APPENDIX D

DATA VALIDATION REPORT

DATA VALIDATION REPORT

BACKGROUND CONCENTRATIONS OF INORGANIC CONSTITUENTS IN MONTANA SURFACE SOILS

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GLOSSARY OF TERMS

CCB..... Continuing Calibration Blank
CCV..... Continuing Calibration Verification
CLP ..... Contract Laboratory Program
CRDL ..... Contract Required Detection Limit
FAA ..... Flame Atomic Absorption
GFAA..... Graphite Furnace Atomic Absorption
HGAA ..... Hydride Generation Atomic Absorption
ICB ..... Initial Calibration Blank
ICP..... Inductively Coupled Plasma
ICV..... Initial Calibration Verification
IDL ..... Instrument Detection Limit
LCS ..... Laboratory Control Sample
MSA ..... Method of Standard Additions
PB..... Preparation Blank
PRDL..... Project Required Detection Limit
QAPP..... Quality Assurance Project Plan
QC ..... Quality Control
RPD..... Relative Percent Difference
RSD..... Relative Standard Deviation
SOW..... Statement of Work
TDS ..... Total Dissolved Solids

DATA VALIDATION REPORT

1. INTRODUCTION

This validation applies to 125 soil samples and 6 water samples (equipment rinsate blanks) collected for the *Background Concentrations of Inorganic Constituents in Montana Surface Soils* project from October 2012 through December 2012. Laboratory analysis for all samples collected in the 2012 as part of this project have been reviewed and validated. This data validation/verification was conducted in accordance with the "Sampling, Analysis, and Quality Assurance Project Plan" for the project (Hydrometrics, 2012), and with the Montana Department of Environmental Quality's "Data Validation Guidelines for Evaluating Analytical Data" dated August 5, 2010.

All samples were submitted to Energy Laboratories in Helena, Montana and were assigned Laboratory Work Order Numbers H12120021, H12120098, H12120007, H12110397, H12110322, H12110065, H12100491, H12110151, and H12110308. The total number of samples included: 112 original soil samples; 13 field duplicate soil samples; and 6 field blanks (equipment rinsate blanks). Samples were submitted for the following analyses:

- All soil 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;

- All soil samples to be dry-sieved through a 250-um (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;

- Equipment rinsate samples (aqueous) to be analyzed for total concentrations of the same list of total metals.

- Validation procedures used are generally consistent with:
  (Check all that apply)
  - _X_ EPA CLP National Functional Guidelines for Inorganics Data Review
  - ____ EPA CLP National Functional Guidelines for Organic Data Review
  - _X_ Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data (August 2010)

2. DELIVERABLES

- **All laboratory document deliverables were present as specified in the CLP-Statement of Work and/or the project contract.**

  _X_ Yes
  ____ No

- **All documentation of field procedures was provided as required.**

  _X_ Yes
  ___ No

3. FIELD QUALITY CONTROL SAMPLES

- **Field blanks**

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

DI, trip, rinsate, or any other field blanks have been carried out at the proper frequency.
_X_ Yes
___ No

The project-required rinsate blank frequency of 5% (1 rinsate blank for every 20 natural samples collected) was achieved. A total of 112 natural samples were collected, along with 6 rinsate blanks, resulting in a blank frequency of 5.3%.

Reported results on the field blanks are less than the contract required detection limits (CRDL) or the project required detection limits (PRDL) if project detection limits have been specified.
___ Yes
_X_ No (see the following table)

Analyte	Sample ID	Laboratory ID	Laboratory Result	Validator Qualifier	Reason for Qualification
Manganese	MBSI-25-04	H12110151-031	0.001	None*	Detectable concentration

*Although manganese was detected in one field equipment blank sample, no results were qualified due to the low level reported in the blank (0.001 mg/L) relative to the range of concentrations observed in the soil samples collected as part of this project (approximately 60 to 3000 mg/kg). This comparison indicates a negligible potential for contamination of samples from sampling equipment.

- **Field duplicates**

Field duplicates have been collected at the proper frequency.
_X_ Yes
___ No

The project-required field duplicate frequency of 10% (1 field duplicate for every 10 natural samples collected) was achieved. A total of 112 natural samples were collected, along with 13 field duplicates, resulting in a duplicate frequency of 11.6%.

Field duplicate relative percent differences (RPD's) were within the required control limits (35 percent or less for soil matrix).

___Yes

_X_No (see the following table)

Analyte	Sample ID	Laboratory Work Order	Sample/Duplicate Results (mg/kg)	Validator Qualifier	Reason for Qualification
Fine Fraction (Sieved) Samples					
Copper	MBSI-45-02/03	H12100491	115.0 / 44.4	J	89%RPD
No 60 retained*	MBSI-26-01/03	H12110151	9.7 / 6.6	J	38%RPD
No 60 retained	MBSI-25-01/03	H12110151	23.1 / 35.5	J	42%RPD
Copper	MBSI-25-01/03	H12110151	34.3 / 49	J	35.3%RPD
Copper	MBSI-34-02/03	H12110322	20.3 / 32.2	J	45%RPD
No 60 retained	MBSI-15-01/03	H12110322	48.7 / 15.1	J	105%RPD
Copper	MBSI-15-01/03	H12110322	44.6 / 23.8	J	61%RPD
Chromium	MBSI-30-02/03	H12120021	35.0 / 50.8	J	37%RPD
Chromium III	MBSI-30-02/03	H12120021	35.0 / 51.0	J	37%RPD
Bulk Samples					
Lead	MBSI-03-02/03	H12100491	10.0 / 22.0	J	75%RPD
Lead	MBSI-53-02/03	H12110065	24.0 / 14.0	J	53%RPD
Cobalt	MBSI-50-01/03	H12110308	16.4 / 11.1	J	39%RPD
Manganese	MBSI-50-01/03	H12110308	1680 / 1020	J	49%RPD
Lead	MBSI-34-02/03	H12110322	10.0 / 7.0	J	35.3%RPD
Cobalt	MBSI-15-01/03	H12110322	4.5 / 6.6	J	38%RPD

*No 60 retained refers to percent retained on 60-mesh sieve; results shown are in percent by weight

Results associated with the above field duplicate exceedances have been qualified in the attached data summary table with a J flag, to denote a potential lack of precision indicated by the field duplicate results. Note that flags have been applied to the fine fraction or bulk fraction results for the associated Work Order and parameter, corresponding to whether the RPD exceedance occurred in the bulk or fine fraction of the sample-duplicate pair.

- **Sieve duplicates**

Sieve duplicates have been collected at the proper frequency.

_X_Yes

___No

The project-required sieve duplicate frequency of 10% (1 sieve duplicate for every 10 samples submitted to the laboratory) was achieved. A total of 112 natural samples were collected and 13 sieve duplicates were requested and analyzed, resulting in a sieve duplicate frequency of 11.6%.

Sieve duplicate relative percent differences (RPD's) were within the required control limits (35 percent or less for soil matrix).

___Yes

_X_No (see the following table)

Analyte	Sample ID	Laboratory Work Order	Laboratory Result	Validator Qualifier	Reason for Qualification
No 60 retained	MBSI-09-02/02SIEVE	H12100491	4.6 / 1.2	J	117%RPD
Copper	MBSI-09-02/02SIEVE	H12100491	23.4 / 37.5	J	46%RPD
Copper	MBSI-39-01/01SIEVE	H12100491	186 / 82.4	J	77%RPD
Copper	MBSI-49-01/01SIEVE	H12110065	173 / 52.4	J	107%RPD
Copper	MBSI-31-01/01SIEVE	H12110151	68.1 / 36.5	J	60%RPD
Copper	MBSI-25-02/02SIEVE	H12110151	70 / 40.3	J	54%RPD
Lead	MBSI-25-02/02SIEVE	H12110151	12 / 18	J	40%RPD

Results associated with the above sieve duplicate exceedances have been qualified in the attached data summary table with a J flag, to denote a potential lack of precision indicated by the sieve duplicate results. Since the sample/duplicate pair results represent the precision of the fine fraction (sieved) samples, only fine fraction sample results for the associated parameters and Work Orders have been qualified.

The relatively high frequency of copper RPD exceedances for sieve duplicate samples (5 samples out of 13 total sieve duplicate samples) suggests that this constituent has a higher potential than other inorganics for lower precision, possibly introduced by the sieving procedure.

4. LABORATORY PROCEDURES

- **Laboratory Case Narrative Notes any nonconformance issues with the analytical data**

  _X_ Yes (see following notes)
  ____ No

  NOTES: The following was noted on the Work Order Receipt Checklist upon samples arrival at Energy Labs;

  - Energy Labs Report H12110308 noted that page 1 of the COC included MBSI- prefix on the sample ID; however, the sample bags 2-4 did not. Samples were logged in with ID from COC.
  - Energy Labs Report H12110308 also noted the collection date on the COC for MBSI-48-02 and MBSI-48-04 is 11/19/12. The date on the containers is 11/16/12. Samples were logged in as date on COC.
  - Energy Labs Report H12100491 noted samples -001, -003, -005, -007, -014, -016, -018, -021, -023, -049, -051, and -053 reporting limit for silver was raised from 0.1 to 0.2. The samples were redigested and reanalyzed. Method blanks digested by EPA 3050 and analyzed for silver showed typical concentrations of approximately 0.1, comparable to the analytical results for these samples. Similar notes regarding raising silver reporting limits due to matrix interference were included with Work Orders H12110308, H12110322, H12110397, H12120007, H12120021, and H12120098.

- **Samples were received by the laboratory at the proper temperature (4±2°C)**

  ____ Yes
  _X_ No (see following notes)

  NOTES: The following was noted on the Workorder Receipt Checklist upon samples arrival at Energy Labs:

  - H12110308 – Cooler 1 had a temperature of 6.4°C but noted was received on ice

- **Holding times met**

  _X_ Yes
  ___ No

- **Consistency with project requirements**

  _X_ Yes (see following notes)
  ____ No

  NOTES: Matrix interference resulted in higher reporting limits than requested for silver in multiple Work Orders, as noted above.

- **Sample Conditions met at Check-in**
  _X_ Yes
  ___ No

- **Reporting units appropriate for the associated sample matrix and methods of analysis**
  _X_ Yes
  ___ No

- **Project specified methods were used.**
  _X_ Yes
  ____ No

- **Detection Limits met project required detection limits (PRDL).**
  ____ Yes
  _X_ No (see following notes)

  NOTES: Energy Laboratories EDDs listed higher reporting limits for cobalt, copper, iron, lead, vanadium, and zinc than requested. However, since all results for these parameters were reported as positive values (above reporting limits), there was no impact on the data obtained.

  Hexavalent chromium (Cr (VI)) results were reported to 0.29 mg/kg rather than the requested 0.1 mg/kg, due to method-related difficulties achieving the lower reporting limit. Reporting to 0.29 mg/kg does allow comparison to the Cr (VI) EPA Regional Screening Level (RSL) of 0.29 mg/kg for residential soils. The majority of Cr (VI) results (88% in the bulk fraction and 100% in the fine fraction) were reported as <0.29 mg/kg.

  For silver, reporting limits were raised for multiple Work Orders due to matrix interference, from the requested to 0.1 mg/kg to a range of 0.2 to 0.5 mg/kg. This reporting limit is still well below the EPA RSL of 39 mg/kg for residential soils, and therefore all results may still be compared to the RSL.

5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS

- **Initial or Continuing Calibration Verification samples were within acceptable limits.**

  _X_ Yes
  ___ No

6. LABORATORY BLANKS

- **Preparation/Method blanks**

Preparation/method blanks were prepared and analyzed at the required frequency (5%).
_X_ Yes
___ No

All analytes in the preparation/method blanks were less than the CRDL (or PRDL if a project detection limit has been specified).
___ Yes
_X_ No (see following notes)

NOTES: One or more method blanks analyzed with the associated work orders contained low concentrations of the following parameters: silver, aluminum, arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, iron, mercury, manganese, nickel, lead, antimony, selenium, thallium, vanadium, and zinc. In all cases, the concentrations reported in the method blanks associated with reported results were significantly lower than the range of concentrations observed in associated project soil samples. Energy Laboratories' procedure for method blank exceedances includes redigestion and/or reanalysis if method blank criteria are not met, and any results reported from batches with method blanks not meeting criteria are flagged. No sample results were qualified by the laboratory for exceedance of method blank control limits, and no flags have been applied as part of this review based on the low levels of method blank contaminants observed. As noted above, the reporting limit for silver was raised for several Work Orders above the project-specified limit, due to consistently detected concentrations of silver in method blanks at concentrations similar to the reporting limit.

7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD)

- Matrix spike samples were analyzed at the proper frequency (5%).
  _X_ Yes
  ___ No

  Matrix spike recoveries were within control limits.
  __ Yes
  _X_ No (see following table)

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H12120021-009AMS	ANTIMONY	25	S	75-125
H12120021-009AMSD	ANTIMONY	27	S	75-125
H12120021-010AMS	ANTIMONY	19	S	75-125
H12120021-010AMSD	ANTIMONY	19	S	75-125
H12120021-007AMS	MERCURY	123	S	80-120
H12120098-010AMS	ANTIMONY	35	S	75-125
	BARIUM	142	S	75-125
H12120098-010AMSD	ANTIMONY	35	S	75-125
	BARIUM	132	S	75-125
H12110322-037AMS	BARIUM	138	S	75-125
	SILVER	131	S	75-125
H121100322-037AMSD	LEAD	73	S	75-125
H12110322-038-010AMS	ANTIMONY	29	S	75-125
	BARIUM	157	S	75-125
H12110322-038-010AMSD	ANTIMONY	31	S	75-125
	BARIUM	148	S	75-125
H12110065-0042AMSD	BARIUM	131	S	75-125
	ANTIMONY	23	S	75-125
H12110065-042AMS	ANTIMONY	25	S	75-125
H12110065-062AMS	ANTIMONY	34	S	75-125
	VANADIUM	138	S	75-125
H12110065-062AMSD	ANTIMONY	34	S	75-125
	VANADIUM	145	S	75-125
	ZINC	144	S	75-125
H12110065-039AMS	ANTIMONY	22	S	75-125
H12110065-039AMSD	ANTIMONY	22	S	75-125
H12110065-063AMS	ANTIMONY	29	S	75-125
	VANADIUM	152	S	75-125
H12110065-063AMSD	ANTIMONY	28	S	75-125
	VANADIUM	143	S	75-125
H12100491-053AMSD	BARIUM	136	S	75-125
	ANTIMONY	31	S	75-125
H12100491-053AMS	BARIUM	127	S	75-125
	ANTIMONY	32	S	75-125
H12100491-041AMS	ANTIMONY	42	S	75-125
H12100491-041AMSD	ANTIMONY	42	S	75-125
H12100491-038AMS	ANTIMONY	40	S	75-125
H12100491-038AMSD	ANTIMONY	41	S	75-125
H12110151-029AMS	ANTIMONY	32	S	75-125

H12110151-029AMSD	ANTIMONY	30	S	75-125
H12110151-030AMS	ANTIMONY	29	S	75-125
H12110151-030AMSD	ANTIMONY	30	S	75-125
H12110151-022AMS	MERCURY	130	S	80-120
H12110151-022AMSD	MERCURY	121	S	80-120
H12110308-034AMS	BARIUM	188	S	75-125
	VANADIUM	142	S	75-125
H12110308-034AMSD	BARIUM	185	S	75-125
	VANADIUM	144	S	75-125
H12110308-035AMS	VANADIUM	139	S	75-125
H12110308-035AMSD	COPPER	63	S	75-125
H12110308-003AMS	MERCURY	123	S	80-120
H12110308-028AMS	MERCURY	121	S	80-120
H12110308-028AMSD	MERCURY	130	S	80-120

NOTES: Discussions with Energy Laboratories indicate that antimony % recoveries are frequently low in the acid digestion matrix utilized for soil samples (EPA Method 3050), for both MS samples and LCS samples. For example, the LCS control limits for antimony in the certified reference material soil used by Energy Laboratories is 2.2 to 92.9%, reflecting the low recoveries typically obtained. Antimony results for the Work Orders showing low MS % recoveries for antimony have been qualified J- as estimated in the attached data table, to denote a potential low bias indicated by the consistently low recovery results. No other QC issues were encountered with antimony analysis for any particular laboratory batches, therefore the data are considered usable, as long as the potential low bias is taken into account.

