Selenium		50.0	mg/kg	1.0	103	75	125			
Silver		27.3	mg/kg	1.0	111	75	125			
Thallium		51.4	mg/kg	1.0	106	75	125			
Vanadium		75.5	mg/kg	1.0	111	75	125			
Zinc		109	mg/kg	1.0	106	75	125			
Sample ID: H12110322-038AMSD	17	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B			12/20/12 01:00	
Antimony		15.0	mg/kg	1.0	31	75	125	4.7	20	S
Arsenic		55.0	mg/kg	1.0	104	75	125	0.1	20	
Barium		194	mg/kg	1.0	148	75	125	2.2	20	S
Beryllium		22.6	mg/kg	1.0	92	75	125	0.8	20	
Cadmium		25.4	mg/kg	1.0	104	75	125	0.9	20	
Chromium		67.6	mg/kg	1.0	111	75	125	0.2	20	
Cobalt		57.3	mg/kg	1.0	108	75	125	1.5	20	
Copper		82.4	mg/kg	1.0	109	75	125	1.0	20	
Iron		15300	mg/kg	5.0		75	125	0.6	20	A
Lead		61.9	mg/kg	1.0	109	75	125	0.9	20	
Manganese		417	mg/kg	1.0	103	75	125	0.2	20	
Nickel		65.7	mg/kg	1.0	110	75	125	0.8	20	
Selenium		50.2	mg/kg	1.0	103	75	125	0.5	20	
Silver		27.2	mg/kg	1.0	111	75	125	0.5	20	
Thallium		51.7	mg/kg	1.0	106	75	125	0.5	20	
Vanadium		75.1	mg/kg	1.0	110	75	125	0.5	20	
Zinc		109	mg/kg	1.0	107	75	125	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121220C	
Sample ID: ICV STD		Initial Calibration Verification Standard							12/20/12 17:30	
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020									Batch: 19050	
Sample ID: MB-19050	17	Method Blank				Run: ICPMS204-B_121220C			12/20/12 20:40	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.04	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.06	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Lead		0.01	mg/kg	0.003						
Manganese		0.05	mg/kg	0.008						
Nickel		0.03	mg/kg	0.01						
Selenium		0.02	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LCS-19050	17	Laboratory Control Sample				Run: ICPMS204-B_121220C			12/20/12 20:44	
Antimony		52.6	mg/kg	1.0	42	2.2	92.9			
Arsenic		302	mg/kg	1.0	89	72.3	106.4			
Barium		609	mg/kg	1.0	100	80.6	112.2			
Beryllium		40.4	mg/kg	1.0	80	76.3	108.6			
Cadmium		119	mg/kg	1.0	87	73	105.1			
Chromium		76.4	mg/kg	1.0	102	72.8	109.1			
Cobalt		57.7	mg/kg	1.0	101	73.3	103.7			
Copper		277	mg/kg	1.0	100	77.5	109.6			
Iron		21000	mg/kg	5.0	92	39.6	138.3			
Lead		201	mg/kg	1.0	108	75.9	108.6			
Manganese		400	mg/kg	1.0	110	80.8	115.7			
Nickel		60.6	mg/kg	1.0	100	72.3	103.4			
Selenium		184	mg/kg	1.0	95	72.5	112.2			
Silver		69.6	mg/kg	1.0	102	67.8	112.8			
Thallium		90.5	mg/kg	1.0	100	71.7	109.5			
Vanadium		67.2	mg/kg	1.0	93	66.6	107.3			
Zinc		220	mg/kg	1.0	104	74.2	109.9			
Method: SW6020									Batch: 19062	
Sample ID: MB-19062		Method Blank				Run: ICPMS204-B_121220C			12/20/12 21:54	
Silver		0.1	mg/kg	0.02						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19062
Sample ID: LCS-19062		Laboratory Control Sample				Run: ICPMS204-B_121220C				12/20/12 21:59
Silver		72.1	mg/kg	1.0	105	67.8	112.8			
Sample ID: LFB-19062		Laboratory Fortified Blank				Run: ICPMS204-B_121220C				12/20/12 22:03
Silver		28.1	mg/kg	1.0	112	80	120			
Sample ID: H12110322-037AMS		Sample Matrix Spike				Run: ICPMS204-B_121220C				12/20/12 23:36
Silver		28.3	mg/kg	1.0	114	75	125			
Sample ID: H12110322-037AMSD		Sample Matrix Spike Duplicate				Run: ICPMS204-B_121220C				12/20/12 23:41
Silver		27.5	mg/kg	1.0	111	75	125	2.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67502
Sample ID: MB-67502		Method Blank				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: B12120032-032AMS		Sample Matrix Spike				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.33	mg/kg	0.010	87	70	130			
Sample ID: B12120032-032AMSD		Sample Matrix Spike Duplicate				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	91	70	130	5.3	20	
Sample ID: H12110322-007A		Sample Duplicate				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: LCS-R196208		Laboratory Control Sample				Run: SUB-B196208				12/04/12 15:20
Chromium, Hexavalent		0.0967	mg/L	0.010	97	90	110			
Method: SW7196A										Batch: B_67503
Sample ID: LCS-R196210		Laboratory Control Sample				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent		0.0973	mg/L	0.010	97	90	110			
Sample ID: MB-67503		Method Blank				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110322-012A		Sample Matrix Spike				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	96	70	130			
Sample ID: H12110322-012A		Sample Matrix Spike Duplicate				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		0.40	mg/kg	0.010	104	70	130	8.4	20	
Sample ID: H12110322-016A		Sample Matrix Spike				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	93	70	130			
Sample ID: H12110322-016A		Sample Matrix Spike Duplicate				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	94	70	130	0.6	20	
Sample ID: H12110322-037A		Sample Duplicate				Run: SUB-B196210				12/04/12 16:05
Chromium, Hexavalent - Soluble		0.10	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67901
Sample ID: LCS-R197099		Laboratory Control Sample				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent		0.0959	mg/L	0.010	96	90	110			
Sample ID: MB-67901		Method Blank				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110322-002A		Sample Matrix Spike				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		0.32	mg/kg	0.010	85	70	130			
Sample ID: H12110322-002A		Sample Matrix Spike Duplicate				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		0.32	mg/kg	0.010	85	70	130	0.0	20	
Sample ID: H12110322-013A		Sample Matrix Spike				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		0.30	mg/kg	0.010	80	70	130			
Sample ID: H12110322-013A		Sample Matrix Spike Duplicate				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		0.30	mg/kg	0.010	78	70	130	2.0	20	
Sample ID: H12110322-019A		Sample Duplicate				Run: SUB-B197099				12/19/12 15:45
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110322

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121207A	
Sample ID: ICV		Initial Calibration Verification Standard							12/07/12 11:17	
Mercury		0.0010	mg/kg	0.50	101	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/07/12 12:31	
Mercury		0.0023	mg/kg	0.50	93	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/07/12 13:12	
Mercury		0.0026	mg/kg	0.50	104	90	110			
Method: SW7471A									Batch: 18869	
Sample ID: MB-18869		Method Blank				Run: HGCV201-H_121207A			12/07/12 12:36	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18869		Laboratory Control Sample				Run: HGCV201-H_121207A			12/07/12 12:38	
Mercury		5.4	mg/kg	0.50	109	80	120			
Sample ID: H12110322-005AMS		Sample Matrix Spike				Run: HGCV201-H_121207A			12/07/12 12:48	
Mercury		1.2	mg/kg	0.50	116	80	120			
Sample ID: H12110322-005AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121207A			12/07/12 12:50	
Mercury		1.2	mg/kg	0.50	113	80	120	2.5	20	
Sample ID: H12110322-005ADIL		Serial Dilution				Run: HGCV201-H_121207A			12/07/12 12:53	
Mercury		0.016	mg/kg	0.50		0	0		20	
Sample ID: H12110322-031AMS		Sample Matrix Spike				Run: HGCV201-H_121207A			12/07/12 13:29	
Mercury		1.0	mg/kg	0.50	101	80	120			
Sample ID: H12110322-031AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121207A			12/07/12 13:31	
Mercury		1.1	mg/kg	0.50	113	80	120	12	20	
Sample ID: H12110322-031ADIL		Serial Dilution				Run: HGCV201-H_121207A			12/07/12 13:33	
Mercury		0.0056	mg/kg	0.50		0	0		20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12110322

Login completed by: Tracy L. Lorash
Date Received: 11/27/2012
Reviewed by: BL2000\sdull
Received by: elm
Reviewed Date: 11/30/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	℃ See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

Cooler 1 was received at 2.3℃, Cooler 2 at 2.0℃ and Cooler 3 at 2.2℃. Samples were not received on ice. TI 11/28/12

Hydrometrics, Inc.

CHAIN OF CUSTODY RECORD

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO.	PROJECT NAME
12042	Montana Background Soil Investigation

SAMPLERS: *(Signature)* J Pell

C#	DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm-60mesh)	Total Metals-Sieve Duplicate			REMARKS
3	11/18/12	1445	X		MBSI-24-01	01 soil									X	X				H2110322
	11/18/12	1635	↓		-24-02	↓									X	X				
	11/19/12	0915			-11-01										X	X				
	↓	1100			-11-02										X	X		X		
		1315			-20-01										X	X				
	↓	1450			-20-02										X	X				
	11/19/12	1615			-37-02										X	X				
	11/20/12	0730			-37-01										X	X				
1	↓	0940			-34-01										X	X				
		1135			-34-02										X	X				
		1145			-34-03										X	X				
	↓	1350			-17-02										X	X				
	11/20/12	1505			-17-01										X	X		X		
	11/21/12	0810	↓		-55-01	↓									X	X				
	11/21/12	0925	X		MBSI-55-02	01 soil									X	X				

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
J Pell	11/27/12 0830	Matt Walker	ELI Helena	Direct Bill MDEQ	Other hand-delivered
					Air Bill #
Relinquished (Signature)	Date/Time	Received by: *(Signature)*	Remarks		
Matt Walker	11/27/12 0905		Bill MDEQ - ATTN: Jason Seyler		
			Reference ORG # 484422 - Inorganic Background Study		
Relinquished (Signature)	Date/Time	Received for Laboratory by: *(Signature)*	Date/Time	Enclosed: ☒ Parameter sheet w/detection limits	
		Esther Merritt	11/27/12 9:05	☐ QA/QC standard mixing instructions ☒ Cover letter	
				☐ Other	

HFORM-1-5/99

Return results & electronic copy to: C1→2.3

Split Samples:
[] Accepted [] Declined
Signature

Chain of Custody and Analytical Request Record

Page ____ of ____

PLEASE PRINT (Provide as much information as possible.)

Company Name: Hydrometrics, Inc.	Project Name, PWS, Permit, Etc.: MBSI	Sample Origin State: MT	EPA/State Compliance: Yes ☑ No ☐
Report Mail Address: Hydrometrics, Inc. 3020 Bozeman Ave Helena MT 59601	Contact Name: Mark Walker Phone/Fax: (406) 443-4150 (406) 443-4155 Email: mwalker@hydrometrics.com		Sampler: (Please Print) Carlo Arendt
Invoice Address: 3020 Bozeman Ave Helena MT 59601	Invoice Contact & Phone: Marta Peters (406) 443-4150	~~Purchase Order:~~ Project # 12042	Quote/Bottle Order:

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Shipped by: Hand
Cooler ID(s): Y
Receipt Temp: See Comments
On Ice: Y N
Custody Seal: On Bottle Y N On Cooler Y N
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Total Metals (Bulk)	Total Metals (<250µm - 60mesh)	Comments:
1	MBSI-15-01	11/19/2012	13:40	I-S	X	X	* Bill to MDEQ ATTN: Jason Sayler Reference # ORG 484422 Inorganic Background Study Temp Blank C1 → 2.3 C2 → 2.0 C3 → 2.2
2	MBSI-15-03	11/19/2012	13:55	I-S	X	X	
3	MBSI-15-02	11/20/2012	11:12	I-S	X	X	
4							
5							
6							
7							
8							
9							
10							

2

LABORATORY USE ONLY H12110322

Custody Record MUST be Signed

Relinquished by (print): Carlo Arendt	Date/Time: 11/20/2012 14:30	Signature:	Received by (print): MARK WALKER	Date/Time: 11/21/12 1330
Relinquished by (print): MARK WALKER	Date/Time: 11/27/12 0905	Signature:	Received by (print):	Date/Time:
Sample Disposal: Return to Client: _____	Lab Disposal: _____		Received by Laboratory: Esther Merritt	Date/Time: 11/27/12 9:05

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 27, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are eighteen (18) soil samples collected from November 18 through 21, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. Selected samples (shown on COC) are to be run as "laboratory sieve duplicates" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis

Parameter[1]	Digestion Method[2]	Analytical Method[2]	Required Reporting Limit (mg/kg)	EPA Regional Screening Level (RSL)[3] (mg/kg)	Maximum Holding Time (days)	Preservation
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

January 02, 2013

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12110397 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 20 samples for MT DEQ-Site Response on 11/29/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12110397-001	MBSI-13-01	11/20/12 13:45	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-002	MBSI-13-01	11/20/12 13:45	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-003	MBSI-13-02	11/20/12 10:30	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-004	MBSI-13-02	11/20/12 10:30	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-005	MBSI-04-01	11/15/12 11:45	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-006	MBSI-04-01	11/15/12 11:45	11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110397-007	MBSI-04-02	11/25/12 15:00 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-008	MBSI-04-02	11/25/12 15:00 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-009	MBSI-46-02	11/23/12 11:30 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-010	MBSI-46-02	11/23/12 11:30 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-011	MBSI-46-02 Sieve Dup	11/23/12 11:30 11/29/12	Soil	Same As Above
H12110397-012	MBSI-46-01	11/23/12 14:10 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-013	MBSI-46-01	11/23/12 14:10 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-014	MBSI-18-02	11/28/12 11:00 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-015	MBSI-18-02	11/28/12 11:00 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12110397-016	MBSI-18-01	11/28/12 14:30 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-017	MBSI-18-01	11/28/12 14:30 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-018	MBSI-30-01	11/28/12 16:50 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12110397-019	MBSI-30-01	11/28/12 16:50 11/29/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12110397-020	MBSI-30-04	11/28/12 16:15 11/29/12	Aqueous	Metals by ICP/ICPMS, Total Mercury, Total Metals Digestion by EPA 200.2 Digestion, Mercury by CVAA

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2013.01.02 16:50:15 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12110397

Report Date: 01/02/13

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 1/2/13

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110397

Report Date: 01/02/13
Date Received: 11/29/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110397-001	MBSI-13-01	0	0		< 0.3	11200	2.7	104	0.4	0.1	3.7	9.2	7.4	9740
H12110397-002	MBSI-13-01	0	0	57.2	< 0.3	12500	3.4	102	0.5	< 0.1	3.3	10.2	20.6	12500
H12110397-003	MBSI-13-02	0	0		< 0.4	10600	2.2	88	0.5	< 0.1	3.5	6.7	13.0	12800
H12110397-004	MBSI-13-02	0	0	79.6	< 0.3	15800	3.6	155	0.7	< 0.1	6.4	9.6	50.4	19300
H12110397-005	MBSI-04-01	0	0		0.5	17800	5.6	139	0.8	< 0.1	5.3	32.5	14.0	16900
H12110397-006	MBSI-04-01	0	0	46.0	< 0.3	19200	4.8	144	0.8	< 0.1	4.4	28.6	26.5	18600
H12110397-007	MBSI-04-02	0	0		< 0.3	14500	4.5	160	0.5	< 0.1	3.9	10.0	9.3	10800
H12110397-008	MBSI-04-02	0	0	65.2	< 0.1	21800	6.7	297	0.8	0.1	4.5	10.6	35.1	14900
H12110397-009	MBSI-46-02	0	0		< 0.3	17500	23.4	334	1.2	0.5	6.1	16.8	23.0	17400
H12110397-010	MBSI-46-02	0	0	57.4	< 0.3	19500	21.9	398	1.1	0.5	6.4	25.2	52.5	19100
H12110397-011	MBSI-46-02 Sieve Dup	0	0	49.5	< 0.3	18300	22.5	393	1.1	0.5	6.3	24.2	70.4	18800
H12110397-012	MBSI-46-01	0	0		< 0.3	9620	19.1	129	0.7	0.2	8.3	10.5	17.5	20700
H12110397-013	MBSI-46-01	0	0	55.9	< 0.3	10800	14.9	246	0.7	0.3	6.5	22.7	54.8	14900
H12110397-014	MBSI-18-02	0	0		< 0.3	7950	9.2	111	0.3	0.4	2.6	16.2	8.9	6430
H12110397-015	MBSI-18-02	0	0	26.6	< 0.3	8850	9.6	127	0.3	0.3	1.5	22.1	17.1	8220
H12110397-016	MBSI-18-01	0	0		< 0.3	16800	33.3	191	0.6	0.7	5.2	19.2	16.7	14100
H12110397-017	MBSI-18-01	0	0	45.7	< 0.3	16500	26.1	213	0.6	0.8	4.9	39.3	37.0	15300
H12110397-018	MBSI-30-01	0	0		< 0.3	19000	80.8	233	0.9	1.0	4.3	12.6	70.7	12800
H12110397-019	MBSI-30-01	0	0	76.5	0.3	24000	80.2	305	1.1	1.0	4.0	66.8	138	16800
H12110397-020	MBSI-30-04	0	0											

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110397

Report Date: 01/02/13
Date Received: 11/29/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Al-T	Sb-T
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110397-001	MBSI-13-01	0	0	377	4.8	8	0.1	< 0.2	0.15	11.1	20	9		
H12110397-002	MBSI-13-01	0	0	353	5.8	8	< 0.1	< 0.2	0.17	16.6	31	10		
H12110397-003	MBSI-13-02	0	0	387	4.0	8	< 0.1	< 0.2	0.20	18.3	26	7		
H12110397-004	MBSI-13-02	0	0	625	5.9	9.2	< 0.1	< 0.2	0.31	34.6	56	10		
H12110397-005	MBSI-04-01	0	0	251	22.5	6	0.1	< 0.2	0.24	20.7	16	32		
H12110397-006	MBSI-04-01	0	0	293	19.1	7	< 0.1	< 0.2	0.24	24.4	20	29		
H12110397-007	MBSI-04-02	0	0	348	7.1	9	0.1	< 0.2	0.11	11.0	35	10		
H12110397-008	MBSI-04-02	0	0	533	9.1	18	0.1	< 0.2	0.14	19.6	60	11		
H12110397-009	MBSI-46-02	0	0	611	12.6	11	0.4	< 0.2	0.64	27.9	82	17		
H12110397-010	MBSI-46-02	0	0	694	17.2	19	0.3	< 0.2	0.55	30.6	106	25		
H12110397-011	MBSI-46-02 Sieve Dup	0	0	698	16.6	16	0.3	< 0.2	0.53	29.9	110	24		
H12110397-012	MBSI-46-01	0	0	434	8.8	18	0.7	< 0.2	0.32	24.7	70	10		
H12110397-013	MBSI-46-01	0	0	338	13.1	20	0.8	0.2	0.32	25.4	72	23		
H12110397-014	MBSI-18-02	0	0	181	7.1	7	< 0.1	0.6	0.16	12.7	30	16		
H12110397-015	MBSI-18-02	0	0	213	7.9	9	0.1	0.6	0.17	15.3	34	22		
H12110397-016	MBSI-18-01	0	0	567	10.9	17	0.5	0.7	0.52	23.9	69	19		
H12110397-017	MBSI-18-01	0	0	602	20.1	14	0.4	0.5	0.45	24.0	88	39		
H12110397-018	MBSI-30-01	0	0	1260	7.7	26	0.7	0.2	0.25	18.5	74	12		
H12110397-019	MBSI-30-01	0	0	1440	29.4	30	0.7	0.3	0.33	24.4	116	67		
H12110397-020	MBSI-30-04	0	0										< 0.03	< 0.001

