
**2015 SUPPLEMENTAL CONTAMINANT SOURCE AREA
INVESTIGATION AT THE FORMER EAST HELENA SMELTER**

-FINAL-

Prepared for:

Montana Environmental Trust Group, LLC
Trustee of the Montana Environmental Custodial Trust
P.O. Box 1230
East Helena, MT 59635

Prepared by:

Hydrometrics, Inc.
3020 Bozeman Avenue
Helena, MT 59601

March 2016

TABLE OF CONTENTS

LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF APPENDICES.....	v
EXECUTIVE SUMMARY	vi
1.0 INTRODUCTION	1-1
1.1 PROJECT BACKGROUND	1-1
1.2 2015 SOURCE AREA INVESTIGATION OBJECTIVES AND SCOPE ...	1-4
2.0 INVESTIGATION METHODS	2-1
2.1 DRILLING, SOIL SAMPLING, AND MONITORING WELL COMPLETION.....	2-1
2.2 GROUNDWATER SAMPLING AND ANALYSIS	2-4
2.3 SOIL SAMPLE ANALYSIS	2-4
2.4 DEVIATIONS FROM SOURCE AREA CHARACTERIZATION WORK PLAN.....	2-9
2.4.1 Soil Boring Locations	2-9
2.4.2 Soil Sample Analyses	2-10
3.0 RESULTS AND DISCUSSION.....	3-1
3.1 STRATIGRAPHY	3-1
3.2 SOIL SAMPLE TOTAL METALS RESULTS	3-2
3.2.1 Lateral and Vertical Distribution of Metals	3-6
3.2.2 Comparison to Previous Soil Sampling Results	3-9
3.3 SOIL LEACH TEST RESULTS	3-12
3.3.1 West Selenium Area Leaching Results.....	3-15
3.3.1.1 Unsaturated Zone Soils.....	3-15
3.3.1.2 Saturated Zone Soils	3-16
3.3.2 Former Acid Plant Area Leaching Results	3-16
3.3.2.1 Unsaturated Zone Soils	3-16
3.3.2.2 Saturated Zone Soils	3-17
3.3.3 Speiss-Dross Area Leaching Results	3-17

3.3.3.1 Unsaturated Zone Soils3-17

3.3.3.2 Saturated Zone Soils3-18

3.4 NORTH PLANT DOWNGRADIENT AREA ADSORPTION TEST

 RESULTS3-20

3.5 GROUNDWATER SAMPLING RESULTS3-25

3.6 SPEISS-DROSS SLURRY WALL EVALUATION3-28

4.0 2015 SAI SUMMARY AND CONCLUSIONS.....4-1

5.0 REFERENCES5-1

LIST OF TABLES

TABLE 2-1.	2015 SOURCE AREA INVESTIGATION SOIL BORING/MONITORING WELL COMPLETION DETAILS	2-3
TABLE 2-2.	SOIL SAMPLE ANALYTICAL PARAMETER LIST.....	2-5
TABLE 2-3.	2015 SUPPLEMENTAL SOURCE AREA INVESTIGATION SOIL SAMPLING AND ANALYTICAL SUMMARY TABLE	2-6
TABLE 3-1.	AVERAGE TOTAL METALS CONCENTRATIONS IN 2015 SAI SOILS.....	3-3
TABLE 3-2.	2015 SOIL SAMPLE TOTAL METALS AND pH SUMMARY STATISTICS.....	3-4
TABLE 3-3.	SUMMARY OF UNSATURATED SOIL SAMPLE LEACHING RESULTS.....	3-13
TABLE 3-4.	SUMMARY OF SATURATED SOIL SAMPLE LEACHING RESULTS.....	3-14
TABLE 3-5.	SUMMARY OF BATCH ARSENIC ADSORPTION TEST RESULTS.....	3-21
TABLE 3-6.	SCREENING LEVEL AND MONITORING WELL GROUNDWATER SAMPLING RESULTS.....	3-26
TABLE 3-7.	SPEISS-DROSS SLURRY WALL EVALUATION GROUNDWATER QUALITY DATA.....	3-31

LIST OF FIGURES

FIGURE 1-1. POTENTIAL GROUNDWATER CONTAMINANT SOURCE AREAS.....1-2

FIGURE 2-1. 2015 SOURCE AREA INVESTIGATION SOIL BORING LOCATIONS2-2

FIGURE 3-1. 2015 SAI MAXIMUM TOTAL AND LEACHATE ARSENIC, SELENIUM, AND CADMIUM IN SATURATED ZONE SOILS3-5

FIGURE 3-2. BATCH ARSENIC ADSORPTION AT VARYING INITIAL SOIL/GROUNDWATER ARSENIC CONCENTRATIONS3-22

FIGURE 3-3. EXAMPLE LANGMUIR ISOTHERM FOR ARSENIC3-24

FIGURE 3-4. 2015 SAI SOIL BORING AND MONITORING WELL GROUNDWATER RESULTS3-27

FIGURE 3-5. SLURRY WALL EVALUATION AREA MONITORING WELLS...3-30

LIST OF APPENDICES

APPENDIX A SOIL BORING AND MONITORING WELL COMPLETION LOGS

APPENDIX B 2015 SOURCE AREA INVESTIGATION SOIL SAMPLING AND ANALYSIS SUMMARY

APPENDIX C SOIL SAMPLE LABORATORY ANALYTICAL REPORTS

APPENDIX D 2015 SOURCE AREA INVESTIGATION SOIL SAMPLE TOTAL METALS AND PH BOXPLOTS

APPENDIX E ARSENIC BATCH ADSORPTION TESTING RESULTS AND LABORATORY ANALYTICAL REPORTS

APPENDIX F GROUNDWATER SAMPLE LABORATORY ANALYTICAL REPORTS

APPENDIX G SPEISS-DROSS SLURRY WALL EVALUATION LABORATORY ANALYTICAL REPORTS

EXECUTIVE SUMMARY

The Montana Environmental Trust Group, LLC, Trustee of the Montana Environmental Custodial Trust, completed a supplemental groundwater contaminant source area investigation (SAI) at the former ASARCO East Helena lead smelter (former smelter) in 2015. The 2015 SAI (and an associated 2014 SAI) was conducted as part of the Corrective Measures Study (CMS) to further characterize the occurrence and distribution of contaminants in the source area soils, and contaminant fate and transport processes in groundwater. The SAI data has been used in the groundwater flow and contaminant transport model, and in the evaluation of the need for and scope of source control corrective measures. The overall goal of the focused 2015 SAI was to provide sufficient data to complete CMS source control evaluations for the former East Helena smelter site.

The 2015 SAI focused on four specific contaminant source areas: the West Selenium Source Area, the North Plant Arsenic Source Area, the former Speiss-Dross Area, and the former Acid Plant Area. Contaminated soils in these areas have been identified as primary contributors to groundwater contamination within and downgradient of the former smelter site, including the offsite selenium and arsenic groundwater plumes.

The 2015 SAI included completion of seven soil borings in the West Selenium Source Area, two borings downgradient of the North Plant Arsenic Source Area, two borings in the former Speiss-Dross Area, and four borings in the former Acid Plant area. Field work included lithologic logging, collection of soil samples for total and leachable metals testing, and collection of groundwater samples for rapid turnaround analysis. All borings were advanced into the low permeability Tertiary ash/clay unit that forms the base of the shallow aquifer (in which the groundwater contaminant plumes occur) to allow characterization of ash/clay properties at varying depths. Five of the soil borings were completed as monitoring wells with the remaining borings abandoned in accordance with State regulations and project protocol. Leach testing included both synthetic precipitation leaching procedure (SPLP) and saturated paste analyses to evaluate the leachability of soils at varying soil to water ratios and better assess potential in-situ leaching rates. Selected soil samples from the borings downgradient of the North Plant Arsenic Source Area were tested for arsenic adsorption properties using a batch adsorption procedure, to directly characterize arsenic attenuation and adsorption capacity of soils within the off-site arsenic groundwater plume.

Subsurface conditions documented within and downgradient of the former smelter through the 2015 drilling program were consistent with previous drilling results, with the stratigraphy comprised of a relatively thin veneer of earthen fill material underlain by 25 to 50 feet of alluvial sand, gravel and cobbles, underlain in turn by the low permeability ash/clay unit. The depth to the ash/clay unit ranged from 30 feet in the south (the former Acid Plant area) to more than 50 feet in the north part of the West Selenium Source Area. Depths to the ash/clay layer at the off-site borings in East Helena were 55 to 70 feet.

Based on the 2015 (and 2014) SAI results, saturated zone soils within the West Selenium Area currently leach selenium to groundwater contributing significantly to the downgradient selenium plume. Based on extensive drilling and sampling in the area, the West Selenium

source material appears to be of limited mass and may leach out within the next ten years at current groundwater loading rates. Based on this conceptual model, no further source control measures (beyond the source removal actions, hydraulic controls and site capping currently in progress) are planned for the West Selenium Area. Groundwater monitoring will continue to determine if groundwater concentrations continue to decline to acceptable levels or if additional source control measures are warranted in the future.

Based on the 2015 SAI results, as well as previous investigations, saturated soils within the former Acid Plant Area are a current source of arsenic loading to groundwater. Soil and groundwater arsenic concentration trends indicate that the higher concentration source material occurs in the area of the former Acid Plant settling pond, an area of known historic arsenic loading to soils and groundwater. Soils within the Acid Plant settling pond area are also a source of cadmium loading to groundwater. These soils also had the highest selenium concentrations of all four source areas investigated, although groundwater concentrations are low due to the prevailing geochemical conditions. Due to the current arsenic and cadmium loading to groundwater, and potential for future selenium loading to groundwater if geochemical conditions were to change in the future, the Acid Plant settling pond source soils will be excavated in 2016 and placed within the EPA-approved Area of Contamination (AOC) and under the site ET Cover System.

Current groundwater flow information and testing of soil samples from the two Speiss-Dross area soil borings suggest that soils at the boring locations, both outside of the Speiss-Dross slurry wall, are not significant contributors to the downgradient groundwater arsenic or selenium plumes. In addition, results from pump testing and water quality monitoring in 2015 indicate that groundwater flow through the Speiss-Dross slurry wall is minimal and that the slurry wall is minimizing downgradient impacts to groundwater quality from the enclosed soils as intended.

Results from the two soil borings completed in East Helena, downgradient of the North Plant Arsenic Source Area, show that arsenic concentrations in this area are significantly lower than in the North Plant Arsenic Source Area itself, and that arsenic in groundwater is currently adsorbing to soils in this area. This information indicates that the primary area of arsenic loading to groundwater (North Plant source area) does not extend northward into East Helena, and that the offsite soils currently act as a sink, removing arsenic from groundwater. Arsenic adsorption data obtained through the 2015 SAI testing was incorporated into the groundwater contaminant fate and transport model, as part of simulations developed to evaluate the arsenic plume response to on-site source control measures. Model results indicate that, although plant site concentrations would be reduced, implementing source control measures at the North Plant Arsenic Source Area, beyond the current source removal, hydraulic control and site capping interim measures, would not reduce the size of the arsenic plume exceeding the 0.01 mg/L human health standard.

2015 SUPPLEMENTAL CONTAMINANT SOURCE AREA INVESTIGATION AT THE FORMER EAST HELENA SMELTER

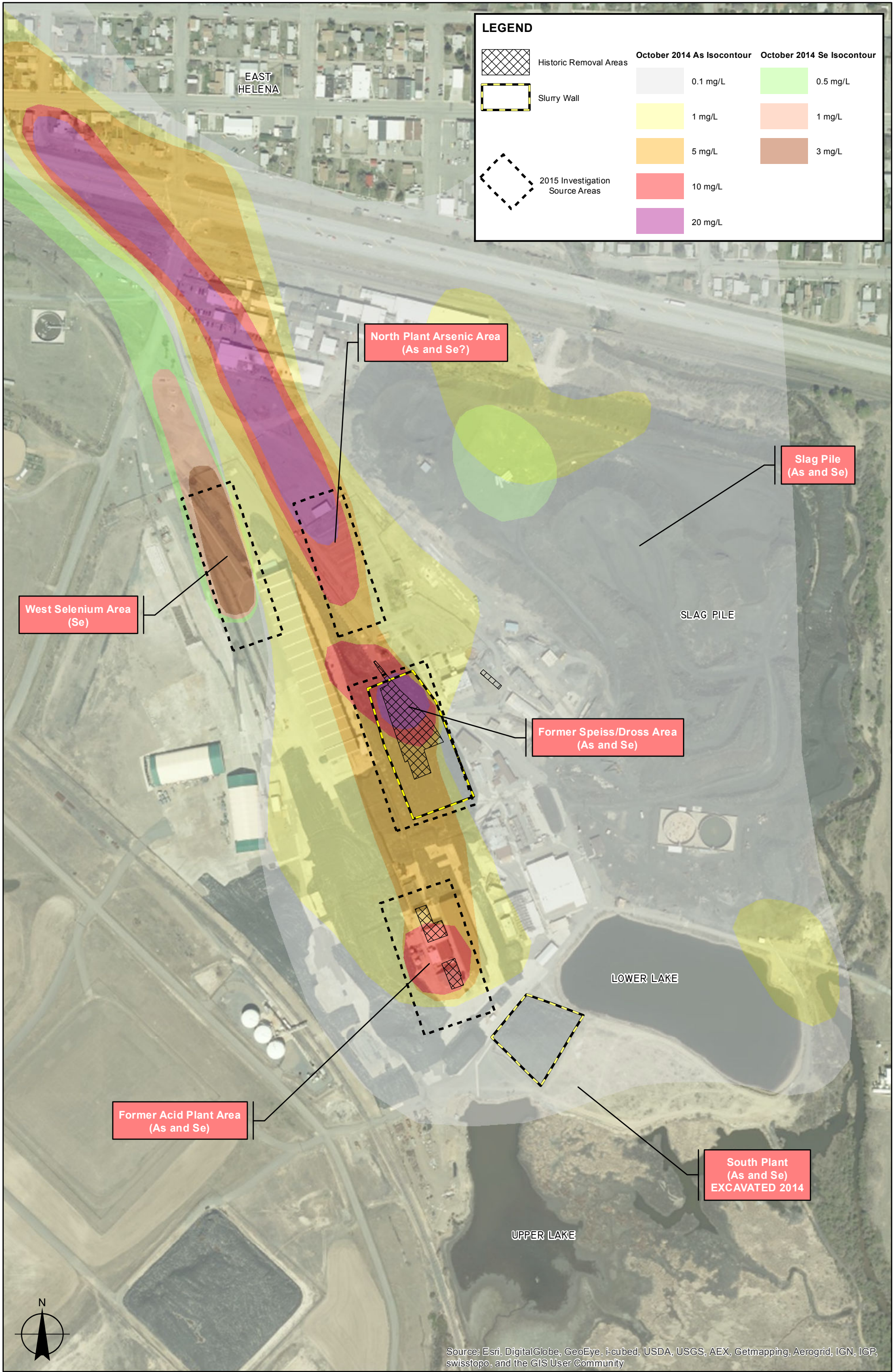
-FINAL-

1.0 INTRODUCTION

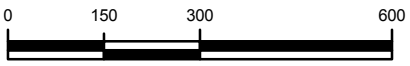
The Montana Environmental Trust Group, LLC, Trustee of the Montana Environmental Custodial Trust (Custodial Trust), completed a supplemental contaminant source area investigation (SAI) at the former ASARCO East Helena Lead Smelter (former smelter) in 2015. The supplemental SAI is one of the technical evaluations being conducted by the Custodial Trust as part of a Corrective Measures Study (CMS) for the East Helena Facility (Facility). The CMS is one of the Resource Conservation and Recovery Act (RCRA) Corrective Actions being conducted pursuant to the First Modification to the 1998 RCRA Consent Decree (U.S. District Court, 2012).

1.1 PROJECT BACKGROUND

Several groundwater contaminant source areas have been identified over the past three decades at the former smelter through various site investigations, including the Comprehensive Remedial Investigation/Feasibility Study (RI/FS) (Hydrometrics, 1990), Current Conditions/Release Assessment report (Hydrometrics, 1999), the Phase I and Phase II RCRA Facility Investigations (RFIs) (ACI, 2005; METG, 2011), and most recently a 2014 Source Area Investigation (Hydrometrics, 2015a). The primary groundwater contaminant source areas delineated during previous site investigations are shown in Figure 1-1. The 2014 Supplemental Source Area Characterization Work Plan (Hydrometrics, 2014) presented an inventory of these identified groundwater contaminant source areas, a summary of current groundwater and soil conditions for each area, and the significance of each area in terms of contribution to the groundwater contaminant plumes. Based on the source area inventory, current groundwater quality data, concentration trends for the primary groundwater contaminants arsenic and selenium (as well as other contaminants such as cadmium), and the project construction schedule, an SAI was conducted for the West Selenium Source Area and the North Plant Arsenic Source Area in 2014 (the 2014 SAI). The 2014 SAI was designed to further characterize the occurrence and distribution of contaminants in West Selenium and North Plant Arsenic area soils in order to support development of a groundwater flow and contaminant transport model, and to aid in the evaluation of potential groundwater remedies for each source area. The scope and results of the 2014 Supplemental SAI are presented in the final 2014 SAI report (Hydrometrics, 2015a).



Path: V:\10022\GIS\SourceInventory\2015 Investigation\Report\Figure 1-1.mxd



Scale in Feet
Hydrometrics, Inc.
 Consulting Scientists and Engineers

Date Saved: 12/2/2015 5:21:26 PM

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2015 SUPPLEMENTAL SOURCE AREA INVESTIGATION FORMER EAST HELENA SMELTER	POTENTIAL GROUNDWATER CONTAMINANT SOURCE AREAS	FIGURE 1-1
--	--	--------------------------------

The Custodial Trust is also conducting a Tier II Source Control Measure/Groundwater Remedy Evaluation (CH2M Hill, 2015) as part of the CMS for the Facility. The primary purpose of the Tier II remedy evaluation is to assess the feasibility and potential effects of various source-control remedies for former smelter site source areas on downgradient groundwater quality, and to estimate associated implementation costs. The source-control alternatives evaluated are referred to as “Tier II” to distinguish them from the three “Tier I” corrective actions or interim measures (IMs) that have been approved by the U.S. Environmental Protection Agency and are being implemented at the Facility, namely the South Plant Hydraulic Control (SPHC), Tito Park Area (TPA) Source Removal, and Evapotranspiration (ET) Cover System IMs. The Tier II remedy evaluation utilized historic site groundwater and soils data, the source area inventory (Hydrometrics, 2014), information obtained from the 2014 SAI (Hydrometrics, 2015a), and the results of groundwater fate and transport modeling (NewFields, 2015) to identify, screen and evaluate potential source-control measures in terms of cost and environmental benefit, and to develop recommendations regarding remedy selection and supplemental evaluations (CH2M Hill, 2015). The results of the Tier II remedy evaluation (to date) for the West Selenium and North Plant Site Arsenic source areas are summarized in the 2015 SAI Work Plan (Hydrometrics, 2015b). Review of the information obtained for the West Selenium and North Plant Arsenic areas from the 2014 SAI and previous investigations, along with the source-control/groundwater remedy evaluations and recommendations presented in the Tier II remedy evaluation document (CH2M Hill, 2015), indicated that additional characterization of these source areas was needed in order to:

- Complete the characterization and evaluation of the nature and extent of source material in the West Selenium Area;
- Delineate the downgradient (northern) extent of potential source material in the North Plant Arsenic Area and geochemical behavior of arsenic downgradient of the former smelter; and
- Provide information and data to support planning of potential groundwater remedy design in these areas.

While the results of previous site investigations and the configuration of the groundwater arsenic plume (Figure 1-1) indicate that the primary source of arsenic loading to groundwater is the North Plant Arsenic area, where the main plume migrating into East Helena originates, elevated arsenic concentrations (>10 mg/L) are also present within and adjacent to the Speiss-Dross slurry wall and in the former Acid Plant area. A review of current groundwater and soils data for these two former smelter source areas, summarized in the 2015 SAI Work Plan (Hydrometrics, 2015b), indicated that these source areas also required further investigation to fully evaluate whether groundwater remedies might be warranted. Results of the 2015 SAI are presented in this report.

1.2 2015 SOURCE AREA INVESTIGATION OBJECTIVES AND SCOPE

As outlined in the 2015 SAI Work Plan (Hydrometrics, 2015b), the overall goal of the focused 2015 SAI was to provide sufficient data to complete CMS source-control evaluations for the former smelter site. The 2015 SAI field investigation and laboratory testing program was designed to obtain additional information to better define contaminant concentrations, contaminant geochemistry and soil and groundwater properties in the West Selenium, North Plant Arsenic, former Acid Plant, and former Speiss-Dross source areas. The information and environmental data complement the information obtained during the 2014 SAI and previous site investigations. The information from the 2014-2015 SAIs will be used in the CMS to support final remedy selection to reduce contaminant loading from the former smelter site to downgradient groundwater. Overall 2015 SAI objectives included:

1. Further characterization of source area contaminant loading to groundwater in the four source areas noted above; and
2. Providing additional data to support groundwater fate and transport modeling, and to complete groundwater remedy evaluations for each source area.

More detailed source-area-specific objectives are presented in the 2015 SAI Work Plan (Hydrometrics, 2015b).

The overall scope of the sampling and analytical program outlined in the 2015 SAI Work Plan included:

- Installation of soil borings and monitoring wells; and
- Collection of soil and groundwater samples for analysis of geochemical properties (total and leachable soil concentrations, groundwater chemistry) for further delineating the location, total mass, and availability for leaching to groundwater of contaminants present.

Additional soil samples were collected and archived to support remedial action design if needed in the future. Details regarding boring installation, sample collection and sample testing (including deviations from the 2015 SAI Work Plan) are outlined in Section 2.0.

2.0 INVESTIGATION METHODS

The 2015 SAI methodology and protocol closely followed the SAI Work Plan (Hydrometrics, 2015b). Following is a brief overview of investigation protocol and methodology; deviations from the Work Plan are noted in Section 2.4. The SAI results are discussed in Section 3.

2.1 DRILLING, SOIL SAMPLING, AND MONITORING WELL COMPLETION

The SAI included completion of fifteen soil borings with seven borings in the West Selenium Area, two downgradient of the North Plant Site Arsenic Source Area, two in the former Speiss-Dross area, and four in the former Acid Plant area. Drilling of all borings except EHSB-18 and EHSB-19 was completed using a Mobile tubex air rotary drill rig; borings EHSB-18 and EHSB-19 were drilled using a sonic drill rig. All drilling activities were observed and supervised by Hydrometrics personnel. All soil borings were advanced two to seven feet into the top of the ash/clay unit signifying the base of the contaminated shallow aquifer. Soil boring locations are shown on Figure 2-1 and completion details are summarized in Table 2-1. Boring logs are included in Appendix A.