Energy Laboratory procedure for MS % recovery exceedances involves examining batch LCS recovery for compliance and the level of exceedance, and redigesting or repeating analyses if warranted. LCS recoveries were within compliance for all samples associated with the MS/MSD exceedances noted above, and the laboratory did not qualify any reported sample results. Based on the wider range of recovery typically observed for soil matrices, and the infrequent MS % recovery exceedances for constituents other than antimony, no qualifiers have been applied.

- Matrix spike duplicate samples were analyzed at the proper frequency (5%).
  _X_ Yes
  ___ No

  Matrix spike duplicate RPDs were within control limits.
  _X_ Yes (for one exception see following table)
  ___ No

QC Sample ID	Parameter	% RPD	Lab Flag	Lab Advisory Limits (% RPD)
H12110308-035AMSD	COPPER	23	R	20

NOTES: Duplicate RPD criteria for soils (35%) were not exceeded, and no flags have been applied as a result of this MS/MSD RPD exceedance.

8. LABORATORY CONTROL SAMPLES

- **LCS Samples**

Laboratory Control Samples used the correct matrix and concentrations
_X_ Yes
___No

Laboratory Control Samples were prepared and analyzed at the required frequency (5%).
_X_ Yes
___No

All analytes in the laboratory control samples were within the specified control limits.
___Yes
_X_ No (see following table)

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H12110397 – LCS-18863	SILVER	117	S	85 – 115
H12110322 – LCS-18872	LEAD	110	S	75.9 – 108.6
H12110065 – LCS-18642	NICKEL	106	S	72.3 – 103.4
H12110308 – LCS-18969	LEAD	114	S	75.9 – 108.6
H12110308 – LCS-18990	SILVER	119	S	67.8 – 112.8

NOTES: Inquiries with Energy Laboratories indicated the following details associated with the reported LCS exceedances:

- Failing LCS from a specific analytical procedure (ICP (6010) or ICPMS (6020), with most associated results reported for an alternate batch or analytical procedure with compliant LCS (H12110322-LCS-18872 and H12110065-LCS-18642);
- High recovery on LCS (associated potential for high bias) associated with a nondetect result (H12110397-LCS-18863 and H12110308-LCS-18990) – no qualifiers applied;
- Failing LCS subsequently reanalyzed and reanalysis within control limits (H12110308-LCS-18969) – no qualifiers applied.

Based on the communications with the laboratory, two J+ flags have been applied to sample results associated with LCS control limit exceedances: the lead result for sample H12110322-012, and the nickel result for sample H12110065-042. These results were reported from analytical procedures/batches with slightly elevated LCS recoveries, and the flags indicate a potential lack of accuracy (high bias) based on recovery results.

9. DATA QUALITY OBJECTIVES

- **Project data quality objectives (DQOs) met.**

  _X_ Yes
  ___ No

  NOTES: Based on the overall data review, all data are deemed acceptable as delivered, and no data have been rejected as unusable. Data qualified as a result of this review are discussed in the above report. No unusual quality control deficiencies were discovered during this review, and the impact of data qualifiers on data usability is estimated to be minimal.

  Note that, as demonstrated by LCS and matrix spike results, recoveries of antimony in a solid matrix which has undergone a Method 3050 digestion may be biased low due to solubility limitations addressed within the analytical method.

  Precision

  Precision is the degree of mutual agreement between individual measurements of the same property under similar conditions (reproducibility), and is inversely related to variability. Precision is assessed through comparison of field and laboratory duplicate results. For this project:

  - 15 parameters exceeded RPD control limits in field duplicate samples, out of 286 total analyses (95% of results in control);
  - 7 parameters exceeded RPD control limits in laboratory sieve duplicate samples, out of 247 total analyses (97% of results in control); and
  - 1 parameter exceeded control limits in laboratory MS/MSD samples (>99.9% of results in control).

  Sample results associated with field or sieve duplicate RPD exceedances have been qualified as estimated (J) in the attached data summary table.

  Accuracy

  Accuracy is a measure of the closeness of a reported concentration to a true (i.e., known to a certain degree of confidence) value. Analytical accuracy was assessed through routine analysis of laboratory control samples (LCSs), matrix spikes, and matrix spike duplicates, along with field equipment rinsate blanks and laboratory method blanks to assess the potential for contamination. For this project:

  - No parameters were detected in field equipment rinsate blanks or laboratory method blanks at concentrations that could significantly affect reported results;
  - LCS results associated with reported sample results were all within control limits, with the exception of one lead result and one nickel result;
  - MS/MSD percent recoveries showed some minor control limit exceedances. Antimony recoveries were consistently low, as expected based on the sample digestion matrix.

Antimony results associated with low MS/MSD percent recovery exceedances have been qualified as estimated with potential low bias (J-) in the attached data summary table. Lead and nickel results associated with high LCS percent recovery exceedances have been qualified as estimated with potential high bias (J+) in the attached data summary table.

Representativeness

Representativeness is the degree to which sample data accurately and precisely represent the characteristics of a population and an environmental condition. Representative data was obtained for this project through careful selection of sampling locations (background uncontaminated areas); proper collection of composite samples, handling of samples, and use and consistent application of specified field and laboratory procedures, including analysis of quality control samples. Based on the review of field and laboratory results, target representativeness was achieved for this project.

Completeness

The completeness for this project is defined as the number of samples and valid measurements obtained, compared with the total number planned, expressed as a percentage. Sampling completeness for this project is 100%, as all planned samples were collected and analyzed. Data completeness for this project is also 100%, since all samples were analyzed for the intended parameter suite, and no data were rejected as unusable.

Comparability

Comparability expresses the confidence with which data from one sample, sampling round, site, laboratory, or project can be compared to those from another. Comparability during sampling is dependent upon sampling program design and time periods. Comparability during analysis is dependent upon analytical methods, detection limits, laboratories, units of measure, and sample preparation procedures.

For this project, comparability of all data collected was ensured by adherence to standard sample collection procedures, standard field measurement procedures, standard reporting methods, including consistent units, and the use of the same analytical laboratory. In addition, to support the comparability of the Montana Background Soil Investigation dataset with those obtained in future testing, all samples were analyzed using EPA-approved methods. Based on the review of field and laboratory results, comparability targets for this project were met.

REFERENCES

Montana Department of Environmental Quality, 2010. Data Validation Guidelines for Evaluating Analytical Data (Updated August 5, 2010)

U.S. Environmental Protection Agency, 2010. USEPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Inorganic Superfund Data Review, EPA 540R-10-011, January 2010.

APPENDIX 1

TABLES

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12100491

	Sample Number	MBSI-22-02		MBSI-22-02		MBSI-22-01		MBSI-22-01		MBSI-22-03		MBSI-22-03		MBSI-09-01		MBSI-09-01		MBSI-09-02		MBSI-09-02		MBSI-09-02 Sieve Dup		MBSI-42-02	
	Date	10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012		10/22/2012	
	Time	8:15		8:15		10:00		10:00		10:10		10:10		12:30		12:30		14:05		14:05		14:05		16:00	
	Laboratory ID	H12100491-001		H12100491-002		H12100491-003		H12100491-004		H12100491-005		H12100491-006		H12100491-007		H12100491-008		H12100491-009		H12100491-010		H12100491-011		H12100491-012	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained			12	J			46.9	J			48.1	J			20.3	J			4.6	J	1.2	J		
TOTAL METALS																									
Aluminum (Al)	mg/kg	14400		14900		22100		20700		21700		21000		12400		16100		9770		11800		12300		9940	
Antimony (Sb)	mg/kg	0.1	J-	<0.1	J-	0.2	J-	0.1	J-	0.2	J-	0.1	J-	0.3	J-	0.2	J-	0.1	J-	<0.1	J-	0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	10.1		8.8		6.9		7.3		6.8		7.2		13.8		11.4		6		6.1		6.3		10.5	
Barium (Ba)	mg/kg	142		148		212		224		218		230		123		144		88		97		97		131	
Beryllium (Be)	mg/kg	0.7		0.6		0.9		0.8		0.9		0.8		1.1		0.8		0.6		0.6		0.7		0.6	
Cadmium (Cd)	mg/kg	0.2		0.2		0.4		0.4		0.3		0.4		0.5		0.4		0.2		0.2		0.2		<0.1	
Cobalt (Co)	mg/kg	7.2		4.8		7.2		5.7		6.9		4.7		12.9		8.3		7.1		4.8		4.3		5.6	
Chromium (Cr)	mg/kg	17.8		18.2		23.6		23.6		22.7		24		21.4		27.5		15.4		16.3		17.5		16.6	
Chromium III (CrIII)	mg/kg	18		18		24		24		23		24		21		28		15		16		18		17	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	12.9		23.2	J	16.2		31.1	J	16.1		28.8	J	29.7		52.8	J	14.2		23.4	J	37.5	J	10.2	
Iron (Fe)	mg/kg	19500		16600		20500		18300		17800		18400		42600		24800		13700		14600		14800		14200	
Lead (Pb)	mg/kg	14.5	J	16		12.2	J	11		12	J	14		20.3	J	18		13.8	J	12		9		10.5	J
Manganese (Mn)	mg/kg	362		307		450		425		409		413		642		490		373		381		391		107	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05						<0.05	
Nickel (Ni)	mg/kg	14.6		13.3		15.6		16.5		14.9		16.7		28.3		26.8		11.2		11.5		11.6		11.9	
Selenium (Se)	mg/kg	0.7		0.7		0.3		0.3		0.3		0.3		0.6		0.4		0.4		0.5		0.5		0.6	
Silver (Ag)	mg/kg	0.3		<0.1		<0.2		0.1		<0.2		0.1		<0.2		0.1		<0.1		<0.1		0.2		<0.1	
Thallium (Tl)	mg/kg	0.27		0.24		0.26		0.27		0.25		0.26		0.24		0.25		0.2		0.21		0.21		0.19	
Vanadium (V)	mg/kg	39.8		38.1		32.1		31.5		29.4		31.1		36.1		34.1		21.9		22.9		23.4		38.7	
Zinc (Zn)	mg/kg	61		62		46		54		46		51		86		81		46		45		48		55	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12100491

	Sample Number	MBSI-42-02		MBSI-42-01		MBSI-42-01		MBSI-39-02		MBSI-39-02		MBSI-39-01		MBSI-39-01		MBSI-39-01 Sieve Dup		MBSI-52-01		MBSI-52-01		MBSI-52-02		MBSI-52-02	
	Date	10/22/2012		10/22/2012		10/22/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012	
	Time	16:00		18:00		18:00		7:50		7:50		9:15		9:15		9:15		10:20		10:20		11:35		11:35	
	Laboratory ID	H12100491-013		H12100491-014		H12100491-015		H12100491-016		H12100491-017		H12100491-018		H12100491-019		H12100491-020		H12100491-021		H12100491-022		H12100491-023		H12100491-024	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained	2.4	J			0.3	J			9.1	J			43	J	43.9	J			57.2	J			42.2	J
TOTAL METALS																									
Aluminum (Al)	mg/kg	9740		29300		31500		8850		9520		12600		17000		16800		18600		18400		12400		12600	
Antimony (Sb)	mg/kg	<0.1	J-	0.3	J-	0.2	J-	0.2	J-	<0.1	J-	0.4	J-	0.1	J-	0.1	J-	0.1	J-	<0.1	J-	0.2	J-	0.1	J-
Arsenic (As)	mg/kg	9.5		13.1		13		6.3		5.7		17		8.1		7.5		9.4		8.5		6.9		6.5	
Barium (Ba)	mg/kg	136		154		166		74		73		567		762		634		214		218		135		150	
Beryllium (Be)	mg/kg	0.5		1		1.1		0.5		0.5		1		0.7		0.7		1		0.9		0.7		0.7	
Cadmium (Cd)	mg/kg	<0.1		0.2		0.2		0.1		0.1		0.4		0.3		0.3		0.4		0.3		0.3		0.2	
Cobalt (Co)	mg/kg	3.5		15.8		10.9		6		3		13.6		6.6		6.3		10.7		5.9		6.3		5.1	
Chromium (Cr)	mg/kg	15.7		35.2		39		15.1		15		24.2		24.5		23.5		26.3		26		16.1		16.6	
Chromium III (CrIII)	mg/kg	16		35		39		15		15		24		24		24		26		26		16		17	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	15.2	J	29.5		58.6	J	8.7		56.4	J	21.4		186	J	82.4	J	18.8		195	J	13.5		58.9	J
Iron (Fe)	mg/kg	13200		30400		31800		13500		12400		59200		26900		25000		19100		17800		14600		15500	
Lead (Pb)	mg/kg	15		19.9	J	22		8.7	J	10		16.4	J	12		17		16.1	J	17		12.1	J	17	
Manganese (Mn)	mg/kg	112		246		267		271		261		1590		798		739		452		431		306		335	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05						<0.05				<0.05			
Nickel (Ni)	mg/kg	11.5		29.1		32.1		11.9		10.9		28.5		21.3		21.1		20.8		18.1		13.6		14.5	
Selenium (Se)	mg/kg	0.6		1.1		1		0.3		0.2		1.2		0.8		0.7		0.7		0.7		0.4		0.5	
Silver (Ag)	mg/kg	<0.1		<0.2		0.1		<0.2		<0.1		<0.2		<0.1		<0.1		<0.2		<0.1		<0.2		<0.1	
Thallium (Tl)	mg/kg	0.16		0.3		0.31		0.11		0.1		0.34		0.28		0.26		0.32		0.26		0.2		0.18	
Vanadium (V)	mg/kg	33.9		92.2		95.4		20.1		16.9		40.9		29.5		28.6		30.8		28.9		24		23.5	
Zinc (Zn)	mg/kg	52		93		100		37		43		74		83		65		69		92		50		58	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12100491