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110397

Report Date: 01/02/13
Date Received: 11/29/12

		Analysis		As-T	Ba-T	Be-T	Cd-T	Cr-T	Co-T	Cu-T	Fe-T	Pb-T	Mn-T	Hg-T
		Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12110397-001	MBSI-13-01	0	0											
H12110397-002	MBSI-13-01	0	0											
H12110397-003	MBSI-13-02	0	0											
H12110397-004	MBSI-13-02	0	0											
H12110397-005	MBSI-04-01	0	0											
H12110397-006	MBSI-04-01	0	0											
H12110397-007	MBSI-04-02	0	0											
H12110397-008	MBSI-04-02	0	0											
H12110397-009	MBSI-46-02	0	0											
H12110397-010	MBSI-46-02	0	0											
H12110397-011	MBSI-46-02 Sieve Dup	0	0											
H12110397-012	MBSI-46-01	0	0											
H12110397-013	MBSI-46-01	0	0											
H12110397-014	MBSI-18-02	0	0											
H12110397-015	MBSI-18-02	0	0											
H12110397-016	MBSI-18-01	0	0											
H12110397-017	MBSI-18-01	0	0											
H12110397-018	MBSI-30-01	0	0											
H12110397-019	MBSI-30-01	0	0											
H12110397-020	MBSI-30-04	0	0	< 0.001	< 0.05	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005	< 0.03	< 0.001	< 0.001	< 0.0001

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12110397

Report Date: 01/02/13
Date Received: 11/29/12

		Analysis		Ni-T	Se-T	Ag-T	Tl-T	V-T	Zn-T	Hg, Total	Chromium, Hexavalent
		Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results
H12110397-001	MBSI-13-01	0	0							< 0.050	< 0.29
H12110397-002	MBSI-13-01	0	0								< 0.29
H12110397-003	MBSI-13-02	0	0							< 0.050	< 0.29
H12110397-004	MBSI-13-02	0	0								< 0.29
H12110397-005	MBSI-04-01	0	0							< 0.050	< 0.29
H12110397-006	MBSI-04-01	0	0								< 0.29
H12110397-007	MBSI-04-02	0	0							< 0.050	< 0.29
H12110397-008	MBSI-04-02	0	0								< 0.29
H12110397-009	MBSI-46-02	0	0							< 0.050	< 0.29
H12110397-010	MBSI-46-02	0	0								< 0.29
H12110397-011	MBSI-46-02 Sieve Dup	0	0								< 0.29
H12110397-012	MBSI-46-01	0	0							0.068	< 0.29
H12110397-013	MBSI-46-01	0	0								< 0.29
H12110397-014	MBSI-18-02	0	0							< 0.050	< 0.29
H12110397-015	MBSI-18-02	0	0								< 0.29
H12110397-016	MBSI-18-01	0	0							< 0.050	< 0.29
H12110397-017	MBSI-18-01	0	0								< 0.29
H12110397-018	MBSI-30-01	0	0							< 0.050	0.64
H12110397-019	MBSI-30-01	0	0								< 0.29
H12110397-020	MBSI-30-04	0	0	< 0.005	< 0.001	< 0.001	< 0.0005	< 0.01	< 0.01		