Soil samples were collected on five foot intervals using split spoon samplers, with additional drill cutting grab samples collected between split spoon intervals to further document lithology and for potential testing. Intact soil core (Shelby tube) samples of the ash/clay unit were collected at selected boring locations for potential future testing. All soil samples were collected, handled, stored, and transported in accordance with the project Quality Assurance Project Plan (QAPP) (Hydrometrics, 2010b). Field duplicate soil samples were collected and analyzed at a frequency of one per twenty field samples for quality control purposes. A total of 119 soil samples were collected and either submitted for analyses or archived for potential future use. A complete list of 2015 soil samples is included in Appendix B.

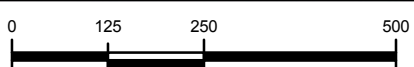
All drilling equipment was decontaminated between boring locations at the Facility truck wash, with decontamination water treated at the Facility water treatment plant. Following drilling, the boreholes were either permanently abandoned or completed as monitoring wells. Borehole abandonment included filling the borehole with bentonite chips or pellets as the drill casing was pulled back (to prevent borehole caving), following procedures outlined in the East Helena Facility Borehole Abandonment Plan (Hydrometrics, 2010a). Five boreholes were completed as monitoring wells, as shown in Table 2-1 and on Figure 2-1, including EHSB-12 (monitoring well DH-83), EHSB-17 (DH-82), EHSB-24 (DH-81), EHSB-25 (DH-80), and EHSB-27 (DH-79). The monitoring wells were completed in accordance with applicable State regulations (ARM 36.21.800), and constructed with two-inch diameter flush-threaded schedule 40 PVC, five to ten feet of factory-slotted PVC screen, silica sand pack, and a bentonite annular seal.



LEGEND

- ⊕ 2015 SAI Soil Boring/Monitoring Well
- 2015 SAI Sol Boring (Not Installed)
- ⊕ 2014 SAI Soil Boring/Monitoring Well
- Historic Removal Areas
- Slurry Wall
- ▲ Phase II RFI Soil Boring
- Monitoring Well

Path: V:\10022\GIS\SourceInventory\2015 Investigation\Report\Figure 2-1.mxd



Scale in Feet
Hydrometrics, Inc.
 Consulting Scientists and Engineers
 Date Saved: 3/11/2016 2:05:54 PM

2015 SUPPLEMENTAL
 SOURCE AREA INVESTIGATION
 FORMER EAST HELENA SMELTER

2015 SOURCE AREA INVESTIGATION
 SOIL BORING LOCATIONS

FIGURE
2-1

TABLE 2-1. 2015 SOURCE AREA INVESTIGATION SOIL BORING/MONITORING WELL COMPLETION DETAILS

Boring/ Monitoring Well	Ground Elevation	Total Depth	Screened Interval	Static Water Level at Time of Drilling	Depth to Ash/Clay Layer	Depth of Petroleum
EHSB-10	3917.30	56	NA	38	49	None
EHSB-11	3912.08	55	NA	44	49	None
EHSB-12/DH-83	3916.00	56	49.5-54.5	42.22	45.4	None
EHSB-13	3911.27	59	NA	46.5	54	None
EHSB-14	3918.88	53	NA	48	47	None
EHSB-15	3916.46	51.5	NA	47	44.5	None
EHSB-17/DH-82	3905.01	55	39-49	38.12	50.3	None
EHSB-18	3887.55	86	NA	NM	69.5	None
EHSB-19	3889.26	67	NA	NM	60	None
EHSB-22	3921.02	30.5	NA	20	29	None
EHSB-23	3924.59	33	NA	20.9	30.8	None
EHSB-24/DH-81	3924.23	32	20-30	20.19	30	None
EHSB-25/DH-80	3916.04	32	20-30	20.23	30	None
EHSB-26	3913.06	35	NA	24.4	33	19.5-30
EHSB-27/DH-79	3913.15	45.5	32-42	39.5	41.5	22.5-33.5

Monitoring wells DH-79, DH-80, DH-81, DH-82, and DH-83 completed with 2" Schedule 40 PVC casing and screen. Soil boring and well completion logs are in Appendix A.
 All measurements in feet from ground surface. Elevation datum is NAVD88.
 NA = not applicable (boring not completed as a monitoring well)
 NM = not measured (boring drilled as continuous core with sonic rig)

2.2 GROUNDWATER SAMPLING AND ANALYSIS

Screening-level groundwater samples were collected from each soil boring that was not subsequently completed as a monitoring well, for rapid-turnaround analysis of selected parameters. Groundwater screening samples were collected by lowering a plastic bailer inside the drill casing. The samples were analyzed for dissolved arsenic and selenium, with selected samples also analyzed for dissolved cadmium (field filtered through a 0.45 micron filter and acidified) as well as the major ion indicator parameters sulfate and chloride. The screening-level samples were delivered to an analytical laboratory for overnight or same-day analysis with results used to help guide subsequent borehole locations. Since the screening-level groundwater sampling did not follow approved project sampling protocol, no field QC sampling was conducted and the sample results were not incorporated into the East Helena Project water quality database.

For the five soil borings that were completed as monitoring wells (Table 2-1), screening-level groundwater samples were not collected. Instead, after completion and development, the new monitoring wells were sampled in accordance with the groundwater sampling protocols outlined in the 2015 Corrective Action Monitoring Plan (CAMP) for the Facility, and were subsequently incorporated into the periodic monitoring stipulated in the CAMP. Data obtained from the monitoring well sampling have been incorporated into the East Helena Project water quality database.

2.3 SOIL SAMPLE ANALYSIS

Following completion of each soil boring, soil samples were submitted to an analytical laboratory for analysis of select geochemical properties. The first step in soil sample analysis consisted of analyzing selected samples for total metals concentrations and pH to identify areas of potentially significant contaminant loading to groundwater. In general, two samples from the unsaturated zone were selected from each boring; one from the deep vadose zone just above the water table and a second from a shallower depth. In addition, all saturated-zone soil samples of sufficient volume for testing were analyzed for total metals and pH. The analytical parameter list for total metals is included in Table 2-2, and samples selected for total metals analyses are summarized in Table 2-3.

TABLE 2-2. SOIL SAMPLE ANALYTICAL PARAMETER LIST

Total Metals Analysis		
Parameter	Analytical Method⁽¹⁾	Soil Boring Sample PRDL (mg/kg)
Aluminum (Al)	SW 3050/6010B/6020	5
Arsenic (As)	SW 3050/6010B/6020	5
Cadmium (Cd)	SW 3050/6010B/6020	1
Barium (Ba)	SW 3050/6010B/6020	1
Copper (Cu)	SW 3050/6010B/6020	5
Iron (Fe)	SW 3050/6010B/6020	5
Lead (Pb)	SW 3050/6010B/6020	5
Manganese (Mn)	SW 3050/6010B/6020	5
Selenium (Se)	SW 3050/6010B/6020	0.55
Zinc (Zn)	SW 3050/6010B/6020	5
pH	SW 9045D	0.1 s.u.
Leach Testing Analysis		
Parameter	Analytical Method⁽¹⁾	Extractant/Leach Solution PRDL (mg/L)
Arsenic (As)	EPA 200.8/6010/6020	0.005
Selenium (Se)	EPA 200.8/6010/6020	0.005
Barium (Ba)	EPA 200.8/6010/6020	0.005
Calcium (Ca)	EPA 200.8/6010/6020	1
Magnesium (Mg)	EPA 200.8/6010/6020	1
Sodium (Na)	EPA 200.8/6010/6020	1
Potassium (K)	EPA 200.8/6010/6020	1
Chloride (Cl)	EPA 300.0	1
Bicarbonate (HCO ₃)	A 2320B	4
Sulfate (SO ₄)	EPA 300.0	1
pH	A 4500-H B	0.1 s.u.

(1) Analytical methods are from the current version of Standard Methods (SM) for the Examination of Water and Wastewater (available online at <http://www.standardmethods.org/>, or EPA's Methods for Chemical Analysis of Water and Waste (EPA, 1983)). Equivalent procedures may be used as long as detection limits are achieved.

Table 2-3. 2015 Supplemental Source Area Investigation Soil Sampling and Analytical Summary Table

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample
EHSB-10	AEH-1506-144S	3.5-4			
	AEH-1506-145S	5-5.7			
	AEH-1506-146S	7-9			
	AEH-1506-147S	10-11.5	X	X	
	AEH-1506-148S	13-14			
	AEH-1506-149S	15-15.8			
	AEH-1506-150S	28-28.8			
	AEH-1506-151S	30-30.25			
	AEH-1506-152S	32-33	X		
	AEH-1506-153S	34-35			
	AEH-1506-154S	35-35.3			
	AEH-1506-155S	38-38.5	X	X*A	
	AEH-1506-156S	40-41	X	X*A	
	AEH-1506-157S	44-45	X	X*B	
	AEH-1506-158S	45-45.4			
	AEH-1506-159S	46-48	X	X*B	
	AEH-1506-161S	50-51.2	X		
	AEH-1506-162S	51.2-52			
	AEH-1506-163S	52-54			
		54-56			XX
EHSB-11	AEH-1506-164S	3.5-5			
	AEH-1506-165S	5-5.25			
	AEH-1506-166S	7-9			
	AEH-1506-167S	10-11			
	AEH-1506-168S	10-14			
	AEH-1506-169S	15-15.2			
	AEH-1506-170S	16-19	X		
	AEH-1506-171S	20-20.4			
	AEH-1506-172S	22-25			
	AEH-1506-173S	25-26.5			
	AEH-1506-174S	25-27.5			
	AEH-1506-175S	30-30.5			
	AEH-1506-176S	30.5-32			
	AEH-1506-177S	32-34			
	AEH-1506-178S	35-37			
	AEH-1506-179S	37-39			
	AEH-1506-180S	40-42	X		
	AEH-1506-501S	40-42 Dup	X		
	AEH-1506-181S	43-44.5	X		
	AEH-1506-182S	45-47	X	X*C	
	AEH-1506-183S	46.8	X	X*C	
	AEH-1506-184S	45-45.5	X		
	AEH-1506-185S	48-49	X	X	
	AEH-1506-186S	49-51			
	AEH-1506-187S	51-52			
		53-55			XX

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample
EHSB-12 (DH-83)	AEH-1507-290S	5-5.7			
	AEH-1507-291S	10-11			
	AEH-1507-279S	15-15.9			
	AEH-1507-280S	17-20			
	AEH-1507-281S	20-22.5			
	AEH-1507-282S	22.5-25			
	AEH-1507-283S	25-26			
	AEH-1507-284S	27-28.5			
	AEH-1507-285S	26-27			
	AEH-1507-286S	30-32			
	AEH-1507-287S	32.5-33.5			
	AEH-1507-288S	35-35.3			
	AEH-1507-289S	35.3-35.8			
	AEH-1507-292S	35-36.5			
	AEH-1507-293S	37-38.5			
	AEH-1507-294S	38.5-40			
	AEH-1507-295S	40-40.2			
	AEH-1507-296S	40-42	X	X	
	AEH-1507-297S	42-44			
	AEH-1507-298S	44-45			
	AEH-1507-299S	45-45.4	X	X	
	AEH-1507-300S	45.4-47	X		
	AEH-1507-301S	47-48.6			
	AEH-1507-302S	49-51			
	AEH-1507-303S	51-53			
	AEH-1507-304S	53-55	X	X	
	EHSB-13	AEH-1506-233S	4-5		
AEH-1506-234S		5-6.5			
AEH-1506-235S		10-10.5			
AEH-1506-236S		12-14.5			
AEH-1506-237S		15-15.7			
AEH-1506-238S		21-23.5			
AEH-1506-239S		25-26.5			
AEH-1506-240S		28-29	X		
AEH-1507-241S		30-33			
AEH-1507-242S		33-35			
AEH-1507-243S		35-36			
AEH-1507-244S		36-36.1			
AEH-1507-245S		37-38			
AEH-1507-246S		40-41.2	X		
AEH-1507-247S		41.2-42			
AEH-1507-248S		42-43.5	X		
AEH-1507-249S		44-44.5			
AEH-1507-250S		45-46	X		
AEH-1507-251S		46.5-48			
AEH-1507-252S		52-53	X	X	
AEH-1507-254S		55-56			
AEH-1507-253S		56-57	X		
AEH-1507-255S		57-59	X		

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample	
EHSB-14	AEH-1506-213S	5-5.3				
	AEH-1506-214S	8-9.5				
	AEH-1506-215S	10-11.4				
	AEH-1506-216S	11.5-13				
	AEH-1506-217S	13.2-14				
	AEH-1506-218S	15-15.8	X			
	AEH-1506-219S	25-25.5				
	AEH-1506-220S	30.7-30.8				
	AEH-1506-221S	32.5-34				
	AEH-1506-222S	34-35				
	AEH-1506-223S	37-38.5				
	AEH-1506-224S	38.5-40				
	AEH-1506-225S	40-40.9		X*D		
	AEH-1506-226S	40.9-41	X	X*D		
	AEH-1506-227S	41-41.4		X*D		
	AEH-1506-228S	43.5-44.5	X			
	AEH-1506-229S	45-46.4	X	X		
	AEH-1506-230S	47-48.5	X			
	AEH-1506-231S	50-52				
	AEH-1506-232S	52-53				
		53-54			XX	
	EHSB-15	AEH-1507-256S	5-5.5			
		AEH-1507-257S	6-8			
		AEH-1507-258S	8-9.5			
		AEH-1507-259S	10-11.3			
		AEH-1507-260S	11.3-13.8			
		AEH-1507-261S	13.8-14.2			
AEH-1507-262S		15-16.3				
AEH-1507-263S		20-20.5				
AEH-1507-264S		20-24				
AEH-1507-265S		26-28	X	X		
AEH-1507-266S		28-29.5				
AEH-1507-267S		30-30.3				
AEH-1507-278S		31.5-32.5				
AEH-1507-268S		35-35.6				
AEH-1507-269S		36-36.5				
AEH-1507-270S		39-40				
AEH-1507-271S		40-41.5	X	X*E		
AEH-1507-272S		41.5-42		X*E		
AEH-1507-273S		42.5-43	X	X*F		
AEH-1507-274S		43-44	X	X*F		
AEH-1507-275S		44.5-45				
AEH-1507-276S		45-46	X	X		
AEH-1507-502S		45-46 Dup	X			
AEH-1507-277S		49.5-51.5				
		49.5-50			XX	

Notes: Saturated zone sample Ash/clay layer sample
X = sample analyzed; XX = sample collected and archived
*A,B,C... = two or more samples composited for leach testing
All samples archived for future testing if necessary

Table 2-3. 2015 Supplemental Source Area Investigation Soil Sampling and Analytical Summary Table

(continued)

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample	
EHSB-17 (DH-82)	AEH-1507-2791S	1-4				
	AEH-1507-2801S	4-5				
	AEH-1507-2811S	5-6.5				
	AEH-1507-2821S	5-7				
	AEH-1507-2831S	6-10				
	AEH-1507-2841S	10.75-13				
	AEH-1507-2851S	10-10.66				
	AEH-1507-2861S	15-15.25				
	AEH-1507-2991S	15.25-17				
	AEH-1507-2871S	18-20	X	X		
	AEH-1507-2881S	20-20.5				
	AEH-1507-2891S	20.5-21				
	AEH-1507-2901S	21-25				
	AEH-1507-2911S	25-25.05				
	AEH-1507-2921S	28.5-29				
	AEH-1507-2931S	30-31.7				
	AEH-1507-2941S	30-35				
	AEH-1507-2951S	37-39				
	AEH-1507-2961S	35-37	X			
	AEH-1507-503S	35-37 Dup	X			
	AEH-1507-2971S	40-41.5	X			
	AEH-1507-331S	41.5-42				
	AEH-1507-332S	42-45				
	AEH-1507-333S	45-45.5	X	X*G		
	AEH-1507-334S	46-47				
	AEH-1507-335S	48-50				
	AEH-1507-336S	50-50.25	X	X*G		
	AEH-1507-337S	50.5-51				
	AEH-1507-338S	51-52				
		52-53			XX	
	AEH-1507-339S	53-55				
	EHSB-18	AEH-1508-600S	15-17	X		
		AEH-1508-601S	24-25	X		
AEH-1508-602S		24-25 Dup	X			
AEH-1508-615S		35-37	X			
AEH-1508-603S		45-47	X			
AEH-1508-604S		55-60	X			
AEH-1508-605S		69-69.5	X			
AEH-1508-606S		74-76	X			
AEH-1506-607S	80-82	X				
EHSB-19	AEH-1508-608S	20-22	X			
	AEH-1508-609S	30-32	X			
	AEH-1508-610S	40-42	X			
	AEH-1508-611S	50-51	X			
	AEH-1508-612S	50-51 Dup	X			
	AEH-1508-613S	54.5-56.5	X			
AEH-1508-614S	62-65	X				

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample
EHSB-22	AEH-1507-340S	0-3			
	AEH-1507-341S	5-5.5			
	AEH-1507-342S	6-10			
	AEH-1507-343S	10-11	X		
	AEH-1507-344S	12.5-13			
	AEH-1507-345S	13.3-14			
	AEH-1507-346S	14-15			
	AEH-1507-347S	15-15.01			
	AEH-1507-348S	15.5-17			
	AEH-1507-349S	17-18	X	X	
	AEH-1507-350S	18.5-19.5			
	AEH-1507-351S	19.5-20			
	AEH-1507-352S	20-21.3	X	X	
	AEH-1507-354S	22-23			
	AEH-1507-355S	23.5			
	AEH-1507-356S	23.3-24			
	AEH-1507-357S	24-25			
	AEH-1507-358S	25-26.3	X		
	AEH-1507-359S	27-28			
	AEH-1507-360S	28-29	X	X	
	AEH-1507-3601S	29-30.5	X	X	
		30-31.25			XX
	EHSB-23	AEH-1507-361S	1-4		
AEH-1507-362S		5-5.8	X		
AEH-1507-363S		5-7			
AEH-1507-364S		8-9.5			
AEH-1507-365S		10-11.3			
AEH-1507-366S		10-12			
AEH-1507-367S		13-15			
AEH-1507-368S		15-16.2	X		
AEH-1507-369S		15-18			
AEH-1507-370S		18-19			
AEH-1507-371S		20-20.01			
AEH-1507-372S		20-22	X	X	
AEH-1507-373S		24-25			
AEH-1507-374S		25-25.6	X	X	
AEH-1507-375S		25-28			
AEH-1507-376S		27-28			
AEH-1507-377S		28-29			
AEH-1507-378S		29-30			
AEH-1507-379S		30-30.8	X	X	
AEH-1507-380S		30.8-31.2	X		
AEH-1507-381S		31-31.5			
AEH-1507-382S		31.5-32.5			
AEH-1507-383S		32.5-33			

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample
EHSB-24 (DH-81)	AEH-1506-117S	0.5-5			
	AEH-1506-118S	5-5.8			
	AEH-1506-119S	8.5-9			
	AEH-1506-120S	10-10.5			
	AEH-1506-121S	12-14			
	AEH-1506-122S	15-16	X	X	
	AEH-1506-123S	17-18			
	AEH-1506-124S	20-21.8	X	X*H	
	AEH-1506-500S	20-21.8 Dup	X	X*H	
	AEH-1506-125S	22-24			
	AEH-1506-126S	25-26.2	X	X*I	
	AEH-1506-127S	27-29	X	X*I	
	AEH-1506-128S	30-32			
EHSB-25 (DH-80)	AEH-1506-112S	3-4			
	AEH-1506-107S	5-6.5			
	AEH-1506-111S	8-9			
	AEH-1506-108S	15-15.7	X		
	AEH-1506-109S	19-20	X	X	
	AEH-1506-110S	20-21	X	X	
	AEH-1506-113S	22-23.5	X		
	AEH-1506-114S	25-25.2			
	AEH-1506-115S	26-28	X	X	
	AEH-1506-116S	30-32	X		

Notes:

Saturated zone sample Ash/clay layer sample

X = sample analyzed; XX = sample collected and archived

*A,B,C... = two or more samples composited for leach testing

All samples archived for future testing if necessary

Table 2-3. 2015 Supplemental Source Area Investigation Soil Sampling and Analytical Summary Table
(continued)

Soil Boring	Sample #	Depth (ft bgs)	Total Metals	Leachable Metals	Shelby Tube Sample
EHSB-26	AEH-1506-100S	5			
	AEH-1506-101S	10			
	AEH-1506-102S	15-16.3	X		
	AEH-1506-103S	20-21.8	X	X	
	AEH-1506-104S	25-26.4	X	X	
	AEH-1506-105S	30-30.9	X		
	AEH-1506-106S	33-35	X		
EHSB-27 (DH-79)	AEH-1506-129S	3.5-4.5			
	AEH-1506-130S	5-6			
	AEH-1506-131S	13-15			
	AEH-1506-132S	15-16.3			
	AEH-1506-133S	20-20.7			
	AEH-1506-134S	23-24			
	AEH-1506-135S	25-25.8			
	AEH-1506-136S	27-28	X		
	AEH-1506-137S	30-30.4			
	AEH-1506-138S	33.5-34.5	X	X	
	AEH-1506-139S	35-35.7	X		
	AEH-1506-140S	37-38	X	X	
	AEH-1506-141S	40-40.6	X		
	AEH-1506-142S	41			
		42-44			XX
AEH-1506-143S	44-45.5	X	X		

Notes:

Saturated zone sample	Ash/clay layer sample
-----------------------	-----------------------

X = sample analyzed; XX = sample collected and archived

*A,B,C... = two or more samples composited for leach testing

All samples archived for future testing if necessary

The second step of soil testing included further characterization of selected samples by leach testing using EPA Method 1312 (Synthetic Precipitation Leaching Procedure (SPLP)) and saturated paste extraction (USDA, 1954) on separate aliquots of the sample. The dual leach test procedures were used to evaluate the effect of the liquid to soil ratio on leach test results (SPLP uses a 20:1 ratio while saturated paste uses a much lower ratio, averaging about 0.2:1), and to better evaluate actual contaminant leaching processes within the aquifer. Leach testing of unsaturated-zone samples was done using the SPLP standard synthetic precipitation leaching solution. Leach testing of saturated-zone soils utilized upgradient groundwater from monitoring well DH-3 to better represent actual aquifer conditions. Leach test analytical parameters are shown in Table 2-2, and soil samples selected for leach testing are shown in Table 2-3. Complete details of leach testing conditions (initial soil moisture, mass of soil, volume of leaching solution and chemical composition of groundwater leaching solution) and results are in Appendix B.

2.4 DEVIATIONS FROM SOURCE AREA CHARACTERIZATION WORK PLAN

Deviations from the Work Plan included not installing three planned borings; modification of the soil testing protocol for some borings; and changes to the number of samples analyzed for total and/or leachable metals concentrations for certain soil borings. These work plan deviations were primarily made to better target and characterize source areas and to increase the efficiency of the data collection program. Each of these deviations is discussed below.