	Sample Number	MBSI-16-01		MBSI-16-01		MBSI-16-02		MBSI-16-02		MBSI-45-02		MBSI-45-02		MBSI-45-03		MBSI-45-03		MBSI-45-01		MBSI-45-01		MBSI-14-01		MBSI-14-01	
	Date	10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/23/2012		10/24/2012		10/24/2012	
	Time	13:10		13:10		14:20		14:20		16:00		16:00		16:10		16:10		17:30		17:30		8:05		8:05	
	Laboratory ID	H12100491-025		H12100491-026		H12100491-027		H12100491-028		H12100491-029		H12100491-030		H12100491-031		H12100491-032		H12100491-033		H12100491-034		H12100491-035		H12100491-036	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			39.1	J			39.3	J			23.8	J			26.4	J			46.5	J			12.7	J
TOTAL METALS																									
Aluminum (Al)	mg/kg	14800		15000		12200		15200		12600		14000		12400		13200		12000		14200		4150		5200	
Antimony (Sb)	mg/kg	0.4	J-	0.3	J-	0.1	J-	0.1	J-	0.1	J-	0.1	J-	0.1	J-	<0.1	J-	1.2	J-	0.1	J-	<0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	24.6		17.1		7.5		8.4		6.6		6.4		6.1		6.1		18.8		9		2.9		2.8	
Barium (Ba)	mg/kg	405		533		190		228		116		129		114		135		203		227		43		48	
Beryllium (Be)	mg/kg	0.8		0.7		0.5		0.6		0.6		0.6		0.6		0.6		0.7		0.6		0.3		0.3	
Cadmium (Cd)	mg/kg	0.2		0.2		0.2		0.2		0.2		0.3		0.2		0.2		0.3		0.2		<0.1		<0.1	
Cobalt (Co)	mg/kg	8.4		5.5		6.5		5.8		6.8		5.6		6.8		5.4		8.1		5.8		3.7		2.8	
Chromium (Cr)	mg/kg	17.7		18.1		18		20.3		17.5		19.3		16.4		18.3		20		18.9		9.5		11.9	
Chromium III (CrIII)	mg/kg	17		18		18		20		18		19		16		18		20		19		10		12	
Chromium VI (CrVI)	mg/kg	0.32		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	15.2		118	J	13		127	J	13.2		115	J	12.4		44.4	J	14.2		114	J	3.8		42.6	J
Iron (Fe)	mg/kg	19500		18000		13600		14800		17800		17200		17700		17000		27900		16800		7320		7230	
Lead (Pb)	mg/kg	15.4	J	20		9.4	J	12		11.5	J	13		11		12		14.7	J	13		6.8	J	8	
Manganese (Mn)	mg/kg	372		389		231		249		402		387		396		378		532		404		143		134	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	14.1		13.3		14.8		15.4		13.1		14.3		13.6		13.8		14.4		14.1		5.3		6.3	
Selenium (Se)	mg/kg	0.5		0.5		0.4		0.5		0.4		0.4		0.4		0.4		0.4		0.5		0.3		0.3	
Silver (Ag)	mg/kg	<0.1		<0.1		<0.1		0.1		<0.1		<0.1		<0.1		<0.1		<0.1		0.1		<0.1		<0.1	
Thallium (Tl)	mg/kg	0.26		0.24		0.14		0.17		0.19		0.19		0.18		0.17		0.17		0.18		0.07		0.07	
Vanadium (V)	mg/kg	26.2		23.8		25.9		29.1		25.2		25.1		25		23.5		33.2		24.7		10.4		11.9	
Zinc (Zn)	mg/kg	52		71		38		61		46		64		45		50		48		64		24		30	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12100491

	Sample Number	MBSI-14-02		MBSI-14-02		MBSI-29-02		MBSI-29-02		MBSI-29-01		MBSI-29-01		MBSI-33-01		MBSI-33-01		MBSI-03-01		MBSI-03-01		MBSI-03-02		MBSI-03-02	
	Date	10/24/2012		10/24/2012		10/24/2012		10/24/2012		10/24/2012		10/24/2012		10/24/2012		10/24/2012		10/26/2012		10/26/2012		10/26/2012		10/26/2012	
	Time	9:55		9:55		11:10		11:10		17:30		17:30		14:40		14:40		8:15		8:15		12:25		12:25	
	Laboratory ID	H12100491-037		H12100491-038		H12100491-039		H12100491-040		H12100491-041		H12100491-042		H12100491-043		H12100491-044		H12100491-045		H12100491-046		H12100491-047		H12100491-048	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			30.7	J			11.7	J			5.3	J			8.7	J			26.7	J			3.2	J
TOTAL METALS																									
Aluminum (Al)	mg/kg	7320		12200		5160		5980		8650		9190		10700		11800		16400		17500		15000		15100	
Antimony (Sb)	mg/kg	0.2	J-	<0.1	J-	<0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	0.2	J-	0.1	J-
Arsenic (As)	mg/kg	9.1		7.5		3.7		3.8		8		5.7		5.2		5.4		10.5		9.6		8.1		7.4	
Barium (Ba)	mg/kg	505		693		55		54		120		125		175		176		214		213		136		135	
Beryllium (Be)	mg/kg	0.5		0.6		0.3		0.4		0.5		0.5		0.5		0.6		0.8		0.8		0.6		0.6	
Cadmium (Cd)	mg/kg	0.2		0.2		<0.1		0.1		0.2		0.1		0.2		0.2		0.3		0.3		0.2		0.2	
Cobalt (Co)	mg/kg	6.9		6.1		4.8		4.8		5.7		5.1		7.3		7.7		8.7		8.1		7.4		7.2	
Chromium (Cr)	mg/kg	13.7		18.1		8.1		10.2		12.2		14.5		20.9		22.9		26.3		27.5		18.1		18.4	
Chromium III (CrIII)	mg/kg	14		18		8		10		12		14		21		23		26		28		18		18	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		0.43		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	11.4		108	J	7.4		20	J	9.2		64.5	J	11.6		21.3	J	15.1		37.3	J	13.2		22.8	J
Iron (Fe)	mg/kg	23600		18000		8060		7260		12500		11600		15300		15600		20100		18300		15900		15900	
Lead (Pb)	mg/kg	15.3	J	13		8.3	J	7		9.7	J	7		11	J	14		16	J	17		10	J	17	
Manganese (Mn)	mg/kg	383		252		252		218		234		227		346		349		417		393		492		505	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	13.6		15.5		7.5		7.9		8.4		9.5		14.3		15.7		17.3		17.2		13.7		13.2	
Selenium (Se)	mg/kg	0.5		0.4		<0.2		0.2		0.3		0.3		0.3		0.3		0.4		0.4		0.3		0.3	
Silver (Ag)	mg/kg	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		0.2		<0.1		0.1	
Thallium (Tl)	mg/kg	0.11		0.14		0.1		0.09		0.13		0.11		0.17		0.17		0.37		0.36		0.18		0.17	
Vanadium (V)	mg/kg	35.3		31.9		16.8		16		15.6		15.1		24.9		26.2		36.6		37.6		25		25.1	
Zinc (Zn)	mg/kg	43		59		24		30		32		53		46		59		58		74		47		58	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12100491

	Sample Number	MBSI-03-03		MBSI-03-03		MBSI-23-01		MBSI-23-01		MBSI-23-02		MBSI-23-02	MBSI-23-02 Sieve Dup	
	Date	10/26/2012		10/26/2012		10/26/2012		10/26/2012		10/26/2012		10/26/2012	10/26/2012	
	Time	12:30		12:30		14:15		14:15		15:25		15:25	15:25	
	Laboratory ID	H12100491-049		H12100491-050		H12100491-051		H12100491-052		H12100491-053		H12100491-054	H12100491-055	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	Fine (<250µm)	
No 06 Sieve	wt% retained			3.8	J			3.7	J			19.7	J	22.8	J
TOTAL METALS															
Aluminum (Al)	mg/kg	14900		15700		15700		16900		17300		19800		19300	
Antimony (Sb)	mg/kg	0.1	J-	0.1	J-	0.2	J-	0.1	J-	0.2	J-	<0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	8.4		7		8.3		8.5		13.1		10.8		10.4	
Barium (Ba)	mg/kg	145		148		125		129		155		168		166	
Beryllium (Be)	mg/kg	0.6		0.6		0.8		0.8		0.8		0.8		0.7	
Cadmium (Cd)	mg/kg	0.2		0.2		0.2		0.2		0.3		0.3		0.3	
Cobalt (Co)	mg/kg	7.9		7.4		7.3		7.6		7.7		7.6		7.3	
Chromium (Cr)	mg/kg	17.9		18.3		18.6		19.1		19.7		21.4		21.3	
Chromium III (CrIII)	mg/kg	18		18		19		19		20		21		21	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	15		25.6	J	14.5		32.7	J	18.8		31.8	J	25.7	J
Iron (Fe)	mg/kg	16200		17300		17600		18800		18100		18100		17900	
Lead (Pb)	mg/kg	22	J	14		20	J	21		19	J	15		19	
Manganese (Mn)	mg/kg	544		564		471		523		327		335		329	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05					
Nickel (Ni)	mg/kg	13.2		14.3		13.3		14.3		15.6		16.5		16.6	
Selenium (Se)	mg/kg	0.3		0.3		0.3		0.3		0.7		0.4		0.5	
Silver (Ag)	mg/kg	<0.2		<0.1		<0.2		<0.1		<0.2		<0.1		<0.1	
Thallium (Tl)	mg/kg	0.18		0.15		0.2		0.19		0.25		0.23		0.23	
Vanadium (V)	mg/kg	25.3		25.9		22.2		25		35.5		38.5		37.6	
Zinc (Zn)	mg/kg	46		54		48		55		55		62		60	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110065

	Sample Number	MBSI-10-01		MBSI-10-01		MBSI-10-02		MBSI-10-02		MBSI-10-04		MBSI-32-01		MBSI-32-01		MBSI-32-02		MBSI-32-02		MBSI-40-01		MBSI-40-01		MBSI-49-02		MBSI-49-02	
	Date	11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		
	Time	8:20		8:20		10:05		10:05		10:30		11:50		11:50		14:05		14:05		17:00		17:00		8:30		8:30		
	Laboratory ID	H12110065-001		H12110065-002		H12110065-003		H12110065-004		H12110065-005		H12110065-006		H12110065-007		H12110065-008		H12110065-009		H12110065-010		H12110065-011		H12110065-012		H12110065-013		
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		BLANK		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		
No 06 Sieve	wt% retained			19.7				65.5						47.7				14.3				42.8				40.5		
TOTAL METALS																												
Aluminum (Al)	mg/kg	9360		10400		5770		10000				15400		16500		20100		18500		33700		38400		24500		24300		
Antimony (Sb)	mg/kg	<0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-			0.2	J-	0.2	J-	0.2	J-	0.1	J-	<0.1	J-	<0.1	J-	0.2	J-	0.2	J-	
Arsenic (As)	mg/kg	4.3		4.1		1.5		3				8.8		8.2		8		8		4		6.1		7.4		8.9		
Barium (Ba)	mg/kg	81		84		32		59				111		107		171		171		126		161		172		191		
Beryllium (Be)	mg/kg	0.4		0.4		0.1		0.2				0.7		0.8		0.8		0.8		0.4		0.5		1.4		1.3		
Cadmium (Cd)	mg/kg	0.2		0.2		<0.1		<0.1				0.4		0.4		0.3		0.2		0.3		0.4		0.3		0.3		
Cobalt (Co)	mg/kg	3.9		3.4		3.1		4.5				8		5.2		8.7		6		13.6		9.8		12		9.4		
Chromium (Cr)	mg/kg	17.1		19.2		12.8		26				20.6		25.5		23.2		24.4		29.6		34.3		32.8		34.8		
Chromium III (CrIII)	mg/kg	17		19		13		26				21		26		23		24		30		34		33		35		
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29				<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		
Copper (Cu)	mg/kg	8.2		113	J	4		298	J			13.3		251	J	15		143	J	23.8		533	J	19.4		307	J	
Iron (Fe)	mg/kg	9550		9800		8550		13700				16300		15100		20100		19000		18000		18300		23500		22900		
Lead (Pb)	mg/kg	7	J	15		11	J	19				27	J	32		18	J	15		11	J	16		24	J	33		
Manganese (Mn)	mg/kg	176		177		102		178				470		358		429		404		529		490		726		796		
Mercury (Hg)	mg/kg	<0.05				<0.05						<0.05				<0.05				<0.05				<0.05				
Nickel (Ni)	mg/kg	10.9		10		7.3		12.4				15.4		17.4		17.3		15.6		41.3		44		21.9		20.9		
Selenium (Se)	mg/kg	0.2		0.2		<0.2		<0.2				0.3		0.4		0.4		0.4		<0.2		0.3		0.3		0.3		
Silver (Ag)	mg/kg	<0.1		0.2		<0.1		0.2				<0.1		0.2		0.2		0.1		<0.1		0.1		<0.1		0.2		
Thallium (Tl)	mg/kg	0.11		0.14		0.08		0.15				0.23		0.25		0.27		0.25		0.1		0.15		0.3		0.31		
Vanadium (V)	mg/kg	21.4		21.6		11.3		20.6				27.3		25.3		37.3		33.9		29.6		30.9		29.6		28.5		
Zinc (Zn)	mg/kg	30		47		22		86				61		105		69		86		56		153		84		135		
AQUEOUS TOTAL METALS																												
Aluminum (Al)	mg/L									<0.03																		
Antimony (Sb)	mg/L									<0.001																		
Arsenic (As)	mg/L									<0.001																		
Barium (Ba)	mg/L									<0.05																		
Beryllium (Be)	mg/L									<0.001																		
Cadmium (Cd)	mg/L									<0.001																		
Chromium (Cr)	mg/L									<0.005																		
Cobalt (Co)	mg/L									<0.005																		
Copper (Cu)	mg/L									<0.005																		
Iron (Fe)	mg/L									<0.03																		
Lead (Pb)	mg/L									<0.001																		
Manganese (Mn)	mg/L									<0.001																		
Mercury (Hg)	mg/L									<0.0001																		
Nickel (Ni)	mg/L									<0.005																		
Selenium (Se)	mg/L									<0.001																		
Silver (Ag)	mg/L									<0.001																		
Thallium (Tl)	mg/L									<0.0005																		
Vanadium (V)	mg/L									<0.01																		
Zinc (Zn)	mg/L									<0.01																		