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121212B		
Sample ID: ICV	11	Initial Calibration Verification Standard							12/12/12 13:33	
Aluminum		4.05	mg/L	0.10	101	90	110			
Barium		0.797	mg/L	0.10	100	90	110			
Chromium		0.792	mg/L	0.010	99	90	110			
Cobalt		0.815	mg/L	0.010	102	90	110			
Copper		0.797	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.803	mg/L	0.013	100	90	110			
Manganese		4.07	mg/L	0.010	102	90	110			
Nickel		0.782	mg/L	0.010	98	90	110			
Vanadium		0.815	mg/L	0.10	102	90	110			
Zinc		0.809	mg/L	0.010	101	90	110			
Sample ID: ICSA	11	Interference Check Sample A							12/12/12 13:48	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000320	mg/L	0.10		0	0			
Chromium		0.00238	mg/L	0.012		0	0			
Cobalt		-0.00868	mg/L	0.010		0	0			
Copper		-0.000580	mg/L	0.010		0	0			
Iron		192	mg/L	0.030	96	80	120			
Lead		0.0568	mg/L	0.013		0	0			
Manganese		-0.00276	mg/L	0.010		0	0			
Nickel		0.00778	mg/L	0.010		0	0			
Vanadium		-0.000230	mg/L	0.10		0	0			
Zinc		0.00900	mg/L	0.010		0	0			
Sample ID: ICSAB	11	Interference Check Sample AB							12/12/12 13:52	
Aluminum		521	mg/L	0.10	104	80	120			
Barium		0.495	mg/L	0.10	99	80	120			
Chromium		0.477	mg/L	0.012	95	80	120			
Cobalt		0.478	mg/L	0.010	96	80	120			
Copper		0.498	mg/L	0.010	100	80	120			
Iron		193	mg/L	0.030	96	80	120			
Lead		1.05	mg/L	0.013	105	80	120			
Manganese		0.490	mg/L	0.010	98	80	120			
Nickel		0.942	mg/L	0.010	94	80	120			
Vanadium		0.497	mg/L	0.10	99	80	120			
Zinc		1.03	mg/L	0.010	103	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121217C	
Sample ID: ICV		Initial Calibration Verification Standard							12/17/12 14:19	
Lead		0.796	mg/L	0.013	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/17/12 14:34	
Lead		0.0187	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/17/12 14:38	
Lead		0.975	mg/L	0.013	98	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121219A	
Sample ID: ICV	4	Initial Calibration Verification Standard							12/19/12 12:36	
Aluminum		4.06	mg/L	0.10	101	90	110			
Iron		4.00	mg/L	0.030	100	90	110			
Lead		0.799	mg/L	0.013	100	90	110			
Nickel		0.798	mg/L	0.010	100	90	110			
Sample ID: ICSA	4	Interference Check Sample A							12/19/12 12:51	
Aluminum		525	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Lead		0.0376	mg/L	0.013		0	0			
Nickel		0.00537	mg/L	0.010		0	0			
Sample ID: ICSAB	4	Interference Check Sample AB							12/19/12 12:55	
Aluminum		526	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Lead		1.02	mg/L	0.013	102	80	120			
Nickel		0.893	mg/L	0.010	89	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121220B	
Sample ID: ICV	2	Initial Calibration Verification Standard							12/20/12 13:28	
Cobalt		0.819	mg/L	0.010	102	90	110			
Lead		0.845	mg/L	0.013	106	90	110			
Sample ID: ICSA	2	Interference Check Sample A							12/20/12 13:43	
Cobalt		-0.00405	mg/L	0.010		0	0			
Lead		0.0329	mg/L	0.013		0	0			
Sample ID: ICSAB	2	Interference Check Sample AB							12/20/12 13:47	
Cobalt		0.457	mg/L	0.010	91	80	120			
Lead		0.945	mg/L	0.013	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121221B	
Sample ID: ICV		Initial Calibration Verification Standard							12/21/12 11:25	
Lead		0.800	mg/L	0.013	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/21/12 11:40	
Lead		0.0391	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/21/12 11:44	
Lead		0.950	mg/L	0.013	95	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121226C	
Sample ID: ICV	2	Initial Calibration Verification Standard							12/26/12 11:24	
Cobalt		0.803	mg/L	0.010	100	90	110			
Lead		0.775	mg/L	0.013	97	90	110			
Sample ID: ICSA	2	Interference Check Sample A							12/26/12 11:39	
Cobalt		-0.00323	mg/L	0.010		0	0			
Lead		0.0716	mg/L	0.013		0	0			
Sample ID: ICSAB	2	Interference Check Sample AB							12/26/12 11:43	
Cobalt		0.474	mg/L	0.010	95	80	120			
Lead		0.960	mg/L	0.013	96	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121205A		
Sample ID: ICV STD	17	Initial Calibration Verification Standard							12/05/12 17:16	
Aluminum		0.253	mg/L	0.10	101	90	110			
Antimony		0.0510	mg/L	0.050	102	90	110			
Arsenic		0.0508	mg/L	0.0050	102	90	110			
Barium		0.0505	mg/L	0.10	101	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Chromium		0.0509	mg/L	0.010	102	90	110			
Cobalt		0.0505	mg/L	0.010	101	90	110			
Copper		0.0530	mg/L	0.010	106	90	110			
Iron		0.269	mg/L	0.030	108	90	110			
Lead		0.0501	mg/L	0.010	100	90	110			
Manganese		0.249	mg/L	0.010	99	90	110			
Nickel		0.0522	mg/L	0.010	104	90	110			
Selenium		0.0526	mg/L	0.0050	105	90	110			
Thallium		0.0505	mg/L	0.10	101	90	110			
Vanadium		0.0512	mg/L	0.10	102	90	110			
Zinc		0.0524	mg/L	0.010	105	90	110			
Sample ID: ICSA	17	Interference Check Sample A							12/05/12 17:21	
Aluminum		40.8	mg/L	0.10	102	70	130			
Antimony		0.000383	mg/L	0.050						
Arsenic		0.000256	mg/L	0.0050						
Barium		0.000107	mg/L	0.10						
Beryllium		2.00E-06	mg/L	0.0010						
Cadmium		0.00101	mg/L	0.0010						
Chromium		0.00107	mg/L	0.010						
Cobalt		0.000390	mg/L	0.010						
Copper		0.000126	mg/L	0.010						
Iron		99.5	mg/L	0.030	99	70	130			
Lead		0.000255	mg/L	0.010						
Manganese		0.000420	mg/L	0.010						
Nickel		0.000616	mg/L	0.010						
Selenium		0.000401	mg/L	0.0050						
Thallium		0.000240	mg/L	0.10						
Vanadium		0.000261	mg/L	0.10						
Zinc		0.00117	mg/L	0.010						
Sample ID: ICSAB	17	Interference Check Sample AB							12/05/12 17:25	
Aluminum		41.7	mg/L	0.10	104	70	130			
Antimony		0.000547	mg/L	0.050		0	0			
Arsenic		0.0107	mg/L	0.0050	107	70	130			
Barium		0.000155	mg/L	0.10		0	0			
Beryllium		9.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0109	mg/L	0.0010	109	70	130			
Chromium		0.0210	mg/L	0.010	105	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121205A		
Sample ID: ICSAB	17	Interference Check Sample AB							12/05/12 17:25	
Cobalt		0.0208	mg/L	0.010	104	70	130			
Copper		0.0200	mg/L	0.010	100	70	130			
Iron		99.9	mg/L	0.030	100	70	130			
Lead		0.000290	mg/L	0.010		0	0			
Manganese		0.0207	mg/L	0.010	103	70	130			
Nickel		0.0204	mg/L	0.010	102	70	130			
Selenium		0.0113	mg/L	0.0050	113	70	130			
Thallium		0.000186	mg/L	0.10		0	0			
Vanadium		0.0210	mg/L	0.10	105	70	130			
Zinc		0.0111	mg/L	0.010	111	70	130			
Sample ID: ICSA	17	Interference Check Sample A							12/06/12 07:21	
Aluminum		41.5	mg/L	0.10	104	70	130			
Antimony		0.000374	mg/L	0.050						
Arsenic		0.000194	mg/L	0.0050						
Barium		0.000136	mg/L	0.10						
Beryllium		9.00E-06	mg/L	0.0010						
Cadmium		0.000982	mg/L	0.0010						
Chromium		0.00115	mg/L	0.010						
Cobalt		0.000363	mg/L	0.010						
Copper		0.000138	mg/L	0.010						
Iron		98.7	mg/L	0.030	99	70	130			
Lead		0.000346	mg/L	0.010						
Manganese		0.000503	mg/L	0.010						
Nickel		0.000579	mg/L	0.010						
Selenium		0.000450	mg/L	0.0050						
Thallium		0.000228	mg/L	0.10						
Vanadium		0.000270	mg/L	0.10						
Zinc		0.00111	mg/L	0.010						
Sample ID: ICSAB	17	Interference Check Sample AB							12/06/12 07:26	
Aluminum		42.5	mg/L	0.10	106	70	130			
Antimony		0.000440	mg/L	0.050		0	0			
Arsenic		0.0101	mg/L	0.0050	101	70	130			
Barium		0.000207	mg/L	0.10		0	0			
Beryllium		8.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0112	mg/L	0.0010	112	70	130			
Chromium		0.0223	mg/L	0.010	112	70	130			
Cobalt		0.0211	mg/L	0.010	106	70	130			
Copper		0.0214	mg/L	0.010	107	70	130			
Iron		103	mg/L	0.030	103	70	130			
Lead		0.000411	mg/L	0.010		0	0			
Manganese		0.0220	mg/L	0.010	110	70	130			
Nickel		0.0220	mg/L	0.010	110	70	130			
Selenium		0.0110	mg/L	0.0050	110	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121205A		
Sample ID: ICSAB	17	Interference Check Sample AB							12/06/12 07:26	
Thallium		0.000179	mg/L	0.10		0	0			
Vanadium		0.0222	mg/L	0.10	111	70	130			
Zinc		0.0111	mg/L	0.010	111	70	130			
Sample ID: ICV STD	17	Initial Calibration Verification Standard							12/06/12 13:58	
Aluminum		0.259	mg/L	0.10	104	90	110			
Antimony		0.0511	mg/L	0.050	102	90	110			
Arsenic		0.0508	mg/L	0.0050	102	90	110			
Barium		0.0505	mg/L	0.10	101	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0258	mg/L	0.0010	103	90	110			
Chromium		0.0499	mg/L	0.010	100	90	110			
Cobalt		0.0510	mg/L	0.010	102	90	110			
Copper		0.0514	mg/L	0.010	103	90	110			
Iron		0.267	mg/L	0.030	107	90	110			
Lead		0.0497	mg/L	0.010	99	90	110			
Manganese		0.254	mg/L	0.010	101	90	110			
Nickel		0.0508	mg/L	0.010	102	90	110			
Selenium		0.0511	mg/L	0.0050	102	90	110			
Thallium		0.0504	mg/L	0.10	101	90	110			
Vanadium		0.0501	mg/L	0.10	100	90	110			
Zinc		0.0536	mg/L	0.010	107	90	110			
Sample ID: ICSA	17	Interference Check Sample A							12/06/12 14:03	
Aluminum		40.1	mg/L	0.10	100	70	130			
Antimony		0.000440	mg/L	0.050						
Arsenic		0.000258	mg/L	0.0050						
Barium		0.000215	mg/L	0.10						
Beryllium		7.00E-06	mg/L	0.0010						
Cadmium		0.000884	mg/L	0.0010						
Chromium		0.00109	mg/L	0.010						
Cobalt		0.000323	mg/L	0.010						
Copper		0.000234	mg/L	0.010						
Iron		98.2	mg/L	0.030	98	70	130			
Lead		0.000325	mg/L	0.010						
Manganese		0.000453	mg/L	0.010						
Nickel		0.000607	mg/L	0.010						
Selenium		0.000333	mg/L	0.0050						
Thallium		0.000162	mg/L	0.10						
Vanadium		0.000265	mg/L	0.10						
Zinc		0.000969	mg/L	0.010						
Sample ID: ICSAB	17	Interference Check Sample AB							12/06/12 14:07	
Aluminum		40.7	mg/L	0.10	102	70	130			
Antimony		0.000620	mg/L	0.050		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS204-B_121205A		
Sample ID: ICSAB	17	Interference Check Sample AB							12/06/12 14:07	
Arsenic		0.0107	mg/L	0.0050	107	70	130			
Barium		0.000232	mg/L	0.10		0	0			
Beryllium		1.00E-06	mg/L	0.0010		0	0			
Cadmium		0.0106	mg/L	0.0010	106	70	130			
Chromium		0.0210	mg/L	0.010	105	70	130			
Cobalt		0.0205	mg/L	0.010	103	70	130			
Copper		0.0200	mg/L	0.010	100	70	130			
Iron		96.9	mg/L	0.030	97	70	130			
Lead		0.000365	mg/L	0.010		0	0			
Manganese		0.0202	mg/L	0.010	101	70	130			
Nickel		0.0209	mg/L	0.010	104	70	130			
Selenium		0.0108	mg/L	0.0050	108	70	130			
Thallium		0.000131	mg/L	0.10		0	0			
Vanadium		0.0210	mg/L	0.10	105	70	130			
Zinc		0.0111	mg/L	0.010	111	70	130			
Method: E200.8									Batch: 18863	
Sample ID: MB-18863	18	Method Blank				Run: ICPMS204-B_121205A			12/06/12 15:02	
Aluminum		ND	mg/L	0.002						
Antimony		ND	mg/L	3E-05						
Arsenic		4E-05	mg/L	3E-05						
Barium		ND	mg/L	0.00010						
Beryllium		ND	mg/L	3E-05						
Cadmium		ND	mg/L	2E-05						
Chromium		ND	mg/L	6E-05						
Cobalt		ND	mg/L	3E-05						
Copper		0.0004	mg/L	0.0003						
Iron		0.001	mg/L	0.0007						
Lead		0.0001	mg/L	2E-05						
Manganese		ND	mg/L	5E-05						
Nickel		ND	mg/L	0.0001						
Selenium		ND	mg/L	0.0001						
Silver		0.0002	mg/L	6E-05						
Thallium		8E-05	mg/L	3E-05						
Vanadium		0.0002	mg/L	5E-05						
Zinc		0.003	mg/L	0.0007						
Sample ID: LCS-18863	18	Laboratory Control Sample				Run: ICPMS204-B_121205A			12/06/12 15:06	
Aluminum		2.54	mg/L	0.030	101	85	115			
Antimony		0.530	mg/L	0.0010	106	85	115			
Arsenic		0.517	mg/L	0.0010	103	85	115			
Barium		0.533	mg/L	0.050	107	85	115			
Beryllium		0.249	mg/L	0.0010	100	85	115			
Cadmium		0.267	mg/L	0.0010	107	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18863
Sample ID: LCS-18863	18	Laboratory Control Sample				Run: ICPMS204-B_121205A				12/06/12 15:06
Chromium		0.517	mg/L	0.0050	103	85	115			
Cobalt		0.521	mg/L	0.0050	104	85	115			
Copper		0.511	mg/L	0.0050	102	85	115			
Iron		2.47	mg/L	0.030	99	85	115			
Lead		0.520	mg/L	0.0010	104	85	115			
Manganese		2.59	mg/L	0.0010	104	85	115			
Nickel		0.520	mg/L	0.0050	104	85	115			
Selenium		0.511	mg/L	0.0010	102	85	115			
Silver		0.0588	mg/L	0.0010	117	85	115			S
Thallium		0.502	mg/L	0.00050	100	85	115			
Vanadium		0.522	mg/L	0.010	104	85	115			
Zinc		0.534	mg/L	0.010	106	85	115			
Sample ID: H12110397-020AMS3	18	Sample Matrix Spike				Run: ICPMS204-B_121205A				12/06/12 15:25
Aluminum		2.56	mg/L	0.030	102	70	130			
Antimony		0.530	mg/L	0.0010	106	70	130			
Arsenic		0.504	mg/L	0.0010	101	70	130			
Barium		0.526	mg/L	0.050	105	70	130			
Beryllium		0.251	mg/L	0.0010	100	70	130			
Cadmium		0.264	mg/L	0.0010	106	70	130			
Chromium		0.505	mg/L	0.0050	101	70	130			
Cobalt		0.520	mg/L	0.0050	104	70	130			
Copper		0.504	mg/L	0.0050	101	70	130			
Iron		2.43	mg/L	0.030	97	70	130			
Lead		0.513	mg/L	0.0010	103	70	130			
Manganese		2.58	mg/L	0.0010	103	70	130			
Nickel		0.508	mg/L	0.0050	102	70	130			
Selenium		0.491	mg/L	0.0010	98	70	130			
Silver		0.0597	mg/L	0.0010	118	70	130			
Thallium		0.492	mg/L	0.00050	98	70	130			
Vanadium		0.515	mg/L	0.010	103	70	130			
Zinc		0.510	mg/L	0.010	101	70	130			
Sample ID: H12110397-020AMSD3	18	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121205A				12/06/12 15:30
Aluminum		2.58	mg/L	0.030	103	70	130	0.6	20	
Antimony		0.531	mg/L	0.0010	106	70	130	0.2	20	
Arsenic		0.513	mg/L	0.0010	103	70	130	1.7	20	
Barium		0.531	mg/L	0.050	106	70	130	0.9	20	
Beryllium		0.250	mg/L	0.0010	100	70	130	0.3	20	
Cadmium		0.266	mg/L	0.0010	106	70	130	0.7	20	
Chromium		0.510	mg/L	0.0050	102	70	130	0.9	20	
Cobalt		0.516	mg/L	0.0050	103	70	130	0.8	20	
Copper		0.504	mg/L	0.0050	101	70	130	0.1	20	
Iron		2.45	mg/L	0.030	98	70	130	0.7	20	
Lead		0.519	mg/L	0.0010	104	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 18863
Sample ID: H12110397-020AMSD3	18	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121205A				12/06/12 15:30
Manganese		2.57	mg/L	0.0010	103	70	130	0.3	20	
Nickel		0.511	mg/L	0.0050	102	70	130	0.6	20	
Selenium		0.493	mg/L	0.0010	99	70	130	0.4	20	
Silver		0.0602	mg/L	0.0010	119	70	130	0.7	20	
Thallium		0.500	mg/L	0.00050	100	70	130	1.7	20	
Vanadium		0.517	mg/L	0.010	103	70	130	0.3	20	
Zinc		0.518	mg/L	0.010	103	70	130	1.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS204-B_121210B	
Sample ID: ICV STD		Initial Calibration Verification Standard							12/10/12 12:34	
Silver		0.0249	mg/L	0.0050	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/10/12 12:39	
Silver		0.000389	mg/L	0.0050						
Sample ID: ICSAB		Interference Check Sample AB							12/10/12 12:44	
Silver		0.0178	mg/L	0.0050	89	70	130			
Sample ID: ICV STD		Initial Calibration Verification Standard							12/14/12 01:49	
Silver		0.0244	mg/L	0.0050	98	90	110			
Sample ID: ICSA		Interference Check Sample A							12/14/12 01:54	
Silver		0.000825	mg/L	0.0050						
Sample ID: ICSAB		Interference Check Sample AB							12/14/12 01:59	
Silver		0.0178	mg/L	0.0050	89	70	130			
Method: E200.8									Batch: 18863	
Sample ID: MB-18863	18	Method Blank				Run: ICPMS204-B_121210B			12/11/12 15:46	
Aluminum		ND	mg/L	0.002						
Antimony		0.0001	mg/L	3E-05						
Arsenic		5E-05	mg/L	3E-05						
Barium		ND	mg/L	0.00010						
Beryllium		ND	mg/L	3E-05						
Cadmium		ND	mg/L	2E-05						
Chromium		ND	mg/L	6E-05						
Cobalt		ND	mg/L	3E-05						
Copper		0.0004	mg/L	0.0003						
Iron		ND	mg/L	0.0007						
Lead		ND	mg/L	2E-05						
Manganese		ND	mg/L	5E-05						
Nickel		ND	mg/L	0.0001						
Selenium		ND	mg/L	0.0001						
Silver		ND	mg/L	6E-05						
Thallium		ND	mg/L	3E-05						
Vanadium		0.0001	mg/L	5E-05						
Zinc		0.003	mg/L	0.0007						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E245.1										Analytical Run: HGCV201-H_121204A
Sample ID: ICV		Initial Calibration Verification Standard								12/04/12 09:44
Mercury		0.00019	mg/L	0.00010	93	90	110			
New Calibration. SBK										
Sample ID: ICV		Initial Calibration Verification Standard								12/04/12 11:52
Mercury		0.00019	mg/L	0.00010	93	90	110			
New Calibration. SBK										
Sample ID: CCV		Continuing Calibration Verification Standard								12/04/12 11:54
Mercury		0.00021	mg/L	0.00010	103	95	105			
Sample ID: CCV		Continuing Calibration Verification Standard								12/04/12 15:56
Mercury		0.00021	mg/L	0.00010	106	90	110			
Method: E245.1										Batch: 18860
Sample ID: MB-18860		Method Blank				Run: HGCV201-H_121204A				12/04/12 13:51
Mercury		1E-05	mg/L	6E-06						
Sample ID: LCS-18860		Laboratory Control Sample				Run: HGCV201-H_121204A				12/04/12 13:54
Mercury		0.00021	mg/L	0.00010	99	90	110			
Sample ID: H12110388-013DMS		Sample Matrix Spike				Run: HGCV201-H_121204A				12/04/12 16:15
Mercury		0.00022	mg/L	0.00010	98	70	130			
Sample ID: H12110388-013DMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121204A				12/04/12 16:18
Mercury		0.00024	mg/L	0.00010	108	70	130	8.5	30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121212B				12/13/12 04:24
Aluminum		0.8	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18968	11	Laboratory Fortified Blank				Run: ICP2-HE_121212B				12/13/12 04:27
Aluminum		264	mg/kg	5.0	105	80	120			
Barium		53.0	mg/kg	1.0	106	80	120			
Chromium		51.1	mg/kg	1.0	102	80	120			
Cobalt		49.7	mg/kg	1.0	99	80	120			
Copper		52.3	mg/kg	1.0	105	80	120			
Iron		263	mg/kg	5.0	104	80	120			
Lead		46.3	mg/kg	1.0	93	80	120			
Manganese		260	mg/kg	1.0	104	80	120			
Nickel		49.8	mg/kg	1.0	100	80	120			
Vanadium		52.5	mg/kg	1.0	105	80	120			
Zinc		49.3	mg/kg	1.0	98	80	120			
Sample ID: LCS-18968	11	Laboratory Control Sample				Run: ICP2-HE_121212B				12/13/12 04:39
Aluminum		14100	mg/kg	5.0	98	50.7	131.3			
Barium		571	mg/kg	1.0	95	80.6	112.2			
Chromium		75.0	mg/kg	1.0	101	72.8	109.1			
Cobalt		49.5	mg/kg	1.0	88	73.3	103.7			
Copper		259	mg/kg	1.0	94	77.5	109.6			
Iron		20200	mg/kg	5.0	90	39.6	138.3			
Lead		172	mg/kg	3.0	94	75.9	108.6			
Manganese		378	mg/kg	1.0	104	80.8	115.7			
Nickel		54.8	mg/kg	1.0	92	72.3	103.4			
Vanadium		64.3	mg/kg	1.0	90	66.6	107.3			
Zinc		189	mg/kg	1.0	90	74.2	109.9			
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B				12/13/12 06:34
Aluminum		19600	mg/kg	5.0		75	125			A
Barium		214	mg/kg	1.0	97	75	125			
Chromium		62.3	mg/kg	1.0	99	75	125			
Cobalt		57.9	mg/kg	1.0	104	75	125			
Copper		106	mg/kg	1.0	99	75	125			
Iron		23000	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18968	
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B			12/13/12 06:34	
Lead		68.5	mg/kg	3.0	117	75	125			
Manganese		738	mg/kg	1.0	98	75	125			
Nickel		60.6	mg/kg	1.0	104	75	125			
Vanadium		87.4	mg/kg	1.0	104	75	125			
Zinc		121	mg/kg	1.0	96	75	125			
Sample ID: H12120021-009AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121212B			12/13/12 06:38	
Aluminum		18400	mg/kg	5.0		75	125	6.0	20	A
Barium		210	mg/kg	1.0	87	75	125	2.0	20	
Chromium		61.2	mg/kg	1.0	95	75	125	1.8	20	
Cobalt		56.4	mg/kg	1.0	99	75	125	2.6	20	
Copper		102	mg/kg	1.0	91	75	125	3.1	20	
Iron		20500	mg/kg	5.0		75	125	12	20	A
Lead		68.1	mg/kg	3.1	114	75	125	0.6	20	
Manganese		741	mg/kg	1.0	97	75	125	0.4	20	
Nickel		61.0	mg/kg	1.0	103	75	125	0.7	20	
Vanadium		86.2	mg/kg	1.0	99	75	125	1.3	20	
Zinc		121	mg/kg	1.0	94	75	125	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	3	Method Blank				Run: ICP2-HE_121217C				12/17/12 21:54
Aluminum		1	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Copper		ND	mg/kg	0.2						
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121217C				12/17/12 23:49
Aluminum		19600	mg/kg	5.0		75	125			A
Barium		217	mg/kg	1.0	102	75	125			
Chromium		64.7	mg/kg	1.0	99	75	125			
Cobalt		59.3	mg/kg	1.0	106	75	125			
Copper		106	mg/kg	1.0	96	75	125			
Iron		23100	mg/kg	5.0		75	125			A
Lead		64.3	mg/kg	3.0	97	75	125			
Manganese		749	mg/kg	1.0	101	75	125			
Nickel		55.6	mg/kg	1.0	94	75	125			
Vanadium		89.1	mg/kg	1.0	101	75	125			
Zinc		124	mg/kg	1.0	98	75	125			
Sample ID: H12120021-009AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121217C				12/17/12 23:53
Aluminum		18600	mg/kg	5.0		75	125	5.7	20	A
Barium		213	mg/kg	1.0	91	75	125	2.0	20	
Chromium		64.1	mg/kg	1.0	95	75	125	0.9	20	
Cobalt		57.7	mg/kg	1.0	101	75	125	2.6	20	
Copper		104	mg/kg	1.0	91	75	125	1.9	20	
Iron		20800	mg/kg	5.0		75	125	11	20	A
Lead		62.4	mg/kg	3.1	91	75	125	3.0	20	
Manganese		758	mg/kg	1.0	103	75	125	1.3	20	
Nickel		56.0	mg/kg	1.0	93	75	125	0.8	20	
Vanadium		90.1	mg/kg	1.0	101	75	125	1.1	20	
Zinc		123	mg/kg	1.0	93	75	125	1.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121219A				12/19/12 13:40
Aluminum		0.9	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.08	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	5	Method Blank				Run: ICP2-HE_121219A				12/19/12 19:23
Aluminum		0.5	mg/kg	0.3						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						
Sample ID: LFB-19051	5	Laboratory Fortified Blank				Run: ICP2-HE_121219A				12/19/12 19:27
Aluminum		263	mg/kg	5.0	105	80	120			
Cobalt		52.1	mg/kg	1.0	104	80	120			
Iron		260	mg/kg	5.0	103	80	120			
Lead		50.6	mg/kg	1.0	101	80	120			
Nickel		50.7	mg/kg	1.0	101	80	120			
Sample ID: LCS-19051	5	Laboratory Control Sample				Run: ICP2-HE_121219A				12/19/12 19:30
Aluminum		12600	mg/kg	5.0	87	50.7	131.3			
Cobalt		54.2	mg/kg	1.0	95	73.3	103.7			
Iron		19700	mg/kg	5.0	87	39.6	138.3			
Lead		197	mg/kg	3.1	106	75.9	108.6			
Nickel		57.3	mg/kg	1.0	95	72.3	103.4			
Sample ID: H12120021-010AMS	5	Sample Matrix Spike				Run: ICP2-HE_121219A				12/19/12 21:29
Aluminum		23300	mg/kg	5.0		75	125			A
Cobalt		56.4	mg/kg	1.0	96	75	125			
Iron		24700	mg/kg	5.0		75	125			A
Lead		77.2	mg/kg	3.1	104	75	125			
Nickel		68.6	mg/kg	1.0	89	75	125			
Sample ID: H12120021-010AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 21:33
Aluminum		22800	mg/kg	5.0		75	125	2.4	20	A
Cobalt		57.1	mg/kg	1.0	98	75	125	1.3	20	
Iron		24600	mg/kg	5.0		75	125	0.3	20	A
Lead		74.3	mg/kg	3.1	98	75	125	3.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19051
Sample ID: H12120021-010AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 21:33
Nickel		67.4	mg/kg	1.0	86	75	125	1.7	20	
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121220B				12/20/12 14:25
Aluminum		1	mg/kg	0.8						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		0.05	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	5	Method Blank				Run: ICP2-HE_121220B				12/20/12 14:48
Aluminum		1.0	mg/kg	0.8						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		0.1	mg/kg	0.08						
Sample ID: H12120021-010AMS	5	Sample Matrix Spike				Run: ICP2-HE_121220B				12/20/12 16:20
Aluminum		23400	mg/kg	5.0		75	125			A
Cobalt		55.8	mg/kg	1.0	94	75	125			
Iron		24900	mg/kg	5.0		75	125			A
Lead		73.1	mg/kg	3.1	105	75	125			
Nickel		72.5	mg/kg	1.0	95	75	125			
Sample ID: H12120021-010AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121220B				12/20/12 16:24
Aluminum		22800	mg/kg	5.0		75	125	2.3	20	A
Cobalt		57.2	mg/kg	1.0	97	75	125	2.5	20	
Iron		24900	mg/kg	5.0		75	125	0.1	20	A
Lead		76.6	mg/kg	3.1	112	75	125	4.7	20	
Nickel		72.1	mg/kg	1.0	94	75	125	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121221B				12/21/12 16:37
Aluminum		1	mg/kg	0.8						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		0.1	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	5	Method Blank				Run: ICP2-HE_121226C				12/26/12 17:04
Aluminum		0.7	mg/kg	0.3						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						
Sample ID: LFB-19051	5	Laboratory Fortified Blank				Run: ICP2-HE_121226C				12/26/12 17:15
Aluminum		260	mg/kg	5.0	104	80	120			
Cobalt		53.4	mg/kg	1.0	107	80	120			
Iron		262	mg/kg	5.0	104	80	120			
Lead		53.8	mg/kg	1.0	108	80	120			
Nickel		50.3	mg/kg	1.0	101	80	120			
Sample ID: LCS-19051	5	Laboratory Control Sample				Run: ICP2-HE_121226C				12/26/12 17:19
Aluminum		11100	mg/kg	5.0	77	50.7	131.3			
Cobalt		46.4	mg/kg	1.0	82	73.3	103.7			
Iron		16900	mg/kg	5.0	74	39.6	138.3			
Lead		162	mg/kg	1.2	87	75.9	108.6			
Nickel		46.6	mg/kg	1.0	77	72.3	103.4			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/10/12 12:34	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0504	mg/L	0.0010	101	90	110			
Beryllium		0.0258	mg/L	0.0010	103	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Cobalt		0.0507	mg/L	0.0010	101	90	110			
Selenium		0.0527	mg/L	0.0010	105	90	110			
Silver		0.0249	mg/L	0.0010	100	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/11/12 11:44	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Beryllium		0.0246	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Cobalt		0.0498	mg/L	0.0010	100	90	110			
Selenium		0.0503	mg/L	0.0010	101	90	110			
Silver		0.0236	mg/L	0.0010	94	90	110			
Thallium		0.0492	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/12/12 03:37	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Cobalt		0.0494	mg/L	0.0010	99	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0233	mg/L	0.0010	93	90	110			
Thallium		0.0488	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/12/12 10:49	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0500	mg/L	0.0010	100	90	110			
Beryllium		0.0261	mg/L	0.0010	104	90	110			
Cadmium		0.0266	mg/L	0.0010	106	90	110			
Cobalt		0.0508	mg/L	0.0010	102	90	110			
Selenium		0.0535	mg/L	0.0010	107	90	110			
Silver		0.0252	mg/L	0.0010	101	90	110			
Thallium		0.0506	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/13/12 10:57	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0511	mg/L	0.0010	102	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0265	mg/L	0.0010	106	90	110			
Cobalt		0.0508	mg/L	0.0010	102	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/13/12 10:57	
Selenium		0.0543	mg/L	0.0010	109	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/13/12 18:01	
Antimony		0.0510	mg/L	0.0010	102	90	110			
Arsenic		0.0516	mg/L	0.0010	103	90	110			
Beryllium		0.0256	mg/L	0.0010	102	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Cobalt		0.0508	mg/L	0.0010	102	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0509	mg/L	0.0010	102	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/14/12 01:49	
Antimony		0.0505	mg/L	0.0010	101	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0260	mg/L	0.0010	104	90	110			
Cobalt		0.0502	mg/L	0.0010	100	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0244	mg/L	0.0010	98	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	8	Initial Calibration Verification Standard							12/15/12 03:36	
Antimony		0.0508	mg/L	0.0010	102	90	110			
Arsenic		0.0509	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Cobalt		0.0507	mg/L	0.0010	101	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0246	mg/L	0.0010	98	90	110			
Thallium		0.0503	mg/L	0.0010	101	90	110			
Method: SW6020									Batch: 18968	
Sample ID: MB-18968	8	Method Blank				Run: ICPMS204-B_121210A			12/14/12 06:28	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		0.003	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Cobalt		ND	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.2	mg/kg	0.02						
Thallium		0.005	mg/kg	0.002						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18968
Sample ID: LCS-18968	8	Laboratory Control Sample				Run: ICPMS204-B_121210A			12/14/12 06:33	
Antimony		50.2	mg/kg	1.0	41	2.2	92.9			
Arsenic		304	mg/kg	1.0	90	72.3	106.4			
Beryllium		38.5	mg/kg	1.0	77	76.3	108.6			
Cadmium		122	mg/kg	1.0	91	73	105.1			
Cobalt		56.8	mg/kg	1.0	101	73.3	103.7			
Selenium		189	mg/kg	1.0	99	72.5	112.2			
Silver		75.3	mg/kg	1.0	111	67.8	112.8			
Thallium		91.2	mg/kg	1.0	102	71.7	109.5			
Sample ID: LFB-18968	8	Laboratory Fortified Blank				Run: ICPMS204-B_121210A			12/14/12 06:37	
Antimony		57.4	mg/kg	1.0	115	80	120			
Arsenic		50.8	mg/kg	1.0	101	80	120			
Beryllium		22.0	mg/kg	1.0	88	80	120			
Cadmium		28.6	mg/kg	1.0	114	80	120			
Cobalt		53.0	mg/kg	1.0	106	80	120			
Selenium		51.8	mg/kg	1.0	104	80	120			
Silver		29.9	mg/kg	1.0	119	80	120			
Thallium		54.0	mg/kg	1.0	108	80	120			
Sample ID: H12120021-009AMS	8	Sample Matrix Spike				Run: ICPMS204-B_121210A			12/14/12 08:53	
Antimony		12.4	mg/kg	1.0	25	75	125			S
Arsenic		130	mg/kg	1.0	99	75	125			
Beryllium		21.3	mg/kg	1.0	85	75	125			
Cadmium		25.4	mg/kg	1.0	101	75	125			
Cobalt		64.3	mg/kg	1.0	114	75	125			
Selenium		51.5	mg/kg	1.0	105	75	125			
Silver		29.3	mg/kg	1.0	119	75	125			
Thallium		53.6	mg/kg	1.0	109	75	125			
Sample ID: H12120021-009AMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121210A			12/14/12 08:57	
Antimony		13.7	mg/kg	1.0	27	75	125	10	20	S
Arsenic		129	mg/kg	1.0	95	75	125	0.8	20	
Beryllium		21.3	mg/kg	1.0	84	75	125	0.1	20	
Cadmium		26.2	mg/kg	1.0	102	75	125	3.1	20	
Cobalt		62.8	mg/kg	1.0	109	75	125	2.3	20	
Selenium		53.4	mg/kg	1.0	106	75	125	3.7	20	
Silver		29.7	mg/kg	1.0	118	75	125	1.4	20	
Thallium		54.6	mg/kg	1.0	109	75	125	1.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121219B		
Sample ID: ICV STD	14 Initial Calibration Verification Standard								12/19/12 15:17	
Antimony		0.0500	mg/L	0.0010	100	90	110			
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Barium		0.0505	mg/L	0.0010	101	90	110			
Beryllium		0.0249	mg/L	0.0010	100	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Chromium		0.0507	mg/L	0.0010	101	90	110			
Copper		0.0526	mg/L	0.0010	105	90	110			
Iron		0.273	mg/L	0.0010	109	90	110			
Manganese		0.246	mg/L	0.0010	98	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0255	mg/L	0.0010	102	90	110			
Thallium		0.0497	mg/L	0.0010	99	90	110			
Vanadium		0.0506	mg/L	0.0010	101	90	110			
Zinc		0.0545	mg/L	0.0010	109	90	110			
Method: SW6020									Batch: 19051	
Sample ID: MB-19051	16 Method Blank					Run: ICPMS204-B_121219B			12/20/12 01:14	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.04	mg/kg	0.006						
Barium		0.05	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.09	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Lead		0.02	mg/kg	0.003						
Manganese		0.1	mg/kg	0.008						
Selenium		0.01	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LFB-19051	16 Laboratory Fortified Blank					Run: ICPMS204-B_121219B			12/20/12 01:23	
Antimony		53.5	mg/kg	1.0	107	80	120			
Arsenic		52.8	mg/kg	1.0	106	80	120			
Barium		53.2	mg/kg	1.0	106	80	120			
Beryllium		23.0	mg/kg	1.0	92	80	120			
Cadmium		27.9	mg/kg	1.0	111	80	120			
Chromium		54.0	mg/kg	1.0	108	80	120			
Cobalt		53.7	mg/kg	1.0	107	80	120			
Copper		56.0	mg/kg	1.0	112	80	120			
Iron		289	mg/kg	5.0	114	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: LFB-19051	16	Laboratory Fortified Blank				Run: ICPMS204-B_121219B				12/20/12 01:23
Lead		53.6	mg/kg	1.0	107	80	120			
Manganese		262	mg/kg	1.0	105	80	120			
Selenium		52.6	mg/kg	1.0	105	80	120			
Silver		27.9	mg/kg	1.0	111	80	120			
Thallium		52.4	mg/kg	1.0	105	80	120			
Vanadium		52.4	mg/kg	1.0	105	80	120			
Zinc		55.8	mg/kg	1.0	111	80	120			
Sample ID: H12120021-010AMS	16	Sample Matrix Spike				Run: ICPMS204-B_121219B				12/20/12 03:51
Antimony		9.79	mg/kg	1.0	19	75	125			S
Arsenic		168	mg/kg	1.0	106	75	125			
Barium		301	mg/kg	1.0		75	125			A
Beryllium		22.0	mg/kg	1.0	87	75	125			
Cadmium		24.4	mg/kg	1.0	95	75	125			
Chromium		104	mg/kg	1.0	108	75	125			
Cobalt		64.7	mg/kg	1.0	107	75	125			
Copper		157	mg/kg	1.0	114	75	125			
Iron		27100	mg/kg	5.0		75	125			A
Lead		70.8	mg/kg	1.0	108	75	125			
Manganese		950	mg/kg	1.0	110	75	125			
Selenium		50.2	mg/kg	1.0	101	75	125			
Silver		27.8	mg/kg	1.0	111	75	125			
Thallium		52.5	mg/kg	1.0	106	75	125			
Vanadium		108	mg/kg	1.0	117	75	125			
Zinc		164	mg/kg	1.0	105	75	125			
Sample ID: H12120021-010AMSD	16	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/20/12 03:55
Antimony		9.78	mg/kg	1.0	19	75	125	0.1	20	S
Arsenic		167	mg/kg	1.0	105	75	125	0.4	20	
Barium		300	mg/kg	1.0		75	125	0.3	20	A
Beryllium		21.9	mg/kg	1.0	86	75	125	0.6	20	
Cadmium		24.2	mg/kg	1.0	94	75	125	1.0	20	
Chromium		101	mg/kg	1.0	101	75	125	3.2	20	
Cobalt		63.8	mg/kg	1.0	105	75	125	1.4	20	
Copper		154	mg/kg	1.0	108	75	125	1.8	20	
Iron		27600	mg/kg	5.0		75	125	2.0	20	A
Lead		70.8	mg/kg	1.0	108	75	125	0.1	20	
Manganese		966	mg/kg	1.0	117	75	125	1.8	20	
Selenium		51.5	mg/kg	1.0	104	75	125	2.5	20	
Silver		27.4	mg/kg	1.0	110	75	125	1.2	20	
Thallium		52.4	mg/kg	1.0	105	75	125	0.2	20	
Vanadium		106	mg/kg	1.0	114	75	125	1.5	20	
Zinc		163	mg/kg	1.0	104	75	125	0.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121220C	
Sample ID: ICV STD		Initial Calibration Verification Standard							12/20/12 17:30	
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020									Batch: 19051	
Sample ID: MB-19051	16	Method Blank				Run: ICPMS204-B_121220C			12/21/12 00:55	
Antimony		0.007	mg/kg	0.002						
Arsenic		0.05	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.2	mg/kg	0.01						
Iron		4	mg/kg	0.1						
Lead		0.03	mg/kg	0.003						
Manganese		0.06	mg/kg	0.008						
Selenium		ND	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.09	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121227B		
Sample ID: ICV STD	3	Initial Calibration Verification Standard							12/27/12 12:04	
Cadmium		0.0266	mg/L	0.0010	107	90	110			
Cobalt		0.0522	mg/L	0.0010	104	90	110			
Lead		0.0509	mg/L	0.0010	102	90	110			
Sample ID: ICV STD	3	Initial Calibration Verification Standard							12/27/12 17:00	
Cadmium		0.0268	mg/L	0.0010	107	90	110			
Cobalt		0.0522	mg/L	0.0010	104	90	110			
Lead		0.0515	mg/L	0.0010	103	90	110			
Method: SW6020									Batch: 19051	
Sample ID: MB-19051	16	Method Blank				Run: ICPMS204-B_121227B			12/27/12 20:05	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.05	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Cobalt		ND	mg/kg	0.003						
Copper		0.07	mg/kg	0.01						
Iron		2	mg/kg	0.1						
Lead		0.01	mg/kg	0.003						
Manganese		0.05	mg/kg	0.008						
Selenium		0.03	mg/kg	0.007						
Silver		0.3	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Vanadium		0.2	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LCS-19051	16	Laboratory Control Sample				Run: ICPMS204-B_121227B			12/27/12 20:10	
Antimony		45.5	mg/kg	1.0	36	2.2	92.9			
Arsenic		320	mg/kg	1.0	94	72.3	106.4			
Barium		629	mg/kg	1.0	103	80.6	112.2			
Beryllium		47.0	mg/kg	1.0	93	76.3	108.6			
Cadmium		129	mg/kg	1.0	95	73	105.1			
Chromium		78.5	mg/kg	1.0	104	72.8	109.1			
Cobalt		56.9	mg/kg	1.0	100	73.3	103.7			
Copper		288	mg/kg	1.0	104	77.5	109.6			
Iron		22300	mg/kg	5.0	98	39.6	138.3			
Lead		194	mg/kg	1.0	105	75.9	108.6			
Manganese		397	mg/kg	1.0	109	80.8	115.7			
Selenium		203	mg/kg	1.0	105	72.5	112.2			
Silver		74.2	mg/kg	1.0	108	67.8	112.8			
Thallium		87.9	mg/kg	1.0	98	71.7	109.5			
Vanadium		69.6	mg/kg	1.0	96	66.6	107.3			
Zinc		227	mg/kg	1.0	108	74.2	109.9			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Report Date: 01/02/13
Project: ORG #484422 - Inorganic Background Study
Work Order: H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: LCS-19051	16	Laboratory Control Sample				Run: ICPMS204-B_121227B				12/27/12 20:10