2.4.1 Soil Boring Locations

Based on field observations made and data collected during the course of the 2015 drilling program and with further evaluation of available data, the following three soil borings identified in the 2015 SAI Work Plan were not installed:

- EHSB-16: In the Work Plan, boring EHSB-16 was to be located between wells DH-78 and DH-66 in the West Selenium Area, to further delineate the center of the selenium source area (Figure 2-1). This boring was eliminated from the program after multiple groundwater sampling events indicated that groundwater selenium concentrations at wells DH-78 and DH-66 were similar and showing a decreasing trend through the first half of 2015. These results suggested no selenium loading to groundwater occurring in the area between DH-78 (upgradient) and DH-66 (downgradient); therefore, installation of EHSB-16 was deemed unnecessary.
- EHSB-20: In the Work Plan, boring EHSB-20 was to be located in East Helena near existing monitoring well EH-111 (see Figure 3-2 in the 2015 SAI Work Plan), to further define the northern extent of potential arsenic source material and the remaining adsorptive capacity near the leading edge of the arsenic plume. Based on the results from borings EHSB-18 and EHSB-19 installed upgradient of the proposed EHSB-20 location (Figure 2-1), which indicated remaining arsenic adsorption

capacity within the aquifer closer to the arsenic source area, completion of this soil boring further downgradient was deemed unnecessary.

- EHSB-21: In the Work Plan, boring EHSB-21 was to be located near existing monitoring wells DH-24 and DH-64 near American Chemet (Figure 2-1), to further define the northern extent of potential arsenic source material and remaining adsorptive capacity in this area. Based on the presence of elevated soil and groundwater arsenic concentrations at wells DH-64 (with total soil arsenic concentrations comparable to concentrations within the North Plant Site Arsenic source area), along with the results for borings EHSB-18 and EHSB-19 indicating additional downgradient adsorption capacity, installation of boring EHSB-21 was deemed unnecessary.

2.4.2 Soil Sample Analyses

In addition to deleting the three soil borings noted above, the analytical protocol (number of samples analyzed) varied for certain soil borings from that outlined in the work plan. Field observations and ongoing review of analytical results supported the following modifications:

- EHSB-11: No unsaturated-zone leach tests were conducted due to low total selenium (<0.6 mg/kg) and arsenic concentrations (9 to 11 mg/kg) in the unsaturated-zone samples.
- EHSB-12: One sample was selected for analysis from the unsaturated zone rather than two samples, due to the high density of soil sample coverage near this soil boring. Multiple samples from the basal ash/clay layer were analyzed at this location, to evaluate potential differences between shallow and deep ash layers.
- EHSB-13: No unsaturated-zone leach tests were conducted due to the low total selenium and arsenic concentrations observed (<0.6 and 7 to 31 mg/kg, respectively). Multiple samples from the basal ash/clay layer were analyzed at this location, to evaluate potential differences between shallower, finer-grained ash and deeper, more granular ash.
- EHSB-15: Two unsaturated-zone samples were leach tested at this location, rather than one, due to the relatively elevated total selenium concentrations observed (7 to 21 mg/kg).
- EHSB-17: One sample was selected for analysis from the unsaturated zone rather than two samples, due to the location of the boring in an area where significant impacts to the unsaturated zone would not be expected (outside of the former smelter site).
- EHSB-23: No unsaturated-zone leach tests were conducted due to the low total arsenic (11 to 14 mg/kg) and selenium (<0.6 to 0.7 mg/kg) concentrations observed.

- EHSB-24: One sample was selected for analysis from the unsaturated zone rather than two samples, due to the limited thickness of the unsaturated zone.
- At some locations, multiple samples from adjacent depth intervals were combined for leach testing, in order to provide sufficient mass for conducting the requested leach procedure.

Leach testing (SPLP and saturated paste analysis) was not conducted on soil samples from soil borings EHSB-18 and EHSB-19, which are located downgradient of the North Plant Arsenic Area. Instead of leach testing, a program of batch adsorption testing for arsenic was implemented for these soils. Total metals results for soils from these borings had cadmium and selenium concentrations below the minimum reporting limits, and arsenic concentrations that ranged from less than 1 to about 100 mg/kg. The 2015 total arsenic results also suggested that (1) arsenic concentrations in saturated soils in this area have increased over time, due to adsorption/coprecipitation of arsenic from groundwater, and (2) arsenic concentrations remain lower than in the North Plant Arsenic source area itself, indicating the potential for additional arsenic removal capacity. Since the key question to be addressed in the North Plant downgradient area is whether or not soils have additional arsenic removal capacity, adsorption testing was conducted in lieu of leach testing, to more directly measure this capacity. The batch adsorption testing protocol is described below and results are discussed in Section 3.4.

Batch adsorption tests on soil samples from borings EHSB-18 and EHSB-19 were conducted using groundwater collected from the Facility, and in accordance with EPA (1992), and consisted of the following steps:

- Groundwater samples were obtained with different arsenic concentrations (18.4 mg/L and 2.99 mg/L), to allow adsorption testing under different initial solution conditions. Groundwater for testing was obtained from wells DH-64 (18.4 mg/L As) and SDMW-1 (2.99 mg/L As);
- Four saturated-zone soil samples (two each from borings EHSB-18 and EHSB-19) were mixed with groundwater at six different soil:solution ratios (1:4, 1:10, 1:20, 1:40, 1:60, and 1:100). Soil samples were selected covering the range of total arsenic concentrations observed in the downgradient borings, including both lower concentrations (10 to 34 mg/kg) and higher concentrations (102 to 106 mg/kg);
- The soil:solution mixtures were agitated and allowed to equilibrate for 72 hours; and
- Final post-equilibration arsenic concentrations were measured on a filtered sample of the solution.

The optional mineralogy and/or sequential extraction testing identified in the 2015 SAI Work Plan was not conducted on any of the 2015 SAI soil samples. After review of the total and leachable metals results for the 2015 soil borings, it was concluded that more detailed mineralogic characterization was not required to meet the project objectives regarding evaluation of potential source-control measures.

3.0 RESULTS AND DISCUSSION

3.1 STRATIGRAPHY

The stratigraphy on the former smelter site has been well-characterized through various investigations since the 1980s including the additional detail obtained through the 2014 and 2015 SAIs. The site stratigraphy is relevant to the source area investigations since the soil/sediment distribution and properties influence groundwater flow and contaminant transport through the subsurface. Of particular interest for source-control evaluation purposes are the physical characteristics of soils and sediments, such as grain size and uniformity (which affect the soil permeability); soil moisture conditions and depth to groundwater; presence of smelter-related debris such as slag, brick or other potential primary contaminant source material; secondary mineralization such as iron-oxide cements which may act as secondary contaminant source material; and petroleum staining or odor which originated from historic petroleum releases and may affect groundwater redox conditions and contaminant mobility. Stratigraphic logs for the 15 source investigation soil borings and monitoring well completion logs are included in Appendix A, and boring locations are shown on Figure 2-1.

The stratigraphy observed through the 2015 drilling program was consistent with previous investigation results and the conceptual site model. The stratigraphy generally consists of a veneer of earthen granular fill overlying varying alluvial/colluvial sediments, in turn overlying the low permeability Tertiary-age ash/clay layer at depth. In the West Selenium Area, surficial fill material consisted of primarily sand and gravel earthen fill, with some brick fragments noted at borings EHSB-10 and EHSB-15. Depths to the basal ash/clay layer ranged from 44.5 feet below ground surface (bgs) at EHSB-15 to 54 feet bgs at EHSB-13. Elevations of the top of the ash/clay layer followed the northeasterly slope documented in previous investigations (METG, 2011). The stratigraphy between the surficial fill layer and basal ash/clay consists of alternating layers of alluvial/colluvial sandy, silty gravels and clean medium-grained sands. No petroleum staining or odors were noted in any of the West Selenium Area soil borings.

Stratigraphy in the former Acid Plant area is similar to the West Selenium area except that the surficial fill layer contained a higher proportion of non-native material (brick, slag), and the ash/clay layer occurred at shallower depths (29 to 30 feet bgs). Native alluvial/colluvial sediments were similar to the West Selenium Area consisting of alternating layers of silt/sand/gravel in varying proportions and clean medium-grained sand layers. Sediments from soil borings EHSB-22, 23, and 24, all completed in the former Acid Plant Settling Pond area, exhibited distinct discoloration (yellow, orange, green) below the water table. The former settling pond has been identified as a groundwater contaminant source area and is

scheduled for soil removal in 2016. No petroleum staining or odor was noted in any of the Acid Plant area soil borings.

Soil borings EHSB-26 and 27 are located in the former Speiss-Dross area, with both borings located outside of the Speiss-Dross slurry wall. The surficial fill layer at both locations included slag and brick fragments within earthen fill, with depths to the ash/clay layer of 33 feet bgs at EHSB-26 to the south, and 41.5 feet bgs at EHSB-27 to the north. The intervening native sediments again consisted of alternating silt/sand/gravel and clean medium-grained sand layers. Petroleum staining and odors were noted at both borings, with the staining noted at 19 feet bgs at EHSB-26 and 22 feet bgs at EHSB-27. The depth of petroleum staining corresponds to the historic high groundwater levels as compared to the current depths to groundwater of 24.5 feet bgs at EHSB-26 and 39.5 feet bgs at EHSB-27. The 17-foot difference between the historic and current groundwater levels at EHSB-27 is attributed to its location immediately north and downgradient of the Speiss-Dross slurry wall which acts to divert groundwater flow around this area.

The 2015 soil borings were advanced anywhere from 2 to 7 feet into the basal ash/clay layer to provide additional information on the low permeability ash/clay material, with split spoon samples collected for observation and logging and Shelby tube samples collected at select locations to support potential remedy designs. The resulting information shows the ash/clay layer to consist of a layer of brown moderately plastic clay at the top, grading downward to a varying white/gray/green nonplastic clay with increasing density and sand content with depth. Moisture content with the ash/clay varied from moist to saturated depending on depth and sand content. The stratigraphic data collected in 2014 and 2015 are being used to update the numerical groundwater flow model and in evaluation and design of remedial measures.

3.2 SOIL SAMPLE TOTAL METALS RESULTS

As described in Section 2.3, total metals analyses were performed on select saturated and unsaturated-zone soil samples from each soil boring. A total of 86 soil samples were analyzed for total metals and pH, including:

- 40 samples from the West Selenium Area;
- 14 samples from the North Plant Site Downgradient Area;
- 10 samples from the former Speiss-Dross area; and
- 22 samples from the former Acid Plant area.

Average total metals results for the 2015 SAI are summarized in Table 3-1. Table 3-2 presents total metals summary statistics (range, average, and median values) for the 2015 SAI samples along with 2014 SAI summary statistics for comparison. Maximum saturated-zone arsenic, cadmium, and selenium concentrations at each boring are shown on Figure 3-1. Complete metals and pH results are summarized in Appendix B, and laboratory reports

Table 3-1. Average Total Metals Concentrations in 2015 SAI Soils

Parameter	West Selenium Area	Acid Plant Area	Speiss-Dross Area	North Plant Downgradient	Regional Background⁽¹⁾
Arsenic	27	235	<i>194</i>	29	<i>43.8</i>
Selenium	<i>1.4</i>	9.3	2.6	<0.6	<i>0.4</i>
Cadmium	<i>5.4</i>	158	<i>145</i>	<1	<i>1.2</i>
Iron	19356	18156	23620	18181	<i>35300</i>
Manganese	423	302	308	349	<i>1130</i>
Lead	20	51	17	15	<i>53.9</i>
Zinc	54	<i>178</i>	315	39	<i>122</i>
pH	7.9	6.4	8.5	7.7	<i>NC</i>

NOTES: All concentrations in mg/kg except pH (standard units)
 Values below detection limit were replaced with the detection limit for calculation of averages.
Bold values represent highest average value (highest and lowest for pH); *italicized values* exceed background.
 (1) Regional background defined here as the 90th percentile of concentrations obtained from Lewis and Clark and Jefferson counties during recent statewide sampling of surface soils conducted by Montana DEQ (2013) and USGS (2013).
 NC = not calculated.
 Complete summary statistics are in Table 3-2.

Table 3-2. 2015 Soil Sample Total Metals and pH Summary Statistics

Parameter	Regional Background ⁽¹⁾	West Se Area 2015 (n=40)			West Se Area 2014 (n=33)		
		Range	Average	Median	Range	Average	Median
Al	68400	6440-48700	15854	11250	4060-42300	12318	10200
As	43.8	<1-159	27	12	<5-217	38	19
Ba	885	13-457	85	64	NA	NA	NA
Cd	1.2	<1-75	5.4	<1	<1-518	25	<1
Cu	55.1	6-87	34	31	8-76	36	33
Fe	35300	8460-42400	19356	17550	7650-30800	18177	17300
Pb	53.9	6-163	20	14	<5-155	19	12
Mn	1130	59-1890	423	366	120-2070	500	364
Se	0.4	<0.6-21	1.4	<0.6	<0.5-44.7	4.2	0.7
Zn	122	16-158	54	43	20-270	64	46
pH	NC	7.4-8.8	7.9	7.8	6.9-9.3	7.9	7.6

Parameter	Regional Background ⁽¹⁾	Acid Plant Area 2015 (n=22)			Speiss-Dross Area 2015 (n=10)			North Plant Downgradient Area 2015 (n=14)			North Plant Arsenic Area 2014 (n=9)		
		Range	Average	Median	Range	Average	Median	Range	Average	Median	Range	Average	Median
Al	68400	5690-51100	16158	10900	7920-50700	19229	13900	5250-24400	12460	9815	6990-23500	12999	12500
As	43.8	2-871	235	158	3-333	194	185	<1-106	29	8	5-323	179	209
Ba	885	29-172	82	78	35-251	104	94	20-150	65	64	NA	NA	NA
Cd	1.2	<1- 857	158	45	<1- 780	145	3	<1	<1	<1	<1-59	12	<1
Cu	55.1	6-425	63	40	13-52	32	32	12-62	31	32	25-84	39	34
Fe	35300	7430-38200	18156	17250	13800-34600	23620	25800	11500-27000	18181	17300	12800-27400	18722	17000
Pb	53.9	7-149	51	32	8-52	17	12	7-28	15	13	6-20	13	13
Mn	1130	77-1280	302	209	137-537	308	288	34-689	349	351	126-406	217	195
Se	0.4	<0.6- 59.7	9.3	1.0	<0.6- 5.6	2.6	2.6	<0.6	<0.6	<0.6	<0.5-1.8	0.8	<0.5
Zn	122	56-533	178	125	33-1090	315	192	7.4-83	39	35.5	30-1750	562	463
pH	NC	4.6-8.4	6.4	6.5	6.5-10	8.5	8.9	7.1-8.2	7.7	7.7	6.0-9.1	8.1	8.2

NOTES: n = number of sample results
 All concentrations in mg/kg except pH (standard units)
 Values below detection limit replaced with the detection limit for calculation of averages.
 (1) Regional background defined here as the 90th percentile of concentrations obtained from Lewis and Clark and Jefferson counties during recent statewide sampling of surface soils conducted by Montana DEQ (2013) and USGS (2013).
 NA = not analyzed
 NC = not calculated.
 Shaded cells show data collected during 2014 SAI, as summarized in the 2014 SAI Report (Hydrometrics, 2015).

LEGEND

- ⊕ 2015 Boring Locations
- ⊕ 2014 SAI Soil Borings/Monitoring Wells
- Existing Monitoring Wells

EHSB-17		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	10	0
Cadmium	<1	0.008
Selenium	0.7	0

EHSB-13		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	123	0.41
Cadmium	2	0.029
Selenium	<0.6	0.082

EHSB-11		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	39	0.08
Cadmium	<1	0.28
Selenium	0.7	0

EHSB-10		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	159	0.37
Cadmium	<1	0.23
Selenium	0.7	0.22

EHSB-12		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	5	0.022
Cadmium	2	0.088
Selenium	0.6	0.34

EHSB-14		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	73	0.49
Cadmium	15	0.097
Selenium	<0.6	0.37

EHSB-15		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	15	0.02
Cadmium	2.1	0.11
Selenium	3.5	5.1

EHSB-27		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	210	43.1
Cadmium	4	0.15
Selenium	3.3	1.6

EHSB-26		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	169	0
Cadmium	780	14.7
Selenium	<0.6	0.006

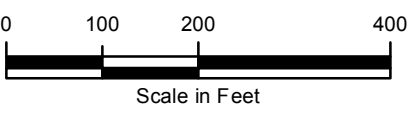
EHSB-25		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	120	0
Cadmium	241	22.3
Selenium	0.7	0.04

EHSB-23		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	460	0
Cadmium	396	23
Selenium	45.1	1.6

EHSB-22		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	763	14
Cadmium	426	120
Selenium	5	0.3

EHSB-25/DH-80		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	120	0
Cadmium	241	22.3
Selenium	0.7	0.04

EHSB-24		
Maximum Saturated Zone Concentration		
Parameter	Total (mg/kg)	Leachate (mg/L)
Arsenic	549	0
Cadmium	857	7.6
Selenium	19.7	0.21



V:\10022\GIS\SourceInventory\2015 Investigation\Report\Figure 3-1.mxd

are provided in Appendix C. Boxplots that summarize total metals concentrations and soil pH for each of the 2015 investigation areas are presented in Appendix D. The boxplots summarize the data distribution, including the minimum and maximum concentrations, median concentration, and lower and upper quartiles (25th and 75th percentiles) for each analyzed constituent.

3.2.1 Lateral and Vertical Distribution of Metals

Table 3-1 provides a comparison of average soil total metals concentrations among the investigated source areas, as well as comparison to regional background concentrations. Average arsenic, selenium, cadmium, and lead concentrations were highest in the Acid Plant Area, iron and zinc were highest in the Speiss-Dross Area, and the average manganese concentration was highest in the West Selenium Area (Table 3-1). Note that the highest overall average zinc concentration was observed in 2014 SAI samples from the North Plant Arsenic Area (Table 3-2).

Soil pH values measured during the 2015 SAI reflect the impacts of historic plant site processes and process water releases. As shown in Table 3-1, soil pH values were generally highest in the former Speiss-Dross area (average pH of 8.5 s.u.), where alkaline process water releases occurred. The lowest pH values (average 6.4 s.u.) were measured in the former Acid Plant Area, where acidic process waters and other materials were stored and released. Average soil pH values and the overall pH ranges observed in the West Selenium Area and the North Plant Downgradient area in 2015 SAI samples were between these two extremes (Tables 3-1 and 3-2).

Metals are naturally present in all soils and sediment, thus identification of metals enrichment or contamination in soils typically involves comparison to ambient or background concentrations. For comparison purposes, a calculated regional background concentration for total metals is shown in Tables 3-1 and 3-2, along with the average of concentrations from the 2015 SAI. The “regional background” concentration for comparison purposes is the 90th percentile of values obtained from recent surface soil sampling studies conducted by the Montana Department of Environmental Quality (Hydrometrics, 2013) and the USGS (2013). To provide a representative regional value for the former smelter site, the calculated 90th percentile is based on eleven samples collected from Lewis and Clark County and Jefferson County, since the former smelter is located near the boundary of these two counties. Overall, the total metals and regional background data presented in Tables 3-1 and 3-2 for the 2014 and 2015 SAIs suggest the following:

- Aluminum, iron, lead, and manganese do not exhibit evidence of widespread enrichment above background, as average and median values are below the regional background value. Copper exhibited slight enrichment, with 14% of the 2014 SAI

soil samples exceeding the regional background level, and 2015 average (63 mg/kg) and median (40 mg/kg) values in the former Acid Plant area similar to the regional background value of 55.1 mg/kg.

- Arsenic, cadmium, selenium and zinc exhibited evidence of enrichment in some samples, with some concentrations one or more orders of magnitude greater than the regional background values, and average and median concentrations for certain areas well above the regional background values shown in Tables 3-1 and 3-2.

Despite the higher average selenium concentrations in Acid Plant and Speiss-Dross Area soils compared with the West Selenium Area soils (Table 3-1), groundwater concentrations indicate that selenium loading to groundwater in the West Selenium Area is higher than either the Acid Plant or Speiss-Dross Areas. The data suggest that selenium in West Selenium Area soils is more available for leaching and transport to groundwater than the selenium in the Acid Plant and Speiss-Dross source areas under current groundwater geochemical conditions. Redox speciation diagrams for selenium (e.g., Essington, 2004) indicate that selenium typically becomes less mobile in groundwater under reducing and/or acidic conditions; given the reducing conditions in the Speiss-Dross area and the acidic conditions in the Acid Plant area, selenium mobility in these areas is expected to be lower than in the oxidizing, more neutral pH conditions present in the West Selenium Area.

The data for individual soil borings in Appendix B support the following:

- The highest concentrations of arsenic (up to 871 mg/kg in the unsaturated zone and 763 mg/kg in the saturated zone) were observed in the former Acid Plant Area. The unsaturated-zone concentration of 871 mg/kg arsenic occurred in a sample collected about 5 feet above the water table, a zone that was saturated, at least seasonally, prior to the November 2011 implementation of the South Plant Hydraulic Control (SPHC) IM. High arsenic concentrations persisted into the underlying ash/clay unit at Acid Plant borings EHSB-22 (176 mg/kg) and EHSB-23 (460 mg/kg). Elevated soil arsenic concentrations in deeper materials at the base of the shallow alluvial aquifer and at the top of the underlying ash/clay have previously been observed in former plant process areas, including the Acid Plant and Speiss-Dross areas. These concentrations are believed to be due to historic releases of high density process waters (with dissolved solids concentrations in the 10,000 to 40,000 mg/L range) and settling of the process waters and associated contaminants to the bottom of the shallow aquifer, where partitioning to soils occurred. The soil concentrations coupled with the elevated groundwater arsenic concentrations in the Acid Plant area (over 15 mg/L) indicate that the deeper saturated soils are a significant current source of arsenic loading to groundwater.

- The highest concentrations of selenium in soils (up to 59.7 mg/kg in the unsaturated zone and 45.1 mg/kg in the saturated zone) were also observed in the Acid Plant area. For comparison, the maximum total selenium concentrations observed in the West Selenium area were 21 mg/kg in the unsaturated zone and 3.5 mg/kg in the saturated zone, both at boring EHSB-15. As previously noted, although the concentrations of selenium in soils are highest in this area, geochemical conditions in the Acid Plant area groundwater limit selenium leachability and mobility.
- The highest concentrations of cadmium (up to 259 mg/kg in the unsaturated zone and 857 mg/kg in the saturated zone) were observed in Acid Plant area borings EHSB-22 and EHSB-24, respectively (Figure 2-1). Overall, saturated-zone soil cadmium concentrations were highest at boring EHSB-24 in the Acid Plant area (269 to 857 mg/kg) and EHSB-26 west of the Speiss-Dross slurry wall (591 to 780 mg/kg). The 2014 and 2015 SAIs and prior investigations have shown that soil and groundwater cadmium concentrations are elevated in certain areas of the former smelter (particularly the former Acid Plant and areas downgradient of the Acid Plant). Unlike arsenic and selenium, however, cadmium does not currently migrate offsite at concentrations exceeding the applicable groundwater standard of 0.005 mg/L (MDEQ, 2012).