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110065

	Sample Number	MBSI-49-01		MBSI-49-01		MBSI-49-01 Sieve Dup		MBSI-47-01		MBSI-47-01		MBSI-47-02		MBSI-47-02		MBSI-44-02		MBSI-44-02		MBSI-53-02		MBSI-53-02		MBSI-53-03		MBSI-53-03	
	Date	11/1/2012		11/1/2012		11/1/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012		11/3/2012		11/3/2012		11/3/2012		11/3/2012		11/3/2012		11/3/2012	
	Time	9:50		9:50		9:50		11:20		11:20		15:10		15:10		9:25		9:25		10:25		10:25		10:35		10:35	
	Laboratory ID	H12110065-014		H12110065-015		H12110065-016		H12110065-017		H12110065-018		H12110065-019		H12110065-020		H12110065-021		H12110065-022		H12110065-023		H12110065-024		H12110065-025		H12110065-026	
	Remarks	Bulk		Fine (<250µm)		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			18.1		19.8				13.7				18.3				23				19.9				25	
TOTAL METALS																											
Aluminum (Al)	mg/kg	27300		27500		26400		20400		21600		22800		26300		17200		18500		21700		22100		20500		21600	
Antimony (Sb)	mg/kg	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.1	J-	0.2	J-	0.2	J-	0.1	J-	0.1	J-	0.1	J-	0.1	J-
Arsenic (As)	mg/kg	7.9		7.7		8		8.3		8.1		11.3		9.4		8.2		8.1		9.6		9.3		9.5		9.5	
Barium (Ba)	mg/kg	225		231		227		249		255		98		104		121		129		137		140		130		139	
Beryllium (Be)	mg/kg	0.9		1		1		0.9		1		1.4		1.6		0.7		0.7		0.8		0.8		0.8		0.9	
Cadmium (Cd)	mg/kg	0.3		0.3		0.3		0.5		0.3		0.2		0.2		0.3		0.3		0.4		0.4		0.4		0.4	
Cobalt (Co)	mg/kg	12.1		8.7		8.8		8.7		6.1		12.7		8.8		6.6		5.1		7.6		5.7		7.5		6.2	
Chromium (Cr)	mg/kg	31		35		33.9		13.8		17.3		26.7		32.9		19.5		22.4		23.5		26.9		22.7		25.5	
Chromium III (CrIII)	mg/kg	31		35		34		14		17		26		33		19		22		24		27		23		26	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		0.9		<0.29		0.37		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	26.4		173	J	52.4	J	19.1		40.9	J	18.1		36.1	J	14.5		29.8	J	15.8		54.9	J	15.3		69.7	J
Iron (Fe)	mg/kg	25000		24600		24400		17600		17700		25300		25100		15800		16000		18000		18100		17600		18000	
Lead (Pb)	mg/kg	21	J	23		19		18	J	21		27	J	28		18	J	24		24	J	27		14	J	24	
Manganese (Mn)	mg/kg	735		717		716		760		712		640		581		329		336		418		425		414		433	
Mercury (Hg)	mg/kg	<0.05						<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	21.8		21		21.1		9.4		10		21.9		19.9		13.4		13.2		15.9		15.7		16.4		16	
Selenium (Se)	mg/kg	0.3		0.3		0.3		0.3		0.3		0.4		0.4		0.4		0.4		0.4		0.3		0.4		0.4	
Silver (Ag)	mg/kg	0.1		0.2		0.2		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		0.1		0.1		<0.1		0.1	
Thallium (Tl)	mg/kg	0.25		0.27		0.25		0.35		0.36		0.24		0.27		0.19		0.21		0.29		0.28		0.27		0.29	
Vanadium (V)	mg/kg	46.4		47.8		45.2		24.9		26.2		26.8		30.5		25.8		25.7		33.4		33.7		31.4		32.4	
Zinc (Zn)	mg/kg	69		92		70		57		61		51		53		53		56		68		73		68		75	
AQUEOUS TOTAL METALS																											
Aluminum (Al)	mg/L																										
Antimony (Sb)	mg/L																										
Arsenic (As)	mg/L																										
Barium (Ba)	mg/L																										
Beryllium (Be)	mg/L																										
Cadmium (Cd)	mg/L																										
Chromium (Cr)	mg/L																										
Cobalt (Co)	mg/L																										
Copper (Cu)	mg/L																										
Iron (Fe)	mg/L																										
Lead (Pb)	mg/L																										
Manganese (Mn)	mg/L																										
Mercury (Hg)	mg/L																										
Nickel (Ni)	mg/L																										
Selenium (Se)	mg/L																										
Silver (Ag)	mg/L																										
Thallium (Tl)	mg/L																										
Vanadium (V)	mg/L																										
Zinc (Zn)	mg/L																										

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110065

	Sample Number	MBSI-53-01		MBSI-53-01		MBSI-44-01		MBSI-44-01		MBSI-40-02		MBSI-40-02		MBSI-06-02		MBSI-06-02		MBSI-43-02		MBSI-43-02	MBSI-43-02 Sieve Dup		MBSI-01-01		MBSI-01-01	
	Date	11/3/2012		11/3/2012		11/3/2012		11/3/2012		11/3/2012		11/3/2012		11/4/2012		11/4/2012		11/4/2012		11/4/2012	11/4/2012		11/4/2012		11/4/2012	
	Time	11:50		11:50		13:40		13:40		14:35		14:35		9:25		9:25		10:25		10:25	10:25		12:40		12:40	
	Laboratory ID	H12110065-027		H12110065-028		H12110065-029		H12110065-030		H12110065-031		H12110065-032		H12110065-033		H12110065-034		H12110065-035		H12110065-036	H12110065-037		H12110065-038		H12110065-039	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			16.2				40.8				16.5				5.3				18.8	19.8				77.1	
TOTAL METALS																										
Aluminum (Al)	mg/kg	21900		23900		13200		15700		23500		25900		15500		17600		18000		20000	19500		7080		15600	
Antimony (Sb)	mg/kg	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.1	J-	0.1	J-	0.2	J-	0.3	J-	0.2	J-	0.2	0.2	J-	<0.1	J-	0.2	J-
Arsenic (As)	mg/kg	10.7		11.2		9.5		9.7		6.9		7.2		6.3		6.5		10.8		12	12.2		8.7		19.7	
Barium (Ba)	mg/kg	201		211		111		126		227		231		132		139		163		157	157		116		293	
Beryllium (Be)	mg/kg	0.8		0.9		0.6		0.7		0.9		0.9		1.1		1.2		0.9		1	0.9		0.2		0.6	
Cadmium (Cd)	mg/kg	0.2		0.2		0.3		0.3		0.3		0.3		0.4		0.3		0.4		0.5	0.5		0.2		0.4	
Cobalt (Co)	mg/kg	9.8		7.2		6.9		4.9		12.5		8.6		6.6		5		7.7		6.1	6.2		2.1		3	
Chromium (Cr)	mg/kg	22.4		27.3		16.5		21.6		29.2		35.4		18.7		23.3		20.2		24.8	24.3		3.2		8.5	
Chromium III (CrIII)	mg/kg	22		27		16		22		29		35		19		23		20		25	24		<5		8	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	16.5		165	J	12.4		52.6	J	26.6		37.4	J	19		32.1	J	37.9		59.8	J 59.2	J	6.2		50.3	J
Iron (Fe)	mg/kg	22200		22000		17900		17600		23900		23100		15500		16800		17000		17900	18000		10600		21700	
Lead (Pb)	mg/kg	22	J	23		20	J	25		22	J	25		19	J	23		21	J	30	22		6	J	24	
Manganese (Mn)	mg/kg	257		264		388		415		497		455		591		615		466		491	491		805		1560	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05					<0.05			
Nickel (Ni)	mg/kg	19.5		18.8		11.5		12.1		28.1		26.5		12.4		12.8		13.6		14.9	14.6		1.6		6.1	
Selenium (Se)	mg/kg	0.5		0.5		0.4		0.4		0.3		0.3		0.2		0.2		0.2		0.3	0.3		<0.2		0.2	
Silver (Ag)	mg/kg	<0.1		0.1		0.1		0.2		0.1		0.1		0.1		0.1		0.1		0.2	0.2		<0.1		0.2	
Thallium (Tl)	mg/kg	0.28		0.31		0.16		0.21		0.21		0.24		0.31		0.36		0.28		0.31	0.3		0.2		0.42	
Vanadium (V)	mg/kg	42.4		47.7		30.7		34.1		36.4		41.2		29.6		33.9		27.7		29.8	29.1		6.7		18	
Zinc (Zn)	mg/kg	73		95		54		64		64		63		57		59		67		72	72		34		89	
AQUEOUS TOTAL METALS																										
Aluminum (Al)	mg/L																									
Antimony (Sb)	mg/L																									
Arsenic (As)	mg/L																									
Barium (Ba)	mg/L																									
Beryllium (Be)	mg/L																									
Cadmium (Cd)	mg/L																									
Chromium (Cr)	mg/L																									
Cobalt (Co)	mg/L																									
Copper (Cu)	mg/L																									
Iron (Fe)	mg/L																									
Lead (Pb)	mg/L																									
Manganese (Mn)	mg/L																									
Mercury (Hg)	mg/L																									
Nickel (Ni)	mg/L																									
Selenium (Se)	mg/L																									
Silver (Ag)	mg/L																									
Thallium (Tl)	mg/L																									
Vanadium (V)	mg/L																									
Zinc (Zn)	mg/L																									

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110065

	Sample Number	MBSI-01-02		MBSI-01-02		MBSI-51-01		MBSI-51-01		MBSI-51-02		MBSI-51-02		MBSI-51-04		MBSI-08-02		MBSI-08-02		MBSI-08-01		MBSI-08-01		MBSI-36-02		MBSI-36-02	
	Date	11/4/2012		11/4/2012		11/4/2012		11/4/2012		11/4/2012		11/4/2012		11/4/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012	
	Time	13:55		13:55		15:40		15:40		17:00		17:00		17:30		9:30		9:30		12:15		12:15		15:00		15:00	
	Laboratory ID	H12110065-040		H12110065-041		H12110065-042		H12110065-043		H12110065-044		H12110065-045		H12110065-046		H12110065-047		H12110065-048		H12110065-049		H12110065-050		H12110065-051		H12110065-052	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		BLANK		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			64.9				46.3				29.6						36.2				<0.1				46.6	
TOTAL METALS																											
Aluminum (Al)	mg/kg	16100		21500		18100		22800		19600		20900				7960		10400		22700		20600		16800		19500	
Antimony (Sb)	mg/kg	0.3	J-	0.6	J-	0.2	J-	0.3	J-	0.8	J-	0.6	J-			0.1	J-	0.1	J-	0.2	J-	0.1	J-	0.2	J-	0.2	J-
Arsenic (As)	mg/kg	29		40.5		33.3		43.3		23.3		21.8				5.1		6.1		8.3		8.2		11.6		12.6	
Barium (Ba)	mg/kg	374		496		161		210		198		178				108		124		207		206		185		204	
Beryllium (Be)	mg/kg	0.6		1		0.6		0.8		0.9		0.9				0.4		0.5		0.9		0.8		1.1		1.1	
Cadmium (Cd)	mg/kg	1.1		1.6		0.6		0.9		0.9		0.9				0.4		0.5		0.3		0.3		0.6		0.7	
Cobalt (Co)	mg/kg	6.1		7.5		6.8		7.7		9.2		9				3.9		4.9		8.2		8		8.9		9.4	
Chromium (Cr)	mg/kg	25.9		36		11.8		13.8		23.2		22.4				14.5		17.3		21.5		17.2		29.3		29.2	
Chromium III (CrIII)	mg/kg	26		36		12		14		23		22				14		17		22		17		29		29	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29				<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	43.6		103	J	25.7		77.3	J	45.2		60.5	J			14		34.1	J	18.8		29.6	J	15.7		34	J
Iron (Fe)	mg/kg	12000		15700		17000		19200		21000		19000				8210		8640		20800		19700		20100		21000	
Lead (Pb)	mg/kg	28	J	36.5		20	J	23.2		36.9	J	38.6				8.7	J	11.5		14.5	J	14.4		16.9	J	18.9	
Manganese (Mn)	mg/kg	344		387		620		640		678		581				171		177		501		526		520		585	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05						<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	13.9		19.2		5.7	J+	6.5		20.7		15.8				7.6		7.8		17.5		17.4		28.2		29.9	
Selenium (Se)	mg/kg	<0.2		0.2		<0.2		<0.2		0.4		0.3				0.6		0.6		0.5		0.5		0.6		0.7	
Silver (Ag)	mg/kg	0.2		0.6		0.1		0.4		0.4		0.5				0.1		0.2		0.2		0.1		0.1		0.2	
Thallium (Tl)	mg/kg	0.35		0.53		0.23		0.25		0.29		0.36				0.12		0.17		0.33		0.31		0.28		0.33	
Vanadium (V)	mg/kg	18.7		29.6		31.5		44.6		39.6		41.7				42.6		58.4		39.7		33.6		37.7		44.8	
Zinc (Zn)	mg/kg	67		121		99		132		107		112				51		63		84		82		76		83	
AQUEOUS TOTAL METALS																											
Aluminum (Al)	mg/L													<0.03													
Antimony (Sb)	mg/L													<0.001													
Arsenic (As)	mg/L													<0.001													
Barium (Ba)	mg/L													<0.05													
Beryllium (Be)	mg/L													<0.001													
Cadmium (Cd)	mg/L													<0.001													
Chromium (Cr)	mg/L													<0.005													
Cobalt (Co)	mg/L													<0.005													
Copper (Cu)	mg/L													<0.005													
Iron (Fe)	mg/L													<0.03													
Lead (Pb)	mg/L													<0.001													
Manganese (Mn)	mg/L													<0.001													
Mercury (Hg)	mg/L													<0.0001													
Nickel (Ni)	mg/L													<0.005													
Selenium (Se)	mg/L													<0.001													
Silver (Ag)	mg/L													<0.001													
Thallium (Tl)	mg/L													<0.0005													
Vanadium (V)	mg/L													<0.01													
Zinc (Zn)	mg/L													<0.01													

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110065

	Sample Number	MBSI-36-02 Sieve Dup		MBSI-36-01		MBSI-36-01		MBSI-19-02		MBSI-19-02		MBSI-19-01		MBSI-19-01		MBSI-02-02		MBSI-02-02		MBSI-02-01		MBSI-02-01	
	Date	11/1/2012		11/1/2012		11/1/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012		11/2/2012	
	Time	15:00		17:00		17:00		8:45		8:45		11:30		11:30		14:30		14:30		16:45		16:45	
	Laboratory ID	H12110065-053		H12110065-054		H12110065-055		H12110065-056		H12110065-057		H12110065-058		H12110065-059		H12110065-060		H12110065-061		H12110065-062		H12110065-063	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained	42.2				26.7				15.5				26				4.8				9.1	
TOTAL METALS																							
Aluminum (Al)	mg/kg	19500		17600		18500		12900		14600		18300		21300		18800		22100		18800		19200	
Antimony (Sb)	mg/kg	0.2	J-	0.2	J-	0.3	J-	0.1	J-	0.1	J-	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.4	J-	0.3	J-
Arsenic (As)	mg/kg	13		13.5		13		6		6.9		10		10.9		16.6		15.4		17		14	
Barium (Ba)	mg/kg	207		199		204		136		147		176		188		213		229		458		475	
Beryllium (Be)	mg/kg	1.2		0.8		0.9		0.5		0.6		0.7		0.9		1		1.1		0.9		0.9	
Cadmium (Cd)	mg/kg	0.7		0.4		0.4		0.3		0.3		0.2		0.2		0.3		0.4		0.5		0.5	
Cobalt (Co)	mg/kg	9.7		8.2		8.7		7		7.8		8		8.8		6.8		7.1		12.9		11.4	
Chromium (Cr)	mg/kg	29.9		23		20.9		16.7		16.5		22.3		22		18		18		25.4		21.9	
Chromium III (CrIII)	mg/kg	30		23		21		17		16		22		22		18		18		25		22	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	34.3	J	19		33.8	J	13.9		36.7	J	17		31.9	J	18.1		108	J	27.2		47.6	J
Iron (Fe)	mg/kg	21400		20300		20000		15600		17000		19700		21100		18000		18100		24000		22000	
Lead (Pb)	mg/kg	19		14.5	J	14.9		9.3	J	10.4		11.5	J	12.7		13.5	J	14.2		17.2	J	15.4	
Manganese (Mn)	mg/kg	597		454		522		388		447		316		353		372		401		773		840	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	30.4		20		20.7		15.4		16.8		20		23.4		18.7		19.2		27.4		24.2	
Selenium (Se)	mg/kg	0.7		0.6		0.6		0.4		0.3		0.8		0.8		0.6		0.6		0.6		0.5	
Silver (Ag)	mg/kg	0.1		0.1		0.2		<0.1		0.1		<0.1		<0.1		<0.1		0.1		0.2		<0.1	
Thallium (Tl)	mg/kg	0.32		0.24		0.26		0.22		0.25		0.27		0.31		0.39		0.44		0.27		0.28	
Vanadium (V)	mg/kg	44.6		40.2		39.6		28.9		32.7		48.1		55.8		35.3		42.5		54.8		52	
Zinc (Zn)	mg/kg	82		89		93		62		70		60		69		80		94		101		98	
AQUEOUS TOTAL METALS																							
Aluminum (Al)	mg/L																						
Antimony (Sb)	mg/L																						
Arsenic (As)	mg/L																						
Barium (Ba)	mg/L																						
Beryllium (Be)	mg/L																						
Cadmium (Cd)	mg/L																						
Chromium (Cr)	mg/L																						
Cobalt (Co)	mg/L																						
Copper (Cu)	mg/L																						
Iron (Fe)	mg/L																						
Lead (Pb)	mg/L																						
Manganese (Mn)	mg/L																						
Mercury (Hg)	mg/L																						
Nickel (Ni)	mg/L																						
Selenium (Se)	mg/L																						
Silver (Ag)	mg/L																						
Thallium (Tl)	mg/L																						
Vanadium (V)	mg/L																						
Zinc (Zn)	mg/L																						