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67711
Sample ID: MB-67711		Method Blank				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110397-001A		Sample Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.18	mg/kg	5.0					30	
Sample ID: H12110397-014A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	110	70	130			
Sample ID: H12110397-014A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130	0.5	20	
Sample ID: H12120021-001A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	92	70	130			
Sample ID: H12120021-001A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.33	mg/kg	0.010	86	70	130	7.1	20	
Method: SW7196A										Batch: B_67951
Sample ID: LCS-R197178		Laboratory Control Sample				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent		0.0959	mg/L	0.010	96	90	110			
Sample ID: MB-67951		Method Blank				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110397-002A		Sample Matrix Spike				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130			
Sample ID: H12110397-002A		Sample Matrix Spike Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.41	mg/kg	0.010	108	70	130	1.7	20	
Sample ID: B12120644-015ADUP		Sample Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: H12120021-008A		Sample Matrix Spike				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	93	70	130			
Sample ID: H12120021-008A		Sample Matrix Spike Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.37	mg/kg	0.010	98	70	130	4.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 01/02/13

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12110397

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121210A	
Sample ID: ICV		Initial Calibration Verification Standard							12/10/12 16:14	
Mercury		0.00099	mg/kg	0.50	99	90	110			
New Calibration. SBK										
Sample ID: CCV		Continuing Calibration Verification Standard							12/10/12 16:17	
Mercury		0.0026	mg/kg	0.50	104	90	110			
Method: SW7471A									Batch: 18955	
Sample ID: H12110397-009AMS		Sample Matrix Spike				Run: HGCV201-H_121210A			12/10/12 16:42	
Mercury		1.1	mg/kg	0.50	113	80	120			
Sample ID: H12110397-009AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121210A			12/10/12 16:44	
Mercury		1.1	mg/kg	0.50	111	80	120	1.5	20	
Method: SW7471A									Batch: 18955	
Sample ID: MB-18955		Method Blank				Run: HGCV201-H_121213A			12/13/12 11:26	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18955		Laboratory Control Sample				Run: HGCV201-H_121213A			12/13/12 11:32	
Mercury		4.9	mg/kg	0.50	99	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12110397

Login completed by: Tracy L. Lorash
Date Received: 11/29/2012
Reviewed by: BL2000\sdull
Received by: elm
Reviewed Date: 12/4/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.9°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

H2110397

PROJ. NO.	PROJECT NAME
12042	MBSI

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk) MBSI (on) hand list	Total Metals (<250um-60mesh)		Total Metals - Sieve Duplicate					REMARKS
11/20	13:40		X	MBSI 13-01	1									X	X							Soil
11/20	10:30		X	MBSI -13-02	1									X	X							↓
11/15	11:45		X	MBSI -04-01	1									X	X							↓
11/25	15:20		X	MBSI -04-02	1									X	X							↓
11/23	11:30		X	MBSI - 46-02	1									X	X		X					↓
11/23	14:10		X	MBSI -46-01	1									X	X							↓

Relinquished (Signature)	Date / Time	Received by (Signature)	Lab	P.O. #	Shipped via: Bus FedEx UPS
[signature]	11/27/12 10:30		ELI Helena	Direct Bill MDEQ	Other Hand Delivered; Air Bill #

Relinquished (Signature)	Date / Time	Received by (Signature)	Remarks
[signature]	11/27/12 10:50	[signature]	Bill MDEQ ATTN: Jason Seyler; Reference ORG #48442Z; Temp Blank 1.9

Relinquished (Signature)	Date / Time	Received for Laboratory by (Signature)	Date / Time
[signature]	11/29/12 1155	[signature]	11/29/12 11:55

Enclosed: ☒ Parameter sheet w/detection limits
☐ QA / AC standard mixing instructions ☒ Cover letter
☐ Other

Split Samples:
☐ Accepted ☐ Declined ________
Signature

HFORM-1 07/11
TNO 406-443-8550

Return results & electronic copy to:
QA / QC Dept. at address at top of page

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

H12110397

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* Matt Waller

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250um-ea-mesh)	Total Metals - Sieve Duplicate	REMARKS
11/28/12	1100	X		MBSI-18-02	1									X	X		soil
	1430	X		-18-01	1									X	X		
	1650	X		-30-01	1									X	X		
↓	1615		X	-30-04	1					X							water

Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Lab	P.O. #	Shipped via: Bus FedEx UPS
Matt Waller	11/29/12 1155		ELI Helena	Direct Bill MDEQ	Other Hand Delivered
Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Remarks	Bill MDEQ ATTN: Jason Seyler	Air Bill #
			Reference ORA # 484422		Temp Blank 1.9
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time	Enclosed: X Parameter sheet w/detection limits	
		Esther Bennett	11/29/12 11:55	☐ QA / AC standard mixing instructions X Cover letter	
				☐ Other	

Split Samples:
☐ Accepted ☐ Declined _____ Signature

HFORM-1 07/11
TNO 406 443 8550

Return results & electronic copy to:
QA / QC Dept. at address at top of page

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 29, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are nine (9) soil samples and one (1) water sample collected from November 15 through 28, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**
3. One sample (shown on COC) is to be run as a "laboratory sieve duplicate" with two fine fraction samples obtained from a single natural sample, as a check on the reproducibility of the sieving procedure.
4. **Water sample** to be analyzed for total metals, using the same parameter list and routine analytical reporting limits.

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

K:\PROJECT\10022\ ELI_11_29_2012.doc 11/29/2012,11:05 AM

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis

Parameter[1]	Digestion Method[2]	Analytical Method[2]	Required Reporting Limit (mg/kg)	EPA Regional Screening Level (RSL)[3] (mg/kg)	Maximum Holding Time (days)	Preservation
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 27, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12120007 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 6 samples for MT DEQ-Site Response on 11/30/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12120007-001	MBSI-43-01	11/29/12 13:30	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120007-002	MBSI-43-01	11/29/12 13:30	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120007-003	MBSI-05-02	11/29/12 15:30	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120007-004	MBSI-05-02	11/29/12 15:30	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120007-005	MBSI-05-03	11/29/12 15:45	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120007-006	MBSI-05-03	11/29/12 15:45	11/30/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.27 14:10:41 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12120007

Report Date: 12/27/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 12/27/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120007

Report Date: 12/27/12
Date Received: 11/30/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	**Client Sample ID**	**Up**	**Low**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**	**Results**
H12120007-001	MBSI-43-01	0	0		< 0.3	22500	6.2	225	1.2	0.2	7.2	18.0	19.1	18600
H12120007-002	MBSI-43-01	0	0	78.2	< 0.3	21500	9.6	412	1.2	0.4	6.8	35.4	63.0	21100
H12120007-003	MBSI-05-02	0	0		< 0.3	11500	15.6	135	0.6	0.3	5.7	18.8	16.7	13700
H12120007-004	MBSI-05-02	0	0	66.6	< 0.1	11400	16.6	161	0.6	0.4	6.5	38.7	48.0	15900
H12120007-005	MBSI-05-03	0	0		< 0.3	11300	16.1	140	0.7	0.4	6.5	17.3	17.4	14100
H12120007-006	MBSI-05-03	0	0	66.6	< 0.1	10100	16.4	151	0.6	0.4	6.2	41.6	57.8	15400