Groundwater monitoring and 2014 SAI results have previously indicated that the predominant source area for the groundwater selenium plume emanating from the West Selenium area is likely located near boring EHSB-6 and well DH-8. Four additional borings were installed in this area during the 2015 SAI (EHSB-10, EHSB-12, EHSB-14, and EHSB-15) in order to further characterize the distribution and characteristics of the selenium source material and to evaluate potential source control remedies (Figure 2-1). Total selenium concentrations at these borings ranged overall from less than 0.6 to 21 mg/kg, and from less than 0.6 to 3.5 mg/kg in the saturated zone. As shown in Appendix B, boring EHSB-15 was the only one of the four to have total selenium concentrations above the 0.6 mg/kg reporting limit in all samples analyzed, with concentrations ranging from 1.1 to 21 mg/kg. The maximum total selenium concentration observed in the other borings near 2014 SAI boring EHSB-6 and well DH-8 was 0.9 mg/kg at EHSB-14; the majority of results were reported as below the 0.6 mg/kg reporting level. The combined 2015 and 2014 SAI results suggest that the highest current soil selenium concentrations in the West Selenium area are confined to a limited lateral area (<100 feet from north to south) defined by borings EHSB-6 and EHSB-15 (Figure 2-1).

In addition, the 2015 SAI results were also consistent with the 2014 SAI results in that the highest observed soil selenium concentrations in the West Selenium area are present in the unsaturated zone. At borings EHSB-6 and EHSB-15, maximum unsaturated zone selenium concentrations were 44.7 and 21 mg/kg, respectively, while the maximum saturated zone

selenium concentrations were 12.9 and 3.5 mg/kg, respectively. The 2014 and 2015 SAI results indicate historic transport of selenium (and other contaminants) from the surface through the unsaturated zone via infiltration, and eventually down to the saturated zone. Historic surface sources of contaminants in this area likely included ore and other materials stockpiled in uncovered, unpaved areas prior to the 1990 completion of the ore storage building, as well as rail corridor fill material. Transport and deposition of selenium throughout the unsaturated zone and into the saturated zone via repeated cycles of wetting and drying might be expected to lead to the presence of highly leachable forms of selenium in local soils, and subsequently to elevated groundwater concentrations. Along with potential migration of selenium-bearing groundwater from the upgradient Acid Plant, infiltration of leachable selenium from surface sources likely contributed to the current presence of selenium in West Selenium area soils.

3.2.2 Comparison to Previous Soil Sampling Results

Numerous site investigations have shown that soil contaminant concentrations across the former smelter site are highly variable both laterally and vertically, due to the variety of materials storage and handling processes and process water releases that occurred in different areas throughout the life of the smelter. As discussed in the 2014 SAI Report (Hydrometrics, 2015a), overall average soil arsenic concentrations observed during previous sitewide investigations are generally higher than averages obtained during the recent source area-specific investigations (the 2014 and 2015 SAIs). For example, the Phase I RFI noted median arsenic concentrations ranging from 197 to 962 mg/kg in surface soils collected from different former smelter site areas, and the Phase II RFI presented an average overall arsenic concentration of 370 mg/kg. As shown in Table 3-1, average arsenic concentrations obtained as part of the 2015 SAI ranged from 27 mg/kg in the West Selenium area to 235 mg/kg in the former Acid Plant area. Note that concentrations of arsenic and other contaminants tend to be higher in slag and in surficial fill that includes smelter waste materials such as brick and flue dust, which often contain arsenic concentrations on the order of 1000 mg/kg or greater. The lower overall average soil arsenic concentrations for the 2014 and 2015 samples likely reflect the absence of these highly contaminated primary source materials.

Similar to arsenic, sitewide soils data demonstrate that the highest selenium concentrations have historically been observed in slag and in fill containing ore, brick, or other process-related materials, with concentrations up to 325 mg/kg noted in Phase II RFI slag pile samples and up to 662 mg/kg in a Phase II RFI surface fill sample composed of brick and slag. A lower reporting limit (0.5-0.6 mg/kg) was utilized for the 2014 and 2015 SAIs in an effort to provide more quantifiable total selenium data for site soils. Overall, the 2014 and 2015 SAI selenium data confirmed that selenium concentrations in non-slag soils are relatively low, ranging from less than 0.5 to 59.7 mg/kg and showing the lowest average concentrations of any of the constituents tested (Tables 3-1 and 3-2).

Total metals concentrations observed in 2015 SAI soil samples were consistent with previous investigations when compared with proximal sampling locations. For example, West Selenium area soil concentrations obtained during the 2015 SAI are similar to the values obtained during the 2014 SAI (also summarized in Table 3-2 for comparison). The values shown in Table 3-2 highlight the comparability of 2014 and 2015 SAI concentrations of arsenic (average of 27 mg/kg in 2015, 38 mg/kg in 2014), copper (34 mg/kg in 2015, 36 mg/kg in 2014), manganese (423 mg/kg in 2015, 500 mg/kg in 2014), selenium (1.4 mg/kg in 2015, 4.2 mg/kg in 2014), and zinc (54 mg/kg in 2015, 64 mg/kg in 2014) in West Selenium Area soil samples.

Speiss-Dross area soil samples collected during the 2015 SAI had an average arsenic concentration of 194 mg/kg, with concentrations ranging from 3 to 333 mg/kg. As shown in Table 3-2, arsenic concentrations in 2014 SAI borings from the North Plant Arsenic area (borings EHSB-8 and EHSB-9), located immediately north and downgradient of the Speiss-Dross area (Figure 2-1), showed a similar average (179 mg/kg) and overall range (5 to 323 mg/kg). The arsenic (and other contaminants) currently present in North Plant Arsenic Area saturated soils are believed to be originally derived from upgradient sources, including primarily the Speiss-Dross Area. Process water releases and leaching of smelter-related materials in the Speiss-Dross Area resulted in loading of arsenic to groundwater, downgradient migration of arsenic-bearing groundwater, and adsorption of arsenic to soils throughout the North Plant Arsenic Area. Soils and groundwater having the highest concentrations of arsenic in the Speiss-Dross area have been encapsulated within the Speiss-Dross slurry wall, leaving the area peripheral to the wall and the downgradient North Plant Arsenic area (along with any leakage through the slurry wall) as potential current loading sources to groundwater.

Total selenium concentrations in 2015 SAI Speiss-Dross area soil samples ranged from <0.6 to 5.6 mg/kg, averaging 2.6 mg/kg (Table 3-2). Similar relatively low concentrations were observed in 2014 SAI samples from the North Plant Arsenic area (<0.5 to 1.8 mg/kg, with an average of 0.8 mg/kg). The average cadmium concentration in 2015 Speiss-Dross soil samples of 145 mg/kg is substantially higher than the 2014 North Plant Arsenic area average of 12 mg/kg (Table 3-2). The 2015 average cadmium concentration reflects the cadmium concentration observed at Speiss-Dross boring EHSB-26, west of the Speiss-Dross slurry wall (Figure 2-1), where concentrations ranged from 2 to 780 mg/kg, with saturated-zone concentrations of 591 to 780 mg/kg. The other Speiss-Dross area boring (EHSB-27) completed north of the slurry wall showed much lower cadmium concentrations (<1 to 4 mg/kg).

As noted in Section 3.2.1 above, soils in the former Acid Plant showed the highest average arsenic, cadmium, and selenium concentrations of all the 2015 SAI soil samples collected

(Table 3-1). The review of Acid Plant area soils data presented in the 2015 SAI Work Plan (Hydrometrics, 2015b) indicated that, although high contaminant concentration soils have been desaturated since the inception of the SPHC IM in late 2011, and groundwater arsenic concentrations have decreased at some wells, elevated groundwater arsenic concentrations (10 to 20 mg/L) persist in this area, indicating ongoing arsenic loading from local soils to groundwater. Soil arsenic concentrations for Phase II RFI boring RFI2SB-18, installed near the former Acid Plant settling pond in the vicinity of 2015 SAI borings EHSB-22 and EHSB-23, showed arsenic concentrations in non-slag samples ranging from 46 to 1710 mg/kg, with an average of 669 mg/kg. Similarly elevated average non-slag soil concentrations at this boring were observed for selenium (38 mg/kg) and cadmium (1222 mg/kg). 2015 SAI Acid Plant area soil averages for arsenic (235 mg/kg), selenium (9.3 mg/kg), and cadmium (158 mg/kg) were lower than averages observed at Phase II RFI boring EHSB-18; however, the maximum 2015 Acid Plant area concentrations of 871 mg/kg arsenic, 857 mg/kg cadmium, and 59.7 mg/kg selenium (Table 3-2) demonstrate that soil samples with similarly high contaminant concentrations are present at various depths throughout the former Acid Plant area.

2015 SAI borings EHSB-18 and EHSB-19 were drilled adjacent to downgradient well sets EH-60/EH-61/EH-103 (boring EHSB-18) and EH-50/EH-100 (boring EHSB-19). Groundwater with elevated concentrations of arsenic (5 to 20 mg/L) and selenium (0.5 to 2 mg/L) has migrated from the plant site through these areas for many years. The groundwater arsenic data also indicate that downgradient soils attenuate arsenic through adsorption and/or coprecipitation processes, reducing concentrations in groundwater and potentially increasing concentrations in soils. Comparison of 2015 and historic total soil arsenic data for these sampling locations suggests that soil arsenic concentrations may have increased over time at certain depths. For example, boring EHSB-18 had a total arsenic concentration of 106 mg/kg in a sample collected from 24 - 25 feet below ground surface; a sample collected from the same interval in 1987 from an adjacent monitoring well had a total arsenic concentration of 78 mg/kg. Similarly, at boring EHSB-19, a sample from the 50 - 51 foot depth interval had an arsenic concentration of 102 mg/kg, and a sample from the same interval collected in 1986 from an adjacent monitoring well had a total arsenic concentration of 22.2 mg/kg. This apparent enrichment of arsenic over time in downgradient saturated soils was confined to relatively specific depth intervals (the total arsenic concentrations in other intervals sampled during both the 2015 SAI and previous investigations were much lower, in the less than 1 to 40 mg/kg range), reflecting the vertical variability in groundwater flow and contaminant transport/removal through the shallow aquifer. Soil cadmium concentrations were at or near minimum reporting limits throughout the sampled intervals in both 2015 and historic samples, and total selenium concentrations were all below the minimum reporting limit of 0.6 mg/kg in the 2015 SAI samples (selenium was not analyzed on soil samples collected from this area during previous investigations).

3.3 SOIL LEACH TEST RESULTS

The total metals concentrations described above provide a good overview of soil conditions in the source areas investigated, but do not necessarily quantify the availability of metals to leach from the soils to groundwater. Based on the total metals results, select soil samples were leach tested to better assess the leachability of contaminants and their potential to affect groundwater quality (Section 2.3). Complete results of leachable metals and pH analyses conducted on the 2015 SAI samples are presented in Appendix B, and laboratory analytical reports are provided in Appendix C. Details of leach testing protocols (initial soil moisture, mass of soil, volume of leaching solution, and chemical composition of groundwater leaching solution) are also provided in Appendix B.

A total of 11 unsaturated-zone samples (6 from the West Selenium Area, 3 from the Acid Plant Area, and 2 from the Speiss-Dross Area) and 24 saturated-zone samples (11 from the West Selenium Area, 10 from the Acid Plant Area, and 3 from the Speiss-Dross Area) were analyzed using the leach testing protocols (see Section 2.3 for description of sample selection). Leachable metals results for unsaturated-zone samples are summarized in Table 3-3, and saturated-zone leach test results are summarized in Table 3-4. Maximum saturated-zone leachate concentrations of arsenic, cadmium, and selenium at each boring are shown on Figure 3-1.

Leachable concentrations were measured using two different test procedures (SPLP and saturated paste) to simulate conditions of high and low liquid to solid ratios, respectively (Section 2.3). Previous leach testing on site soils has shown that concentrations in soil leachates can vary significantly with liquid to solid ratio; testing at multiple ratios allows for a more robust evaluation of potential impacts to groundwater loading and concentrations. In general, leach test results indicate that the highest leachable mass is observed under the high liquid:solid ratio conditions of the SPLP test, since there is more solvent (water) available to solubilize contaminants. Conversely, the highest leachable concentrations are observed under the low liquid:solid ratio conditions of the saturated paste leach test, since the lower amount of solvent (water) results in less dilution. In general, saturated paste tests may provide a more direct approximation of actual groundwater concentrations resulting from soil leaching, since the liquid:solid ratio of about 0.2:1 is likely more representative of in situ aquifer conditions.

Leach tests on unsaturated-zone soils were conducted with the typical leaching solutions used for the SPLP test (synthetic precipitation). Leach tests on saturated-zone samples were conducted using the standard methodology for these two methods, but the typical leach solutions were replaced with groundwater from well DH-3, which is located upgradient of the former smelter. Leach testing with area groundwater was intended to provide a more

Table 3-3. Summary of Unsaturated Soil Sample Leaching Results

Parameter	West Se Area (n=6)		Acid Plant Area (n=3)		Speiss-Dross Area Area (n=2)	
	SPLP	Saturated Paste	SPLP	Saturated Paste	SPLP	Saturated Paste
As	0.006 - 1.3	<0.06 - 7.8	0.15 - 2.5	0.23 - 15	1.6 - 4.4	2.5 - 72
Cd	<0.001 - 0.017	0.011 - 0.11	<0.001 - 0.3	2.4 - 66	0.004 - 0.26	0.032 - 0.16
Se	0.001 - 0.61	0.03 - 15	0.054 - 0.39	0.45 - 3.8	0.008 - 0.069	0.36 - 1.7
Ba	<0.02 - 0.35	0.037 - 0.13	<0.02 - 0.15	0.051 - 0.33	0.2 - 0.48	0.24 - 0.63
Ca	4 - 11	17 - 150	2 - 9	92 - 350	5 - 8	12 - 56
Mg	2 - 10	9 - 82	<1 - 2	18 - 80	2 - 6	11 - 13
Na	<100	<20 - 250	<100	38 - 41	<100	160 - 300
K	<1 - 8	4 - 10	1 - 2	21 - 24	4 - 5	10 - 57
HCO3	<4 - 48	60 - 110	7 - 48	21 - 30	46 - 54	60 - 210
SO4	<1 - 30	31 - 936	16 - 33	503 - 1340	17 - 20	59 - 181
Cl	<1	4 - 15	<1	3 - 5	<1	6 - 10

NOTES: n = number of sample results
All concentrations in mg/L

Table 3-4. Summary of Saturated Soil Sample Leaching Results

<i>Laboratory-Reported Leach Concentrations</i>							
Parameter	Initial Leach Solution	West Se Area (n=11)		Acid Plant Area (n=10)		Speiss-Dross Area Area (n=3)	
		Final SPLP	Final Saturated Paste	Final SPLP	Final Saturated Paste	Final SPLP	Final Saturated Paste
As	0.010	0.005 - 0.19	0.019 - 0.51	0.017 - 1.9	0.038 - 14	0.014 - 0.77	0.071 - 53
Cd	<0.001	<0.001 - 0.002	0.008 - 0.28	<0.001 - 2.7	0.065 - 120	<0.001 - 0.36	0.091 - 15
Se	0.001	0.003 - 0.082	0.084 - 5.3	0.002 - 0.31	0.007 - 1.6	0.001 - 0.027	0.005 - 1.6
Ba	0.072	0.026 - 0.053	0.042 - 0.37	0.036 - 0.067	0.040 - 0.19	0.042 - 0.049	0.053 - 0.42
Ca	64	47 - 64	56 - 590	43 - 57	16 - 320	39 - 55	16 - 180
Mg	14	15 - 17	21 - 140	12 - 14	5 - 57	11 - 14	12 - 47
Na	22	54 - 72	52 - 210	57 - 95	26 - 80	61 - 90	31 - 360
K	5	5 - 6	8 - 19	5 - 7	5 - 31	5 - 8	5 - 72
HCO3	210	230 - 270	72 - 150	200 - 290	12 - 55	240 - 260	24 - 380
SO4	71	85-117	203-1290	80 - 106	79 - 1090	83 - 100	125 - 1550
Cl	13	13 - 22	17 - 400	12 - 14	6 - 28	13 - 14	8 - 18

NOTES: n = number of sample results
All concentrations in mg/L

<i>Corrected Net Leach Leach Concentrations</i>							
Parameter	Initial Leach Solution	West Se Area (n=11)		Acid Plant Area (n=10)		Speiss-Dross Area Area (n=3)	
		SPLP Net Leached	Saturated Paste Net Leached	SPLP Net Leached	Saturated Paste Net Leached	SPLP Net Leached	Saturated Paste Net Leached
As	0.010	0 - 0.18	0 - 0.49	0 - 1.9	0 - 14	0.004 - 0.67	0 - 43
Cd	<0.001	0 - 0.002	0.008 - 0.28	0 - 2.7	0.06 - 120	0 - 0.36	0.09 - 14.7
Se	0.001	0 - 0.077	0 - 5.1	0.001 - 0.31	0.007 - 1.6	0.00001 - 0.026	0.004 - 1.6

NOTES: n = number of sample results
All concentrations in mg/L
Corrected net leach concentrations have been corrected based on initial concentration in leach solution (DH-3 groundwater) and initial concentration in residual soil moisture (obtained from groundwater samples)
Net leached result of 0 indicates one or more samples showed no net leaching

realistic simulation of leaching behavior under actual field conditions. Note that, due to the presence of arsenic and selenium in the groundwater leach solutions and in residual soil moisture within the saturated-zone samples, corrected (net) leaching concentrations were calculated for arsenic and selenium in these soils to differentiate between the mass initially present in the leaching solution and the mass actually leached from the soil itself. Corrected net leach concentrations, which are slightly lower than the laboratory-reported concentrations in the leach solution, are included in Table 3-4. For saturated-zone soils, the following discussion of leaching results references the corrected net leach concentrations.

3.3.1 West Selenium Area Leaching Results

3.3.1.1 Unsaturated Zone Soils

Arsenic concentrations observed in unsaturated soil leach tests (SPLP and saturated paste) ranged from 0.006 to 7.8 mg/L (Table 3-3), similar to the range of less than 0.005 mg/L to 1.5 mg/L observed during the 2014 SAI. The highest arsenic leach concentration observed was from boring EHSB-15, and was obtained from a sample with an unusually elevated total arsenic concentration for this area (71 mg/kg). The unsaturated-zone arsenic leach concentration for this boring is anomalously elevated compared with other West Selenium Area unsaturated-zone samples (<0.005 to 0.37 mg/L). The lower arsenic leachate concentrations of the majority of West Selenium Area unsaturated-zone soil samples are consistent with the relatively low groundwater arsenic concentrations typical of this area. As noted in the 2014 SAI Report (Hydrometrics, 2015a), unsaturated-zone soils in this area generally leach a relatively low percentage of total arsenic, indicating that overall the arsenic mass in the West Selenium Area unsaturated zone is relatively unavailable for partitioning to groundwater.

Selenium concentrations observed in unsaturated soil leach test solutions ranged from 0.001 to 0.61 mg/L in SPLP tests and 0.03 to 15 mg/L in saturated paste tests (Table 3-2). These leachate concentrations are relatively high, particularly the saturated paste tests, and are consistent with the 2014 SAI leach test results for this area (0.007 to 1.1 mg/L in SPLP tests and 0.13 to 33 mg/L in saturated paste tests). The saturated paste results are similar to or higher than selenium concentrations historically observed in West Selenium Area groundwater (1 to 8 mg/L). In contrast to arsenic, larger fractions of the total soil selenium in West Selenium Area unsaturated soil samples were leached during both 2014 and 2015 testing, indicating that selenium is relatively soluble in unsaturated-zone soils. For example, a sample from boring EHSB-15 with 7 mg/kg total selenium generated a saturated paste leach concentration of 12 mg/L; given the amounts of soil and water used to generate the saturated paste, this equates to leaching of 29% of the soil selenium during the leach test. Based solely on comparison of leachable concentrations, it appears that leaching of unsaturated soils could theoretically generate the observed selenium (and arsenic) groundwater concentrations in the West Selenium Area. As noted in the 2014 SAI Report,

however (Hydrometrics, 2015a), the presence of asphalt ground cover and building footprints since the early 1990s, when the ore storage building was constructed, is believed to have inhibited infiltration and leaching of unsaturated-zone soils in this area. Completion of the ET Cover System will prevent future infiltration and leaching of selenium from the unsaturated zone to groundwater.

3.3.1.2 Saturated Zone Soils

The saturated-zone soil leach test results for West Selenium Area (Table 3-4) demonstrate that arsenic concentrations are relatively low and similar to the range cited above for unsaturated-zone soils (<0.005 to 0.37 mg/L), with saturated-zone leach results ranging from 0 mg/L (no net leaching indicated) to 0.49 mg/L. Net selenium concentrations from the saturated-zone leach tests ranged from 0 to 0.077 mg/L for SPLP tests, and 0 to 5.1 mg/L for saturated paste tests (Table 3-3). These leachate concentration ranges are similar to the ranges observed during 2014 SAI testing for this area (0 to 0.24 mg/L for SPLP tests and 0 to 9.3 mg/L for saturated paste tests), with the saturated paste concentrations very similar to the West Selenium Area groundwater concentrations. The 2014 and 2015 West Selenium Area saturated-zone leaching results indicate that selenium is generally highly available for leaching from these saturated soils, with leach rates of up to 48%. The relatively low total soil selenium concentrations (Section 3.2.1) and high leaching rate suggests that the West Selenium Area source material may “flush out” with time under current conditions.

3.3.2 Former Acid Plant Area Leaching Results

3.3.2.1 Unsaturated Zone Soils

Unsaturated-zone soils from the former Acid Plant area collected as part of the 2015 SAI leached 0.23 to 15 mg/L arsenic and 0.45 to 3.8 mg/L selenium using the saturated paste leach method, and slightly lower concentrations using the SPLP method (Table 3-3). Leached concentrations of cadmium were higher, with up to 66 mg/L leached using the saturated paste method. Leachable cadmium concentrations were higher in the Acid Plant than in the West Selenium or Speiss-Dross areas (Table 3-3); elevated cadmium concentrations in both soils and groundwater have been previously identified as indicative of historic Acid Plant process water and/or process sediment impacts. The cadmium leach concentration of 66 mg/L was observed on a sample from boring EHSB-22 (within the former Acid Plant settling pond footprint) at a depth of 17 to 18 feet below ground surface, about 3 feet above the current water table. These soils likely were saturated prior to implementation of the SPHC IM in 2011, and would remain unsaturated except possibly under high runoff or flooding conditions. Although these soils have been isolated from the groundwater flow system, they will be removed in 2016 as part of the Acid Plant Settling Pond source removal action. As noted above for the West Selenium Area, completion of the ET cover System and stabilization of groundwater levels through SPHC is intended to

address potential future contaminant leaching from unsaturated zone soils to groundwater throughout the Acid Plant Area and throughout the former smelter.