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110151

	Sample Number	MBSI-38-01		MBSI-38-01		MBSI-26-01		MBSI-26-01		MBSI-26-03		MBSI-26-03		MBSI-31-01		MBSI-31-01	
	Date	11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012	
	Time	7:40		7:40		9:40		9:40		9:50		9:50		11:05		11:05	
	Laboratory ID	H12110151-001		H12110151-002		H12110151-003		H12110151-004		H12110151-005		H12110151-006		H12110151-007		H12110151-008	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			46.3	J			9.7	J			6.6	J			42.2	J
TOTAL METALS																	
Aluminum (Al)	mg/kg	13200		17000		16500		18800		17500		18500		21700		22600	
Antimony (Sb)	mg/kg	0.2	J-	<0.1	J-	0.1	J-	<0.1	J-	0.2	J-	<0.1	J-	0.2	J-	<0.1	J-
Arsenic (As)	mg/kg	5.2		5.8		8.8		8.7		8.8		8.7		12.5		12.7	
Barium (Ba)	mg/kg	216		237		177		166		178		165		285		264	
Beryllium (Be)	mg/kg	0.7		0.8		0.6		0.6		0.7		0.6		0.7		0.8	
Cadmium (Cd)	mg/kg	0.8		1		0.3		0.4		0.3		0.4		0.3		0.4	
Cobalt (Co)	mg/kg	8.8		6.8		6.1		5.3		6.4		4.7		6.9		5.3	
Chromium (Cr)	mg/kg	17.2		18.9		19.9		20.7		19.9		19.9		19.6		19.8	
Chromium III (CrIII)	mg/kg	17		19		20		21		20		20		20		20	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	19.6		42.2	J	14.9		24.5	J	15.7		23.3	J	16.4		68.1	J
Iron (Fe)	mg/kg	21600		21200		15800		15100		16300		15100		17700		16900	
Lead (Pb)	mg/kg	14.8		12	J	10.7		15	J	10.9		15	J	13.2		15	J
Manganese (Mn)	mg/kg	499		418		406		372		422		372		375		326	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	19.9		19		15.7		15		16.7		14.3		17.6		15.8	
Selenium (Se)	mg/kg	0.3		0.4		0.4		0.4		0.4		0.5		0.4		0.4	
Silver (Ag)	mg/kg	0.2		0.1		0.2		<0.1		0.2		<0.1		0.2		0.2	
Thallium (Tl)	mg/kg	0.2		0.23		0.24		0.23		0.24		0.22		0.25		0.22	
Vanadium (V)	mg/kg	33.4		31.3		32.5		29.1		32		28.7		38		31.1	
Zinc (Zn)	mg/kg	107		109		60		58		61		56		61		68	
AQUEOUS TOTAL METALS																	
Aluminum (Al)	mg/L																
Antimony (Sb)	mg/L																
Arsenic (As)	mg/L																
Barium (Ba)	mg/L																
Beryllium (Be)	mg/L																
Cadmium (Cd)	mg/L																
Chromium (Cr)	mg/L																
Cobalt (Co)	mg/L																
Copper (Cu)	mg/L																
Iron (Fe)	mg/L																
Lead (Pb)	mg/L																
Manganese (Mn)	mg/L																
Mercury (Hg)	mg/L																
Nickel (Ni)	mg/L																
Selenium (Se)	mg/L																
Silver (Ag)	mg/L																
Thallium (Tl)	mg/L																
Vanadium (V)	mg/L																
Zinc (Zn)	mg/L																

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110151

	Sample Number	MBSI-31-01 Sieve Dup		MBSI-31-02		MBSI-31-02		MBSI-31-03		MBSI-31-03		MBSI-38-02		MBSI-38-02		MBSI-21-01	
	Date	11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012	
	Time	11:05		13:05		13:05		13:15		13:15		14:45		14:45		15:45	
	Laboratory ID	H12110151-009		H12110151-010		H12110151-011		H12110151-012		H12110151-013		H12110151-014		H12110151-015		H12110151-016	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained	45.3	J			37.4	J			30.1	J			11.8	J		
TOTAL METALS																	
Aluminum (Al)	mg/kg	24600		28100		29000		28000		28700		15000		14800		10900	
Antimony (Sb)	mg/kg	<0.1	J-	0.2	J-	<0.1	J-	0.2	J-	0.2	J-	0.1	J-	<0.1	J-	0.1	J-
Arsenic (As)	mg/kg	13		10.8		10.2		10.3		10.3		5.5		5.2		20.8	
Barium (Ba)	mg/kg	271		273		230		274		230		229		211		281	
Beryllium (Be)	mg/kg	0.8		1		1		1		1		0.5		0.5		0.7	
Cadmium (Cd)	mg/kg	0.4		0.3		0.3		0.3		0.3		0.4		0.5		0.1	
Cobalt (Co)	mg/kg	5.6		10.7		7.1		10.5		7.4		7.2		4.9		5.4	
Chromium (Cr)	mg/kg	21.2		37.4		32.4		36.3		32.9		18.4		17.2		22.3	
Chromium III (CrIII)	mg/kg	21		37		32		36		33		18		17		21	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		1	
Copper (Cu)	mg/kg	36.5	J	25.2		32.9	J	24.6		31.9	J	16		42.9	J	27.4	
Iron (Fe)	mg/kg	17200		22100		22200		22100		22400		16100		15200		24900	
Lead (Pb)	mg/kg	16	J	15.8		12	J	15.5		14.8	J	10.1		10.2	J	14.2	
Manganese (Mn)	mg/kg	324		446		340		447		344		658		599		84	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05				<0.05	
Nickel (Ni)	mg/kg	15.8		30		23.2		28.9		23.9		13.8		11.3		19.7	
Selenium (Se)	mg/kg	0.4		0.5		0.5		0.5		0.5		0.5		0.6		1.6	
Silver (Ag)	mg/kg	0.1		0.1		0.1		0.1		0.1		<0.1		<0.1		0.1	
Thallium (Tl)	mg/kg	0.27		0.32		0.3		0.33		0.3		0.21		0.2		0.33	
Vanadium (V)	mg/kg	35.7		75.6		61.2		74.7		60.3		32.4		26.2		48.8	
Zinc (Zn)	mg/kg	64		89		74		89		76		82		82		94	
AQUEOUS TOTAL METALS																	
Aluminum (Al)	mg/L																
Antimony (Sb)	mg/L																
Arsenic (As)	mg/L																
Barium (Ba)	mg/L																
Beryllium (Be)	mg/L																
Cadmium (Cd)	mg/L																
Chromium (Cr)	mg/L																
Cobalt (Co)	mg/L																
Copper (Cu)	mg/L																
Iron (Fe)	mg/L																
Lead (Pb)	mg/L																
Manganese (Mn)	mg/L																
Mercury (Hg)	mg/L																
Nickel (Ni)	mg/L																
Selenium (Se)	mg/L																
Silver (Ag)	mg/L																
Thallium (Tl)	mg/L																
Vanadium (V)	mg/L																
Zinc (Zn)	mg/L																

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110151

	Sample Number	MBSI-21-01		MBSI-21-02		MBSI-21-02		MBSI-26-02		MBSI-26-02		MBSI-06-01		MBSI-06-01		MBSI-25-02	
	Date	11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/6/2012	
	Time	15:45		16:25		16:25		17:20		17:20		12:30		12:30		16:30	
	Laboratory ID	H12110151-017		H12110151-018		H12110151-019		H12110151-020		H12110151-021		H12110151-022		H12110151-023		H12110151-024	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained	28.1	J			4.5	J			0.9	J			22.4	J		
TOTAL METALS																	
Aluminum (Al)	mg/kg	12400		15200		17400		13800		15600		10600		9920		13200	
Antimony (Sb)	mg/kg	<0.1	J-	<0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	0.2	J-
Arsenic (As)	mg/kg	16.6		11.9		11.6		9.5		9.5		8		6.5		8.8	
Barium (Ba)	mg/kg	273		339		312		219		205		160		138		169	
Beryllium (Be)	mg/kg	0.6		0.7		0.8		0.6		0.6		0.6		0.5		0.6	
Cadmium (Cd)	mg/kg	0.1		0.1		0.1		0.3		0.3		0.4		0.4		0.3	
Cobalt (Co)	mg/kg	3.5		5.6		3.5		7.7		5.6		5.5		4.1		9.1	
Chromium (Cr)	mg/kg	21.1		25.8		26.9		19.9		21		22.2		21		27	
Chromium III (CrIII)	mg/kg	21		25		27		20		21		22		21		27	
Chromium VI (CrVI)	mg/kg	<0.29		0.97		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	69.7	J	28.1		46.3	J	19		36.5	J	11.1		50.4	J	24.7	
Iron (Fe)	mg/kg	21000		23200		23900		18000		17300		14900		13700		17600	
Lead (Pb)	mg/kg	13.6	J	19.4		19.1	J	12.8		12.7	J	9.8		8.6	J	9.2	
Manganese (Mn)	mg/kg	80		74		61		375		331		858		739		674	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05				<0.05	
Nickel (Ni)	mg/kg	15.1		18.9		15.2		22.5		19.4		13.9		10.9		25	
Selenium (Se)	mg/kg	1.3		0.7		0.7		0.5		0.5		0.3		0.3		0.3	
Silver (Ag)	mg/kg	0.1		0.2		0.2		0.1		0.1		<0.1		<0.1		0.2	
Thallium (Tl)	mg/kg	0.28		0.37		0.36		0.26		0.26		0.46		0.25		0.22	
Vanadium (V)	mg/kg	41.3		48.4		49.2		40.7		40.3		22.9		19.8		31.6	
Zinc (Zn)	mg/kg	83		94		84		86		82		74		64		48	
AQUEOUS TOTAL METALS																	
Aluminum (Al)	mg/L																
Antimony (Sb)	mg/L																
Arsenic (As)	mg/L																
Barium (Ba)	mg/L																
Beryllium (Be)	mg/L																
Cadmium (Cd)	mg/L																
Chromium (Cr)	mg/L																
Cobalt (Co)	mg/L																
Copper (Cu)	mg/L																
Iron (Fe)	mg/L																
Lead (Pb)	mg/L																
Manganese (Mn)	mg/L																
Mercury (Hg)	mg/L																
Nickel (Ni)	mg/L																
Selenium (Se)	mg/L																
Silver (Ag)	mg/L																
Thallium (Tl)	mg/L																
Vanadium (V)	mg/L																
Zinc (Zn)	mg/L																

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110151

	Sample Number	MBSI-25-02		MBSI-25-02 Sieve Dup		MBSI-25-01		MBSI-25-01		MBSI-25-03		MBSI-25-03		MBSI-25-04	
	Date	11/6/2012		11/6/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012		11/7/2012	
	Time	16:30		16:30		10:00		10:00		10:30		10:30		9:30	
	Laboratory ID	H12110151-025		H12110151-026		H12110151-027		H12110151-028		H12110151-029		H12110151-030		H12110151-031	
	Remarks	Fine (<250µm)		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		BLANK	
No 06 Sieve	wt% retained	32.5	J	32.6	J			23.1	J			35.5	J		
TOTAL METALS															
Aluminum (Al)	mg/kg	15800		15700		18200		18600		19700		20900			
Antimony (Sb)	mg/kg	<0.1	J-	<0.1	J-	0.2	J-	<0.1	J-	0.1	J-	0.1	J-		
Arsenic (As)	mg/kg	8.9		8.8		6.3		6.3		6.7		6.4			
Barium (Ba)	mg/kg	168		167		308		308		349		304			
Beryllium (Be)	mg/kg	0.7		0.7		0.7		0.8		0.8		0.9			
Cadmium (Cd)	mg/kg	0.3		0.3		0.6		0.7		0.6		0.7			
Cobalt (Co)	mg/kg	5.8		6		8.3		5.2		8.4		4.7			
Chromium (Cr)	mg/kg	30.8		30.8		17.2		16.7		17.5		18.8			
Chromium III (CrIII)	mg/kg	31		31		17		17		17		19			
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		0.36		<0.29			
Copper (Cu)	mg/kg	70	J	40.3	J	19.9		34.3	J	18.6		49	J		
Iron (Fe)	mg/kg	18100		18100		18500		16300		18300		17000			
Lead (Pb)	mg/kg	12	J	18	J	12.8		21	J	14.1		20	J		
Manganese (Mn)	mg/kg	525		525		800		682		813		643			
Mercury (Hg)	mg/kg					<0.05				<0.05					
Nickel (Ni)	mg/kg	21.7		21.4		19.5		12.2		18.5		12.4			
Selenium (Se)	mg/kg	0.3		0.3		<0.2		0.2		0.2		0.3			
Silver (Ag)	mg/kg	<0.1		0.2		0.1		0.1		0.1		0.1			
Thallium (Tl)	mg/kg	0.23		0.22		0.25		0.26		0.29		0.3			
Vanadium (V)	mg/kg	31.1		31.3		30.4		24.4		30.1		26.5			
Zinc (Zn)	mg/kg	58		53		83		83		87		87			
AQUEOUS TOTAL METALS															
Aluminum (Al)	mg/L													<0.03	
Antimony (Sb)	mg/L													<0.001	
Arsenic (As)	mg/L													<0.001	
Barium (Ba)	mg/L													<0.05	
Beryllium (Be)	mg/L													<0.001	
Cadmium (Cd)	mg/L													<0.001	
Chromium (Cr)	mg/L													<0.005	
Cobalt (Co)	mg/L													<0.005	
Copper (Cu)	mg/L													<0.005	
Iron (Fe)	mg/L													<0.03	
Lead (Pb)	mg/L													<0.001	
Manganese (Mn)	mg/L													0.001	
Mercury (Hg)	mg/L													<0.0001	
Nickel (Ni)	mg/L													<0.005	
Selenium (Se)	mg/L													<0.001	
Silver (Ag)	mg/L													<0.001	
Thallium (Tl)	mg/L													<0.0005	
Vanadium (V)	mg/L													<0.01	
Zinc (Zn)	mg/L													<0.01	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110308