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120007

Report Date: 12/27/12
Date Received: 11/30/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium, Hexavalent
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12120007-001	MBSI-43-01	0	0	427	16.8	21	0.4	< 0.2	0.17	15.6	67	18	< 0.050	< 0.29
H12120007-002	MBSI-43-01	0	0	567	20.8	23	0.4	0.2	0.20	20.5	88	35		< 0.29
H12120007-003	MBSI-05-02	0	0	513	15.3	19	0.2	0.3	0.21	17.9	58	19	< 0.050	< 0.29
H12120007-004	MBSI-05-02	0	0	546	25.6	22	0.2	0.4	0.22	20.4	78	39		< 0.29
H12120007-005	MBSI-05-03	0	0	510	16.0	19	0.2	0.4	0.22	18.3	60	17	< 0.050	< 0.29
H12120007-006	MBSI-05-03	0	0	549	25.5	17	0.2	0.4	0.20	18.8	78	42		< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121212B		
Sample ID: ICV	10	Initial Calibration Verification Standard							12/12/12 13:33	
Aluminum		4.05	mg/L	0.10	101	90	110			
Barium		0.797	mg/L	0.10	100	90	110			
Chromium		0.792	mg/L	0.010	99	90	110			
Cobalt		0.815	mg/L	0.010	102	90	110			
Copper		0.797	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Manganese		4.07	mg/L	0.010	102	90	110			
Nickel		0.782	mg/L	0.010	98	90	110			
Vanadium		0.815	mg/L	0.10	102	90	110			
Zinc		0.809	mg/L	0.010	101	90	110			
Sample ID: ICSA	10	Interference Check Sample A							12/12/12 13:48	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000320	mg/L	0.10		0	0			
Chromium		0.00238	mg/L	0.012		0	0			
Cobalt		-0.00868	mg/L	0.010		0	0			
Copper		-0.000580	mg/L	0.010		0	0			
Iron		192	mg/L	0.030	96	80	120			
Manganese		-0.00276	mg/L	0.010		0	0			
Nickel		0.00778	mg/L	0.010		0	0			
Vanadium		-0.000230	mg/L	0.10		0	0			
Zinc		0.00900	mg/L	0.010		0	0			
Sample ID: ICSAB	10	Interference Check Sample AB							12/12/12 13:52	
Aluminum		521	mg/L	0.10	104	80	120			
Barium		0.495	mg/L	0.10	99	80	120			
Chromium		0.477	mg/L	0.012	95	80	120			
Cobalt		0.478	mg/L	0.010	96	80	120			
Copper		0.498	mg/L	0.010	100	80	120			
Iron		193	mg/L	0.030	96	80	120			
Manganese		0.490	mg/L	0.010	98	80	120			
Nickel		0.942	mg/L	0.010	94	80	120			
Vanadium		0.497	mg/L	0.10	99	80	120			
Zinc		1.03	mg/L	0.010	103	80	120			
Method: E200.7								Analytical Run: ICP2-HE_121217C		
Sample ID: ICV		Initial Calibration Verification Standard							12/17/12 14:19	
Lead		0.796	mg/L	0.013	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/17/12 14:34	
Lead		0.0187	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/17/12 14:38	
Lead		0.975	mg/L	0.013	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121219A	
Sample ID: ICV	3	Initial Calibration Verification Standard							12/19/12 12:36	
Aluminum		4.06	mg/L	0.10	101	90	110			
Lead		0.799	mg/L	0.013	100	90	110			
Nickel		0.798	mg/L	0.010	100	90	110			
Sample ID: ICSA	3	Interference Check Sample A							12/19/12 12:51	
Aluminum		525	mg/L	0.10	105	80	120			
Lead		0.0376	mg/L	0.013		0	0			
Nickel		0.00537	mg/L	0.010		0	0			
Sample ID: ICSAB	3	Interference Check Sample AB							12/19/12 12:55	
Aluminum		526	mg/L	0.10	105	80	120			
Lead		1.02	mg/L	0.013	102	80	120			
Nickel		0.893	mg/L	0.010	89	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121220B	
Sample ID: ICV		Initial Calibration Verification Standard							12/20/12 13:28	
Cobalt		0.819	mg/L	0.010	102	90	110			
Sample ID: ICSA		Interference Check Sample A							12/20/12 13:43	
Cobalt		-0.00405	mg/L	0.010		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/20/12 13:47	
Cobalt		0.457	mg/L	0.010	91	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121212B				12/13/12 04:24
Aluminum		0.8	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18968	11	Laboratory Fortified Blank				Run: ICP2-HE_121212B				12/13/12 04:27
Aluminum		264	mg/kg	5.0	105	80	120			
Barium		53.0	mg/kg	1.0	106	80	120			
Chromium		51.1	mg/kg	1.0	102	80	120			
Cobalt		49.7	mg/kg	1.0	99	80	120			
Copper		52.3	mg/kg	1.0	105	80	120			
Iron		263	mg/kg	5.0	104	80	120			
Lead		46.3	mg/kg	1.0	93	80	120			
Manganese		260	mg/kg	1.0	104	80	120			
Nickel		49.8	mg/kg	1.0	100	80	120			
Vanadium		52.5	mg/kg	1.0	105	80	120			
Zinc		49.3	mg/kg	1.0	98	80	120			
Sample ID: LCS-18968	11	Laboratory Control Sample				Run: ICP2-HE_121212B				12/13/12 04:39
Aluminum		14100	mg/kg	5.0	98	50.7	131.3			
Barium		571	mg/kg	1.0	95	80.6	112.2			
Chromium		75.0	mg/kg	1.0	101	72.8	109.1			
Cobalt		49.5	mg/kg	1.0	88	73.3	103.7			
Copper		259	mg/kg	1.0	94	77.5	109.6			
Iron		20200	mg/kg	5.0	90	39.6	138.3			
Lead		172	mg/kg	3.0	94	75.9	108.6			
Manganese		378	mg/kg	1.0	104	80.8	115.7			
Nickel		54.8	mg/kg	1.0	92	72.3	103.4			
Vanadium		64.3	mg/kg	1.0	90	66.6	107.3			
Zinc		189	mg/kg	1.0	90	74.2	109.9			
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B				12/13/12 06:34
Aluminum		19600	mg/kg	5.0		75	125			A
Barium		214	mg/kg	1.0	97	75	125			
Chromium		62.3	mg/kg	1.0	99	75	125			
Cobalt		57.9	mg/kg	1.0	104	75	125			
Copper		106	mg/kg	1.0	99	75	125			
Iron		23000	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18968	
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B			12/13/12 06:34	
Lead		68.5	mg/kg	3.0	117	75	125			
Manganese		738	mg/kg	1.0	98	75	125			
Nickel		60.6	mg/kg	1.0	104	75	125			
Vanadium		87.4	mg/kg	1.0	104	75	125			
Zinc		121	mg/kg	1.0	96	75	125			
Sample ID: H12120021-009AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121212B			12/13/12 06:38	
Aluminum		18400	mg/kg	5.0		75	125	6.0	20	A
Barium		210	mg/kg	1.0	87	75	125	2.0	20	
Chromium		61.2	mg/kg	1.0	95	75	125	1.8	20	
Cobalt		56.4	mg/kg	1.0	99	75	125	2.6	20	
Copper		102	mg/kg	1.0	91	75	125	3.1	20	
Iron		20500	mg/kg	5.0		75	125	12	20	A
Lead		68.1	mg/kg	3.1	114	75	125	0.6	20	
Manganese		741	mg/kg	1.0	97	75	125	0.4	20	
Nickel		61.0	mg/kg	1.0	103	75	125	0.7	20	
Vanadium		86.2	mg/kg	1.0	99	75	125	1.3	20	
Zinc		121	mg/kg	1.0	94	75	125	0.0	20	
Method: SW6010B									Batch: 18968	
Sample ID: MB-18968	3	Method Blank				Run: ICP2-HE_121217C			12/17/12 21:54	
Aluminum		1	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Copper		ND	mg/kg	0.2						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	4	Method Blank				Run: ICP2-HE_121219A				12/19/12 19:23
Aluminum		0.5	mg/kg	0.3						
Cobalt		ND	mg/kg	0.1						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						
Sample ID: LFB-19051	4	Laboratory Fortified Blank				Run: ICP2-HE_121219A				12/19/12 19:27
Aluminum		263	mg/kg	5.0	105	80	120			
Cobalt		52.1	mg/kg	1.0	104	80	120			
Lead		50.6	mg/kg	1.0	101	80	120			
Nickel		50.7	mg/kg	1.0	101	80	120			
Sample ID: LCS-19051	4	Laboratory Control Sample				Run: ICP2-HE_121219A				12/19/12 19:30
Aluminum		12600	mg/kg	5.0	87	50.7	131.3			
Cobalt		54.2	mg/kg	1.0	95	73.3	103.7			
Lead		197	mg/kg	3.1	106	75.9	108.6			
Nickel		57.3	mg/kg	1.0	95	72.3	103.4			
Sample ID: H12120021-010AMS	4	Sample Matrix Spike				Run: ICP2-HE_121219A				12/19/12 21:29
Aluminum		23300	mg/kg	5.0		75	125			A
Cobalt		56.4	mg/kg	1.0	96	75	125			
Lead		77.2	mg/kg	3.1	104	75	125			
Nickel		68.6	mg/kg	1.0	89	75	125			
Sample ID: H12120021-010AMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 21:33
Aluminum		22800	mg/kg	5.0		75	125	2.4	20	A
Cobalt		57.1	mg/kg	1.0	98	75	125	1.3	20	
Lead		74.3	mg/kg	3.1	98	75	125	3.8	20	
Nickel		67.4	mg/kg	1.0	86	75	125	1.7	20	
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	4	Method Blank				Run: ICP2-HE_121220B				12/20/12 14:48
Aluminum		1.0	mg/kg	0.8						
Cobalt		ND	mg/kg	0.1						
Lead		ND	mg/kg	1						
Nickel		0.1	mg/kg	0.08						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/10/12 12:34	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0504	mg/L	0.0010	101	90	110			
Beryllium		0.0258	mg/L	0.0010	103	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Selenium		0.0527	mg/L	0.0010	105	90	110			
Silver		0.0249	mg/L	0.0010	100	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/11/12 11:44	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Beryllium		0.0246	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Selenium		0.0503	mg/L	0.0010	101	90	110			
Silver		0.0236	mg/L	0.0010	94	90	110			
Thallium		0.0492	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 03:37	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0233	mg/L	0.0010	93	90	110			
Thallium		0.0488	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 10:49	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0500	mg/L	0.0010	100	90	110			
Beryllium		0.0261	mg/L	0.0010	104	90	110			
Cadmium		0.0266	mg/L	0.0010	106	90	110			
Selenium		0.0535	mg/L	0.0010	107	90	110			
Silver		0.0252	mg/L	0.0010	101	90	110			
Thallium		0.0506	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 10:57	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0511	mg/L	0.0010	102	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0265	mg/L	0.0010	106	90	110			
Selenium		0.0543	mg/L	0.0010	109	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 18:01	
Antimony		0.0510	mg/L	0.0010	102	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121210A	
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 18:01	
Arsenic		0.0516	mg/L	0.0010	103	90	110			
Beryllium		0.0256	mg/L	0.0010	102	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0509	mg/L	0.0010	102	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/14/12 01:49	
Antimony		0.0505	mg/L	0.0010	101	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0260	mg/L	0.0010	104	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0244	mg/L	0.0010	98	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/15/12 03:36	
Antimony		0.0508	mg/L	0.0010	102	90	110			
Arsenic		0.0509	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0246	mg/L	0.0010	98	90	110			
Thallium		0.0503	mg/L	0.0010	101	90	110			
Method: SW6020									Batch: 18968	
Sample ID: MB-18968	7	Method Blank				Run: ICPMS204-B_121210A			12/14/12 06:28	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		0.003	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.2	mg/kg	0.02						
Thallium		0.005	mg/kg	0.002						
Sample ID: LCS-18968	7	Laboratory Control Sample				Run: ICPMS204-B_121210A			12/14/12 06:33	
Antimony		50.2	mg/kg	1.0	41	2.2	92.9			
Arsenic		304	mg/kg	1.0	90	72.3	106.4			
Beryllium		38.5	mg/kg	1.0	77	76.3	108.6			
Cadmium		122	mg/kg	1.0	91	73	105.1			
Selenium		189	mg/kg	1.0	99	72.5	112.2			
Silver		75.3	mg/kg	1.0	111	67.8	112.8			
Thallium		91.2	mg/kg	1.0	102	71.7	109.5			
Sample ID: LFB-18968	7	Laboratory Fortified Blank				Run: ICPMS204-B_121210A			12/14/12 06:37	
Antimony		57.4	mg/kg	1.0	115	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18968
Sample ID: LFB-18968	7	Laboratory Fortified Blank				Run: ICPMS204-B_121210A				12/14/12 06:37
Arsenic		50.8	mg/kg	1.0	101	80	120			
Beryllium		22.0	mg/kg	1.0	88	80	120			
Cadmium		28.6	mg/kg	1.0	114	80	120			
Selenium		51.8	mg/kg	1.0	104	80	120			
Silver		29.9	mg/kg	1.0	119	80	120			
Thallium		54.0	mg/kg	1.0	108	80	120			
Sample ID: H12120021-009AMS	7	Sample Matrix Spike				Run: ICPMS204-B_121210A				12/14/12 08:53
Antimony		12.4	mg/kg	1.0	25	75	125			S
Arsenic		130	mg/kg	1.0	99	75	125			
Beryllium		21.3	mg/kg	1.0	85	75	125			
Cadmium		25.4	mg/kg	1.0	101	75	125			
Selenium		51.5	mg/kg	1.0	105	75	125			
Silver		29.3	mg/kg	1.0	119	75	125			
Thallium		53.6	mg/kg	1.0	109	75	125			
Sample ID: H12120021-009AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121210A				12/14/12 08:57
Antimony		13.7	mg/kg	1.0	27	75	125	10	20	S
Arsenic		129	mg/kg	1.0	95	75	125	0.8	20	
Beryllium		21.3	mg/kg	1.0	84	75	125	0.1	20	
Cadmium		26.2	mg/kg	1.0	102	75	125	3.1	20	
Selenium		53.4	mg/kg	1.0	106	75	125	3.7	20	
Silver		29.7	mg/kg	1.0	118	75	125	1.4	20	
Thallium		54.6	mg/kg	1.0	109	75	125	1.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121219B		
Sample ID: ICV STD	14 Initial Calibration Verification Standard								12/19/12 15:17	
Antimony		0.0500	mg/L	0.0010	100	90	110			
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Barium		0.0505	mg/L	0.0010	101	90	110			
Beryllium		0.0249	mg/L	0.0010	100	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Chromium		0.0507	mg/L	0.0010	101	90	110			
Copper		0.0526	mg/L	0.0010	105	90	110			
Iron		0.273	mg/L	0.0010	109	90	110			
Manganese		0.246	mg/L	0.0010	98	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0255	mg/L	0.0010	102	90	110			
Thallium		0.0497	mg/L	0.0010	99	90	110			
Vanadium		0.0506	mg/L	0.0010	101	90	110			
Zinc		0.0545	mg/L	0.0010	109	90	110			
Method: SW6020									Batch: 19051	
Sample ID: MB-19051	14 Method Blank					Run: ICPMS204-B_121219B			12/20/12 01:14	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.04	mg/kg	0.006						
Barium		0.05	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.09	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Manganese		0.1	mg/kg	0.008						
Selenium		0.01	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LCS-19051	14 Laboratory Control Sample					Run: ICPMS204-B_121219B			12/20/12 01:18	
Antimony		53.9	mg/kg	1.0	43	2.2	92.9			
Arsenic		321	mg/kg	1.0	95	72.3	106.4			
Barium		640	mg/kg	1.0	105	80.6	112.2			
Beryllium		43.1	mg/kg	1.0	85	76.3	108.6			
Cadmium		122	mg/kg	1.0	90	73	105.1			
Chromium		80.1	mg/kg	1.0	106	72.8	109.1			
Copper		302	mg/kg	1.0	109	77.5	109.6			
Iron		21300	mg/kg	5.0	93	39.6	138.3			
Manganese		407	mg/kg	1.0	111	80.8	115.7			
Selenium		192	mg/kg	1.0	99	72.5	112.2			
Silver		74.1	mg/kg	1.0	108	67.8	112.8			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: LCS-19051	14	Laboratory Control Sample				Run: ICPMS204-B_121219B				12/20/12 01:18
Thallium		93.0	mg/kg	1.0	103	71.7	109.5			
Vanadium		69.6	mg/kg	1.0	96	66.6	107.3			
Zinc		226	mg/kg	1.0	107	74.2	109.9			
Sample ID: LFB-19051	14	Laboratory Fortified Blank				Run: ICPMS204-B_121219B				12/20/12 01:23
Antimony		53.5	mg/kg	1.0	107	80	120			
Arsenic		52.8	mg/kg	1.0	106	80	120			
Barium		53.2	mg/kg	1.0	106	80	120			
Beryllium		23.0	mg/kg	1.0	92	80	120			
Cadmium		27.9	mg/kg	1.0	111	80	120			
Chromium		54.0	mg/kg	1.0	108	80	120			
Copper		56.0	mg/kg	1.0	112	80	120			
Iron		289	mg/kg	5.0	114	80	120			
Manganese		262	mg/kg	1.0	105	80	120			
Selenium		52.6	mg/kg	1.0	105	80	120			
Silver		27.9	mg/kg	1.0	111	80	120			
Thallium		52.4	mg/kg	1.0	105	80	120			
Vanadium		52.4	mg/kg	1.0	105	80	120			
Zinc		55.8	mg/kg	1.0	111	80	120			
Sample ID: H12120021-010AMS	14	Sample Matrix Spike				Run: ICPMS204-B_121219B				12/20/12 03:51
Antimony		9.79	mg/kg	1.0	19	75	125			S
Arsenic		168	mg/kg	1.0	106	75	125			
Barium		301	mg/kg	1.0		75	125			A
Beryllium		22.0	mg/kg	1.0	87	75	125			
Cadmium		24.4	mg/kg	1.0	95	75	125			
Chromium		104	mg/kg	1.0	108	75	125			
Copper		157	mg/kg	1.0	114	75	125			
Iron		27100	mg/kg	5.0		75	125			A
Manganese		950	mg/kg	1.0	110	75	125			
Selenium		50.2	mg/kg	1.0	101	75	125			
Silver		27.8	mg/kg	1.0	111	75	125			
Thallium		52.5	mg/kg	1.0	106	75	125			
Vanadium		108	mg/kg	1.0	117	75	125			
Zinc		164	mg/kg	1.0	105	75	125			
Sample ID: H12120021-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/20/12 03:55
Antimony		9.78	mg/kg	1.0	19	75	125	0.1	20	S
Arsenic		167	mg/kg	1.0	105	75	125	0.4	20	
Barium		300	mg/kg	1.0		75	125	0.3	20	A
Beryllium		21.9	mg/kg	1.0	86	75	125	0.6	20	
Cadmium		24.2	mg/kg	1.0	94	75	125	1.0	20	
Chromium		101	mg/kg	1.0	101	75	125	3.2	20	
Copper		154	mg/kg	1.0	108	75	125	1.8	20	
Iron		27600	mg/kg	5.0		75	125	2.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: H12120021-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/20/12 03:55
Manganese		966	mg/kg	1.0	117	75	125	1.8	20	
Selenium		51.5	mg/kg	1.0	104	75	125	2.5	20	
Silver		27.4	mg/kg	1.0	110	75	125	1.2	20	
Thallium		52.4	mg/kg	1.0	105	75	125	0.2	20	
Vanadium		106	mg/kg	1.0	114	75	125	1.5	20	
Zinc		163	mg/kg	1.0	104	75	125	0.4	20	
Method: SW6020										Analytical Run: ICPMS204-B_121220C
Sample ID: ICV STD		Initial Calibration Verification Standard								12/20/12 17:30
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020										Batch: 19051
Sample ID: MB-19051	14	Method Blank				Run: ICPMS204-B_121220C				12/21/12 00:55
Antimony		0.007	mg/kg	0.002						
Arsenic		0.05	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.2	mg/kg	0.01						
Iron		4	mg/kg	0.1						
Manganese		0.06	mg/kg	0.008						
Selenium		ND	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.09	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						
Sample ID: LCS-19051	14	Laboratory Control Sample				Run: ICPMS204-B_121220C				12/21/12 00:59
Antimony		52.4	mg/kg	1.0	42	2.2	92.9			
Arsenic		314	mg/kg	1.0	92	72.3	106.4			
Barium		647	mg/kg	1.0	106	80.6	112.2			
Beryllium		42.9	mg/kg	1.0	85	76.3	108.6			
Cadmium		123	mg/kg	1.0	91	73	105.1			
Chromium		79.2	mg/kg	1.0	105	72.8	109.1			
Copper		294	mg/kg	1.0	106	77.5	109.6			
Iron		21600	mg/kg	5.0	95	39.6	138.3			
Manganese		413	mg/kg	1.0	113	80.8	115.7			
Selenium		192	mg/kg	1.0	99	72.5	112.2			
Silver		73.7	mg/kg	1.0	108	67.8	112.8			
Thallium		94.5	mg/kg	1.0	105	71.7	109.5			
Vanadium		69.7	mg/kg	1.0	96	66.6	107.3			
Zinc		227	mg/kg	1.0	107	74.2	109.9			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67711
Sample ID: MB-67711		Method Blank				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110397-001A		Sample Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.18	mg/kg	5.0					30	
Sample ID: H12110397-014A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	110	70	130			
Sample ID: H12110397-014A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130	0.5	20	
Sample ID: H12120021-001A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	92	70	130			
Sample ID: H12120021-001A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.33	mg/kg	0.010	86	70	130	7.1	20	
Method: SW7196A										Batch: B_67951
Sample ID: LCS-R197178		Laboratory Control Sample				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent		0.0959	mg/L	0.010	96	90	110			
Sample ID: MB-67951		Method Blank				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: B12120644-015ADUP		Sample Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: H12120021-008A		Sample Matrix Spike				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	93	70	130			
Sample ID: H12120021-008A		Sample Matrix Spike Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.37	mg/kg	0.010	98	70	130	4.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/27/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120007

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121212A	
Sample ID: ICV		Initial Calibration Verification Standard							12/12/12 12:16	
Mercury		0.00096	mg/kg	0.50	96	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/12/12 13:48	
Mercury		0.0027	mg/kg	0.50	107	90	110			
Method: SW7471A									Batch: 18964	
Sample ID: MB-18964		Method Blank				Run: HGCV201-H_121212A			12/12/12 13:20	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18964		Laboratory Control Sample				Run: HGCV201-H_121212A			12/12/12 13:23	
Mercury		4.7	mg/kg	0.50	93	80	120			
Sample ID: H12120021-007AMS		Sample Matrix Spike				Run: HGCV201-H_121212A			12/12/12 14:12	
Mercury		1.2	mg/kg	0.50	123	80	120			S
Sample ID: H12120021-007AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121212A			12/12/12 14:14	
Mercury		1.2	mg/kg	0.50	118	80	120	4.1	20	
Sample ID: H12120021-007ADIL		Serial Dilution				Run: HGCV201-H_121212A			12/12/12 14:17	
Mercury		0.0090	mg/kg	0.50		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12120007

Login completed by: Tracy L. Lorash
Date Received: 11/30/2012
Reviewed by: BL2000\sdull
Received by: elm
Reviewed Date: 12/5/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.3°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

H12120007

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* Matt Wallen

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - 60 mesh)	REMARKS
11/29/12	1330	X		MBSI-43-01	1									X	X	Soil
↓	1530	X		↓ -05-02	1									X	X	↓
↓	1545	X		↓ -05-03	1									X	X	

Relinquished *(Signature)* Matt Wallen	Date / Time 11/30/12 1150	Received by *(Signature)*	Lab ELI Helena	P.O. # Direct Bill MDEQ
Shipped via: Bus FedEx UPS Other Hand Delivered Air Bill #				
Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Remarks Bill to MDEQ ATTN: Jason Seyler Reference # ORG 484422 - Inorganic Background Study	
Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)* Esther Merritt	Date / Time 11/30/12 11:50	Enclosed: ☒ Parameter sheet w/detection limits ☐ QA / AC standard mixing instructions ☒ Cover letter ☐ Other

Return results & electronic copy to: Temp Blank 2.3
QA / QC Dept. at address at top of page

Split Samples: ☐ Accepted ☐ Declined _____ Signature

HFORM-1 07/11
TNO 406-443-8550

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

November 30, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are three (3) soil samples collected on November 29, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis

Parameter[1]	Digestion Method[2]	Analytical Method[2]	Required Reporting Limit (mg/kg)	EPA Regional Screening Level (RSL)[3] (mg/kg)	Maximum Holding Time (days)	Preservation
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 28, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12120021 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 10 samples for MT DEQ-Site Response on 12/3/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12120021-001	MBSI-05-01	12/01/12 9:15	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120021-002	MBSI-05-01	12/01/12 9:15	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120021-003	MBSI-28-01	12/01/12 14:15	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120021-004	MBSI-28-01	12/01/12 14:15	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120021-005	MBSI-28-02	12/01/12 15:35	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120021-006	MBSI-28-02	12/01/12 15:35	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12120021-007	MBSI-30-02	12/02/12 9:35	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120021-008	MBSI-30-02	12/02/12 9:35	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120021-009	MBSI-30-03	12/02/12 9:45	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120021-010	MBSI-30-03	12/02/12 9:45	12/03/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Amanda Blackburn
Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.28 13:09:40 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12120021

Report Date: 12/28/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 12/28/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120021

Report Date: 12/28/12
Date Received: 12/03/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12120021-001	MBSI-05-01	0	0		0.2	21900	14.2	227	0.8	0.3	6.9	19.4	25.4	22800
H12120021-002	MBSI-05-01	0	0	70.4	< 0.3	22400	14.9	267	0.8	0.4	6.2	38.1	71.9	21900
H12120021-003	MBSI-28-01	0	0		< 0.1	14400	35.7	275	0.5	0.2	8.7	20.3	18.3	18300
H12120021-004	MBSI-28-01	0	0	76.6	< 0.3	17600	33.9	349	0.6	0.3	8.1	39.0	70.2	19200
H12120021-005	MBSI-28-02	0	0		0.2	13200	32.6	235	0.7	0.5	5.8	14.3	24.2	20600
H12120021-006	MBSI-28-02	0	0	50.0	< 0.3	12900	36.0	283	0.8	0.6	4.8	24.4	49.9	20300
H12120021-007	MBSI-30-02	0	0		< 0.3	18100	79.9	163	0.4	0.7	8.4	13.3	56.1	22000
H12120021-008	MBSI-30-02	0	0	66.3	< 0.3	19700	116	237	0.6	1.0	8.6	35.0	91.4	23000
H12120021-009	MBSI-30-03	0	0		< 0.3	17500	81.9	166	0.5	0.8	7.1	13.8	56.8	20700
H12120021-010	MBSI-30-03	0	0	64.9	< 0.3	20800	115	241	0.6	1.0	9.4	50.8	100	24400

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120021

Report Date: 12/28/12
Date Received: 12/03/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium, Hexavalent
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12120021-001	MBSI-05-01	0	0	479	18.3	20	0.3	0.4	0.32	39.1	70	19	< 0.050	< 0.29
H12120021-002	MBSI-05-01	0	0	519	23.8	30	0.2	0.4	0.33	46.0	95	38		< 0.29
H12120021-003	MBSI-28-01	0	0	1240	16.9	12	1.1	< 0.2	0.55	20.4	53	20	< 0.050	0.43
H12120021-004	MBSI-28-01	0	0	1280	22.8	30	0.5	0.2	0.62	23.5	74	39		< 0.29
H12120021-005	MBSI-28-02	0	0	874	8.4	23	0.4	< 0.2	0.23	34.5	84	14	< 0.050	< 0.29
H12120021-006	MBSI-28-02	0	0	891	13.0	33	0.4	< 0.2	0.23	33.9	107	24		< 0.29
H12120021-007	MBSI-30-02	0	0	493	11.3	23	0.4	0.2	0.19	39.6	75	13	< 0.050	0.67
H12120021-008	MBSI-30-02	0	0	676	19.3	21	0.4	0.2	0.22	45.2	109	35		< 0.29
H12120021-009	MBSI-30-03	0	0	498	9.7	17	0.3	0.2	0.18	36.5	74	13	< 0.050	0.49
H12120021-010	MBSI-30-03	0	0	676	24.7	21	0.4	0.2	0.24	50.1	112	51		< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-HE_121212B		
Sample ID: ICV	10	Initial Calibration Verification Standard							12/12/12 13:33	
Aluminum		4.05	mg/L	0.10	101	90	110			
Barium		0.797	mg/L	0.10	100	90	110			
Chromium		0.792	mg/L	0.010	99	90	110			
Cobalt		0.815	mg/L	0.010	102	90	110			
Copper		0.797	mg/L	0.010	100	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Manganese		4.07	mg/L	0.010	102	90	110			
Nickel		0.782	mg/L	0.010	98	90	110			
Vanadium		0.815	mg/L	0.10	102	90	110			
Zinc		0.809	mg/L	0.010	101	90	110			
Sample ID: ICSA	10	Interference Check Sample A							12/12/12 13:48	
Aluminum		516	mg/L	0.10	103	80	120			
Barium		0.000320	mg/L	0.10		0	0			
Chromium		0.00238	mg/L	0.012		0	0			
Cobalt		-0.00868	mg/L	0.010		0	0			
Copper		-0.000580	mg/L	0.010		0	0			
Iron		192	mg/L	0.030	96	80	120			
Manganese		-0.00276	mg/L	0.010		0	0			
Nickel		0.00778	mg/L	0.010		0	0			
Vanadium		-0.000230	mg/L	0.10		0	0			
Zinc		0.00900	mg/L	0.010		0	0			
Sample ID: ICSAB	10	Interference Check Sample AB							12/12/12 13:52	
Aluminum		521	mg/L	0.10	104	80	120			
Barium		0.495	mg/L	0.10	99	80	120			
Chromium		0.477	mg/L	0.012	95	80	120			
Cobalt		0.478	mg/L	0.010	96	80	120			
Copper		0.498	mg/L	0.010	100	80	120			
Iron		193	mg/L	0.030	96	80	120			
Manganese		0.490	mg/L	0.010	98	80	120			
Nickel		0.942	mg/L	0.010	94	80	120			
Vanadium		0.497	mg/L	0.10	99	80	120			
Zinc		1.03	mg/L	0.010	103	80	120			
Method: E200.7								Analytical Run: ICP2-HE_121217C		
Sample ID: ICV		Initial Calibration Verification Standard							12/17/12 14:19	
Lead		0.796	mg/L	0.013	100	90	110			
Sample ID: ICSA		Interference Check Sample A							12/17/12 14:34	
Lead		0.0187	mg/L	0.013		0	0			
Sample ID: ICSAB		Interference Check Sample AB							12/17/12 14:38	
Lead		0.975	mg/L	0.013	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121219A	
Sample ID: ICV	4	Initial Calibration Verification Standard							12/19/12 12:36	
Aluminum		4.06	mg/L	0.10	101	90	110			
Iron		4.00	mg/L	0.030	100	90	110			
Lead		0.799	mg/L	0.013	100	90	110			
Nickel		0.798	mg/L	0.010	100	90	110			
Sample ID: ICSA	4	Interference Check Sample A							12/19/12 12:51	
Aluminum		525	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Lead		0.0376	mg/L	0.013		0	0			
Nickel		0.00537	mg/L	0.010		0	0			
Sample ID: ICSAB	4	Interference Check Sample AB							12/19/12 12:55	
Aluminum		526	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Lead		1.02	mg/L	0.013	102	80	120			
Nickel		0.893	mg/L	0.010	89	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121220B	
Sample ID: ICV	2	Initial Calibration Verification Standard							12/20/12 13:28	
Cobalt		0.819	mg/L	0.010	102	90	110			
Lead		0.845	mg/L	0.013	106	90	110			
Sample ID: ICSA	2	Interference Check Sample A							12/20/12 13:43	
Cobalt		-0.00405	mg/L	0.010		0	0			
Lead		0.0329	mg/L	0.013		0	0			
Sample ID: ICSAB	2	Interference Check Sample AB							12/20/12 13:47	
Cobalt		0.457	mg/L	0.010	91	80	120			
Lead		0.945	mg/L	0.013	95	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 18968
Sample ID: MB-18968	11	Method Blank				Run: ICP2-HE_121212B				12/13/12 04:24
Aluminum		0.8	mg/kg	0.3						
Barium		0.03	mg/kg	0.02						
Chromium		ND	mg/kg	0.07						
Cobalt		ND	mg/kg	0.1						
Copper		ND	mg/kg	0.2						
Iron		2	mg/kg	0.7						
Lead		ND	mg/kg	1						
Manganese		ND	mg/kg	0.04						
Nickel		ND	mg/kg	0.08						
Vanadium		ND	mg/kg	0.10						
Zinc		0.3	mg/kg	0.1						
Sample ID: LFB-18968	11	Laboratory Fortified Blank				Run: ICP2-HE_121212B				12/13/12 04:27
Aluminum		264	mg/kg	5.0	105	80	120			
Barium		53.0	mg/kg	1.0	106	80	120			
Chromium		51.1	mg/kg	1.0	102	80	120			
Cobalt		49.7	mg/kg	1.0	99	80	120			
Copper		52.3	mg/kg	1.0	105	80	120			
Iron		263	mg/kg	5.0	104	80	120			
Lead		46.3	mg/kg	1.0	93	80	120			
Manganese		260	mg/kg	1.0	104	80	120			
Nickel		49.8	mg/kg	1.0	100	80	120			
Vanadium		52.5	mg/kg	1.0	105	80	120			
Zinc		49.3	mg/kg	1.0	98	80	120			
Sample ID: LCS-18968	11	Laboratory Control Sample				Run: ICP2-HE_121212B				12/13/12 04:39
Aluminum		14100	mg/kg	5.0	98	50.7	131.3			
Barium		571	mg/kg	1.0	95	80.6	112.2			
Chromium		75.0	mg/kg	1.0	101	72.8	109.1			
Cobalt		49.5	mg/kg	1.0	88	73.3	103.7			
Copper		259	mg/kg	1.0	94	77.5	109.6			
Iron		20200	mg/kg	5.0	90	39.6	138.3			
Lead		172	mg/kg	3.0	94	75.9	108.6			
Manganese		378	mg/kg	1.0	104	80.8	115.7			
Nickel		54.8	mg/kg	1.0	92	72.3	103.4			
Vanadium		64.3	mg/kg	1.0	90	66.6	107.3			
Zinc		189	mg/kg	1.0	90	74.2	109.9			
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B				12/13/12 06:34
Aluminum		19600	mg/kg	5.0		75	125			A
Barium		214	mg/kg	1.0	97	75	125			
Chromium		62.3	mg/kg	1.0	99	75	125			
Cobalt		57.9	mg/kg	1.0	104	75	125			
Copper		106	mg/kg	1.0	99	75	125			
Iron		23000	mg/kg	5.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Batch: 18968	
Sample ID: H12120021-009AMS	11	Sample Matrix Spike				Run: ICP2-HE_121212B			12/13/12 06:34	
Lead		68.5	mg/kg	3.0	117	75	125			
Manganese		738	mg/kg	1.0	98	75	125			
Nickel		60.6	mg/kg	1.0	104	75	125			
Vanadium		87.4	mg/kg	1.0	104	75	125			
Zinc		121	mg/kg	1.0	96	75	125			
Sample ID: H12120021-009AMSD	11	Sample Matrix Spike Duplicate				Run: ICP2-HE_121212B			12/13/12 06:38	
Aluminum		18400	mg/kg	5.0		75	125	6.0	20	A
Barium		210	mg/kg	1.0	87	75	125	2.0	20	
Chromium		61.2	mg/kg	1.0	95	75	125	1.8	20	
Cobalt		56.4	mg/kg	1.0	99	75	125	2.6	20	
Copper		102	mg/kg	1.0	91	75	125	3.1	20	
Iron		20500	mg/kg	5.0		75	125	12	20	A
Lead		68.1	mg/kg	3.1	114	75	125	0.6	20	
Manganese		741	mg/kg	1.0	97	75	125	0.4	20	
Nickel		61.0	mg/kg	1.0	103	75	125	0.7	20	
Vanadium		86.2	mg/kg	1.0	99	75	125	1.3	20	
Zinc		121	mg/kg	1.0	94	75	125	0.0	20	
Method: SW6010B									Batch: 18968	
Sample ID: MB-18968	3	Method Blank				Run: ICP2-HE_121217C			12/17/12 21:54	
Aluminum		1	mg/kg	0.8						
Barium		0.02	mg/kg	0.02						
Copper		ND	mg/kg	0.2						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	5	Method Blank				Run: ICP2-HE_121219A				12/19/12 19:23
Aluminum		0.5	mg/kg	0.3						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						
Sample ID: LFB-19051	5	Laboratory Fortified Blank				Run: ICP2-HE_121219A				12/19/12 19:27
Aluminum		263	mg/kg	5.0	105	80	120			
Cobalt		52.1	mg/kg	1.0	104	80	120			
Iron		260	mg/kg	5.0	103	80	120			
Lead		50.6	mg/kg	1.0	101	80	120			
Nickel		50.7	mg/kg	1.0	101	80	120			
Sample ID: LCS-19051	5	Laboratory Control Sample				Run: ICP2-HE_121219A				12/19/12 19:30
Aluminum		12600	mg/kg	5.0	87	50.7	131.3			
Cobalt		54.2	mg/kg	1.0	95	73.3	103.7			
Iron		19700	mg/kg	5.0	87	39.6	138.3			
Lead		197	mg/kg	3.1	106	75.9	108.6			
Nickel		57.3	mg/kg	1.0	95	72.3	103.4			
Sample ID: H12120021-010AMS	5	Sample Matrix Spike				Run: ICP2-HE_121219A				12/19/12 21:29
Aluminum		23300	mg/kg	5.0		75	125			A
Cobalt		56.4	mg/kg	1.0	96	75	125			
Iron		24700	mg/kg	5.0		75	125			A
Lead		77.2	mg/kg	3.1	104	75	125			
Nickel		68.6	mg/kg	1.0	89	75	125			
Sample ID: H12120021-010AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 21:33
Aluminum		22800	mg/kg	5.0		75	125	2.4	20	A
Cobalt		57.1	mg/kg	1.0	98	75	125	1.3	20	
Iron		24600	mg/kg	5.0		75	125	0.3	20	A
Lead		74.3	mg/kg	3.1	98	75	125	3.8	20	
Nickel		67.4	mg/kg	1.0	86	75	125	1.7	20	
Method: SW6010B										Batch: 19051
Sample ID: MB-19051	5	Method Blank				Run: ICP2-HE_121220B				12/20/12 14:48
Aluminum		1.0	mg/kg	0.8						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		0.1	mg/kg	0.08						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121210A		
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/10/12 12:34	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0504	mg/L	0.0010	101	90	110			
Beryllium		0.0258	mg/L	0.0010	103	90	110			
Cadmium		0.0262	mg/L	0.0010	105	90	110			
Selenium		0.0527	mg/L	0.0010	105	90	110			
Silver		0.0249	mg/L	0.0010	100	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/11/12 11:44	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Beryllium		0.0246	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Selenium		0.0503	mg/L	0.0010	101	90	110			
Silver		0.0236	mg/L	0.0010	94	90	110			
Thallium		0.0492	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 03:37	
Antimony		0.0493	mg/L	0.0010	99	90	110			
Arsenic		0.0486	mg/L	0.0010	97	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Selenium		0.0529	mg/L	0.0010	106	90	110			
Silver		0.0233	mg/L	0.0010	93	90	110			
Thallium		0.0488	mg/L	0.0010	98	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/12/12 10:49	
Antimony		0.0511	mg/L	0.0010	102	90	110			
Arsenic		0.0500	mg/L	0.0010	100	90	110			
Beryllium		0.0261	mg/L	0.0010	104	90	110			
Cadmium		0.0266	mg/L	0.0010	106	90	110			
Selenium		0.0535	mg/L	0.0010	107	90	110			
Silver		0.0252	mg/L	0.0010	101	90	110			
Thallium		0.0506	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 10:57	
Antimony		0.0512	mg/L	0.0010	102	90	110			
Arsenic		0.0511	mg/L	0.0010	102	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Cadmium		0.0265	mg/L	0.0010	106	90	110			
Selenium		0.0543	mg/L	0.0010	109	90	110			
Silver		0.0247	mg/L	0.0010	99	90	110			
Thallium		0.0505	mg/L	0.0010	101	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 18:01	
Antimony		0.0510	mg/L	0.0010	102	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121210A	
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/13/12 18:01	
Arsenic		0.0516	mg/L	0.0010	103	90	110			
Beryllium		0.0256	mg/L	0.0010	102	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0246	mg/L	0.0010	99	90	110			
Thallium		0.0509	mg/L	0.0010	102	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/14/12 01:49	
Antimony		0.0505	mg/L	0.0010	101	90	110			
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0260	mg/L	0.0010	104	90	110			
Selenium		0.0524	mg/L	0.0010	105	90	110			
Silver		0.0244	mg/L	0.0010	98	90	110			
Thallium		0.0501	mg/L	0.0010	100	90	110			
Sample ID: ICV STD	7	Initial Calibration Verification Standard							12/15/12 03:36	
Antimony		0.0508	mg/L	0.0010	102	90	110			
Arsenic		0.0509	mg/L	0.0010	102	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0263	mg/L	0.0010	105	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Silver		0.0246	mg/L	0.0010	98	90	110			
Thallium		0.0503	mg/L	0.0010	101	90	110			
Method: SW6020									Batch: 18968	
Sample ID: MB-18968	7	Method Blank				Run: ICPMS204-B_121210A			12/14/12 06:28	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		0.003	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.2	mg/kg	0.02						
Thallium		0.005	mg/kg	0.002						
Sample ID: LCS-18968	7	Laboratory Control Sample				Run: ICPMS204-B_121210A			12/14/12 06:33	
Antimony		50.2	mg/kg	1.0	41	2.2	92.9			
Arsenic		304	mg/kg	1.0	90	72.3	106.4			
Beryllium		38.5	mg/kg	1.0	77	76.3	108.6			
Cadmium		122	mg/kg	1.0	91	73	105.1			
Selenium		189	mg/kg	1.0	99	72.5	112.2			
Silver		75.3	mg/kg	1.0	111	67.8	112.8			
Thallium		91.2	mg/kg	1.0	102	71.7	109.5			
Sample ID: LFB-18968	7	Laboratory Fortified Blank				Run: ICPMS204-B_121210A			12/14/12 06:37	
Antimony		57.4	mg/kg	1.0	115	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 18968
Sample ID: LFB-18968	7	Laboratory Fortified Blank				Run: ICPMS204-B_121210A				12/14/12 06:37
Arsenic		50.8	mg/kg	1.0	101	80	120			
Beryllium		22.0	mg/kg	1.0	88	80	120			
Cadmium		28.6	mg/kg	1.0	114	80	120			
Selenium		51.8	mg/kg	1.0	104	80	120			
Silver		29.9	mg/kg	1.0	119	80	120			
Thallium		54.0	mg/kg	1.0	108	80	120			
Sample ID: H12120021-009AMS	7	Sample Matrix Spike				Run: ICPMS204-B_121210A				12/14/12 08:53
Antimony		12.4	mg/kg	1.0	25	75	125			S
Arsenic		130	mg/kg	1.0	99	75	125			
Beryllium		21.3	mg/kg	1.0	85	75	125			
Cadmium		25.4	mg/kg	1.0	101	75	125			
Selenium		51.5	mg/kg	1.0	105	75	125			
Silver		29.3	mg/kg	1.0	119	75	125			
Thallium		53.6	mg/kg	1.0	109	75	125			
Sample ID: H12120021-009AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121210A				12/14/12 08:57
Antimony		13.7	mg/kg	1.0	27	75	125	10	20	S
Arsenic		129	mg/kg	1.0	95	75	125	0.8	20	
Beryllium		21.3	mg/kg	1.0	84	75	125	0.1	20	
Cadmium		26.2	mg/kg	1.0	102	75	125	3.1	20	
Selenium		53.4	mg/kg	1.0	106	75	125	3.7	20	
Silver		29.7	mg/kg	1.0	118	75	125	1.4	20	
Thallium		54.6	mg/kg	1.0	109	75	125	1.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS204-B_121218B	
Sample ID: ICV STD		Initial Calibration Verification Standard							12/18/12 17:25	
Silver		0.0241	mg/L	0.0010	96	90	110			
Sample ID: ICV STD		Initial Calibration Verification Standard							12/19/12 05:35	
Silver		0.0241	mg/L	0.0010	96	90	110			
Method: SW6020									Batch: 18968	
Sample ID: MB-18968	7	Method Blank				Run: ICPMS204-B_121218B			12/19/12 03:07	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Selenium		0.01	mg/kg	0.007						
Silver		0.06	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Sample ID: LCS-18968	7	Laboratory Control Sample				Run: ICPMS204-B_121218B			12/19/12 03:11	
Antimony		43.6	mg/kg	1.0	35	2.2	92.9			
Arsenic		302	mg/kg	1.0	90	72.3	106.4			
Beryllium		40.4	mg/kg	1.0	81	76.3	108.6			
Cadmium		114	mg/kg	1.0	85	73	105.1			
Selenium		176	mg/kg	1.0	92	72.5	112.2			
Silver		69.3	mg/kg	1.0	102	67.8	112.8			
Thallium		90.5	mg/kg	1.0	101	71.7	109.5			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121219B		
Sample ID: ICV STD	14 Initial Calibration Verification Standard								12/19/12 15:17	
Antimony		0.0500	mg/L	0.0010	100	90	110			
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Barium		0.0505	mg/L	0.0010	101	90	110			
Beryllium		0.0249	mg/L	0.0010	100	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Chromium		0.0507	mg/L	0.0010	101	90	110			
Copper		0.0526	mg/L	0.0010	105	90	110			
Iron		0.273	mg/L	0.0010	109	90	110			
Manganese		0.246	mg/L	0.0010	98	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0255	mg/L	0.0010	102	90	110			
Thallium		0.0497	mg/L	0.0010	99	90	110			
Vanadium		0.0506	mg/L	0.0010	101	90	110			
Zinc		0.0545	mg/L	0.0010	109	90	110			
Method: SW6020									Batch: 19051	
Sample ID: MB-19051	14 Method Blank					Run: ICPMS204-B_121219B			12/20/12 01:14	
Antimony		0.02	mg/kg	0.002						
Arsenic		0.04	mg/kg	0.006						
Barium		0.05	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.09	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Manganese		0.1	mg/kg	0.008						
Selenium		0.01	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						
Sample ID: LCS-19051	14 Laboratory Control Sample					Run: ICPMS204-B_121219B			12/20/12 01:18	
Antimony		53.9	mg/kg	1.0	43	2.2	92.9			
Arsenic		321	mg/kg	1.0	95	72.3	106.4			
Barium		640	mg/kg	1.0	105	80.6	112.2			
Beryllium		43.1	mg/kg	1.0	85	76.3	108.6			
Cadmium		122	mg/kg	1.0	90	73	105.1			
Chromium		80.1	mg/kg	1.0	106	72.8	109.1			
Copper		302	mg/kg	1.0	109	77.5	109.6			
Iron		21300	mg/kg	5.0	93	39.6	138.3			
Manganese		407	mg/kg	1.0	111	80.8	115.7			
Selenium		192	mg/kg	1.0	99	72.5	112.2			
Silver		74.1	mg/kg	1.0	108	67.8	112.8			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: LCS-19051	14	Laboratory Control Sample				Run: ICPMS204-B_121219B				12/20/12 01:18
Thallium		93.0	mg/kg	1.0	103	71.7	109.5			
Vanadium		69.6	mg/kg	1.0	96	66.6	107.3			
Zinc		226	mg/kg	1.0	107	74.2	109.9			
Sample ID: LFB-19051	14	Laboratory Fortified Blank				Run: ICPMS204-B_121219B				12/20/12 01:23
Antimony		53.5	mg/kg	1.0	107	80	120			
Arsenic		52.8	mg/kg	1.0	106	80	120			
Barium		53.2	mg/kg	1.0	106	80	120			
Beryllium		23.0	mg/kg	1.0	92	80	120			
Cadmium		27.9	mg/kg	1.0	111	80	120			
Chromium		54.0	mg/kg	1.0	108	80	120			
Copper		56.0	mg/kg	1.0	112	80	120			
Iron		289	mg/kg	5.0	114	80	120			
Manganese		262	mg/kg	1.0	105	80	120			
Selenium		52.6	mg/kg	1.0	105	80	120			
Silver		27.9	mg/kg	1.0	111	80	120			
Thallium		52.4	mg/kg	1.0	105	80	120			
Vanadium		52.4	mg/kg	1.0	105	80	120			
Zinc		55.8	mg/kg	1.0	111	80	120			
Sample ID: H12120021-010AMS	14	Sample Matrix Spike				Run: ICPMS204-B_121219B				12/20/12 03:51
Antimony		9.79	mg/kg	1.0	19	75	125			S
Arsenic		168	mg/kg	1.0	106	75	125			
Barium		301	mg/kg	1.0		75	125			A
Beryllium		22.0	mg/kg	1.0	87	75	125			
Cadmium		24.4	mg/kg	1.0	95	75	125			
Chromium		104	mg/kg	1.0	108	75	125			
Copper		157	mg/kg	1.0	114	75	125			
Iron		27100	mg/kg	5.0		75	125			A
Manganese		950	mg/kg	1.0	110	75	125			
Selenium		50.2	mg/kg	1.0	101	75	125			
Silver		27.8	mg/kg	1.0	111	75	125			
Thallium		52.5	mg/kg	1.0	106	75	125			
Vanadium		108	mg/kg	1.0	117	75	125			
Zinc		164	mg/kg	1.0	105	75	125			
Sample ID: H12120021-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/20/12 03:55
Antimony		9.78	mg/kg	1.0	19	75	125	0.1	20	S
Arsenic		167	mg/kg	1.0	105	75	125	0.4	20	
Barium		300	mg/kg	1.0		75	125	0.3	20	A
Beryllium		21.9	mg/kg	1.0	86	75	125	0.6	20	
Cadmium		24.2	mg/kg	1.0	94	75	125	1.0	20	
Chromium		101	mg/kg	1.0	101	75	125	3.2	20	
Copper		154	mg/kg	1.0	108	75	125	1.8	20	
Iron		27600	mg/kg	5.0		75	125	2.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19051
Sample ID: H12120021-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/20/12 03:55
Manganese		966	mg/kg	1.0	117	75	125	1.8	20	
Selenium		51.5	mg/kg	1.0	104	75	125	2.5	20	
Silver		27.4	mg/kg	1.0	110	75	125	1.2	20	
Thallium		52.4	mg/kg	1.0	105	75	125	0.2	20	
Vanadium		106	mg/kg	1.0	114	75	125	1.5	20	
Zinc		163	mg/kg	1.0	104	75	125	0.4	20	
Method: SW6020										Analytical Run: ICPMS204-B_121220C
Sample ID: ICV STD		Initial Calibration Verification Standard								12/20/12 17:30
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020										Batch: 19051
Sample ID: MB-19051	14	Method Blank				Run: ICPMS204-B_121220C				12/21/12 00:55
Antimony		0.007	mg/kg	0.002						
Arsenic		0.05	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.2	mg/kg	0.01						
Iron		4	mg/kg	0.1						
Manganese		0.06	mg/kg	0.008						
Selenium		ND	mg/kg	0.007						
Silver		0.1	mg/kg	0.02						
Thallium		ND	mg/kg	0.002						
Vanadium		0.09	mg/kg	0.003						
Zinc		0.4	mg/kg	0.06						
Sample ID: LCS-19051	14	Laboratory Control Sample				Run: ICPMS204-B_121220C				12/21/12 00:59
Antimony		52.4	mg/kg	1.0	42	2.2	92.9			
Arsenic		314	mg/kg	1.0	92	72.3	106.4			
Barium		647	mg/kg	1.0	106	80.6	112.2			
Beryllium		42.9	mg/kg	1.0	85	76.3	108.6			
Cadmium		123	mg/kg	1.0	91	73	105.1			
Chromium		79.2	mg/kg	1.0	105	72.8	109.1			
Copper		294	mg/kg	1.0	106	77.5	109.6			
Iron		21600	mg/kg	5.0	95	39.6	138.3			
Manganese		413	mg/kg	1.0	113	80.8	115.7			
Selenium		192	mg/kg	1.0	99	72.5	112.2			
Silver		73.7	mg/kg	1.0	108	67.8	112.8			
Thallium		94.5	mg/kg	1.0	105	71.7	109.5			
Vanadium		69.7	mg/kg	1.0	96	66.6	107.3			
Zinc		227	mg/kg	1.0	107	74.2	109.9			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67711
Sample ID: MB-67711		Method Blank				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12110397-001A		Sample Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.18	mg/kg	5.0					30	
Sample ID: H12110397-014A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	110	70	130			
Sample ID: H12110397-014A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.42	mg/kg	0.010	109	70	130	0.5	20	
Sample ID: H12120021-001A		Sample Matrix Spike				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.35	mg/kg	0.010	92	70	130			
Sample ID: H12120021-001A		Sample Matrix Spike Duplicate				Run: SUB-B196695				12/12/12 13:35
Chromium, Hexavalent - Soluble		0.33	mg/kg	0.010	86	70	130	7.1	20	
Method: SW7196A										Batch: B_67951
Sample ID: LCS-R197178		Laboratory Control Sample				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent		0.0959	mg/L	0.010	96	90	110			
Sample ID: MB-67951		Method Blank				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: B12120644-015ADUP		Sample Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Sample ID: H12120021-008A		Sample Matrix Spike				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	93	70	130			
Sample ID: H12120021-008A		Sample Matrix Spike Duplicate				Run: SUB-B197178				12/20/12 15:00
Chromium, Hexavalent - Soluble		0.37	mg/kg	0.010	98	70	130	4.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120021