3.3.2.2 Saturated Zone Soils

Similar to unsaturated-zone soils, some of the saturated-zone soil samples from the former Acid Plant area leached high concentrations of arsenic (0 to 14 mg/L saturated paste), cadmium (0.06 to 120 mg/L saturated paste), and selenium (0.007 to 1.6 mg/L saturated paste) (Table 3-4). Inspection of results for individual soil borings, however, shows that for arsenic, one sample showed a net leach concentration of 14 mg/L and the other nine samples tested all showed no net leaching. It is possible that the acidic soil pH conditions in Acid Plant area samples resulted in decreased arsenic leachability during the 2015 SAI leach tests. Acidic soil pH conditions also increase cadmium leachability, and high leachate concentrations of cadmium were measured in the majority of Acid Plant area samples, with average saturated paste leach concentrations of 19.3 mg/L and a maximum concentration of 120 mg/L.

Although Acid Plant soils had the highest average soil selenium concentrations of all 2015 SAI samples, with an average of 9.3 mg/kg and a maximum of 59.7 mg/kg (Section 3.2.1), the leachable concentrations of 0.007 to 1.6 mg/L (Table 3-4) were similar to those observed for the Speiss-Dross area (0.004 to 1.6 mg/L), and were lower than those observed in the West Selenium Area (0 to 5.1 mg/L). Mass leaching rate calculations for the highest concentration selenium leach test (1.6 mg/L) from the Acid Plant area shows that this sample, with a total selenium concentration of 45.1 mg/kg, leached about 1% of the total selenium during the leach test. These leach test results suggest that, similar to the Speiss-Dross area soils discussed in Section 3.3.3.2, geochemical conditions in the former Acid Plant area currently limit selenium leaching and loading to groundwater.

3.3.3 Speiss-Dross Area Leaching Results

3.3.3.1 Unsaturated Zone Soils

Unsaturated-zone soil samples from the Speiss-Dross area collected during the 2015 SAI showed leach test arsenic concentrations of 1.6 to 4.4 mg/L under SPLP conditions, and 2.5 to 72 mg/L using saturated paste methods (Table 3-3). Observed leachate concentrations were higher than the 0.58 to 1.0 mg/L results obtained during the 2014 SAI for North Plant Arsenic area soils (Hydrometrics, 2015a). As noted in Section 3.2.2, arsenic in the North Plant Arsenic area was historically derived from primary sources (process water and material leaching) in the Speiss-Dross Area. The highest unsaturated-zone leach concentration of 72 mg/L arsenic was from a sample from boring EHSB-27 north of the slurry wall at a depth of 33.5 to 34.5 feet, or about 3 to 4 feet above the current water table. This interval was likely saturated prior to implementation of the SPHC IM in 2011. The other unsaturated-zone

sample from the Speiss-Dross area leached an arsenic concentration of 2.5 mg/L, slightly higher than but similar to the 2014 SAI results for this area.

Unsaturated-zone selenium leach test concentrations for the Speiss-Dross area soils ranged from 0.008 to 0.069 mg/L for the SPLP test and 0.36 to 1.7 mg/L for the saturated paste test (Table 3-3). Selenium concentrations in leachate from the 2015 SAI samples were also higher than those observed in North Plant Site Arsenic area soils from the 2014 SAI, which were all below the laboratory reporting limit (<0.005 mg/L). These results indicate that unsaturated-zone leachable contaminant concentrations are higher in the Speiss-Dross area (a former primary source area) than in the area downgradient (the North Plant Site Arsenic area). However, given the typical groundwater arsenic concentrations in the North Plant Site of 10 to 30 mg/L, the groundwater arsenic concentrations at boring EHSB-27 (well DH-79) of about 40 to 45 mg/L, and the relative magnitude of arsenic concentrations in leachate from formerly saturated soil (72 mg/L) compared to unsaturated-zone soil (0.5 to 2.5 mg/L), leaching of unsaturated-zone soils is unlikely to be a significant current source of arsenic or selenium loading to groundwater in the Speiss-Dross area.

3.3.3.2 Saturated Zone Soils

Saturated-zone leach test results for the Speiss-Dross area are presented in Table 3-4. Net leach concentrations of arsenic ranged from 0.004 to 0.67 mg/L for SPLP and 0 to 43 mg/L for saturated paste. For comparison, saturated-zone samples from the North Plant Site Area tested during the 2014 SAI and the Phase II RFI showed SPLP leach concentrations of 0.21 to 2.8 mg/L, and saturated paste concentrations of 0 to 17 mg/L. Thus, leach testing results for this area suggest that leaching of saturated-zone soils can generate leachate arsenic concentrations that are on the same order as groundwater concentrations in the North Plant Site (10 to 30 mg/L). The slightly higher leachable concentrations for 2015 boring EHSB-27 (43 mg/L arsenic) compared with 2014 SAI North Plant Site area soils (0 to 17 mg/L arsenic) may be attributable to the proximity of EHSB-27 to the primary Speiss-Dross source area, where arsenic loading to groundwater originated as process water releases.

Leach tests on saturated-zone samples from the Speiss-Dross area had up to 14.7 mg/L cadmium leached under saturated paste conditions (Table 3-4). The sample leaching the highest cadmium concentration was from boring EHSB-26, west of the Speiss-Dross slurry wall in the former speiss handling area (Figure 2-1). This sample also had an elevated total cadmium concentration (591 mg/kg); however, saturated paste leach concentrations of arsenic (0 mg/L) and selenium (0.006 mg/L) from the same sample were low. While arsenic and selenium are the primary site-related constituents of concern due to their occurrence in off-site groundwater at concentrations above applicable groundwater standards, cadmium is present in on-site groundwater at concentrations up to 5 mg/L in some locations (particularly in areas associated with former Acid Plant area impacts, as noted above in Section 3.3.2).

Selenium leach tests on saturated-zone soils in the Speiss-Dross area (Table 3-4) had concentrations of 0.00001 to 0.026 mg/L under SPLP conditions and 0.004 to 1.6 mg/L under saturated paste conditions. These results were higher than selenium leaching observed for 2014 SAI soils from the North Plant Site area, which had low but detectable net leach concentrations of selenium, ranging from 0 to 0.008 mg/L under SPLP test conditions and 0 to 0.11 mg/L under saturated paste conditions. 2014 SAI mass leaching rates for selenium in the North Plant Site Area saturated soils ranged from 0.4% to 16%, generally lower than the leaching rates in the West Selenium Area saturated-zone soils (9% to 48%). Similarly, the saturated-zone sample that generated the highest selenium leach concentration for the Speiss-Dross area in 2015 (1.6 mg/L) showed a mass leaching rate of 9% based on a total soil selenium concentration of 3.2 mg/kg, compared with the 48% leaching rate of a 3.5 mg/kg sample calculated for the highest saturated-zone leach sample from the West Selenium Area (Section 3.3.1.2). The lower leachability of selenium in the North Plant Site may be related to redox conditions, which are reducing in the North Plant Site Area and thus restrict selenium mobility, in contrast to the West Selenium Area.

The 2015 SAI selenium leaching results for the Speiss-Dross area soils are consistent with previous results for nearby and downgradient soil boring locations, including 2014 SAI borings EHSB-8 and EHSB-9, and Phase II RFI boring RFI2SB-20, which may be significant in terms of potential future groundwater impacts. Currently, groundwater selenium concentrations throughout most of the North Plant Site Area are typically below minimum reporting limits (<0.001 mg/L), and both the low selenium concentrations and high arsenic concentrations in this area appear to be related to the effects of petroleum-impacted soils and reducing conditions in the aquifer on contaminant mobility. Selenium leaching concentrations observed as part of the 2014 and 2015 SAIs and the Phase II RFI suggest some potential for remobilization of selenium in this area if geochemical conditions are altered, either through remedial actions or through natural reoxidation of groundwater as the effects of the historic petroleum release(s) are slowly attenuated over time.

The results from the three North Plant Soils Area borings EHSB-8, EHSB-9, and RFI2SB-20, and Speiss-Dross area boring EHSB-27 can be summarized as follows:

Location	Total Se (mg/kg)	Net Leached Se (mg/L)
EHSB-8	0.5 – 1.8	0.067 – 0.11
EHSB-9	<0.5	0 – 0.042
RFI2SB-20	17	0.6
EHSB-27	0.7 – 4.8	0.004 – 1.6

Overall, the Phase II RFI, 2014 SAI, and 2015 SAI North Plant Soils and Speiss-Dross area selenium data suggest some potential for selenium release under changing geochemical conditions, particularly in the area closer to the former Speiss-Dross handling and processing area and the current Speiss-Dross slurry wall. Based on the available results this potential should be considered as part of any review of groundwater remedies in this area of the former smelter.

3.4 NORTH PLANT DOWNGRADIENT AREA ADSORPTION TEST RESULTS

As described in Section 2.4.2, selected soil samples from downgradient North Plant Site borings EHSB-18 and EHSB-19 were tested for arsenic adsorption properties using batch adsorption testing procedures similar to those previously applied to East Helena project soil samples. One of the primary objectives of the 2015 SAI was to evaluate the potential for saturated soils downgradient of the North Plant Site Arsenic source area to leach and/or adsorb arsenic, and consequently to act as an arsenic source or sink. As noted in Section 3.2.2, a comparison of total arsenic concentrations measured in soil samples from 2015 borings EHSB-18 and EHSB-19 with results obtained 13 to 29 years ago from adjacent soil borings suggested that saturated-zone total soil arsenic concentrations have increased in this area over time. This result is consistent with observed groundwater data, which indicates that removal of arsenic from groundwater to aquifer materials occurs downgradient of the former smelter, limiting migration of arsenic and the overall size of the groundwater arsenic plume.

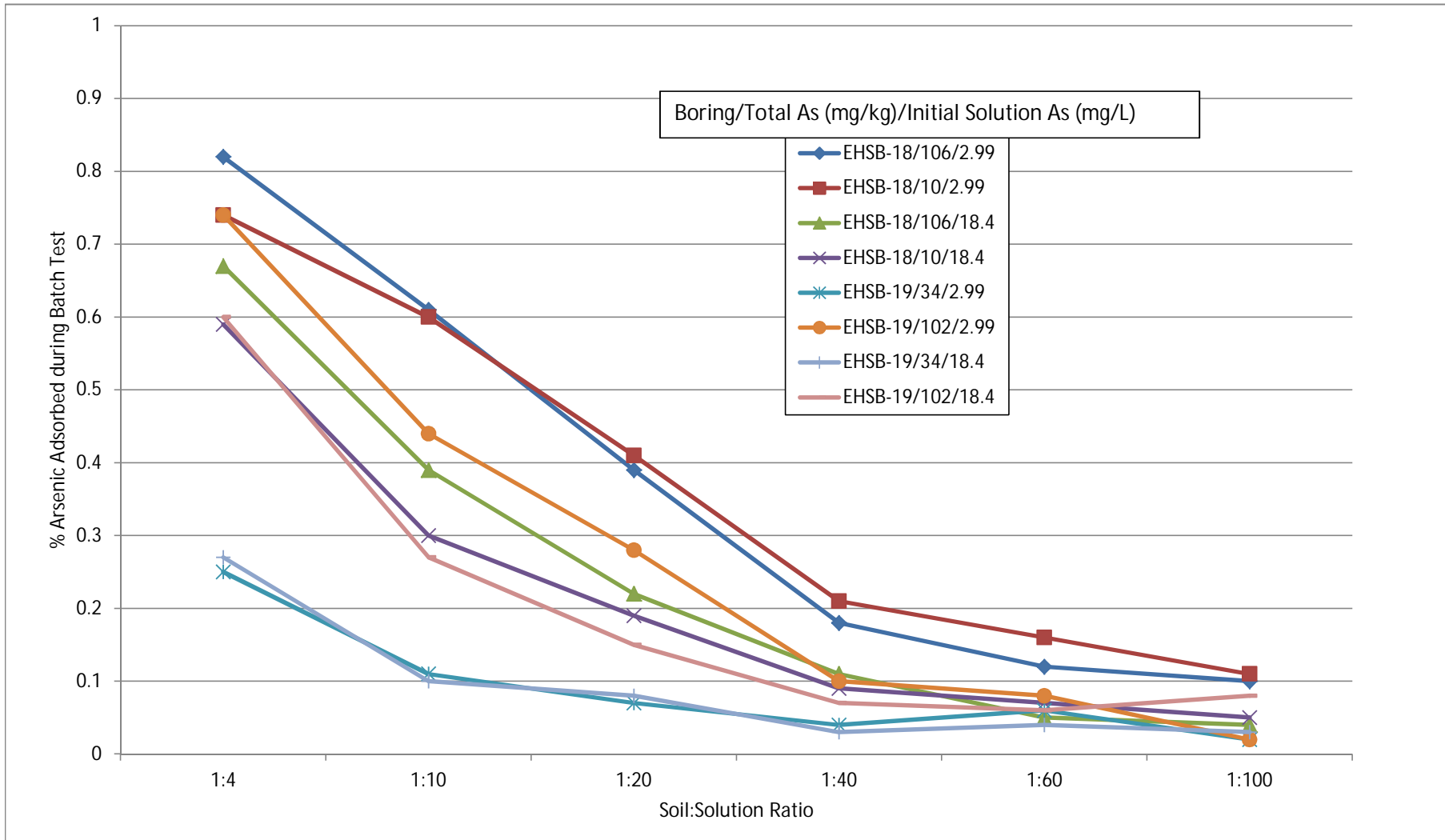
While the total arsenic concentrations in the vicinity of borings EHSB-18 and EHSB-19 (maximum concentrations of about 100 mg/kg) have increased over the past several decades, they remain lower than concentrations observed upgradient within the North Plant Site Arsenic source area itself, which are typically on the order of 200 to 500 mg/kg. Thus, the total arsenic concentrations observed at borings EHSB-18 and EHSB-19 indicate that (1) soils downgradient of the North Plant Arsenic source area have removed and continue to remove arsenic from groundwater over time through adsorption and/or coprecipitation (as evidenced by increasing total concentrations in soils over time and decreasing concentrations in groundwater with downgradient distance), and (2) these soils may have additional capacity for arsenic removal (as evidenced by higher total arsenic concentrations in the North Plant Arsenic source area compared to downgradient aquifer materials in the area of borings EHSB-18 and EHSB-19). The 2015 SAI data also suggests that the North Plant Arsenic area source material does not extend into East Helena.

The results of the 2015 batch arsenic adsorption tests are summarized in Table 3-5 and on Figure 3-2. Complete data tables and laboratory analytical reports for the adsorption testing are in Appendix E. All soil samples tested showed adsorption of arsenic from solution, with the maximum adsorption rates (highest percent of arsenic adsorbed from solution) observed at the highest soil:solution ratio of 1:4. Arsenic adsorption rates at the 1:4 soil:solution ratio

Table 3-5. Summary of Batch Arsenic Adsorption Test Results

Soil Boring	Depth Interval (ft bgs)	Total As (mg/kg)	Initial Solution As (mg/L)	% As Adsorbed at Various Soil:Solution Ratios						Langmuir Adsorption Constants		Langmuir Regression Fit
				1:4	1:10	1:20	1:40	1:60	1:100	K _L	M	R ²
EHSB-18	24-25'	106	2.99	82%	61%	39%	18%	12%	10%	10.8	133	1.0
EHSB-18	35-37'	10	2.99	74%	60%	41%	21%	16%	11%	0.55	62	0.92
EHSB-18	24-25'	106	18.4	67%	39%	22%	11%	5%	4%	1.4	180	0.97
EHSB-18	35-37'	10	18.4	59%	30%	19%	9%	7%	5%	0.04	187	0.36
EHSB-19	40-42'	34	2.99	25%	11%	7%	4%	6%	2%	1.1	51	0.66
EHSB-19	50-51'	102	2.99	74%	44%	28%	10%	8%	2%	NC	NC	NC
EHSB-19	40-42'	34	18.4	27%	10%	8%	3%	4%	3%	NC	NC	NC
EHSB-19	50-51'	102	18.4	60%	27%	15%	7%	6%	8%	0.24	208	0.62

NOTES: NC = adsorption parameters not calculated due to poor data fits (negative slope and/or intercept terms).

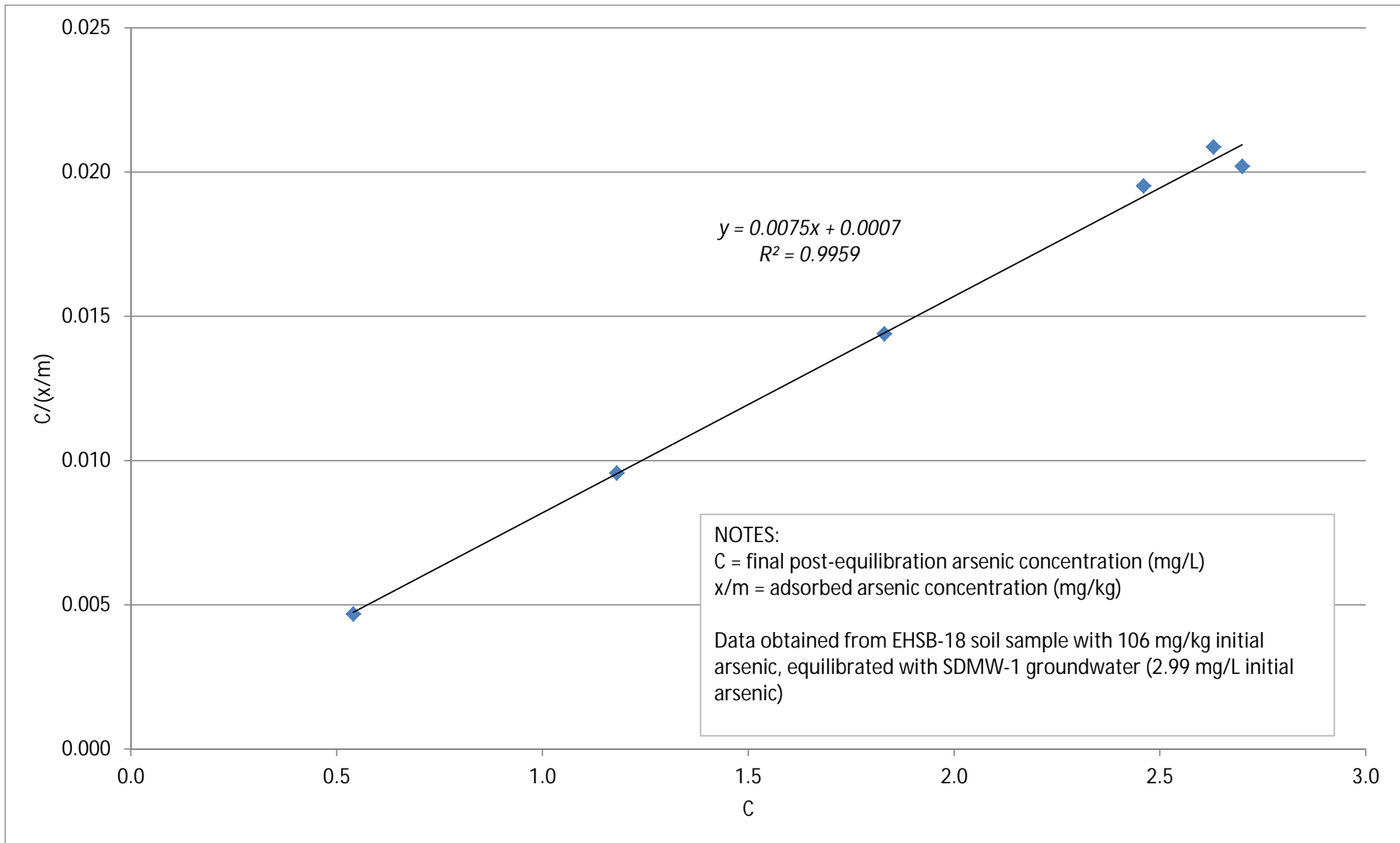


	2015 SUPPLEMENTAL SOURCE AREA INVESTIGATION FORMER EAST HELENA SMELTER	BATCH ARSENIC ADSORPTION AT VARYING INITIAL SOIL/GROUNDWATER ARSENIC CONCENTRATIONS	FIGURE
			3-2

ranged from 25% to 82%, and the percentage of arsenic removed from solution decreased as the soil:solution ratio for a particular soil/groundwater combination decreased. At the 1:10 ratio, arsenic adsorption rates ranged from 11% to 61%, with additional decreasing percent arsenic adsorption at the 1:20 ratio (7% to 41%), 1:40 ratio (3% to 21%), 1:60 ratio (4% to 16%), and 1:100 ratio (2% to 11%). Overall, the observed arsenic adsorption behavior appeared relatively similar for most soil/groundwater combinations (Figure 3-2); however, one soil sample showed substantially lower arsenic adsorption (about 25%) at the 1:4 soil:solution ratio than the other soils (ranging from 59% to 82% adsorption). This sample, from boring EHSB-19 and showing an initial total arsenic concentration of 34 mg/kg, also showed lower total iron and manganese soil concentrations (11,500 mg/kg and 222 mg/kg, respectively) than the other soil samples tested (16,000 to 24,400 mg/kg iron and 432 to 689 mg/kg manganese). Since iron and manganese phases are key adsorptive components of soils, it is possible that the reduced arsenic adsorption exhibited by the EHSB-19 sample is related to fewer adsorption sites as implied by the lower concentrations of iron and manganese.

The batch adsorption test data for arsenic was also fitted to various adsorption isotherms in accordance with the procedures outlined in EPA (1992), including linear, Freundlich, and Langmuir-type adsorption curves (Appendix E). In general, isotherm construction consists of plotting adsorbed arsenic versus arsenic concentrations remaining in solution after equilibration, fitting lines or curves to the plot, and calculating adsorption constants from the properties of the observed relationship. Previous testing during the Phase II RFI suggested that Langmuir-type isotherms were appropriate for describing arsenic adsorption behavior at the site, and the groundwater fate and transport model developed for the East Helena project (NewFields, 2015) summarized the Phase II RFI-based Langmuir adsorption constants used to model arsenic adsorption (and retardation). The 2015 SAI arsenic adsorption data also showed good fits to Langmuir-type isotherms in most cases, with coefficient of determination (R^2) values for the Langmuir plot ranging from 0.36 to 1.0, and averaging 0.76 (Table 3-5). For two of the adsorption data sets, Langmuir isotherms and constants could not be constructed due to poor fitting parameters (negative slope and/or intercept terms). Figure 3-3 shows an example Langmuir plot for one of the adsorption tests using a sample from boring EHSB-18, with a total initial soil arsenic concentration of 106 mg/kg and an initial solution arsenic concentration of 2.99 mg/L. Note that the initial total soil arsenic was assumed to be reactive and available for equilibration with the solution, and was thus added to the amount removed from solution to give the final adsorbed arsenic concentration.

The 2015 SAI adsorption data (Table 3-5) yielded Langmuir coefficients (K_L) ranging from 0.04 to 10.8 L/kg, with an average of 2.36 L/kg; the maximum adsorption capacity terms (M) ranged from 51 to 208 mg/kg, with an average of 137 mg/kg. For the adsorption tests showing the best Langmuir-type isotherm fits (R^2 values greater than 0.9), K_L values ranged



	2015 SUPPLEMENTAL SOURCE AREA INVESTIGATION FORMER EAST HELENA SMELTER	EXAMPLE LANGMUIR ISOTHERM FOR ARSENIC	FIGURE
			3-3

from 0.55 to 10.8 L/kg and M values ranged from 62 to 180 mg/kg (Table 3-5). These results are generally comparable to the values derived from the Phase II RFI adsorption testing and utilized in the calibration of the groundwater fate and transport model (NewFields, 2015). The Langmuir coefficient used in NewFields' model calibration was 2.16 L/kg, and the maximum adsorption capacity term was 54.13 mg/kg. The 2015 SAI adsorption constant values presented in Table 3-5 support the previous fate and transport model setup and have been incorporated into updated groundwater predictive simulations.