	Sample Number	MBSI-07-02		MBSI-07-02		MBSI-56-01		MBSI-56-01		MBSI-56-02		MBSI-56-02		MBSI-07-01		MBSI-07-01	MBSI-07-01 Sieve Dup	MBSI-33-02	
	Date	11/14/2012		11/14/2012		11/15/2012		11/15/2012		11/15/2012		11/15/2012		11/16/2012		11/16/2012	11/16/2012	11/14/2012	
	Time	14:00		14:00		12:20		12:20		15:54		15:54		12:47		12:47	12:47	7:30	
	Laboratory ID	H12110308-001		H12110308-002		H12110308-003		H12110308-004		H12110308-005		H12110308-006		H12110308-007		H12110308-008	H12110308-009	H12110308-010	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	Fine (<250µm)	Bulk	
No 06 Sieve	wt% retained			61.8				42.9				44				2.8	2.3		
TOTAL METALS																			
Aluminum (Al)	mg/kg	29800		32700		14500		15600		19500		17900		25600		25400	25800	12200	
Antimony (Sb)	mg/kg	0.1		0.1		0.1		0.1		<0.1		<0.1		<0.1		0.1	<0.1	<0.1	
Arsenic (As)	mg/kg	6.1		6.4		3.6		2.6		5		3.2		5.1		5.1	5	6	
Barium (Ba)	mg/kg	279		360		197		252		335		249		157		164	165	251	
Beryllium (Be)	mg/kg	0.8		0.8		0.5		0.4		0.6		0.4		1		0.9	0.9	0.4	
Cadmium (Cd)	mg/kg	0.1		0.2		<0.1		0.1		0.3		0.2		<0.1		<0.1	<0.1	<0.1	
Cobalt (Co)	mg/kg	5.7	J	6.1		6.2	J	5		10	J	6.8		6.6	J	6.8	7.1	3.6	J
Chromium (Cr)	mg/kg	13.7		14		12.6		11.7		12.9		14.1		14.2		15.7	16.2	14.6	
Chromium III (CrIII)	mg/kg	14		14		13		12		13		14		14		16	16	15	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	<0.29	<0.29	
Copper (Cu)	mg/kg	14.5		48.7		10.1		35.5		18.9		52.1		31.7		71.9	99.1	7.6	
Iron (Fe)	mg/kg	20600		18700		17100		14000		23800		19000		18000		17700	17800	11600	
Lead (Pb)	mg/kg	11.3		23		13.6		14		10.7		11		19.8		18	23	7.9	
Manganese (Mn)	mg/kg	639	J	731		961	J	834		1600	J	475		212	J	229	229	153	J
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05	
Nickel (Ni)	mg/kg	13.8		13.2		10		11.2		21.4		19.5		22.6		21.8	22.1	9.9	
Selenium (Se)	mg/kg	0.3		<0.2		<0.2		<0.2		<0.2		<0.2		0.6		0.4	0.4	0.3	
Silver (Ag)	mg/kg	<0.2		0.2		<0.2		<0.5		<0.2		<0.5		<0.2		<0.5	<0.5	<0.1	
Thallium (Tl)	mg/kg	0.24		0.21		0.24		0.22		0.41		0.34		0.45		0.43	0.46	0.18	
Vanadium (V)	mg/kg	26.3		23		24.8		18.9		20		15.6		19.4		15.9	16.6	29.5	
Zinc (Zn)	mg/kg	94		98		46		52		133		129		55		57	63	37	
AQUEOUS TOTAL METALS																			
Aluminum (Al)	mg/L																		
Antimony (Sb)	mg/L																		
Arsenic (As)	mg/L																		
Barium (Ba)	mg/L																		
Beryllium (Be)	mg/L																		
Cadmium (Cd)	mg/L																		
Chromium (Cr)	mg/L																		
Cobalt (Co)	mg/L																		
Copper (Cu)	mg/L																		
Iron (Fe)	mg/L																		
Lead (Pb)	mg/L																		
Manganese (Mn)	mg/L																		
Mercury (Hg)	mg/L																		
Nickel (Ni)	mg/L																		
Selenium (Se)	mg/L																		
Silver (Ag)	mg/L																		
Thallium (Tl)	mg/L																		
Vanadium (V)	mg/L																		
Zinc (Zn)	mg/L																		

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110308

	Sample Number	MBSI-33-02		MBSI-50-01		MBSI-50-01		MBSI-50-03		MBSI-50-03		MBSI-50-02		MBSI-50-02		MBSI-41-01		MBSI-41-01		MBSI-41-02	
	Date	11/14/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012	
	Time	7:30		8:10		8:10		8:20		8:20		9:40		9:40		10:50		10:50		12:45	
	Laboratory ID	H12110308-011		H12110308-012		H12110308-013		H12110308-014		H12110308-015		H12110308-016		H12110308-017		H12110308-018		H12110308-019		H12110308-020	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained	13				16.3				20.3				39				14.1			
TOTAL METALS																					
Aluminum (Al)	mg/kg	18100		20900		18600		19700		19200		15000		18300		12100		11700		18200	
Antimony (Sb)	mg/kg	0.1		0.1		0.1		0.1		0.2		0.2		0.2		0.2		0.2		0.2	
Arsenic (As)	mg/kg	9.1		6		5.9		6.4		5.6		8.3		7.1		9.5		8.7		10.1	
Barium (Ba)	mg/kg	304		533		531		532		504		470		795		81		89		115	
Beryllium (Be)	mg/kg	0.6		0.9		0.7		0.8		0.8		0.8		0.7		0.7		0.6		0.8	
Cadmium (Cd)	mg/kg	0.2		0.3		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.3	
Cobalt (Co)	mg/kg	5.2		16.4	J	9.7		11.1	J	9.3		10.4	J	9.1		6.1	J	5.6		7.2	J
Chromium (Cr)	mg/kg	22.2		29.5		27.9		27.9		27.1		26.5		30.1		16.5		17.3		21.5	
Chromium III (CrIII)	mg/kg	22		30		28		28		27		26		30		16		17		22	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	27.3		18.9		55.2		19		53.5		21.2		60.7		16.2		43.3		18.3	
Iron (Fe)	mg/kg	16300		24300		20300		20600		20000		30100		21700		22600		18400		19600	
Lead (Pb)	mg/kg	13		29		16		25		15.2		21		18		25		13		25	
Manganese (Mn)	mg/kg	183		1680	J	980		1020	J	852		773	J	512		506	J	427		542	J
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05				<0.05				<0.05	
Nickel (Ni)	mg/kg	12.8		36.8		23.1		26.4		22.1		27.1		24.1		13.9		14.1		19.1	
Selenium (Se)	mg/kg	0.3		0.3		0.3		0.3		0.3		0.5		0.3		0.4		0.4		0.6	
Silver (Ag)	mg/kg	<0.5		<0.1		<0.5		<0.1		0.1		<0.5		<0.5		<0.5		<0.5		<0.5	
Thallium (Tl)	mg/kg	0.21		0.35		0.23		0.26		0.23		0.2		0.19		0.24		0.2		0.32	
Vanadium (V)	mg/kg	35.3		40.4		30.3		35.3		30		41.1		37.6		29.7		22.8		36.4	
Zinc (Zn)	mg/kg	51		64		61		62		61		56		59		50		50		64	
AQUEOUS TOTAL METALS																					
Aluminum (Al)	mg/L																				
Antimony (Sb)	mg/L																				
Arsenic (As)	mg/L																				
Barium (Ba)	mg/L																				
Beryllium (Be)	mg/L																				
Cadmium (Cd)	mg/L																				
Chromium (Cr)	mg/L																				
Cobalt (Co)	mg/L																				
Copper (Cu)	mg/L																				
Iron (Fe)	mg/L																				
Lead (Pb)	mg/L																				
Manganese (Mn)	mg/L																				
Mercury (Hg)	mg/L																				
Nickel (Ni)	mg/L																				
Selenium (Se)	mg/L																				
Silver (Ag)	mg/L																				
Thallium (Tl)	mg/L																				
Vanadium (V)	mg/L																				
Zinc (Zn)	mg/L																				

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110308

	Sample Number	MBSI-41-02		MBSI-41-02 Sieve Dup		MBSI-27-02		MBSI-27-02		MBSI-27-01		MBSI-27-01		MBSI-27-04		MBSI-12-01		MBSI-12-01		MBSI-12-02	
	Date	11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/16/2012		11/19/2012		11/19/2012		11/19/2012	
	Time	12:45		12:45		14:15		14:15		15:40		15:40		16:00		9:15		9:15		14:00	
	Laboratory ID	H12110308-021		H12110308-022		H12110308-023		H12110308-024		H12110308-025		H12110308-026		H12110308-027		H12110308-028		H12110308-029		H12110308-030	
	Remarks	Fine (<250µm)		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		BLANK		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained	11.9		16.1				41.3				56.3						16			
TOTAL METALS																					
Aluminum (Al)	mg/kg	16400		16300		13600		12700		9150		11000				10900		11000		17100	
Antimony (Sb)	mg/kg	0.2		0.2		0.2		0.3		0.3		0.2				0.1		0.1		0.2	
Arsenic (As)	mg/kg	8.8		8.5		10.3		9.3		12.6		10				5.5		5.6		9.7	
Barium (Ba)	mg/kg	110		110		304		434		206		268				112		122		138	
Beryllium (Be)	mg/kg	0.7		0.7		0.7		0.6		0.5		0.5				0.5		0.4		0.7	
Cadmium (Cd)	mg/kg	0.3		0.3		0.2		0.3		0.1		0.2				0.2		0.2		0.2	
Cobalt (Co)	mg/kg	7.2		6.8		7	J	6.3		4.8	J	4.8				5.6	J	5.1		7.8	J
Chromium (Cr)	mg/kg	20		20.3		18.6		18.3		14.1		17				13.3		14.3		22.5	
Chromium III (CrIII)	mg/kg	20		20		19		18		14		17				13		14		22	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29				<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	45.4		44.6		18.8		43.5		8.4		28.4				8		22		17.4	
Iron (Fe)	mg/kg	18100		17800		18000		16800		15500		15400				12200		12700		18000	
Lead (Pb)	mg/kg	19		16		12		27		11		15				8		12		10.4	
Manganese (Mn)	mg/kg	466		460		436	J	402		248	J	273				337	J	356		326	J
Mercury (Hg)	mg/kg					<0.05				<0.05						<0.05				<0.05	
Nickel (Ni)	mg/kg	16.4		16.7		20.9		17.8		9.6		10.1				12.1		11		23.7	
Selenium (Se)	mg/kg	0.5		0.4		0.5		0.6		0.5		0.5				0.2		0.2		0.5	
Silver (Ag)	mg/kg	<0.5		<0.5		<0.5		<0.5		<0.1		<0.5				<0.1		<0.5		<0.2	
Thallium (Tl)	mg/kg	0.25		0.26		0.26		0.23		0.14		0.15				0.2		0.18		0.29	
Vanadium (V)	mg/kg	29.6		28.9		33.1		26.4		26		24.6				22.5		19.4		40.5	
Zinc (Zn)	mg/kg	61		61		53		50		35		39				47		50		60	
AQUEOUS TOTAL METALS																					
Aluminum (Al)	mg/L													<0.03							
Antimony (Sb)	mg/L													<0.001							
Arsenic (As)	mg/L													<0.001							
Barium (Ba)	mg/L													<0.05							
Beryllium (Be)	mg/L													<0.001							
Cadmium (Cd)	mg/L													<0.001							
Chromium (Cr)	mg/L													<0.005							
Cobalt (Co)	mg/L													<0.005							
Copper (Cu)	mg/L													<0.005							
Iron (Fe)	mg/L													<0.03							
Lead (Pb)	mg/L													<0.001							
Manganese (Mn)	mg/L													<0.001							
Mercury (Hg)	mg/L													<0.0001							
Nickel (Ni)	mg/L													<0.005							
Selenium (Se)	mg/L													<0.001							
Silver (Ag)	mg/L													<0.001							
Thallium (Tl)	mg/L													<0.0005							
Vanadium (V)	mg/L													<0.01							
Zinc (Zn)	mg/L													<0.01							

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110308

	Sample Number	MBSI-12-02		MBSI-48-01		MBSI-48-01		MBSI-48-02		MBSI-48-02		MBSI-48-04	
	Date	11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012	
	Time	14:00		12:00		12:00		15:30		15:30		15:30	
	Laboratory ID	H12110308-031		H12110308-032		H12110308-033		H12110308-034		H12110308-035		H12110308-036	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		BLANK	
No 06 Sieve	wt% retained	45.1				12.8				49.2			
TOTAL METALS													
Aluminum (Al)	mg/kg	17900		15600		16800		22300		24600			
Antimony (Sb)	mg/kg	0.2		0.1		0.1		0.3		0.3			
Arsenic (As)	mg/kg	10.2		9.7		9.6		8.5		8.4			
Barium (Ba)	mg/kg	153		157		171		186		207			
Beryllium (Be)	mg/kg	0.7		0.6		0.6		1		0.9			
Cadmium (Cd)	mg/kg	0.3		0.3		0.3		0.3		0.3			
Cobalt (Co)	mg/kg	6.8		7.4	J	7.4		8.1	J	7.6			
Chromium (Cr)	mg/kg	22.5		19.3		21.4		25.2		27			
Chromium III (CrIII)	mg/kg	22		19		21		25		27			
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29			
Copper (Cu)	mg/kg	43.2		13.6		36.2		17.8		55.8			
Iron (Fe)	mg/kg	18500		17600		18400		19500		20600			
Lead (Pb)	mg/kg	11		21		13		13.2		20			
Manganese (Mn)	mg/kg	323		423	J	417		386	J	371			
Mercury (Hg)	mg/kg			<0.05				<0.05					
Nickel (Ni)	mg/kg	19.9		19.4		18.8		23.2		21.5			
Selenium (Se)	mg/kg	0.5		0.5		0.4		0.3		0.4			
Silver (Ag)	mg/kg	<0.5		<0.1		<0.5		<0.1		<0.5			
Thallium (Tl)	mg/kg	0.27		0.26		0.25		0.32		0.32			
Vanadium (V)	mg/kg	37.3		36.6		35.6		48.8		47.7			
Zinc (Zn)	mg/kg	58		71		72		70		74			
AQUEOUS TOTAL METALS													
Aluminum (Al)	mg/L											<0.03	
Antimony (Sb)	mg/L											<0.001	
Arsenic (As)	mg/L											<0.001	
Barium (Ba)	mg/L											<0.05	
Beryllium (Be)	mg/L											<0.001	
Cadmium (Cd)	mg/L											<0.001	
Chromium (Cr)	mg/L											<0.005	
Cobalt (Co)	mg/L											<0.005	
Copper (Cu)	mg/L											<0.005	
Iron (Fe)	mg/L											<0.03	
Lead (Pb)	mg/L											<0.001	
Manganese (Mn)	mg/L											<0.001	
Mercury (Hg)	mg/L											<0.0001	
Nickel (Ni)	mg/L											<0.005	
Selenium (Se)	mg/L											<0.001	
Silver (Ag)	mg/L											<0.001	
Thallium (Tl)	mg/L											<0.0005	
Vanadium (V)	mg/L											<0.01	
Zinc (Zn)	mg/L											<0.01	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110322