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121212A	
Sample ID: ICV		Initial Calibration Verification Standard							12/12/12 12:16	
Mercury		0.00096	mg/kg	0.50	96	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/12/12 13:48	
Mercury		0.0027	mg/kg	0.50	107	90	110			
Method: SW7471A									Batch: 18964	
Sample ID: MB-18964		Method Blank				Run: HGCV201-H_121212A			12/12/12 13:20	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-18964		Laboratory Control Sample				Run: HGCV201-H_121212A			12/12/12 13:23	
Mercury		4.7	mg/kg	0.50	93	80	120			
Sample ID: H12120021-007AMS		Sample Matrix Spike				Run: HGCV201-H_121212A			12/12/12 14:12	
Mercury		1.2	mg/kg	0.50	123	80	120			S
Sample ID: H12120021-007AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121212A			12/12/12 14:14	
Mercury		1.2	mg/kg	0.50	118	80	120	4.1	20	
Sample ID: H12120021-007ADIL		Serial Dilution				Run: HGCV201-H_121212A			12/12/12 14:17	
Mercury		0.0090	mg/kg	0.50		0	0			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12120021

Login completed by: Tracy L. Lorash
Date Received: 12/3/2012
Reviewed by: BL2000\sdull
Received by: TLL
Reviewed Date: 12/4/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.3°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

Hydrometrics, Inc.

CHAIN OF CUSTODY RECORD

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO.	PROJECT NAME
12042	Montana Background Soils Investigation

SAMPLERS: *(Signature)* JBell

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	Total Metals (Bulk)	Total Metals (<250µm - 60 mesh)					REMARKS
12/1/12	0915	X		MBSI-05-01	01 soil									X	X					H12120021
12/1/12	1415	X		-28-01										X	X					
12/1/12	1535	X		-28-02										X	X					
12/2/12	0935	X		-30-02										X	X					
12/2/12	0945	X		MBSI-30-03	01 soil									X	X					

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
JBell	12/3/12 0930		ELI Helena	Direct Bill MDEQ	Other hand-delivered
					Air Bill #
Relinquished (Signature)	Date/Time	Received by: *(Signature)*	Remarks		
	12/3/12 1133		Bill MDEQ - ATTN: Jason Seyler		
			Reference ORG # 484422 - Inorganic Background Study		
Relinquished (Signature)	Date/Time	Received for Laboratory by: *(Signature)*	Date/Time	Enclosed: ☒ Parameter sheet w/detection limits	
			12/3/12 11:33	☐ QA/QC standard mixing instructions ☒ Cover letter	
				☐ Other	

HFORM-1-5/99

Return results & electronic copy to:

1.3 TB Hand del

No Ice

Split Samples:
[] Accepted [] Declined

Signature

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

December 3, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are five (5) soil samples collected on December 1-2, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis

Parameter[1]	Digestion Method[2]	Analytical Method[2]	Required Reporting Limit (mg/kg)	EPA Regional Screening Level (RSL)[3] (mg/kg)	Maximum Holding Time (days)	Preservation
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).

ANALYTICAL SUMMARY REPORT

December 28, 2012

MT DEQ-Site Response
PO Box 200901
Helena, MT 59620-0901

Workorder No.: H12120098 Quote ID: H726 - MT Background Inorganics

Project Name: ORG #484422 - Inorganic Background Study

Energy Laboratories Inc Helena MT received the following 10 samples for MT DEQ-Site Response on 12/5/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H12120098-001	MBSI 35-01	11/28/12 14:00	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120098-002	MBSI 35-01	11/28/12 14:00	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120098-003	MBSI 35-02	11/28/12 16:00	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120098-004	MBSI 35-02	11/28/12 16:00	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120098-005	MBSI 35-03	11/28/12 16:30	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120098-006	MBSI 35-03	11/28/12 16:30	12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

ANALYTICAL SUMMARY REPORT

H12120098-007	MBSI 54-01	11/28/12 10:30 12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120098-008	MBSI 54-01	11/28/12 10:30 12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation
H12120098-009	MBSI 54-02	12/03/12 10:30 12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Mercury in Solid By CVAA Digestion, Total Metals Alkaline Digestion for Hex Chromium Digestion, Mercury by CVAA
H12120098-010	MBSI 54-02	12/03/12 10:30 12/05/12	Soil	Metals by ICP/ICPMS, Total Chromium, Hexavalent Chromium, Trivalent Digestion, Total Metals Alkaline Digestion for Hex Chromium Sieves Soil Preparation

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Inorganic Supervisor

Digitally signed by
Amanda B. Blackburn
Date: 2012.12.28 13:23:03 -07:00

CLIENT: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Sample Delivery Group: H12120098

Report Date: 12/28/12

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Prior to analysis the samples were air dried and then a subsample was taken for the bulk analysis. The remaining sample was sieved, then digested/analyzed. For the sieve duplicate samples, the samples were air dried, a subsample taken for the bulk analysis, split for the sieve duplicate, then each portion was sieved.

The portion of the sample which passed through the No.60 sieve was then digested/analyzed.

All results are reported on a dry weight basis. Due to matrix interference, the reporting limit was raised for Silver as indicated on the report. Abb 12/27/12

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120098

Report Date: 12/28/12
Date Received: 12/05/12

		Analysis		No_ 60 Sieve,	Ag-T	Al-T	As-T	Ba-T	Be-T	Cd-T	Co-T	Cr-T	Cu-T	Fe-T
		Units		wt% retained	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12120098-001	MBSI 35-01	0	0		0.4	16300	13.4	233	0.7	0.4	10.1	14.6	26.9	29000
H12120098-002	MBSI 35-01	0	0	61.8	0.3	20600	13.7	325	0.8	0.5	14.0	18.7	45.1	28500
H12120098-003	MBSI 35-02	0	0		0.2	22200	7.0	212	0.9	0.1	9.2	21.4	25.7	23500
H12120098-004	MBSI 35-02	0	0	44.3	0.1	24500	6.9	236	1.0	0.2	9.0	24.4	36.2	23200
H12120098-005	MBSI 35-03	0	0		< 0.3	22200	7.3	215	0.9	0.2	9.5	20.4	26.4	24300
H12120098-006	MBSI 35-03	0	0	35.9	< 0.3	22800	6.8	220	0.9	0.2	9.5	20.3	39.4	22400
H12120098-007	MBSI 54-01	0	0		< 0.3	24800	4.0	268	0.6	< 0.1	5.1	14.5	12.0	21200
H12120098-008	MBSI 54-01	0	0	52.8	< 0.3	26000	3.1	276	0.5	< 0.1	4.1	15.7	21.5	18400
H12120098-009	MBSI 54-02	0	0		< 0.1	8630	7.1	66	0.4	< 0.1	5.1	15.1	8.1	14100
H12120098-010	MBSI 54-02	0	0	53.1	< 0.1	12200	8.0	89	0.6	< 0.1	5.1	22.5	23.0	17000

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response
Project: ORG #484422 - Inorganic Background Study
Workorder: H12120098

Report Date: 12/28/12
Date Received: 12/05/12

		Analysis		Mn-T	Ni-T	Pb-T	Sb-T	Se-T	Tl-T	V-T	Zn-T	Chromium, Trivalent	Hg, Total	Chromium, Hexavalent
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample ID	Client Sample ID	Up	Low	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
H12120098-001	MBSI 35-01	0	0	921	34.6	35	0.2	< 0.2	0.23	25.7	147	15	< 0.050	< 0.29
H12120098-002	MBSI 35-01	0	0	1180	27.4	45	0.2	< 0.2	0.31	28.2	194	19		< 0.29
H12120098-003	MBSI 35-02	0	0	750	16.1	15	0.2	< 0.2	0.42	28.4	75	21	< 0.050	0.46
H12120098-004	MBSI 35-02	0	0	806	15.8	17	0.2	0.2	0.43	30.8	83	24		< 0.29
H12120098-005	MBSI 35-03	0	0	794	13.9	18	0.2	< 0.2	0.44	29.6	76	20	< 0.050	0.51
H12120098-006	MBSI 35-03	0	0	767	14.4	20	0.2	< 0.2	0.42	29.2	78	20		< 0.29
H12120098-007	MBSI 54-01	0	0	780	16.0	20	< 0.1	< 0.2	0.30	19.5	105	14	< 0.050	< 0.29
H12120098-008	MBSI 54-01	0	0	732	17.1	22	< 0.1	< 0.2	0.30	19.8	110	16		< 0.29
H12120098-009	MBSI 54-02	0	0	272	11.0	3	< 0.1	< 0.2	0.09	16.9	21	15	< 0.050	< 0.29
H12120098-010	MBSI 54-02	0	0	225	15.0	9	< 0.1	< 0.2	0.13	22.6	32	22		< 0.29