3.5 GROUNDWATER SAMPLING RESULTS

Results of the soil boring and monitoring well groundwater-quality samples collected during the 2015 SAI are presented in Table 3-6 and are summarized on Figure 3-4. Laboratory reports for screening-level groundwater samples are provided in Appendix F. Overall, the groundwater results obtained from 2015 SAI soil borings and monitoring wells were consistent with results from area monitoring wells observed during recent sampling events, and with results from screening-level groundwater sampling conducted as part of the 2014 SAI. In the West Selenium Area, higher selenium concentrations were observed at borings EHSB-11 (4.675 mg/L) and EHSB-17/DH-82 (3.75 mg/L) along the selenium plume axis north of existing wells DH-8, DH-78, and DH-66, along with elevated sulfate (1190 to 1300 mg/L) and chloride (199 to 231 mg/L) concentrations. Boring EHSB-15, installed near existing well DH-8, had selenium (1.20 to 1.45 mg/L), sulfate (1830 mg/L) and chloride (680 mg/L) concentrations consistent with well DH-8 results. The higher concentration selenium plume is bounded by lower selenium concentrations at boring EHSB-10 (0.371 mg/L) and EHSB-13 (0.002 mg/L) on the east, and on the west by the ash/clay ledge that represents the shallow aquifer (and selenium plume) boundary. To the south, higher selenium concentrations were observed at 2015 SAI boring EHSB-14 (0.508 mg/L) and 2014 SAI boring EHSB-6 (1.36 mg/L), with a decreasing concentration further south at 2014 SAI boring EHSB-3 (0.197 mg/L). Therefore, the high concentration selenium plume appears to originate in the vicinity of well DH-8, 2014 SAI boring EHSB-6, and 2015 SAI boring EHSB-14 (Figure 3-4). The plume migrates downgradient to wells DH-78, DH-66, and 2015 SAI borings EHSB-11 and EHSB-17 (well DH-82), and is laterally constrained by the ash/clay layer to the west and the higher arsenic/lower redox plume to the east.

Former Acid Plant area borings and wells EHSB-22, EHSB-23, EHSB-24/DH-81, and EHSB-25/DH-80 all showed high arsenic concentrations (4.78 to 14.7 mg/L) and low selenium concentrations (<0.001 to 0.008 mg/L) in groundwater (Table 3-6). The groundwater data collected during the 2015 SAI and the ongoing CAMP groundwater monitoring events indicates that some arsenic loading to groundwater occurs upgradient of the former Acid Plant, with 4.78 mg/L arsenic observed at boring EHSB-24/DH-81, and additional arsenic loading occurs through the former Acid Plant Settling Pond area (Figure

Table 3-6. Screening Level and Monitoring Well Groundwater Sampling Results

Location ⁽¹⁾	Sample Date	Arsenic	Cadmium	Selenium	Sulfate	Chloride
EHSB-10	6/25/2015	0.025	NA	0.371	1170	251
EHSB-11	6/29/2015	0.076	NA	4.675	1190	231
EHSB-12/DH-83	7/14/2015	0.002	0.003	0.701	1500	430
EHSB-13	7/1/2015	0.002	NA	0.004	151	11
EHSB-14	6/30/2015	0.027	NA	0.508	1450	332
EHSB-15A*	7/2/2015	0.054	NA	1.20	NA	NA
EHSB-15B*	7/2/2015	0.050	NA	1.45	1830	680
EHSB-17/DH-82	7/14/2015	0.166	<0.001	3.75	1170	164
EHSB-22	7/9/2015	6.9	NA	<0.001	134	7
EHSB-23	7/10/2015	12.25	0.006	<0.001	194	7
EHSB-24/DH-81	7/13/2015	4.78	3.6	0.008	272	8
EHSB-25/DH-80	7/13/2015	14.7	2.4	0.008	373	9
EHSB-26	6/23/2015	0.981	0.556	0.002	225	12
EHSB-27/DH-79	7/13/2015	44.5	0.007	0.044	625	42

NOTES: (1) Locations with DH-series designations completed and sampled as monitoring wells; screening-level groundwater samples collected from other locations.
 NA = not analyzed
 All concentrations in mg/L
 *Water samples bailed from different depths in boring EHSB-15; EHSB-15A bailed from deeper (ash/clay) interval and EHSB-15B bailed after retracting drill casing ~10 feet and exposing alluvial sediments.



V:\10022\GIS\SourceInventory\2015 Investigation\Report\Figure 3-4.mxd

3-4). Following the southeast to northwest direction of groundwater flow, groundwater arsenic concentrations increase from about 4.8 mg/L south (upgradient) of the former Acid Plant settling pond, to about 16 mg/L at well DH-19R north (downgradient) of the former settling pond, and then remain relatively stable to well DH-81 located further north and downgradient of the HDS building (Figure 3-4). Overall, this data suggests that soils within the former settling pond area remain a significant localized source of arsenic loading to groundwater. In addition to arsenic, cadmium concentrations were relatively high at the two newly installed monitoring wells (2.4 mg/L at DH-80 and 3.6 mg/L at DH-81), indicating ongoing cadmium as well as arsenic loading to groundwater in this area. The settling pond area soils are scheduled for removal in 2016 under the Acid Plant Area source removal action.

2015 SAI boring EHSB-27 (well DH-79) installed downgradient (north) of the Speiss-Dross slurry wall has an arsenic concentration of about 45 mg/L (Table 3-6). This concentration is lower than groundwater arsenic concentrations within the slurry wall itself, which remain on the order of 100 mg/L, but higher than the maximum arsenic concentrations currently observed in North Plant Site arsenic source area wells such as DH-17 (about 30 mg/L) and DH-64 (about 18 mg/L). The selenium (0.044 mg/L) and cadmium (0.007 mg/L) concentrations at well DH-79 are relatively low. The potential impact of groundwater leakage through the slurry wall and the associated arsenic load on the downgradient arsenic plume appears limited, based on the results of pump tests conducted in this area (discussed below in Section 3.6); however, ongoing evaluations are being conducted to further assess these potential effects.

Groundwater collected from boring EHSB-26 in the former speiss handling area showed moderate concentrations of arsenic (0.981 mg/L) and cadmium (0.556 mg/L), and a low selenium concentration (0.002 mg/L) (Table 3-6). The arsenic and cadmium concentrations, while indicating former smelter site impacts, are lower than those observed in other primary site source areas such as the former Acid Plant (15 mg/L arsenic, 2 to 4 mg/L cadmium) and the North Plant Site Arsenic area (15 to 30 mg/L arsenic); therefore, the groundwater concentrations in the former speiss handling area are not considered indicative of a current loading source to groundwater.

3.6 SPEISS-DROSS SLURRY WALL EVALUATION

The Speiss-Dross slurry wall was constructed in 2007 to isolate some of the more highly contaminated soils on the plant site from the shallow upper groundwater system. The slurry wall is constructed of a soil-bentonite slurry, is three feet thick, and extends from ground surface to a minimum of two feet into the low permeability ash/clay layer forming the base of the contaminated upper aquifer. Total depths range from 35 feet in the southwest corner of the wall to 47 feet in the northeast corner. Groundwater arsenic concentrations inside the

slurry wall are as high as 90 mg/L and represent the highest arsenic concentrations on the former smelter site. The 2015 SAI included a preliminary evaluation of the slurry wall effectiveness at containing the high arsenic concentration groundwater inside the wall.

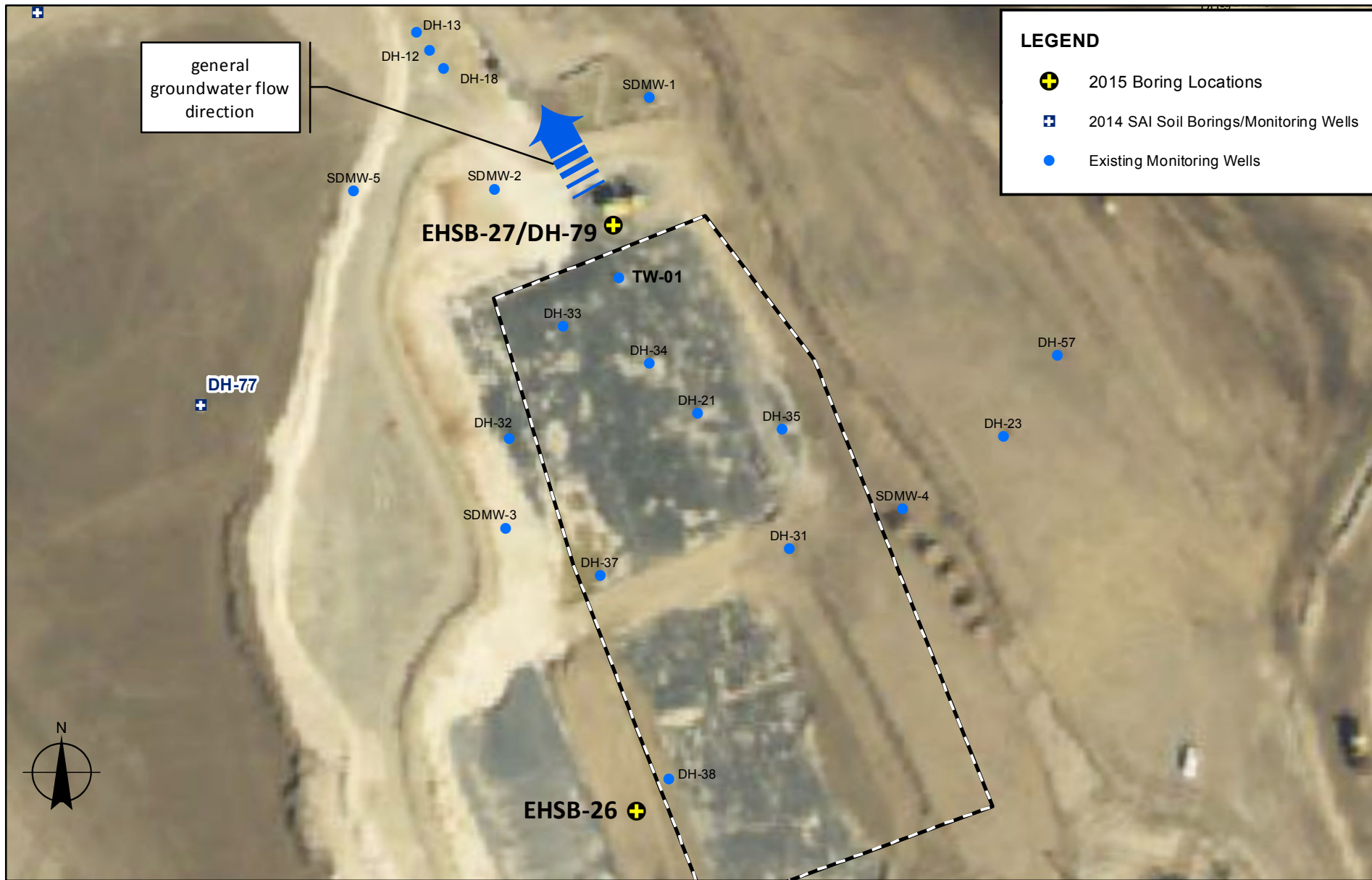
Soil boring EHSB-27, located immediately north (downgradient) of the slurry wall (Figure 3-5), was completed as a monitoring well (DH-79) to aid in the slurry wall effectiveness evaluation. Besides providing groundwater quality data immediately downgradient of the wall, DH-79 served as an observation well during pumping of well TW-01 located inside the slurry wall approximately 40 feet south of DH-79 (Figure 3-5). A water-level decline at DH-79 in response to pumping TW-01 could indicate hydrologic continuity across, and leakage through, the slurry wall.

Pumping of well TW-01 started on July 28 and ended on August 1, 2015 for a total pumping duration of 96.5 hours, and a constant pumping rate of 4.5 gpm. Wells TW-01 and DH-79 were both instrumented with pressure transducers for automatic water level-recording with water-level data recorded prior to, during, and after pumping. Water levels were also monitored at wells SDMW-1 and SDMW-2 north of the slurry wall (Figure 3-5). All other wells located within the slurry wall were either dry or had insufficient water for monitoring due to the SPHC-induced groundwater level declines.

After 96 hours of pumping, the water level in well TW-01 drew down to the pump intake or 7.6 feet below the pre-pumping water level. No corresponding water-level declines were recorded at exterior wells DH-79, SDMW-1 or SDMW-2. Based on the water level data collected during pumping, preliminary hydraulic conductivity estimates of the alluvial sediments near TW-01 are on the order of 20 feet/day. This value is low for typical former smelter site alluvial sediments and may reflect infilling of pore spaces with secondary mineral cements. Although pumping and water-level monitoring inside the slurry wall was inhibited by the generally low water levels (original plans included pumping TW-01 for up to two weeks), information collected during the preliminary evaluation indicates that the slurry wall provides an effective barrier to flow in the vicinity of TW-01/DH-79. Based on an assumed storativity of 0.15 for sandy silty gravel, water levels at DH-79 should have responded to pumping TW-01 within about three hours of pumping if the slurry wall was not present.

In addition to the water-level monitoring, groundwater samples were collected from DH-79 at the beginning and end of pumping to see if arsenic concentrations decreased in response to the slurry wall pumping, which could indicate that the relatively high arsenic concentrations in DH-79 were due to leakage from the slurry wall. Arsenic concentrations in well DH-79 are about 45 mg/L, intermediate to the 90 mg/L inside the slurry wall and the approximately 30 mg/L at the downgradient North Plant Site arsenic source area. As shown in Table 3-7, the arsenic concentrations were relatively unchanged during the pumping test.

V:\10022\GIS\SourceInventory\2015 Investigation\Report\Figure 3-5.mxd



2015 SUPPLEMENTAL SOURCE AREA INVESTIGATION FORMER EAST HELENA SMELTER	SLURRY WALL EVALUATION AREA MONITORING WELLS	FIGURE 3-5
--	--	--------------------------------

TABLE 3-7. SPEISS-DROSS SLURRY WALL EVALUATION GROUNDWATER QUALITY DATA

Site	Date	pH s.u.	TDS	Sulfate	Arsenic	Selenium	Iron	Sodium	Calcium
TW-01	7/28/15	9.3	2990	1310	95.6	0.038	0.09	967	12
	8/1/15	9.2	2880	1210	94.1	0.028	0.07	952	9
DH-79	7/28/15	9.2	1530	547	38.9	0.06	1.35	503	3
	8/1/15	9.1	1540	579	42.2	0.119	0.51	501	3

All concentrations mg/L unless otherwise noted. Metals concentrations are dissolved fraction. Full lab reports are included in Appendix G.

In summary, the 2015 Speiss-Dross slurry wall evaluation provides additional information regarding the performance of the slurry wall as a source control measure and indicates that the wall greatly limits flow through the enclosed highly contaminated soils as intended. Based on the results, potential leakage from the north (downgradient) end of the wall appears to have negligible impacts to downgradient water levels and quality. Although no water-level response was recorded at DH-79 during the slurry wall evaluation, some flux through and leakage from the wall is known to occur as evidenced by the seasonal and longer-term water-level fluctuations documented within the slurry wall wells. A more detailed evaluation of the Speiss-Dross slurry wall is planned for 2016.

4.0 2015 SAI SUMMARY AND CONCLUSIONS

Four primary groundwater contaminant source areas were further investigated during the 2015 SAI including the West Selenium Area, the North Plant Site Arsenic Area, the Former Acid Plant Area and the former Speiss-Dross Area. Findings and recommendations for each area include:

West Selenium Area:

- Similar to the 2014 SAI results, the 2015 SAI sampling identified low to moderate total selenium concentrations in saturated and unsaturated soils while leach test results indicate both soils are capable of leaching selenium concentrations similar to those observed in local groundwater.
- Based on the limited precipitation recharge potential due to impervious ground cover since the early 1990s, unsaturated zone soils are not considered to be a significant source of current selenium loading to groundwater. Saturated zone soils in the vicinity of soil borings EHSB-6 and EHSB-15 appear to be the most likely source of current loading. Based on information from the 2014 and 2015 SAIs, this primary source area encompasses approximately 0.75 acres in area and extends approximately 300 feet from south to north and 100 feet from east to west. The current saturated thickness in this area averages 5 feet.
- Based on the 2014 and 2015 SAI results, the total mass of selenium source material within the West Selenium Area aquifer matrix may be on the order of 60 kilograms. At current groundwater loading rates, the limited source material mass may be leaching out and could be exhausted within 10 years. Selenium concentrations trends, including up to 80% reductions in groundwater selenium concentration in the past two years, appear to support this conceptual model. The selenium mass calculations and leaching rates have been incorporated into the numerical groundwater fate and transport model.
- Completion of the ET Cover System will further reduce potential percolation through the unsaturated soils and associated selenium loading to groundwater.
- Based on the current conceptual model of limited source mass and potential exhaustion of source material within the next 10 years, and completion of the ET Cover System in 2016, no additional corrective actions are planned for the West Selenium Area at this time. Instead, detailed groundwater monitoring will continue within and downgradient of the West Selenium Area to confirm the current conceptual model or if additional source control measures are warranted in the West Selenium Area.

Former Acid Plant Area:

- The Acid Plant Area soils had the highest concentrations of arsenic, selenium and cadmium, and lowest pH of the four source areas investigated. Based on soil and groundwater concentration trends, the primary Acid Plant source material appears to be saturated soils within the former Acid Plant settling pond area, a known source of historic arsenic loading to groundwater. High cadmium concentrations also occur in area soils and groundwater.
- Groundwater level have declined 3 to 4 feet (due to the SPHC IM), desaturating certain high concentration soils in the Acid Plant Area; however, elevated concentrations of total and leachable arsenic and cadmium persist through the saturated zone and into the underlying ash/clay layer.
- Based on the current conceptual model of the former Acid Plant settling pond area, and the numerical contaminant fate and transport groundwater modeling utilizing the 2015 SAI data, mitigation of contaminated soils in the Acid Plant settling pond area would result in notable improvements to plant site groundwater quality. As a consequence, removal of the affected soils is planned for 2016. Continued lowering of the water table and completion of the ET Cover System are expected to further improve groundwater quality in the area.

Speiss-Dross Area:

- Two soil borings were completed within the Speiss-Dross area outside of the slurry wall, with one boring completed as a monitoring well. Speiss-Dross area soils were particularly elevated in arsenic, cadmium and lead, and had elevated pH (average 8.5) due to historic release of alkaline process waters.
- The groundwater arsenic concentration in newly installed monitoring well DH-79, located immediately north of the slurry wall, was 45 mg/L; intermediate to groundwater concentrations within (90 mg/L) and downgradient (30 mg/L) of the slurry wall.
- Based on the 2015 soil and groundwater test results as well as historic data, soils outside of the slurry wall do not appear to be a significant contributor to the downgradient contaminant plumes.
- The effectiveness of the slurry wall at controlling groundwater flow through the more highly contaminated interior soils was further evaluated in 2015 through groundwater pumping, water level, and water quality monitoring. Preliminary results indicate that the wall is functioning as intended with the groundwater and contaminant flux through the wall having a relatively insignificant impact on downgradient groundwater quality.

North Plant Arsenic Source Area:

- Two soil borings were drilled downgradient of the former smelter to further define the northern extent of the North Plant Site Arsenic Source Area and fate and transport of arsenic north of the site. These borings are referred to as the North Plant Downgradient borings.
- Total metals concentrations in the North Plant downgradient soil samples were generally the lowest recorded during the 2015 SAI, with average metals concentrations less than regional background levels. However, the 2015 arsenic concentrations were higher than concentrations recorded during drilling of adjacent wells more than a decade previous, indicating that the downgradient soils continue to adsorb arsenic from groundwater.
- Detailed arsenic adsorption testing was conducted on the downgradient soil samples with test results, in the form of arsenic adsorption constants, incorporated into the numeric groundwater contaminant fate and transport model.
- The 2015 SAI data supports the current conceptual model that the North Plant Arsenic Source Area does not extend northward off of the former smelter, and that soils north of the former smelter act as a sink for arsenic, thus retarding downgradient migration of the arsenic plume.
- Both the conceptual and numeric models indicate that additional source control measures beyond the currently planned IMs will reduce overall concentrations, but will not significantly reduce the areal extent of the 0.01 mg/L (the groundwater human health standard) arsenic plume. For this reason, additional source control measures are not proposed for the North Plant Site source area at this time. Groundwater monitoring will continue to document the groundwater response to the 2016 completion of the SPHC and ET Cover System IMs over the next few years, and to determine if additional source control measures are warranted.

5.0 REFERENCES

- ASARCO Consulting, Inc. (ACI), 2005. Phase I RCRA Facility Investigation Report, East Helena Facility. Prepared for ASARCO Inc. Revised July 2005.
- CH2M Hill, 2014. Former ASARCO East Helena Facility Corrective Measures Study Work Plan – 2014. Prepared for the Montana Environmental Trust Group, LLC. January 2014.
- CH2M Hill, 2015. Tier II Source Control Measure/Groundwater Remedy Evaluation – Phase 2 Results and Recommendations. Prepared for the Montana Environmental Trust Group, LLC. May 2015.
- Environmental Protection Agency (EPA), 1983. Methods for Chemical Analysis of Water and Wastes. EPA-600/14-79-020. Revised March 1983.
- Environmental Protection Agency (EPA), 1992. Technical Resource Document: Batch-Type Procedures for Estimating Soil Adsorption of Chemicals. EPA/530/SW-87/006-F. Office of Solid Waste and Emergency Response. April 1992.
- Essington, M.E., 2004. Soil and Water Chemistry: An Integrative Approach. Chapter 9, Oxidation-Reduction Reactions in Soils, pp. 459-469. CRC Press LLC, Boca Raton, Florida.
- Hydrometrics, Inc., 1990. Comprehensive Remedial Investigation/Feasibility Study for the ASARCO East Helena Smelter. Prepared for ASARCO, Inc. March 1990.
- Hydrometrics, Inc., 1999. Current Conditions/Release Assessment, East Helena Facility, September 1998, Revised January 1999.
- Hydrometrics, Inc., 2010a. Borehole Abandonment Plan for the Former ASARCO East Helena Facility. June 2010.
- Hydrometrics, Inc., 2010b. Draft Quality Assurance Project Plan for Environmental Data Collection Activities - East Helena Facility. May 2010.
- Hydrometrics, Inc., 2012. Upper Lake Drawdown Test Technical Memorandum. Prepared for Montana Environmental Trust Group. September 20, 2012.
- Hydrometrics, Inc., 2013. Project Report - Background Concentrations of Inorganic Constituents in Montana Surface Soils. Prepared for Montana Department of Environmental Quality. September 2013.
- Hydrometrics, Inc., 2014. Supplemental Source Area Characterization Work Plan for the Former East Helena Smelter. Prepared for Montana Environmental Trust Group. Revised November 2014.