	Sample Number	MBSI-24-01		MBSI-24-01		MBSI-24-02		MBSI-24-02		MBSI-11-01		MBSI-11-01		MBSI-11-02		MBSI-11-02		MBSI-11-02 Sieve Dup		MBSI-20-01	
	Date	11/18/2012		11/18/2012		11/18/2012		11/18/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012	
	Time	14:45		14:45		16:35		16:35		9:15		9:15		11:00		11:00		11:00		13:15	
	Laboratory ID	H12110322-001		H12110322-002		H12110322-003		H12110322-004		H12110322-005		H12110322-006		H12110322-007		H12110322-008		H12110322-009		H12110322-010	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained			51.6	J			46.2	J			48	J			31.8	J	35.2	J		
TOTAL METALS																					
Aluminum (Al)	mg/kg	7880		9500		12600		14600		9980		15600		13300		16400		15100		10400	
Antimony (Sb)	mg/kg	<0.1	J-	<0.1	J-	0.1	J-	0.1	J-	0.2	J-	0.2	J-	0.1	J-	0.2	J-	0.2	J-	0.1	J-
Arsenic (As)	mg/kg	2.3		2.8		9.2		8.5		8.9		10		9.6		9.8		9.6		10.2	
Barium (Ba)	mg/kg	186		229		153		172		241		300		165		206		197		318	
Beryllium (Be)	mg/kg	0.6		0.7		0.6		0.6		0.5		0.7		0.5		0.6		0.6		0.5	
Cadmium (Cd)	mg/kg	<0.1		0.1		0.2		0.2		0.2		0.2		0.2		0.2		0.2		0.1	
Cobalt (Co)	mg/kg	14.6	J	18.2		6.3	J	8		4.8	J	7.6		5.4	J	7.5		7.4		5.1	J
Chromium (Cr)	mg/kg	130		160		15.4		33.6		13.3		34.5		16		29.9		29.1		17.2	
Chromium III (CrIII)	mg/kg	130		160		15		34		12		34		16		30		29		17	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		1.2		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	42.8		82.6	J	13.6		37.9	J	9.7		33.1	J	10.5		32.2	J	43.7	J	7.2	
Iron (Fe)	mg/kg	27700		29900		16100		19100		13300		19300		14800		18400		17600		13500	
Lead (Pb)	mg/kg	6	J	7.1		16	J	10.7		15	J	11.2		16	J	9.3		9.1		11	J
Manganese (Mn)	mg/kg	364		409		287		309		250		283		289		333		328		291	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05						<0.05	
Nickel (Ni)	mg/kg	81.5		114		16.5		27.5		12.7		27.8		12.9		20.8		21		9.2	
Selenium (Se)	mg/kg	<0.2		<0.2		0.4		0.4		0.4		0.4		0.4		0.5		0.5		0.4	
Silver (Ag)	mg/kg	<0.2		0.3		<0.2		0.2		<0.2		0.3		<0.1		<0.2		<0.2		<0.1	
Thallium (Tl)	mg/kg	0.2		0.18		0.24		0.22		0.21		0.22		0.23		0.21		0.19		0.16	
Vanadium (V)	mg/kg	88		99		32.5		41.3		30.9		45.7		29.9		39.2		35.3		32.5	
Zinc (Zn)	mg/kg	51		67		49		62		43		63		39		53		56		31	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110322

	Sample Number	MBSI-20-01		MBSI-20-02		MBSI-20-02		MBSI-37-02		MBSI-37-02		MBSI-37-01		MBSI-37-01		MBSI-34-01		MBSI-34-01		MBSI-34-02	
	Date	11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012	
	Time	13:15		14:50		14:50		16:15		16:15		7:30		7:30		9:40		9:40		11:35	
	Laboratory ID	H12110322-011		H12110322-012		H12110322-013		H12110322-014		H12110322-015		H12110322-016		H12110322-017		H12110322-018		H12110322-019		H12110322-020	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained	75.3	J			24.6	J			26.7	J			57.4	J			44.4	J		
TOTAL METALS																					
Aluminum (Al)	mg/kg	16200		7740		9490		13100		13700		9380		12100		9950		13100		9510	
Antimony (Sb)	mg/kg	0.2	J-	<0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	0.1	J-	0.1	J-	<0.1	J-	0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	14.6		4.3		4.6		6.2		6.2		6.5		7.3		6.6		6.1		5.6	
Barium (Ba)	mg/kg	524		118		147		133		150		145		194		132		198		89	
Beryllium (Be)	mg/kg	0.6		0.3		0.3		0.5		0.5		0.4		0.5		0.4		0.5		0.4	
Cadmium (Cd)	mg/kg	0.2		0.2		0.2		0.2		0.2		0.3		0.3		0.3		0.4		0.2	
Cobalt (Co)	mg/kg	8.2		4.6	J	6.3		6.5	J	8.7		4.3	J	6.4		5.5	J	7.3		4.1	J
Chromium (Cr)	mg/kg	46.1		11.3		15.5		19.9		24.9		12.6		31.7		13.3		26.6		13.6	
Chromium III (CrIII)	mg/kg	46		11		16		20		25		13		32		13		27		14	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	67.2	J	8.1		19.6	J	10.9		29.9	J	9.1		28.7	J	9.1		29.5	J	8.4	
Iron (Fe)	mg/kg	20300		10200		12000		16500		19000		13700		17100		13500		16800		11500	
Lead (Pb)	mg/kg	13.8		6.1	J,J+	6.9		10	J	8.5		9	J	10.6		9	J	8.9		10	J
Manganese (Mn)	mg/kg	406		298		350		514		563		490		622		572		917		345	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05				<0.05				<0.05	
Nickel (Ni)	mg/kg	25.3		7.5		10.6		16.5		21.4		9.7		20.9		11.6		20.4		11.1	
Selenium (Se)	mg/kg	0.5		0.4		0.4		0.4		0.4		0.5		0.6		0.6		0.6		0.6	
Silver (Ag)	mg/kg	<0.2		<0.1		<0.2		<0.1		<0.1		<0.1		<0.2		<0.1		<0.2		<0.1	
Thallium (Tl)	mg/kg	0.19		0.14		0.13		0.18		0.14		0.16		0.18		0.19		0.21		0.2	
Vanadium (V)	mg/kg	48.2		21.3		24.7		30.5		32.3		21.3		25.6		25.1		32.2		26.9	
Zinc (Zn)	mg/kg	60		44		57		52		65		47		69		52		71		41	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110322

	Sample Number	MBSI-34-02		MBSI-34-03		MBSI-34-03		MBSI-17-02		MBSI-17-02		MBSI-17-01		MBSI-17-01		MBSI-17-01 Sieve Dup		MBSI-55-01		MBSI-55-01	
	Date	11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/21/2012		11/21/2012	
	Time	11:35		11:45		11:45		13:50		13:50		15:05		15:05		15:05		8:10		8:10	
	Laboratory ID	H12110322-021		H12110322-022		H12110322-023		H12110322-024		H12110322-025		H12110322-026		H12110322-027		H12110322-028		H12110322-029		H12110322-030	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained	42.4	J			37.5	J			18.5	J			34.2	J	34.2	J			56.3	J
TOTAL METALS																					
Aluminum (Al)	mg/kg	11800		9430		12100		6850		7790		11400		12600		12700		20200		19900	
Antimony (Sb)	mg/kg	<0.1	J-	<0.1	J-	0.1	J-	<0.1	J-	0.1	J-	0.2	J-	0.1	J-	0.1	J-	0.2	J-	0.2	J-
Arsenic (As)	mg/kg	6.3		5.4		6.4		6		6.3		7.1		6.9		6.9		21		16.4	
Barium (Ba)	mg/kg	115		91		118		77		91		225		282		273		575		303	
Beryllium (Be)	mg/kg	0.4		0.4		0.5		0.3		0.3		0.5		0.5		0.5		1.3		0.9	
Cadmium (Cd)	mg/kg	0.3		0.2		0.3		0.2		0.2		0.2		0.3		0.3		0.8		0.3	
Cobalt (Co)	mg/kg	6.1		4.4	J	6.4		3.9	J	4.8		7.5	J	9.1		8.9		9.5	J	7.7	
Chromium (Cr)	mg/kg	21.9		13.2		21.8		9.9		13.8		18.4		26.1		26.4		23.4		29.5	
Chromium III (CrIII)	mg/kg	22		13		22		10		14		18		27		26		23		30	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		0.6		<0.29	
Copper (Cu)	mg/kg	20.3	J	8.8		32.2	J	5.7		15.4	J	15.1		22.9	J	23	J	20.4		34	J
Iron (Fe)	mg/kg	15200		11800		15900		9600		11700		15100		18400		18400		27200		22100	
Lead (Pb)	mg/kg	7.6		7	J	7.8		8	J	6.2		13	J	9.4		9.6		20	J	15.8	
Manganese (Mn)	mg/kg	405		341		418		286		327		353		400		395		2920		351	
Mercury (Hg)	mg/kg			<0.05				<0.05				<0.05						<0.05			
Nickel (Ni)	mg/kg	16.9		11.4		17.7		9.1		13.2		22.6		30.6		30.2		32.2		26.5	
Selenium (Se)	mg/kg	0.6		0.5		0.6		0.3		0.3		0.5		0.5		0.6		0.8		0.7	
Silver (Ag)	mg/kg	<0.1		<0.1		<0.2		<0.1		<0.1		<0.1		<0.2		<0.2		<0.2		<0.2	
Thallium (Tl)	mg/kg	0.19		0.19		0.19		0.15		0.12		0.2		0.18		0.18		0.84		0.34	
Vanadium (V)	mg/kg	35.6		27.7		35.7		19.2		22.3		29.4		35.4		35.6		64.2		58.8	
Zinc (Zn)	mg/kg	55		40		59		34		43		49		59		59		83		93	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110322

	Sample Number	MBSI-55-02		MBSI-55-02		MBSI-15-01		MBSI-15-01		MBSI-15-03		MBSI-15-03		MBSI-15-02		MBSI-15-02	
	Date	11/21/2012		11/21/2012		11/19/2012		11/19/2012		11/19/2012		11/19/2012		11/20/2012		11/20/2012	
	Time	9:25		9:25		13:40		13:40		13:55		13:55		11:12		11:12	
	Laboratory ID	H12110322-031		H12110322-032		H12110322-033		H12110322-034		H12110322-035		H12110322-036		H12110322-037		H12110322-038	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			34.1	J			48.7	J			15.1	J			35.7	J
TOTAL METALS																	
Aluminum (Al)	mg/kg	15300		19000		23300		23100		23300		24400		16300		16900	
Antimony (Sb)	mg/kg	0.1	J-	0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	8.3		8.6		4		4.5		4		4.4		4.9		4.5	
Barium (Ba)	mg/kg	138		171		182		198		183		207		107		122	
Beryllium (Be)	mg/kg	0.6		0.6		0.7		0.6		0.7		0.6		0.4		0.4	
Cadmium (Cd)	mg/kg	<0.1		0.1		0.1		0.2		0.2		0.2		<0.1		<0.1	
Cobalt (Co)	mg/kg	6.2	J	6.8		4.5	J	6.4		6.6	J	6.7		4.2	J	4.7	
Chromium (Cr)	mg/kg	12.7		22.9		8.1		13.8		8.2		13.3		9.4		13.7	
Chromium III (CrIII)	mg/kg	13		23		8		14		8		13		9		14	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		0.39		<0.29		0.36		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	8		18.1	J	13.7		44.6	J	14.1		23.8	J	8.5		29.4	J
Iron (Fe)	mg/kg	13800		17600		13400		16100		13500		16900		13900		15500	
Lead (Pb)	mg/kg	9	J	9.8		17	J	13		19	J	13.5		17	J	9.2	
Manganese (Mn)	mg/kg	304		322		524		558		526		582		230		167	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	12		17.7		7.4		11.4		6.8		11.2		9.2		12.3	
Selenium (Se)	mg/kg	0.3		0.3		<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
Silver (Ag)	mg/kg	<0.1		<0.1		<0.1		<0.2		<0.1		<0.1		<0.2		<0.1	
Thallium (Tl)	mg/kg	0.18		0.17		0.18		0.14		0.18		0.16		0.14		0.13	
Vanadium (V)	mg/kg	23.6		32.7		17.4		19.7		18.3		20.5		19.4		21.6	
Zinc (Zn)	mg/kg	42		54		51		65		50		63		48		58	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110397

	Sample Number	MBSI-13-01		MBSI-13-01		MBSI-13-02		MBSI-13-02		MBSI-04-01		MBSI-04-01		MBSI-04-02		MBSI-04-02	
	Date	11/20/2012		11/20/2012		11/20/2012		11/20/2012		11/15/2012		11/15/2012		11/15/2012		11/15/2012	
	Time	13:45		13:45		10:30		10:30		11:45		11:45		15:00		15:00	
	Laboratory ID	H12110397-001		H12110397-002		H12110397-003		H12110397-004		H12110397-005		H12110397-006		H12110397-007		H12110397-008	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			57.2				79.6				46.0				65.2	
TOTAL METALS																	
Aluminum (Al)	mg/kg	11200		12500		10600		15800		17800		19200		14500		21800	
Antimony (Sb)	mg/kg	0.1		<0.1		<0.1		<0.1		0.1		<0.1		0.1		0.1	
Arsenic (As)	mg/kg	2.7		3.4		2.2		3.6		5.6		4.8		4.5		6.7	
Barium (Ba)	mg/kg	104		102		88		155		139		144		160		297	
Beryllium (Be)	mg/kg	0.4		0.5		0.5		0.7		0.8		0.8		0.5		0.8	
Cadmium (Cd)	mg/kg	0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		0.1	
Cobalt (Co)	mg/kg	3.7		3.3		3.5		6.4		5.3		4.4		3.9		4.5	
Chromium (Cr)	mg/kg	9.2		10.2		6.7		9.6		32.5		28.6		10.0		10.6	
Chromium III (CrIII)	mg/kg	9		10		7		10		32		29		10		11	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	7.4		20.6		13.0		50.4		14.0		26.5		9.3		35.1	
Iron (Fe)	mg/kg	9740		12500		12800		19300		16900		18600		10800		14900	
Lead (Pb)	mg/kg	8		8		8		9.2		6		7		9		18	
Manganese (Mn)	mg/kg	377		353		387		625		251		293		348		533	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	4.8		5.8		4.0		5.9		22.5		19.1		7.1		9.1	
Selenium (Se)	mg/kg	<0.2		<0.2		<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
Silver (Ag)	mg/kg	<0.3		<0.3		<0.4		<0.3		0.5		<0.3		<0.3		<0.1	
Thallium (Tl)	mg/kg	0.15		0.17		0.20		0.31		0.24		0.24		0.11		0.14	
Vanadium (V)	mg/kg	11.1		16.6		18.3		34.6		20.7		24.4		11.0		19.6	
Zinc (Zn)	mg/kg	20		31		26		56		16		20		35		60	
AQUEOUS TOTAL METALS																	
Aluminum (Al)	mg/L																
Antimony (Sb)	mg/L																
Arsenic (As)	mg/L																
Barium (Ba)	mg/L																
Beryllium (Be)	mg/L																
Cadmium (Cd)	mg/L																
Chromium (Cr)	mg/L																
Cobalt (Co)	mg/L																
Copper (Cu)	mg/L																
Iron (Fe)	mg/L																
Lead (Pb)	mg/L																
Manganese (Mn)	mg/L																
Mercury (Hg)	mg/L																
Nickel (Ni)	mg/L																
Selenium (Se)	mg/L																
Silver (Ag)	mg/L																
Thallium (Tl)	mg/L																
Vanadium (V)	mg/L																
Zinc (Zn)	mg/L																