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121219A	
Sample ID: ICV	3	Initial Calibration Verification Standard							12/19/12 12:36	
Aluminum		4.06	mg/L	0.10	101	90	110			
Iron		4.00	mg/L	0.030	100	90	110			
Nickel		0.798	mg/L	0.010	100	90	110			
Sample ID: ICSA	3	Interference Check Sample A							12/19/12 12:51	
Aluminum		525	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Nickel		0.00537	mg/L	0.010		0	0			
Sample ID: ICSAB	3	Interference Check Sample AB							12/19/12 12:55	
Aluminum		526	mg/L	0.10	105	80	120			
Iron		184	mg/L	0.030	92	80	120			
Nickel		0.893	mg/L	0.010	89	80	120			
Method: E200.7									Analytical Run: ICP2-HE_121220B	
Sample ID: ICV	5	Initial Calibration Verification Standard							12/20/12 13:28	
Aluminum		4.07	mg/L	0.10	102	90	110			
Cobalt		0.819	mg/L	0.010	102	90	110			
Iron		4.04	mg/L	0.030	101	90	110			
Lead		0.845	mg/L	0.013	106	90	110			
Nickel		0.816	mg/L	0.010	102	90	110			
Sample ID: ICSA	5	Interference Check Sample A							12/20/12 13:43	
Aluminum		519	mg/L	0.10	104	80	120			
Cobalt		-0.00405	mg/L	0.010		0	0			
Iron		185	mg/L	0.030	92	80	120			
Lead		0.0329	mg/L	0.013		0	0			
Nickel		0.00703	mg/L	0.010		0	0			
Sample ID: ICSAB	5	Interference Check Sample AB							12/20/12 13:47	
Aluminum		530	mg/L	0.10	106	80	120			
Cobalt		0.457	mg/L	0.010	91	80	120			
Iron		187	mg/L	0.030	93	80	120			
Lead		0.945	mg/L	0.013	95	80	120			
Nickel		0.910	mg/L	0.010	91	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-HE_121226C	
Sample ID: ICV	2	Initial Calibration Verification Standard							12/26/12 11:24	
Cobalt		0.803	mg/L	0.010	100	90	110			
Lead		0.775	mg/L	0.013	97	90	110			
Sample ID: ICSA	2	Interference Check Sample A							12/26/12 11:39	
Cobalt		-0.00323	mg/L	0.010		0	0			
Lead		0.0716	mg/L	0.013		0	0			
Sample ID: ICSAB	2	Interference Check Sample AB							12/26/12 11:43	
Cobalt		0.474	mg/L	0.010	95	80	120			
Lead		0.960	mg/L	0.013	96	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19048
Sample ID: MB-19048	5	Method Blank				Run: ICP2-HE_121219A				12/19/12 21:36
Aluminum		1	mg/kg	0.3						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		2	mg/kg	1						
Nickel		ND	mg/kg	0.08						
Sample ID: LFB-19048	5	Laboratory Fortified Blank				Run: ICP2-HE_121219A				12/19/12 21:48
Aluminum		260	mg/kg	5.0	103	80	120			
Cobalt		54.7	mg/kg	1.0	109	80	120			
Iron		261	mg/kg	5.0	103	80	120			
Lead		54.5	mg/kg	1.0	106	80	120			
Nickel		50.7	mg/kg	1.0	101	80	120			
Sample ID: LCS-19048	5	Laboratory Control Sample				Run: ICP2-HE_121219A				12/19/12 21:52
Aluminum		12700	mg/kg	5.0	87	50.7	131.3			
Cobalt		54.6	mg/kg	1.0	96	73.3	103.7			
Iron		20200	mg/kg	5.0	89	39.6	138.3			
Lead		195	mg/kg	3.1	104	75.9	108.6			
Nickel		53.7	mg/kg	1.0	89	72.3	103.4			
Sample ID: H12120098-010AMS	5	Sample Matrix Spike				Run: ICP2-HE_121219A				12/19/12 22:47
Aluminum		14000	mg/kg	5.0		75	125			A
Cobalt		55.0	mg/kg	1.0	100	75	125			
Iron		16200	mg/kg	5.0		75	125			A
Lead		54.2	mg/kg	3.1	76	75	125			
Nickel		60.7	mg/kg	1.0	92	75	125			
Sample ID: H12120098-010AMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-HE_121219A				12/19/12 22:51
Aluminum		14000	mg/kg	5.0		75	125	0.2	20	A
Cobalt		55.1	mg/kg	1.0	100	75	125	0.1	20	
Iron		16300	mg/kg	5.0		75	125	0.3	20	A
Lead		60.3	mg/kg	3.1	89	75	125	11	20	
Nickel		60.6	mg/kg	1.0	92	75	125	0.2	20	
Method: SW6010B										Batch: 19048
Sample ID: MB-19048	5	Method Blank				Run: ICP2-HE_121220B				12/20/12 16:27
Aluminum		ND	mg/kg	0.8						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 19048
Sample ID: MB-19048	5	Method Blank				Run: ICP2-HE_121226C				12/26/12 17:30
Aluminum		1	mg/kg	0.8						
Cobalt		ND	mg/kg	0.1						
Iron		3	mg/kg	0.7						
Lead		ND	mg/kg	1						
Nickel		ND	mg/kg	0.08						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020								Analytical Run: ICPMS204-B_121219B		
Sample ID: ICV STD	14 Initial Calibration Verification Standard								12/19/12 15:17	
Antimony		0.0500	mg/L	0.0010	100	90	110			
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Barium		0.0505	mg/L	0.0010	101	90	110			
Beryllium		0.0249	mg/L	0.0010	100	90	110			
Cadmium		0.0259	mg/L	0.0010	104	90	110			
Chromium		0.0507	mg/L	0.0010	101	90	110			
Copper		0.0526	mg/L	0.0010	105	90	110			
Iron		0.273	mg/L	0.0010	109	90	110			
Manganese		0.246	mg/L	0.0010	98	90	110			
Selenium		0.0525	mg/L	0.0010	105	90	110			
Silver		0.0255	mg/L	0.0010	102	90	110			
Thallium		0.0497	mg/L	0.0010	99	90	110			
Vanadium		0.0506	mg/L	0.0010	101	90	110			
Zinc		0.0545	mg/L	0.0010	109	90	110			
Method: SW6020									Batch: 19048	
Sample ID: MB-19048	14 Method Blank					Run: ICPMS204-B_121219B			12/19/12 19:32	
Antimony		0.01	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.06	mg/kg	0.01						
Beryllium		0.003	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.02	mg/kg	0.009						
Copper		0.1	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Manganese		0.06	mg/kg	0.008						
Selenium		0.02	mg/kg	0.007						
Silver		0.3	mg/kg	0.02						
Thallium		0.004	mg/kg	0.002						
Vanadium		0.1	mg/kg	0.003						
Zinc		0.3	mg/kg	0.06						
Sample ID: LCS-19048	14 Laboratory Control Sample					Run: ICPMS204-B_121219B			12/19/12 19:37	
Antimony		59.1	mg/kg	1.0	47	2.2	92.9			
Arsenic		322	mg/kg	1.0	95	72.3	106.4			
Barium		630	mg/kg	1.0	104	80.6	112.2			
Beryllium		44.5	mg/kg	1.0	88	76.3	108.6			
Cadmium		121	mg/kg	1.0	89	73	105.1			
Chromium		81.1	mg/kg	1.0	108	72.8	109.1			
Copper		297	mg/kg	1.0	107	77.5	109.6			
Iron		22700	mg/kg	5.0	100	39.6	138.3			
Manganese		412	mg/kg	1.0	113	80.8	115.7			
Selenium		198	mg/kg	1.0	102	72.5	112.2			
Silver		71.6	mg/kg	1.0	104	67.8	112.8			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19048
Sample ID: LCS-19048	14	Laboratory Control Sample				Run: ICPMS204-B_121219B				12/19/12 19:37
Thallium		91.6	mg/kg	1.0	102	71.7	109.5			
Vanadium		72.7	mg/kg	1.0	100	66.6	107.3			
Zinc		227	mg/kg	1.0	107	74.2	109.9			
Sample ID: LFB-19048	14	Laboratory Fortified Blank				Run: ICPMS204-B_121219B				12/19/12 19:41
Antimony		52.6	mg/kg	1.0	105	80	120			
Arsenic		51.4	mg/kg	1.0	103	80	120			
Barium		53.0	mg/kg	1.0	106	80	120			
Beryllium		23.8	mg/kg	1.0	95	80	120			
Cadmium		27.2	mg/kg	1.0	109	80	120			
Chromium		53.0	mg/kg	1.0	106	80	120			
Copper		54.5	mg/kg	1.0	109	80	120			
Iron		282	mg/kg	5.0	111	80	120			
Manganese		261	mg/kg	1.0	104	80	120			
Selenium		50.4	mg/kg	1.0	101	80	120			
Silver		27.5	mg/kg	1.0	109	80	120			
Thallium		51.9	mg/kg	1.0	104	80	120			
Vanadium		52.0	mg/kg	1.0	104	80	120			
Zinc		54.0	mg/kg	1.0	108	80	120			
Sample ID: H12120098-010AMS	14	Sample Matrix Spike				Run: ICPMS204-B_121219B				12/19/12 21:32
Antimony		17.5	mg/kg	1.0	35	75	125			S
Arsenic		60.0	mg/kg	1.0	105	75	125			
Barium		159	mg/kg	1.0	142	75	125			S
Beryllium		23.9	mg/kg	1.0	94	75	125			
Cadmium		24.8	mg/kg	1.0	100	75	125			
Chromium		78.7	mg/kg	1.0	113	75	125			
Copper		77.9	mg/kg	1.0	111	75	125			
Iron		17700	mg/kg	5.0		75	125			A
Manganese		486	mg/kg	1.0	105	75	125			
Selenium		51.3	mg/kg	1.0	103	75	125			
Silver		28.5	mg/kg	1.0	114	75	125			
Thallium		52.8	mg/kg	1.0	106	75	125			
Vanadium		78.5	mg/kg	1.0	113	75	125			
Zinc		86.3	mg/kg	1.0	110	75	125			
Sample ID: H12120098-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/19/12 21:36
Antimony		17.6	mg/kg	1.0	35	75	125	0.8	20	S
Arsenic		59.3	mg/kg	1.0	104	75	125	1.3	20	
Barium		154	mg/kg	1.0	132	75	125	3.1	20	S
Beryllium		23.7	mg/kg	1.0	93	75	125	0.9	20	
Cadmium		24.6	mg/kg	1.0	99	75	125	0.7	20	
Chromium		78.3	mg/kg	1.0	113	75	125	0.5	20	
Copper		75.6	mg/kg	1.0	106	75	125	3.0	20	
Iron		17900	mg/kg	5.0		75	125	1.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 19048
Sample ID: H12120098-010AMSD	14	Sample Matrix Spike Duplicate				Run: ICPMS204-B_121219B				12/19/12 21:36
Manganese		487	mg/kg	1.0	106	75	125	0.3	20	
Selenium		50.6	mg/kg	1.0	102	75	125	1.3	20	
Silver		27.9	mg/kg	1.0	111	75	125	2.2	20	
Thallium		52.5	mg/kg	1.0	106	75	125	0.6	20	
Vanadium		77.5	mg/kg	1.0	111	75	125	1.3	20	
Zinc		85.7	mg/kg	1.0	109	75	125	0.7	20	
Method: SW6020										Analytical Run: ICPMS204-B_121220C
Sample ID: ICV STD		Initial Calibration Verification Standard								12/20/12 17:30
Silver		0.0247	mg/L	0.0010	99	90	110			
Method: SW6020										Batch: 19048
Sample ID: MB-19048	14	Method Blank				Run: ICPMS204-B_121220C				12/21/12 02:00
Antimony		0.02	mg/kg	0.002						
Arsenic		0.03	mg/kg	0.006						
Barium		0.07	mg/kg	0.01						
Beryllium		ND	mg/kg	0.003						
Cadmium		0.04	mg/kg	0.003						
Chromium		0.01	mg/kg	0.009						
Copper		0.07	mg/kg	0.01						
Iron		3	mg/kg	0.1						
Manganese		0.08	mg/kg	0.008						
Selenium		0.01	mg/kg	0.007						
Silver		0.07	mg/kg	0.02						
Thallium		0.002	mg/kg	0.002						
Vanadium		0.08	mg/kg	0.003						
Zinc		0.2	mg/kg	0.06						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7196A										Batch: B_67902
Sample ID: MB-R197098		Method Blank				Run: SUB-B197098				12/19/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12120098-001A		Sample Matrix Spike				Run: SUB-B197098				12/19/12 15:00
Chromium, Hexavalent - Soluble		0.40	mg/kg	0.010	104	70	130			
Sample ID: H12120098-001A		Sample Matrix Spike Duplicate				Run: SUB-B197098				12/19/12 15:00
Chromium, Hexavalent - Soluble		0.37	mg/kg	0.010	98	70	130	6.3	20	
Sample ID: H12120098-007A		Sample Duplicate				Run: SUB-B197098				12/19/12 15:00
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	
Method: SW7196A										Batch: B_67965
Sample ID: MB-67965		Method Blank				Run: SUB-B197180				12/20/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	0.1						
Sample ID: H12120098-002A		Sample Matrix Spike				Run: SUB-B197180				12/20/12 16:15
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	94	70	130			
Sample ID: H12120098-002A		Sample Matrix Spike Duplicate				Run: SUB-B197180				12/20/12 16:15
Chromium, Hexavalent - Soluble		0.36	mg/kg	0.010	94	70	130	0.3	20	
Sample ID: H12120098-010A		Sample Duplicate				Run: SUB-B197180				12/20/12 16:15
Chromium, Hexavalent - Soluble		ND	mg/kg	5.0					30	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: MT DEQ-Site Response **Report Date:** 12/28/12

Project: ORG #484422 - Inorganic Background Study **Work Order:** H12120098

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471A									Analytical Run: HGCV201-H_121218A	
Sample ID: ICV		Initial Calibration Verification Standard							12/18/12 13:19	
Mercury		0.0010	mg/kg	0.50	101	90	110			
Sample ID: CCV		Continuing Calibration Verification Standard							12/18/12 15:29	
Mercury		0.0026	mg/kg	0.50	104	90	110			
Method: SW7471A									Batch: 19054	
Sample ID: MB-19054		Method Blank				Run: HGCV201-H_121218A			12/18/12 14:40	
Mercury		ND	mg/kg	0.0004						
Sample ID: LCS-19054		Laboratory Control Sample				Run: HGCV201-H_121218A			12/18/12 14:42	
Mercury		4.8	mg/kg	0.50	97	80	120			
Sample ID: H12120098-005AMS		Sample Matrix Spike				Run: HGCV201-H_121218A			12/18/12 15:44	
Mercury		1.0	mg/kg	0.50	103	80	120			
Sample ID: H12120098-005AMSD		Sample Matrix Spike Duplicate				Run: HGCV201-H_121218A			12/18/12 15:46	
Mercury		1.0	mg/kg	0.50	102	80	120	0.8	20	
Sample ID: H12120098-005ADIL		Serial Dilution				Run: HGCV201-H_121218A			12/18/12 15:48	
Mercury		0.016	mg/kg	0.50		0	0		20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

MT DEQ-Site Response H12120098

Login completed by: Tracy L. Lorash
Date Received: 12/5/2012
Reviewed by: BL2000\sdull
Received by: elm
Reviewed Date: 12/10/2012
Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.0°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Contact and Corrective Action Comments:

None

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

PROJ. NO.: 12042

PROJECT NAME: MBSI

SAMPLERS: *(Signature)* [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H_2SO_4	Diss. Metal F / HNO_3	CN UF / NaOH	Total Metals UF / HNO_3	Total Recoverable Metals UF / HNO_3	BTEX	TPH	~~Total Metals (bulk)~~ MBSI const -list	Total Metals (<250µm -60 mesh)						REMARKS
11/28/12	1400		X	MBSI 35-01	1									X	X						H12120098
11/28/12	1600		X	35-02	1									X	X						
11/28/12	1030		X	35-03	1									X	X						
11/28/12	1030		X	54-01	1									X	X						
12/3/12	1030		X	54-02	1									X	X						

Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Lab	P.O. #	Shipped via: Bus FedEx UPS
[signature]	12/4/12 1000	[signature]	ELI HELENA	Direct Bill MDEQ	Other Hand Delivered; Air Bill #

Relinquished *(Signature)*	Date / Time	Received by *(Signature)*	Remarks
[signature]	12/5/12 1405		TEMP Blank 2.0 °C Ice

Relinquished *(Signature)*	Date / Time	Received for Laboratory by *(Signature)*	Date / Time
		Esther Merritt	12/5/12 14:05

Enclosed: ☒ Parameter sheet w/detection limits
☐ QA / AC standard mixing instructions ☒ Cover letter
☐ Other

Split Samples:
☐ Accepted ☐ Declined ______
Signature

Return results & electronic copy to:
QA / QC Dept. at address at top of page

HFORM-1 07/11
TNO 406-443-8550

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

December 5, 2012

Energy Laboratories, Inc.
3161 E Lyndale
Helena, MT 59601

RE: Montana Background Soils Investigation (MBSI) Samples

Enclosed are five (5) soil samples collected on November 28-December 3, 2012 for the Montana Background Soils Investigation. All samples should be analyzed per the enclosed parameter list and chain-of-custody forms, as follows:

1. All samples to be analyzed for total Al, Sb, As, Ba, Be, Cd, Cr (III), Cr (VI), Co, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Tl, V, Zn on bulk samples.
2. All samples to be dry-sieved through a 250-µm (No. 60) sieve, with the fine fraction portion passing the sieve to be analyzed for the same list of total metals, **except Hg, which is not analyzed on the fine fraction.**

Analytical reports should be sent to Jason Seyler at the Montana Department of Environmental Quality, and to my attention at Hydrometrics. Invoices should be directed to Jason Seyler at MDEQ, referencing ORG #484422 – Inorganic Background Study. Please feel free to call me at 443-4150 ext. 146 if you have any questions.

Sincerely,

Mark Walker
Project Manager

Enclosures

TABLE 4-1. ANALYTICAL METHODS AND DETECTION LIMITS FOR BACKGROUND SOIL SAMPLES

Total Metals Analysis

Parameter[1]	Digestion Method[2]	Analytical Method[2]	Required Reporting Limit (mg/kg)	EPA Regional Screening Level (RSL)[3] (mg/kg)	Maximum Holding Time (days)	Preservation
Aluminum (Al)	3050B	6010/6020	5	7700[4]	180	Cool to 4± 2°C
Antimony (Sb)	3050B	6010/6020	0.1	3.1[4]	180	Cool to 4± 2°C
Arsenic (As)	3050B	6010/6020	0.1	0.39	180	Cool to 4± 2°C
Barium (Ba)	3050B	6010/6020	1	1500[4]	180	Cool to 4± 2°C
Beryllium (Be)	3050B	6010/6020	0.1	16[4]	180	Cool to 4± 2°C
Cadmium (Cd)	3050B	6010/6020	0.1	7[4]	180	Cool to 4± 2°C
Chromium III (Cr III)[5]	3050B	6010/6020	0.1	12000[4]	180	Cool to 4± 2°C
Chromium VI (Cr VI)	3060	7196A	0.1	0.29	180	Cool to 4± 2°C
Cobalt (Co)	3050B	6010/6020	0.1	2.3[4]	180	Cool to 4± 2°C
Copper (Cu)	3050B	6010/6020	0.1	310[4]	180	Cool to 4± 2°C
Iron (Fe)	3050B	6010/6020	1	5500[4]	180	Cool to 4± 2°C
Lead (Pb)	3050B	6010/6020	0.1	400	180	Cool to 4± 2°C
Manganese (Mn)	3050B	6010/6020	1	180[4]	180	Cool to 4± 2°C
Mercury (Hg)[6]	7471A	7471A	0.05	1[4]	28	Cool to 4± 2°C
Nickel (Ni)	3050B	6010/6020	0.5	150[4]	180	Cool to 4± 2°C
Selenium (Se)	3050B	6010/6020	0.2	39[4]	180	Cool to 4± 2°C
Silver (Ag)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Thallium (Tl)	3050B	6010/6020	0.05	0.078[4]	180	Cool to 4± 2°C
Vanadium (V)	3050B	6010/6020	0.1	39[4]	180	Cool to 4± 2°C
Zinc (Zn)	3050B	6010/6020	1	2300[4]	180	Cool to 4± 2°C

(1) All parameters except mercury (Hg) will be analyzed on both bulk soil samples, and on fine fraction samples (portion of sample passing 60-mesh sieve). Sieving shall be conducted by the analytical laboratory. Due to the volatility of mercury and potential losses during sieving, mercury will be analyzed on bulk samples only.

(2) Laboratory analytical methods are from EPA's Test Methods for Analysis of Solid Waste (SW-846) (EPA, 2007) or Methods for Chemical Analysis of Water and Wastes (EPA, 1983). Equivalent procedures may be used as long as required reporting limits are achieved.

(3) EPA RSL for residential soil obtained from www.epa.gov/region9/superfund/prg (updated May 2012). Note that, per Montana DEQ policy, RSLs for non-carcinogens have been adjusted downward by a factor of 10 from those published in the EPA table.

(4) Non-carcinogen; RSL adjusted downward by a factor of 10 from the published EPA value (see footnote 3).

(5) Chromium (III) is determined by analyzing total chromium and calculating the difference between total chromium and chromium (VI) results.

(6) Mercury will be analyzed on bulk samples only (see footnote (1)).