- Hydrometrics, Inc., 2015a. 2014 Supplemental Contaminant Source Area Investigation at the Former East Helena Smelter (Final). Prepared for Montana Environmental Trust Group. February 2015.
- Hydrometrics, Inc., 2015b. 2015 Supplemental Source Area Characterization Work Plan – Former East Helena Smelter. Prepared for Montana Environmental Trust Group. June 2015.
- Montana Department of Environmental Quality (MDEQ), 2012. Circular DEQ-7 – Montana Numeric Water Quality Standards. Prepared by Water Quality Planning Bureau, Water Quality Standards Division. October 2012.
- Montana Environmental Trust Group, LLC, 2011. Phase II RCRA Facility Investigation Report. May 2011.
- NewFields, 2015. Technical Memorandum – Final Fate and Transport Model Design and Calibration, East Helena Site. Dated May 15, 2015.
- United States Department of Agriculture, 1954. Diagnosis and Improvement of Saline and Alkaline Soils, Agricultural Handbook 60. February 1954.
- United States District Court, 2012. District of Montana, First Modification to the 1998 Consent Decree. Civil Action No. CV 98-H-CCL. Case 6:98-cv-00003-CCL. Document 38. Filed January 17, 2012.
- U.S. Geological Survey, 2013. Geochemical and Mineralogical Data for Soils of the Conterminous United States. Data Series 801. 19 pp. Available at <http://pubs.usgs.gov/ds/801/>.














APPENDIX A

**SOIL BORING AND MONITORING
WELL COMPLETION LOGS**

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 36
 Location Description: W Selenium Area, NE of DH-8
 Northing: 860735.297 Easting: 1359465.412
 Elevation: 3917.3

Drilling Company: Boland Drilling
 Driller: Chris Tigart
 Drilling Method: Air Rotary with ODEX
 Drilling Fluids Used: None
 Purpose of Hole: Soil Sampling
 Hole Diameter (in): 4
 Total Depth Drilled (ft): 56
 Recorded By: Scott Mason

Remarks: Surface was ET cover fill material. Water was encountered at 38 feet.








DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 2.0' Granular Fill Dry, dark gray slag, angular to subangular
						2.0 - 2.5' Concrete Dry, concrete with rebar.
5	AEH-1506-144s	GRAB	6/25/2015		5	
	AEH-1506-145a	SS	6/25/2015	(blow counts: 7/3/5/6)		2.5 - 9.5' Granular Fill Dry to moist, gray-black-brown, well-graded clayey silty sandy gravel loam with rubble (brick) throughout.
	AEH-1506-146s	GRAB	6/25/2015		10	
10	AEH-1506-147s	SS	6/25/2015	SM (blow counts: 2/4/5/6)		9.5 - 15.0' Silty Sand Slightly moist, loose, well-graded, fine to coarse silty sand with up to 10% fine gravel.
	AEH-1506-148s	GRAB	6/25/2015		15	
15	AEH-1506-149s	SS	6/25/2015	GP		15.0 - 28.0' Sand and Gravel Dry to slightly moist, dense, sand and gravel with cobbles.
20	No Recovery	SS	6/25/2015	(blow counts: >50)	20	
25	No Recovery	SS	6/25/2015	(blow counts: >50)	25	
30	AEH-1506-150s	GRAB	6/25/2015	GM		28.0 - 28.5' Sand Slightly moist, brown, medium to coarse sand.
	AEH-1506-151s	SS	6/25/2015	GM (blow counts: >50)		28.5 - 32.0' Gravel and Sand Dry to slightly moist, hard, subround gravel with 10% silt and clay, black manganese (?) staining on clasts.
	AEH-1506-152s	GRAB	6/25/2015	SW		32.0 - 35.0' Sand Slightly moist, light brown, well-graded medium to coarse sand with <5% clay fines.
35	AEH-1506-153s	GRAB	6/25/2015	SW		35.0 - 38.0' Gravel and Sand (dry) Dry, hard, subround gravel and sand with 5% fines. Iron staining on clasts.
	AEH-1506-154s	SS	6/25/2015	(blow counts: >50)		38.0 - 47.0' Sand and Gravel (saturated) Wet, yellow to brown to red, subround gravel and sand with minor fines.
40	AEH-1506-155s	GRAB	6/25/2015	SW	40	
	AEH-1506-156s	SS	6/25/2015	SM (blow counts: 4/7/>50)	45	
45	AEH-1506-157s	GRAB	6/25/2015	SW		47.0 - 49.0' Clayey Gravel Wet, red, sandy gravel with 10% clay.
	AEH-1506-158s	SS	6/25/2015	GW (blow counts: 30/>50)		49.0 - 56.0' Volcanic Ash/Clay Very soft becoming firm with depth, wet to moist, slightly to moderately plastic, light brown at top becoming variegated white-green-gray with depth, clay, and ash. Thin layers of black minerals.
	AEH-1506-159s	GRAB	6/25/2015	SW	50	
	AEH-1506-160s	GRAB	6/25/2015	GC (blow counts: 26/>50)	55	
50	AEH-1506-161s	SS	6/25/2015	CL (blow counts: 2/5/18/13)		
	AEH-1506-162s	SS	6/25/2015	MH/CH	55	
	AEH-1506-163s	SS	6/25/2015	MH/CH (blow counts: 2/4/9/11)	55	
55		SH			55	

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC36
Location Description: NW of well DH-66
Northing: 861107.272 Easting: 1359281.079
Elevation: 3912.08

Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary with ODEX
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling
Hole Diameter (in): 4
Total Depth Drilled (ft): 55
Recorded By: Scott Mason/John Anderson

Remarks: Provided percentages are qualitative, samples were not sieved.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 3.5' Fill Fill, bio barrier, dry
5	AEG-1506-164s	GRAB	6/26/2015			3.5 - 18.0' Silty SAND 3.5 feet to 5 feet, black silty sand, damp 5 feet to 10 feet, silty sandy loam, 80%-95% Sand, 5%-20% silts and fines, layering, damp 10 feet to 11 feet, 40%-60% sand, 40-60% clay, brown, some plasticity, slightly damp 11 feet to 18 feet, sand 40%-70%, silt and clay 10%-25%, brown, some gravel, damp
	AEH-1506-165s	SS	6/26/2015	(blow counts: 2/2/3/3)		
	AEG-1506-166s	GRAB	6/26/2015			
10	AEH-1506-167s	SS	6/26/2015	(blow counts: 1/1/4/3)		
	AEH-1506-168s	GRAB	6/26/2015			
15	AEH-1506-169s	SS	6/26/2015	(blow counts: 2/2/5/7)		
	AEH-1506-170s	GRAB	6/26/2015			
20	AEH-1506-171s	SS	6/26/2015	(blow counts: 20+ Bounce Refusal)		18.0 - 30.5' GRAVEL gravel and cobbles, grey, dry
	AEH-1506-172s	GRAB	6/29/2015			
25	AEH-1506-173s	SS	6/29/2015	(blow counts: 34/49/31+ Bounce)		
	AEH-1506-174s	GRAB	6/29/2015			
30	AEH-1506-175s	SS	6/29/2015	(blow counts: 25-Refusal)		30.5 - 32.0' SAND Sand, clean, brown, damp
	AEH-1506-176s	GRAB	6/29/2015			
	AEH-1506-177s	GRAB	6/29/2015			32.0 - 35.0' SAND and GRAVEL 50% sand, 50% gravel, grey, dry
35	AEH-1506-178s	SS	6/29/2015	(blow counts: 10/14/13/10)		35.0 - 46.5' SAND 35 feet to 43 feet, 85% sand, 15% silt and clay, red staining, damp 43 feet to 46 feet, clayey coarse sand, some pebbles, brown, wet 46 feet to 46.5 feet, green and purple stained gravel
	AEH-1506-179s	GRAB	6/29/2015			
40	AEH-1506-180s	SS	6/29/2015	(blow counts: 4/8/15/21)		
	AEH-1506-181s	GRAB	6/29/2015			
45	AEH-1506-182s	SS	6/29/2015	(blow counts: 24/28/28/25)		
	AEH-1506-183s	SS	6/29/2015			
	AEH-1506-184s	SS	6/29/2015			
	AEH-1506-185s	GRAB	6/29/2015			46.5 - 49.0' Sandy CLAY Sand and clays
50	AEH-1506-186s	MC	6/29/2015	(blow counts: 4/6/7/18)		49.0 - 55.0' ASH Brown clay at top then white ash. Soft.
	AEH-1506-187s	SS	6/29/2015	(blow counts: 2/3)		
		SH	6/29/2015	Sample 53 feet to 55 feet.		
55						

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 36
 Location Description: Between wells DH-8 and DH-78

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	+3 to -30
Surface Casing Used?	Y	6" Steel	-0.5 to +3.5
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	49.5 - 54.5
Sand Pack?	Y	10/20 Colorado Silica Sand	48 - 56
Annular Seal?	Y	Bentonite 3/8" Kwikplug	0.5 - 48
Surface Seal?	Y	Concrete	0 to -0.5

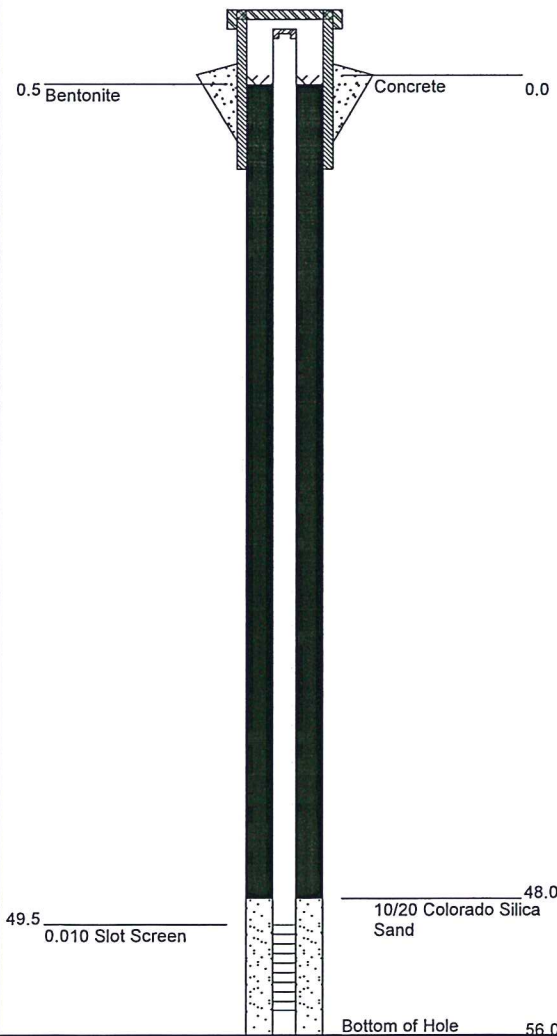
Recorded By: Scott Mason
 Drilling Company: Boland Drilling
 Driller: Chris Tigart
 Drilling Method: Air Rotary with ODEX
 Drilling Fluids Used: None
 Purpose of Hole: Soil Sampling & Mtrg Well
 Target Aquifer: Shallow
 Hole Diameter (in): 4
 Total Depth Drilled (ft): 56

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y Split Spoon and Grab Samples SS @ 5' intervals and Grab
Northing: 860783.429	Easting: 1359388.46
Static Water Level Below MP: 45.05	Surface Casing Height (ft): 3
Date: 7/8/2015	Riser Height (ft): 2.8
MP Description: Ground Surface	Ground Surface Elevation (ft): 3916
MP Height Above or Below Ground (ft):	MP Elevation (ft): 3918.83

Remarks: Surface was ET cover fill material, contact between cover and underlying material is indistinct and may be higher or lower than shown on log.

WELL CONSTRUCTION



GRAPHICS




GEOLOGICAL DESCRIPTION

0.0 - 5.8'	Granular Fill Very soft, dark gray to black, silty clay gravelly loam.
5.8 - 25.3'	Sand and Gravel Dry to moist, medium to very dense, well-graded, subround, brown, sand and gravel.
25.3 - 27.0'	Silty Sand Slightly moist to moist, well-graded, light yellow brown, silty fine to medium sand with some iron staining.
27.0 - 45.4'	Gravel and Sand Dry, medium, dense to very dense, gravel and sand, yellow-brown to gray-brown to brown with light red (7.5 YR 6/8) and black staining on clasts at 35 feet, saturated at 45 feet.
45.4 - 55.0'	Volcanic Ash/Clay Moist to wet, soft becoming stiff with depth, moderately plastic at top becoming low to non-plastic below 51 feet, variegated white-green-gray, clay and ash with increasing sand-sized grains with depth.

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 36
 Location Description: W Selenium Area, NE of DH-66
 Northing: 861117.009 Easting: 1359347.34
 Elevation: 3911.27





Drilling Company: Boland Drilling
 Driller: Chris Tigart
 Drilling Method: Air Rotary with ODEX
 Drilling Fluids Used: None
 Purpose of Hole: Soil Sampling
 Hole Diameter (in): 4
 Total Depth Drilled (ft): 59
 Recorded By: Scott Mason

Remarks: Surface was ET cover fill material, contact between cover and underlying material is indistinct and may be higher or lower than shown on log. Water was encountered at 45 feet.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 4.0' Granular Fill Dry to slightly moist, brown silt, sand, and gravel. ET cover material.
5	AEH-1506-233s	GRAB				
	AEH-1506-234s	SS		SM (blow counts: 3/3/3/6)		4.0 - 5.0' Granular Fill Slightly moist, black, silt and sand with glassy particles, possibly asphalt or coal.
						5.0 - 15.2' Clayey Silty Sand Slightly moist to moist, nonplastic to slightly plastic, loose, pale brown to olive brown, clayey silty sand.
10	AEH-1506-235s	SS		SM (blow counts: 1/1/2/3)		
	AEH-1506-236s	GRAB		SC		
15	AEH-1506-237s	SS		SC (blow counts: 4/29/>50)		15.2 - 28.0' Sand and Gravel Dry to slightly moist, subround, gravel and broken cobbles with 5 to 20% sand.
20	No Sample	SS		(blow counts: >50)		
	AEH-1506-238s	GRAB		GW		
25	No Sample	SS		(blow counts: >50)		
	AEH-1506-239s	GRAB		GW		
	AEH-1506-240s	GRAB		SW		
30	No Recovery	SS		(blow counts: >50)		
	AEH-1506-241s	GRAB		GW		28.0 - 29.0' Sand Slightly moist, loose, poorly graded, yellowish brown, fine sand.
						29.0 - 36.0' Sand and Gravel Dry to moist, medium dense to dense, sand (10 to 20%) and gravel, subround and with some iron staining. No fines, sand lens 33 to 33.3 feet.
	AEH-1506-242s	GRAB		GW		
35						

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLIN2.GDT 1/27/16



(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	AEH-1506-243s	SS		SW/GW (blow counts: 12/35/40/9)		
	AEH-1506-244s	GRAB		ML/CL		36.0 - 41.2' Silty Clay Moist, yellow brown to brown, slightly to moderately plastic silty clay.
	AEH-1506-245s	GRAB		CL		
40	AEH-1506-246s	SS		MH/OH (blow counts: 6/8/21/37). California Split Spoon used.		
	AEH-1506-247s	SS		SP. California Split Spoon used.		41.2 - 54.0' Sand Moist to wet, medium dense, yellow brown to brown, fine to coarse sand with minor gravel and fines. Subround-subangular gravel (30%) 42 to 43.5 feet. Light iron staining at 45 feet. Saturated at 45 feet.
	AEH-1506-248s	SS		GW (blow counts: 15/30/24/13)		
	AEH-1506-249s	GRAB		SP		
45	AEH-1506-250s	SS		SP (blow counts: 9/18/>50)		
	AEH-1506-251s	GRAB		SP		
50	No Recovery	SS				
	AEH-1506-252s	GRAB		SW		54.0 - 59.0' Volcanic Ash/Clay Soft, wet to moist, light brown at top becoming variegated white-green-gray with depth, clay, and ash. Top is highly plastic clay grading down to non-plastic silty sandy ash particles with clay.
55	AEH-1506-254s	SS		CL (blow counts: 2/2/8/15). California Split Spoon used.		
	AEH-1506-253s	MC		ML. California Split Spoon used.		
	AEH-1506-255s	SS		SC (blow counts: 9/19/19/22)		
60						
65						
70						
75						

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 36
 Location Description: W Selenium Area, SE of DH-8
 Northing: 860649.375 Easting: 1359465.646
 Elevation: 3918.88

Drilling Company: Boland Drilling
 Driller: Chris Tigart
 Drilling Method: Air Rotary with ODEX
 Drilling Fluids Used: None
 Purpose of Hole: Soil Sampling
 Hole Diameter (in): 4
 Total Depth Drilled (ft): 53
 Recorded By: Scott Mason

Remarks: Surface was ET cover fill material, contact between cover and underlying material is indistinct and may be higher or lower than shown on log. Water was encountered at 42 feet.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 8.0' Granular Fill Dry to slightly moist, brown silt, sand, and gravel.
5	AEH-1506-213s	SS	6/30/2015	GC (blow counts: 3/1/1/1)		
	AEH-1506-214s	GRAB	6/30/2015			
10	AEH-1506-215s	SS	6/30/2015	SM (blow counts: 1/1/2/3)		
	AEH-1506-216s		6/30/2015			
	AEH-1506-217s	GRAB	6/30/2015			
15	AEH-1506-218s	SS	6/30/2015	SM/SC (blow counts: 6/9/5/27)		
20	No Recovery	SS	6/30/2015	(blow counts: >50)		17.5 - 37.0' Sand and Gravel Dry to slightly moist, dense, sand and gravel with cobbles.
25	AEH-1506-219s	SS	6/30/2015	GP (blow counts: >50)		

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
30	No Sample	SS	6/30/2015	(blow counts: >50)		
	AEH-1506-220s	GRAB	6/30/2015	SW		
	AEH-1506-221s	GRAB	6/30/2015	SW		
	AEH-1506-222s	GRAB	6/30/2015	SW		
35	No Sample	SS	6/30/2015	(blow counts: >50)		
	AEH-1506-223s	GRAB	6/30/2015	SM		37.0 - 38.5' Silty Sand Moist, slightly plastic, dark yellow brown, silty sand with clay.
	AEH-1506-224s	GRAB	6/30/2015	SW		38.5 - 44.5' Gravel and Sand Moist to wet (saturated at 42 feet), brown with occasional red iron staining, well-graded sand and gravel.
40	AEH-1506-225s	SS	6/30/2015	GW (blow counts: 12/14/34/>50)		
	AEH-1506-226s	SS	6/30/2015	SW		
	AEH-1406-227s	SS	6/30/2015	SW		
	AEH-1506-228s	GRAB	6/30/2015	SW		
45	AEH-1506-229s	SS	6/30/2015	GM (blow counts: 12/14/34/>50)		44.5 - 47.0' Clayey Sandy Gravel Wet, variegated gravel clasts with red iron staining and gray ash/clay fragments (5%) and sand (20%).
	AEH-1506-230s	GRAB	6/30/2015	CL		47.0 - 53.0' Volcanic Ash/Clay Soft, wet to moist, light brown at top becoming variegated white-green-gray with depth, clay and ash.
50	AEH-1506-231s	MC	6/30/2015	CL/MH (blow counts: 6/7/9/26). Used a California Split Spoon.		
	AEH-1506-232s	SS	6/30/2015	MH (blow counts: 10/9)		
55						
60						

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: W Selenium Area, N of DH-8
Northing: 860715.205 Easting: 1359400.665
Elevation: 3916.46

Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary with ODEX
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling
Hole Diameter (in): 4
Total Depth Drilled (ft): 51.5
Recorded By: Scott Mason

Remarks: Surface was ET cover fill material, contact between cover and underlying material is indistinct and may be higher or lower than shown on log.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
0.0 - 6.0'						0.0 - 6.0' Granular Fill Dry to moist, light tan to gray brown, clay, silt, sand, and gravel. ET cover material. Brick fragment at 5 feet.
5	AEH-1507-256s	SS	7/1/2015			
	AEH-1507-257s	GRAB	7/1/2015	SM		
	AEH-1507-258s	GRAB	7/1/2015	ML		
10	AEH-1507-259s	SS	7/1/2015	ML (blow counts: 3/6/7/8)		
	AEH-1507-260s	GRAB	7/1/2015	ML		
	AEH-1507-261s	GRAB	7/1/2015	ML		
15	AEH-1507-262s	SS	7/1/2015	SW/GW (blow counts: 10/25/23/30)		
20	AEH-1507-263s	SS	7/1/2015	GW (blow counts: 31/>50)		
	AEH-1507-264s	GRAB	7/1/2015	GW		
25	No Recovery		7/2/2015	(blow counts: >50)		
	AEH-1507-265s	GRAB	7/2/2015	SP		
	AEH-1507-266s	GRAB	7/2/2015	SP		
30	No Recovery	SS	7/2/2015	(blow counts: >50)		
	AEH-1507-267s	GRAB	7/2/2015	GW		
	AEH-1507-268s	GRAB	7/2/2015	SW		
35						
						6.0 - 15.0' Clayey Silt Slightly moist to moist, nonplastic to slightly plastic, loose, gray brown to brown, clayey silt.
						15.0 - 26.0' Sand and Gravel Dry, dense, subround, fine to coarse sand and gravel, iron staining at 20 feet.
						26.0 - 29.5' Sand Moist, loose, poorly graded to well graded, dark yellow brown, fine to coarse sand.
						29.5 - 40.0' Sand and Gravel Dry to moist, medium dense to dense, yellow brown to brown, subround, sand and gravel.