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110397

	Sample Number	MBSI-46-02		MBSI-46-02	MBSI-46-02 Sieve Dup		MBSI-46-01		MBSI-46-01		MBSI-18-02		MBSI-18-02		MBSI-18-01	
	Date	11/15/2012		11/15/2012	11/15/2012		11/15/2012		11/15/2012		11/15/2012		11/15/2012		11/15/2012	
	Time	11:30		11:30	11:30		14:10		14:10		11:00		11:00		14:30	
	Laboratory ID	H12110397-009		H12110397-010	H12110397-011		H12110397-012		H12110397-013		H12110397-014		H12110397-015		H12110397-016	
	Remarks	Bulk		Fine (<250µm)	Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk	
No 06 Sieve	wt% retained			57.4	49.5				55.9				26.6			
TOTAL METALS																
Aluminum (Al)	mg/kg	17500		19500	18300		9620		10800		7950		8850		16800	
Antimony (Sb)	mg/kg	0.4		0.3	0.3		0.7		0.8		<0.1		0.1		0.5	
Arsenic (As)	mg/kg	23.4		21.9	22.5		19.1		14.9		9.2		9.6		33.3	
Barium (Ba)	mg/kg	334		398	393		129		246		111		127		191	
Beryllium (Be)	mg/kg	1.2		1.1	1.1		0.7		0.7		0.3		0.3		0.6	
Cadmium (Cd)	mg/kg	0.5		0.5	0.5		0.2		0.3		0.4		0.3		0.7	
Cobalt (Co)	mg/kg	6.1		6.4	6.3		8.3		6.5		2.6		1.5		5.2	
Chromium (Cr)	mg/kg	16.8		25.2	24.2		10.5		22.7		16.2		22.1		19.2	
Chromium III (CrIII)	mg/kg	17		25	24		10		23		16		22		19	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	23.0		52.5	70.4		17.5		54.8		8.9		17.1		16.7	
Iron (Fe)	mg/kg	17400		19100	18800		20700		14900		6430		8220		14100	
Lead (Pb)	mg/kg	11		19	16		18		20		7		9		17	
Manganese (Mn)	mg/kg	611		694	698		434		338		181		213		567	
Mercury (Hg)	mg/kg	<0.05					0.068				<0.05				<0.05	
Nickel (Ni)	mg/kg	12.6		17.2	16.6		8.8		13.1		7.1		7.9		10.9	
Selenium (Se)	mg/kg	<0.2		<0.2	<0.2		<0.2		0.2		0.6		0.6		0.7	
Silver (Ag)	mg/kg	<0.3		<0.3	<0.3		<0.3		<0.3		<0.3		<0.3		<0.3	
Thallium (Tl)	mg/kg	0.64		0.55	0.53		0.32		0.32		0.16		0.17		0.52	
Vanadium (V)	mg/kg	27.9		30.6	29.9		24.7		25.4		12.7		15.3		23.9	
Zinc (Zn)	mg/kg	82		106	110		70		72		30		34		69	
AQUEOUS TOTAL METALS																
Aluminum (Al)	mg/L															
Antimony (Sb)	mg/L															
Arsenic (As)	mg/L															
Barium (Ba)	mg/L															
Beryllium (Be)	mg/L															
Cadmium (Cd)	mg/L															
Chromium (Cr)	mg/L															
Cobalt (Co)	mg/L															
Copper (Cu)	mg/L															
Iron (Fe)	mg/L															
Lead (Pb)	mg/L															
Manganese (Mn)	mg/L															
Mercury (Hg)	mg/L															
Nickel (Ni)	mg/L															
Selenium (Se)	mg/L															
Silver (Ag)	mg/L															
Thallium (Tl)	mg/L															
Vanadium (V)	mg/L															
Zinc (Zn)	mg/L															

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12110397

	Sample Number	MBSI-18-01		MBSI-30-01		MBSI-30-01		MBSI-30-04	
	Date	11/15/2012		11/15/2012		11/15/2012		11/28/2012	
	Time	14:30		16:50		16:50		16:15	
	Laboratory ID	H12110397-017		H12110397-018		H12110397-019		H12110397-020	
	Remarks	Fine (<250µm)		Bulk		Fine (<250µm)		BLANK	
No 06 Sieve	wt% retained	45.7				76.5			
TOTAL METALS									
Aluminum (Al)	mg/kg	16500		19000		24000			
Antimony (Sb)	mg/kg	0.4		0.7		0.7			
Arsenic (As)	mg/kg	26.1		80.8		80.2			
Barium (Ba)	mg/kg	213		233		305			
Beryllium (Be)	mg/kg	0.6		0.9		1.1			
Cadmium (Cd)	mg/kg	0.8		1.0		1.0			
Cobalt (Co)	mg/kg	4.9		4.3		4.0			
Chromium (Cr)	mg/kg	39.3		12.6		66.8			
Chromium III (CrIII)	mg/kg	39		12		67			
Chromium VI (CrVI)	mg/kg	<0.29		0.64		<0.29			
Copper (Cu)	mg/kg	37.0		70.7		138			
Iron (Fe)	mg/kg	15300		12800		16800			
Lead (Pb)	mg/kg	14		26		30			
Manganese (Mn)	mg/kg	602		1260		1440			
Mercury (Hg)	mg/kg			<0.05					
Nickel (Ni)	mg/kg	20.1		7.7		29.4			
Selenium (Se)	mg/kg	0.5		0.2		0.3			
Silver (Ag)	mg/kg	<0.3		<0.3		0.3			
Thallium (Tl)	mg/kg	0.45		0.25		0.33			
Vanadium (V)	mg/kg	24.0		18.5		24.4			
Zinc (Zn)	mg/kg	88		74		116			
AQUEOUS TOTAL METALS									
Aluminum (Al)	mg/L							<0.03	
Antimony (Sb)	mg/L							<0.001	
Arsenic (As)	mg/L							<0.001	
Barium (Ba)	mg/L							<0.05	
Beryllium (Be)	mg/L							<0.001	
Cadmium (Cd)	mg/L							<0.001	
Chromium (Cr)	mg/L							<0.005	
Cobalt (Co)	mg/L							<0.005	
Copper (Cu)	mg/L							<0.005	
Iron (Fe)	mg/L							<0.03	
Lead (Pb)	mg/L							<0.001	
Manganese (Mn)	mg/L							<0.001	
Mercury (Hg)	mg/L							<0.0001	
Nickel (Ni)	mg/L							<0.005	
Selenium (Se)	mg/L							<0.001	
Silver (Ag)	mg/L							<0.001	
Thallium (Tl)	mg/L							<0.0005	
Vanadium (V)	mg/L							<0.01	
Zinc (Zn)	mg/L							<0.01	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12120007

	Sample Number	MBSI-43-01		MBSI-43-01		MBSI-05-02		MBSI-05-02		MBSI-05-03		MBSI-05-03	
	Date	11/29/2012		11/29/2012		11/29/2012		11/29/2012		11/29/2012		11/29/2012	
	Time	13:30		13:30		15:30		15:30		15:45		15:45	
	Laboratory ID	H12120007-001		H12120007-002		H12120007-003		H12120007-004		H12120007-005		H12120007-006	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			78.2				66.6				66.6	
TOTAL METALS													
Aluminum (Al)	mg/kg	22500		21500		11500		11400		11300		10100	
Antimony (Sb)	mg/kg	0.4		0.4		0.2		0.2		0.2		0.2	
Arsenic (As)	mg/kg	6.2		9.6		15.6		16.6		16.1		16.4	
Barium (Ba)	mg/kg	225		412		135		161		140		151	
Beryllium (Be)	mg/kg	1.2		1.2		0.6		0.6		0.7		0.6	
Cadmium (Cd)	mg/kg	0.2		0.4		0.3		0.4		0.4		0.4	
Cobalt (Co)	mg/kg	7.2		6.8		5.7		6.5		6.5		6.2	
Chromium (Cr)	mg/kg	18.0		35.4		18.8		38.7		17.3		41.6	
Chromium III (CrIII)	mg/kg	18		35		19		39		17		42	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	19.1		63.0		16.7		48.0		17.4		57.8	
Iron (Fe)	mg/kg	18600		21100		13700		15900		14100		15400	
Lead (Pb)	mg/kg	21		23		19		22		19		17	
Manganese (Mn)	mg/kg	427		567		513		546		510		549	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	16.8		20.8		15.3		25.6		16.0		25.5	
Selenium (Se)	mg/kg	<0.2		0.2		0.3		0.4		0.4		0.4	
Silver (Ag)	mg/kg	<0.3		<0.3		<0.3		<0.1		<0.3		<0.1	
Thallium (Tl)	mg/kg	0.17		0.20		0.21		0.22		0.22		0.20	
Vanadium (V)	mg/kg	15.6		20.5		17.9		20.4		18.3		18.8	
Zinc (Zn)	mg/kg	67		88		58		78		60		78	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12120021

	Sample Number	MBSI-05-01		MBSI-05-01		MBSI-28-01		MBSI-28-01		MBSI-28-02		MBSI-28-02		MBSI-30-02		MBSI-30-02		MBSI-30-03		MBSI-30-03	
	Date	12/1/2012		12/1/2012		12/1/2012		12/1/2012		12/1/2012		12/1/2012		12/2/2012		12/2/2012		12/2/2012		12/2/2012	
	Time	9:15		9:15		14:15		14:15		15:35		15:35		9:35		9:35		9:45		9:45	
	Laboratory ID	H12120021-001		H12120021-002		H12120021-003		H12120021-004		H12120021-005		H12120021-006		H12120021-007		H12120021-008		H12120021-009		H12120021-010	
	Remarks	Bulk		Fine (<250 µm)		Bulk		Fine (<250 µm)		Bulk		Fine (<250 µm)		Bulk		Fine (<250 µm)		Bulk		Fine (<250 µm)	
No 06 Sieve	wt% retained			70.4				76.6				50				66.3				64.9	
TOTAL METALS																					
Aluminum (Al)	mg/kg	21900		22400		14400		17600		13200		12900		18100		19700		17500		20800	
Antimony (Sb)	mg/kg	0.3	J-	0.2	J-	1.1	J-	0.5	J-	0.4	J-	0.4	J-	0.4	J-	0.4	J-	0.3	J-	0.4	J-
Arsenic (As)	mg/kg	14.2		14.9		35.7		33.9		32.6		36		79.9		116		81.9		115	
Barium (Ba)	mg/kg	227		267		275		349		235		283		163		237		166		241	
Beryllium (Be)	mg/kg	0.8		0.8		0.5		0.6		0.7		0.8		0.4		0.6		0.5		0.6	
Cadmium (Cd)	mg/kg	0.3		0.4		0.2		0.3		0.5		0.6		0.7		1		0.8		1	
Cobalt (Co)	mg/kg	6.9		6.2		8.7		8.1		5.8		4.8		8.4		8.6		7.1		9.4	
Chromium (Cr)	mg/kg	19.4		38.1	J	20.3		39	J	14.3		24.4	J	13.3		35	J	13.8		50.8	J
Chromium III (CrIII)	mg/kg	19		38	J	20		39	J	14		24	J	13		35	J	13		51	J
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		0.43		<0.29		<0.29		<0.29		0.67		<0.29		0.49		<0.29	
Copper (Cu)	mg/kg	25.4		71.9		18.3		70.2		24.2		49.9		56.1		91.4		56.8		100	
Iron (Fe)	mg/kg	22800		21900		18300		19200		20600		20300		22000		23000		20700		24400	
Lead (Pb)	mg/kg	20		30		12		30		23		33		23		21		17		21	
Manganese (Mn)	mg/kg	479		519		1240		1280		874		891		493		676		498		676	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	18.3		23.8		16.9		22.8		8.4		13		11.3		19.3		9.7		24.7	
Selenium (Se)	mg/kg	0.4		0.4		<0.2		0.2		<0.2		<0.2		0.2		0.2		0.2		0.2	
Silver (Ag)	mg/kg	0.2		<0.3		<0.1		<0.3		0.2		<0.3		<0.3		<0.3		<0.3		<0.3	
Thallium (Tl)	mg/kg	0.32		0.33		0.55		0.62		0.23		0.23		0.19		0.22		0.18		0.24	
Vanadium (V)	mg/kg	39.1		46		20.4		23.5		34.5		33.9		39.6		45.2		36.5		50.1	
Zinc (Zn)	mg/kg	70		95		53		74		84		107		75		109		74		112	

Table 1. Montana Surface Soils 2012 Data Summary
Energy Labs Work Order H12120098

	Sample Number	MBSI 35-01		MBSI 35-01		MBSI 35-02		MBSI 35-02		MBSI 35-03		MBSI 35-03		MBSI 54-01		MBSI 54-01		MBSI 54-02		MBSI 54-02	
	Date	11/28/2012		11/28/2012		11/28/2012		11/28/2012		11/28/2012		11/28/2012		11/28/2012		11/28/2012		12/3/2012		12/3/2012	
	Time	14:00		14:00		16:00		16:00		16:30		16:30		10:30		10:30		10:30		10:30	
	Laboratory ID	H12120098-001		H12120098-002		H12120098-003		H12120098-004		H12120098-005		H12120098-006		H12120098-007		H12120098-008		H12120098-009		H12120098-010	
	Remarks	Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)		Bulk		Fine (<250µm)	
No 06 Sieve	wt% retained			61.8				44.3				35.9				52.8				53.1	
TOTAL METALS																					
Aluminum (Al)	mg/kg	16300		20600		22200		24500		22200		22800		24800		26000		8630		12200	
Antimony (Sb)	mg/kg	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.2	J-	0.2	J-	<0.1	J-	<0.1	J-	<0.1	J-	<0.1	J-
Arsenic (As)	mg/kg	13.4		13.7		7.0		6.9		7.3		6.8		4.0		3.1		7.1		8.0	
Barium (Ba)	mg/kg	233		325		212		236		215		220		268		276		66		89	
Beryllium (Be)	mg/kg	0.7		0.8		0.9		1.0		0.9		0.9		0.6		0.5		0.4		0.6	
Cadmium (Cd)	mg/kg	0.4		0.5		0.1		0.2		0.2		0.2		<0.1		<0.1		<0.1		<0.1	
Cobalt (Co)	mg/kg	10.1		14.0		9.2		9.0		9.5		9.5		5.1		4.1		5.1		5.1	
Chromium (Cr)	mg/kg	14.6		18.7		21.4		24.4		20.4		20.3		14.5		15.7		15.1		22.5	
Chromium III (CrIII)	mg/kg	15		19		21		24		20		20		14		16		15		22	
Chromium VI (CrVI)	mg/kg	<0.29		<0.29		0.46		<0.29		0.51		<0.29		<0.29		<0.29		<0.29		<0.29	
Copper (Cu)	mg/kg	26.9		45.1		25.7		36.2		26.4		39.4		12.0		21.5		8.1		23.0	
Iron (Fe)	mg/kg	29000		28500		23500		23200		24300		22400		21200		18400		14100		17000	
Lead (Pb)	mg/kg	35		45		15		17		18		20		20		22		3		9	
Manganese (Mn)	mg/kg	921		1180		750		806		794		767		780		732		272		225	
Mercury (Hg)	mg/kg	<0.05				<0.05				<0.05				<0.05				<0.05			
Nickel (Ni)	mg/kg	34.6		27.4		16.1		15.8		13.9		14.4		16.0		17.1		11.0		15.0	
Selenium (Se)	mg/kg	<0.2		<0.2		<0.2		0.2		<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
Silver (Ag)	mg/kg	0.4		0.3		0.2		0.1		<0.3		<0.3		<0.3		<0.3		<0.1		<0.1	
Thallium (Tl)	mg/kg	0.23		0.31		0.42		0.43		0.44		0.42		0.30		0.30		0.09		0.13	
Vanadium (V)	mg/kg	25.7		28.2		28.4		30.8		29.6		29.2		19.5		19.8		16.9		22.6	
Zinc (Zn)	mg/kg	147		194		75		83		76		78		105		110		21		32	

TABLE 2.

DATA VALIDATION CODES AND DEFINITIONS

CODE		DEFINITION
J	-	The associated numerical value is an estimated quantity because quality control criteria were not met.
U	-	Blank contamination. Indicates possible high bias and / or false positive. The associated value is an estimate and should be used as a maximum potential concentration.
R	-	Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis necessary for verification.