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	AEH-1507-278s	SS	7/2/2015	GW (blow counts: 38/>50)		
	AEH-1507-269s	GRAB	7/2/2015	SP		
40	AEH-1507-270s	GRAB	7/2/2015	SW		
	AEH-1507-271s	SS	7/2/2015	ML (blow counts: 7/5/33/43)		
	AEH-1507-272s	GRAB	7/2/2015	GM/GC		40.0 - 41.5' Silty Clay Moist, soft, moderately plastic silty clay with occasional pebbles and sand.
	AEH-1507-273s	GRAB	7/2/2015	SW/GW		41.5 - 44.5' Sand Dry to wet (saturated below 42.5 feet), dark yellow brown, well-graded, fine to coarse sand and gravel.
	AEH-1507-274s	GRAB	7/2/2015	GW		
45	AEH-1507-275s	GRAB	7/2/2015	CL		
	AEH-1507-276s	MC	7/2/2015	CL. California Split Spoon used.		44.5 - 51.5' Volcanic Ash/Clay Soft, wet to moist, variegated white-green-gray, clay and ash. Top is highly plastic clay grading down to non-plastic silty sandy ash particles with clay.
50	AEH-1507-277s	SH SS	7/2/2015 7/2/2015	SC (blow counts: 6/14/14/21)		
55						
60						
65						
70						
75						

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: S of well DH-63 near N entrance to former smelter

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch PVC casing	+3.17 to -48.5
Surface Casing Used?	Y	4" Steel	-0.5 to +3.5
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	39-49
Sand Pack?	Y	10/20 silica sand	36-39
Annular Seal?	Y	Bentonite Chips	1.0-36
Surface Seal?	Y	Cement Pad	0.0-1.0

Recorded By: John Anderson
Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling
Target Aquifer: Shallow
Hole Diameter (in): 4
Total Depth Drilled (ft): 55

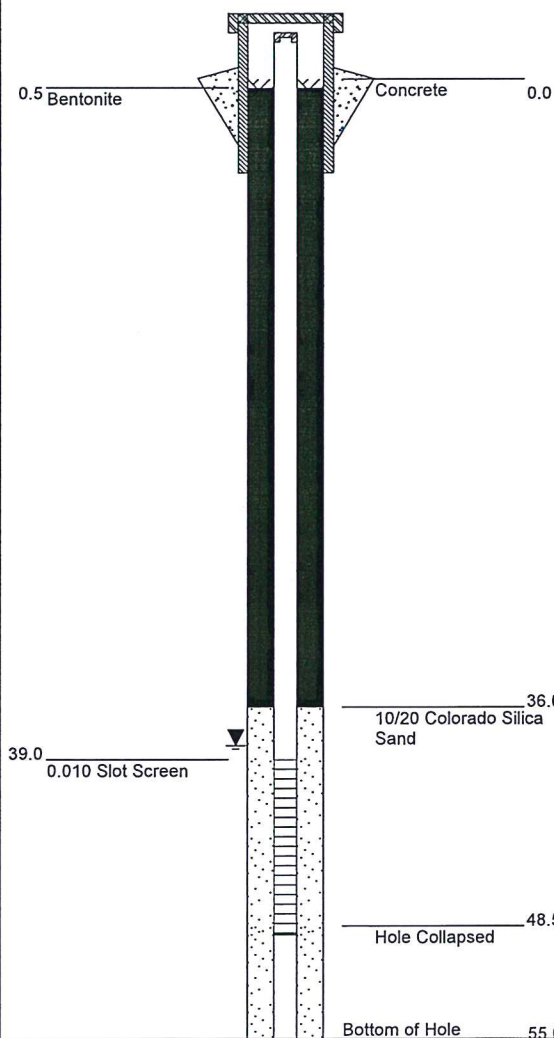
DEVELOPMENT/SAMPLING

Well Developed?	Y	Pumping
Water Samples Taken?	Y	Unfiltered Raw / Filtered HNO3 49' bgs
Boring Samples Taken?	Y	See geologic log

Northing: 861377.161 Easting: 1359161.969
Static Water Level Below MP: 41.38 Surface Casing Height (ft): 3
Date: 7/8/2015 Riser Height (ft): 3.17
MP Description: Top of PVC Ground Surface Elevation (ft): 3905.01
MP Height Above or Below Ground (ft): 3.17 MP Elevation (ft): 3908.18

Remarks: Located by road near edge of property at CHEMET sign. Split spoon samples collected at 5-foot intervals. Ground surface broken rock. Provided percentages are qualitative, samples were not sieved.

WELL CONSTRUCTION



GEOLOGICAL DESCRIPTION

GRAPHICS

0.0 - 1.0' Fill Cobbles
1.0 - 10.8' SAND and SILTS 1 feet to 7 feet, silty sandy loam, light olive grey to brown and yellow brown, slightly moiste, moderately plastic, loose, 80% sand, 20% silts and fines 7 feet to 10.75 feet, 80% coarse sand, 15% gravels, 5% clays, brown, slightly damp
10.8 - 18.0' GRAVEL 90% gravel, 10% sand, very coarse, likely cobbles, dry
18.0 - 20.5' Fine SAND 18 feet to 20 feet, 90% fine sand, 10% silt, some coarse sands, sub angular, yellow brown, damp 20 feet to 20.5 feet, 80% fine sand, clays, <5% gravel
20.5 - 28.5' GRAVEL 90% rock and very coarse gravel
28.5 - 45.0' SAND 28.5 feet to 29.5 feet, 80% fine sand, 20% silts, some clays and gravels, olive brown, damp 29.5 feet to 41.5 feet, 90-95% medium coarse sand. 40 feet to 41.5 feet, beds of fine sand and gravels. 41.5 feet to 42 feet, silty clayey fine sand. 42 feet to 45 feet, 85% medium fine sand, 15% fines, light brown, very damp. 45 feet to 45.5 feet, gravel
45.5 - 50.3' SAND 46 feet to 47 feet, 100% clean fine sand, light brown, saturated 48 feet, 50% medium sand, 20% fine sand, dark brown, saturated
50.3 - 55.0' Volcanic ASH Ash layer, grey weathered material, clay on top, becomes coarse sand with depth

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 25
 Location Description: East Helena near EH-60/61/103
 Northing: 862077.96 Easting: 1359393.81
 Elevation: 3887.55

Drilling Company: Environmental West
 Driller:
 Drilling Method: Sonic
 Drilling Fluids Used:
 Purpose of Hole: Soil Sampling
 Hole Diameter (in):
 Total Depth Drilled (ft): 86
 Recorded By: Michael Peet

Remarks:

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 2.5' Clayey-Sandy Gravel Likely fill, local HC soaking (?) (black), dark gray-brown overall.
5						2.5 - 3.0' Clayey-Sand Indurated medium brown.
						3.0 - 6.5' Brown-gray, mafic sandy gravel with local shattered cobbles, 50% g, 40% s, 10% fines, cobbles, minor local orange iron.
10						6.5 - 28.5' Sandy-Gravel Sandy-gravel with local cobbles, gray-brown-orange with local strong orange iron, 15% cg, 30% fg, 45% sand, 10% fines. Strong iron/FeOH minerals at 6.5-7.0, 10.5-12.5, 14-14.5, 16.5-17.0 (orange to dark brown).
15	AEH-1508-600s		8/14/2015			
20						
25	AEH-1508-601s		8/14/2015	Duplicate: AEH 1508-602s		
30						28.5 - 44.0' Tight, plastic, medium brown-orange clayey-sandy-silt with minor fine gravel, maintained core barrel form (fairly cylindrical), 70% silt, 15% clay, 15% sand.
35	AEH-1508-615s		8/14/2015			35.5 - 38.0' Relatively clean sand saturated, loose, well sorted, brown-orange, 90% medium to coarse sand.
40						
45	AEH-1508-603s		8/14/2015			44.0 - 46.5' Gray-green to orange-brown (color change down hole) sandy-gravel, strong iron toward 46.5 feet, 40% fg, 15% cg, 40% sand, 15% fines.
50						46.5 - 61.0' Medium brown, locally blue gray around reduced mafic clasts, sporadic local orange iron stained sands and gravel clasts. Fairly tight (consolidated overall). Silty-sandy gravel with local cobbles, 40% fg, 20% cg, 30% sand, 10% fines.

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

(Continued)

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
55	AEH-1508-604s		8/14/2015			
60						
65						61.0 - 66.0' Tan-buff relatively clean sand with minor fine gravel, mottled with maroon colored clay which is smeared along outside of core sample. Sand contains vermiculite (weathered biotite), 90% medium sand, 5% silt, 5% clay.
70	AEH-1508-605s		8/14/2015			66.0 - 69.0' Tight, gravelly-clayey-sand, tan overall with darker mafic gray clasts, plastic, 10% cg, 30% fg, 45% sand, 15% fines.
75	AEH-1508-606s		8/14/2015			69.0 - 69.5' Highly oxidized horizon (due to water perched on ash?); sandy-gravel, white-yellow minerals (jarsite-yellow?) grading to very strongly oxidized clasts (orange-brown) rusty, 40% cg, 20% fg, 25% sand, 15% fines. 69.5 - 71.5' Ash? Tan/light brown, plastic, entirely fine grained (clay and silt size grains with minor sand sized grains), partially weathered/altered biotite (fine), maintained core barrel form very well.
80	AEH-1508-607s		8/14/2015			71.5 - 76.0' Tan/light brown relatively clean sand, fairly well sorted, mottled with maroon clay, coarse and fine gravel decreasing through interval with depth, 70% sand, 10% fg, 10% cg, 10% fines.
85						76.0 - 80.0' Brown-yellow-green matrix supported sandy gravel, clasts are subrounded to subangular, matrix "sand" is intensely altered arkose with feldspars altered to yellow-green clays (possibly yellow due to jarosite), abundant vermiculite (golden) clasts are siltites/quartzites (subangular hard silicic) and igneous-light tan with dark matrics (rounded), 70% sand med/coarse, 10% fg, 10% cg, 10% fines.
90						80.0 - 82.5' Tight, silty ash, tan, abundant vermiculite, slightly plastic.
95						82.5 - 86.0' Brown "arkosic" sand with feldspars altered to clays, minor local subrounded/angular quartzite fine gravel clasts locally mottled with maroon clays that occur along veinlets (?), crystal tuff?
100						
105						
110						
115						

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 25
 Location Description: East Helena near EH-50/100
 Northing: 862195.88 Easting: 1358846.22
 Elevation: 3889.26

Drilling Company: Environmental West
 Driller:
 Drilling Method: Sonic
 Drilling Fluids Used:
 Purpose of Hole: Soil Sampling
 Hole Diameter (in):
 Total Depth Drilled (ft): 67
 Recorded By: Michael Peet

Remarks:

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
0.0 - 6.0'						Gravelly fill with tan/gray clayey fines, organic debris.
6.0 - 9.0'						Sandy-silty-coarse gravel, gray-green-brown, mafic clasts, subangular, 40% cg, 20% fg, 30% sand, 10% fines.
9.0 - 11.0'						Clean well sorted medium sand with coarse gravel towards 11 feet, orange-brown due to iron, subrounded clasts, 90% medium sand, 10% coarse gravel, trace fine gravel.
11.0 - 17.0'						Sandy-coarse and fine gravel; local cobbles were drilled through, dark mafic clasts, matrix sand is strongly iron stained (orange-brown), silt and clay increase towards 17 feet, 30% cg, 30% fg, 30% medium sand (mostly clean and sorted), 10% silt and clay.
17.0 - 18.0'						Gravelly-medium sand, loose, dirty with gray-green silt and clay, mostly reduced, 85% medium sand, 10% fines, 5% coarse and fine gravel.
18.0 - 27.5'	AEH-1508-608s		8/17/2015			Sandy-Gravel Moderately oxidized, mafic clasts, subangular, matrix sand ranges from dirty with silt and clay to relatively clean, traces of soft-clayey hematitic (?) red grains within sand from approximately 23 to 25 feet, 30% cg, 20% fg, 40% medium sand, 10% fines, gray-green to brown-orange.
27.5 - 47.0'	AEH-1508-609s		8/17/2015			Orange-brown sand with minor fine and coarse gravel, local finer horizons: 27.5 - 31.5: clean, sorted, fine and medium sand. 31.5 - 32.5: clean fine sand with minor medium sand. 32.5 - 34.5: clean medium sand. 34.5 - 37.0: clean coarse and medium sand. 37.0 - 37.5: fine sand and silt, moderately plastic. 37.5 - 41.5: clean medium and fine sands. 41.5 - 41.7: plastic silt layer, minor clay. 41.7 - 44: coarse and medium sand, clean. 44 - 44.1: plastic silty clay. 44.1 - 46.5: clean coarse and medium sand. 46.5 - 47: slightly plastic silty sand (fine sand).
47.0 - 56.5'	AEH-1508-610s		8/17/2015			Sandy-Gravel Subangular to subrounded, mafic clasts, sandy matrix is brown-orange due to iron, gray-brown due to more fines (dirty sands) at 51 to 53.5 feet and 56 to 56.5 feet, 30% cg, 20% fg, 40% sandy, 10% silt and clay.
	AEH-1508-611s		8/17/2015	Duplicate: AEH-1508-612s		

(Continued)









DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
55	AEH-1508-613s		8/17/2015			
60						56.6 - 67.0' Clay/Ash layer.
65	AEH-1508-614s		8/17/2015			56.5 - 57: tan and white, arkose texture, soft. 57 - 60.3: moderately stiff, tan/buff, minor sand, locally very stiff (pure bentonite). 60.3 - 61.3: very stiff, hard ash with minor sand, light brown. 61.3 - 65.5: tan-slightly greenish with local brown-maroon mottling, fairly stiff and crumbly, nearly 100% clay. 65.5 - 67: crumbly, moderately stiff, brown-maroon, nearly pure clay.
70						
75						
80						
85						
90						
95						
100						
105						
110						
115						

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: Concrete pad btwn truck wash HDS
Northing: 859441.34 Easting: 1360141.131
Elevation: 3921.02

Drilling Company: Boland Drilling
Driller: Brian Hardy
Drilling Method: Air Rotary
Drilling Fluids Used: Air
Purpose of Hole: Soil Sampling
Hole Diameter (in): 5.5"
Total Depth Drilled (ft): 30.5
Recorded By: John Anderson/Michael Peet

Remarks: Located on concrete pad of water treatment plant, borehole about 4 feet above ground surface.
Provided percentages are qualitative, samples were not sieved.

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
	AEH-1507-340s	GRAB	7/8/2015			0.0 - 5.0' Granular FILL Sand and gravel, light brown, well graded, dry
	Lithology	GRAB	7/8/2015			
5	AEH-1507-341s	SS	7/8/2015	(blow counts: 3/5/12/12)		5.0 - 15.0' Gravelly SAND 5 feet to 7 feet, medium-coarse clean gravelly sand, 70% sand, 30% gravel, brown color, some cohesion 7 feet to 10 feet, medium sand (90%), coarser materials 10 feet to 12.5 feet, 80% medium sand, 20% gravel, yellow brown, slightly cemented, odor, damp 12.5 feet to 13.3 feet, 60% coarse sand, 20% medium sand, 20% gravel, brown, slightly damp 13.3 feet to 14 feet, fine to medium sand, 5% gravel, brown, angular, some orange staining, damp. 14 feet to 15 feet, 60% sand, 40% gravel, some red crystalline material showing up in cuttings, angular, dry
	AEH-1507-342s	GRAB	7/8/2015			
10	AEH-1507-343s	SS	7/8/2015	(blow counts: 4/4/8/10)		15.0 - 17.0' GRAVEL 15 feet to 15.5 feet, very coarse, material is dry 15.5 feet to 17 feet, 95% gravel, 5% clay, dark brown, damp.
	AEH-1507-344s	GRAB	7/8/2015			
	AEH-1507-345s	GRAB	7/8/2015			
	AEH-1507-346s	GRAB	7/8/2015			
15	AEH-1507-347s	SS	7/8/2015	(blow counts: 40+ Bouncing)		17.0 - 23.5' SAND and GRAVEL 17 feet to 18.5 feet, 60% gravel, 20% sand, 20% silt, yellow brown, staining, some cohesion, very damp. 18.5 feet to 19.5 feet, 60% coarse sand, 30% gravel, 10% silt and clay, sticky, very damp. 19.5 feet to 22 feet, 50% sand, 40% gravel, 10% fines, yellow brown/olive grey, sand has cohesion, red colored cement, very damp 22 feet to 23 feet, 85% coarse sand, 15% silt and clays, bright yellow-brown-green, slightly plastic, slightly cohesive, odor, wet. 23 feet to 23.5 feet, very coarse gravel
	AEH-1507-348s	GRAB	7/8/2015			
	AEH-1507-349s	GRAB	7/8/2015			
	AEH-1507-350s	GRAB	7/8/2015			
20	AEH-1507-351s	GRAB	7/8/2015			23.5 - 25.0' SAND 23.5 feet to 24 feet, 80% sand, 10% gravel, 10% fines, wet. 24 feet to 25 feet, 95% coarse sand, light brown color, angular, (<5%) fines
	AEH-1507-352s	SS	7/8/2015	(blow counts: 5/25/30/52)		
	AEH-1507-353s	SS	7/8/2015	"		
	AEH-1507-354s	GRAB	7/8/2015			
	AEH-1507-356s	GRAB	7/8/2015			
	AEH-1507-355s	GRAB	7/8/2015			
25	AEH-1507-357s	GRAB	7/8/2015			25.0 - 28.0' Sandy GRAVEL 70-80% coarse gravel, 20-30% sand, highly cemented, odd colors, wet.
	AEH-1507-358s	SS	7/8/2015	(blow counts: 33/50/49/44)		
	AEH-1507-359s	GRAB	7/8/2015			
	AEH 1507-360s	GRAB	7/8/2015			
30	AEH-1507-3611s	SS	7/8/2015	(blow counts: 2/2)		28.0 - 29.0' Sandy CLAY Very silty soft sticky clay, 5-10% coarse sand, dark olive green color, moderately plastic, wet
						29.0 - 30.0' Volcanic Ash Very soft, sticky, saturated volcanic ash, wet

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: Inside of truck wash
Northing: 859404.156 Easting: 1360142.618
Elevation: 3924.59

Drilling Company: Boland Drilling
Driller: Brian Hardy
Drilling Method: Air Rotary
Drilling Fluids Used: Air
Purpose of Hole: Soil Sampling
Hole Diameter (in): 5.5"
Total Depth Drilled (ft): 33
Recorded By: John Anderson/Michael Peet

Remarks: Hole located inside of truck wash. Provided percentages are qualitative, samples were not sieved.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 1.0' Concrete Pad
						1.0 - 6.0' Granular FILL sand and gravel, well graded
5	AEH-1507-361s	GRAB	7/9/2015			
	AEH-1507-362s	SS	7/9/2015	(blow counts: 6/8/4/18)		
	AEH-1507-363s	GRAB	7/9/2015			
	AEH-1507-364s	GRAB	7/9/2015			
10	AEH-1507-365s	SS	7/9/2015	(blow counts: 14/20/27/28)		
	AEH-1507-366s	GRAB	7/9/2015			
	AEH-1507-367s	GRAB	7/9/2015			
15	AEH-1507-368s	SS	7/9/2015	(blow counts: 9/14/16/9)		
	AEH-1507-369s	GRAB	7/9/2015			
	AEH-1507-370s	GRAB	7/9/2015			
20	AEH-1507-371s	SS	7/9/2015	(blow counts: 2/4/3/15)		
	AEH-1507-372s	GRAB	7/9/2015			
	AEH-1507-373s	GRAB	7/9/2015			
25	AEH-1507-374s	SS	7/9/2015	(blow counts: 12/50)		
	AEH-1507-375s	GRAB	7/9/2015			
	AEH-1507-376s	GRAB	7/9/2015			
	AEH-1507-377s	GRAB	7/9/2015			
	AEH-1507-378s	GRAB	7/9/2015			
30	AEH-1507-379s	SS	7/9/2015	(blow counts: 17/45/28/7)		
	AEH-1507-380s	SS	7/9/2015			
	AEH-1507-380s	MC	7/9/2015			
	AEH-1507-381s	MC	7/9/2015			
	AEH-1507-382s	MC	7/9/2015			
						28.0 - 29.0' SAND 70% sand, 10% fine gravel, 20% silts and clays, has odor, medium brown, wet 29.0 - 30.8' Sandy GRAVEL 85% rounded gravel, 15% black sands, silts, wet 30.8 - 33.0' Ash Saturated ash

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: South of truck wash

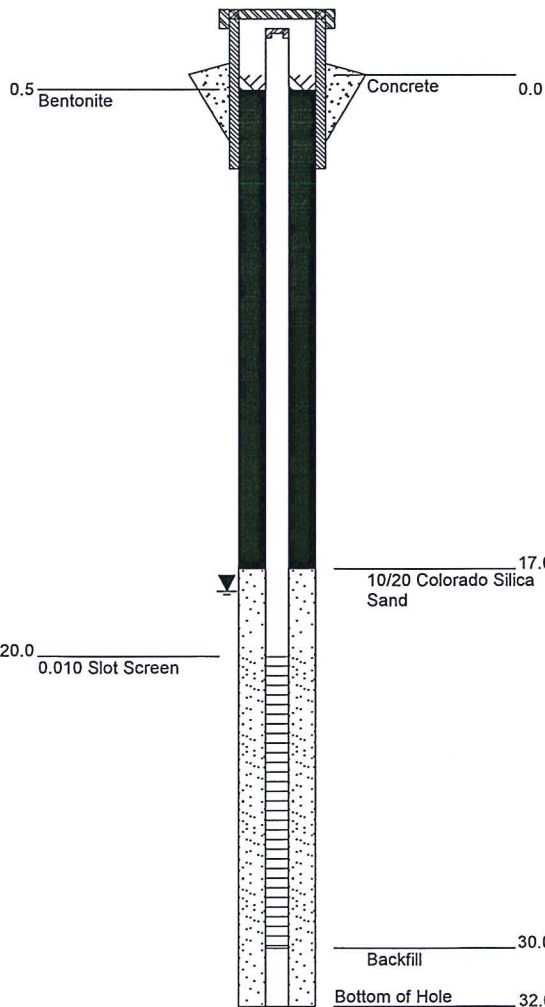
WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	+3 to -30
Surface Casing Used?	Y	6" Steel	-1 to +3
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	20 - 30
Sand Pack?	Y	10/20 Silica Sand	17 - 30
Annular Seal?	Y	Bentonite 3/8" Kwikplug	3 - 17
Surface Seal?	Y	Concrete	0 to -0.5

Recorded By: Scott Mason
Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary with ODEX
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling and Mtrg Well
Target Aquifer: Shallow
Hole Diameter (in): 4
Total Depth Drilled (ft): 32

DEVELOPMENT/SAMPLING	
Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y SS and Grab Samples SS @ 5' intervals & Grab
Northing: 859352.188	Easting: 1360152.25
Static Water Level Below MP: 20.19	Surface Casing Height (ft): 3
Date: 7/15/2015	Riser Height (ft): 2.8
MP Description: Top of PVC	Ground Surface Elevation (ft): 3924.23
MP Height Above or Below Ground (ft): 2.43	MP Elevation (ft): 3926.66

Remarks: Surface was geotextile liner, cut, and folded back to drill. Water encountered at 17.5 feet.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 0.5'	Concrete Dry concrete.
0.5 - 8.0'	Granular Fill Slightly moist to moist, brown, silty sandy gravel.
8.0 - 9.0'	Granular Fill with Slag Slightly moist to moist, black, clayey silty loam with wood fibers and black slag fragments.
9.0 - 17.5'	Gravel and Sand (dry) Dry to slightly moist, subangular to subround, gray to brown, gravel and sand with silt. Minor clay at 17 feet.
17.5 - 22.0'	Silty Sand and Gravel (saturated) Wet, brown, silty sandy gravel, lightly plastic fines. Yellow, red, and brown staining at 20 to 22 feet.
22.0 - 24.0'	Sand Wet, loose, brown, medium to coarse clean sand.
24.0 - 30.0'	Clayey Silty Sand and Gravel Wet, brown, silty sandy gravel with minor clay, slightly plastic fines.
30.0 - 32.0'	Volcanic Ash/Clay Very soft, wet to moist, slightly to moderately plastic, variegated white-green-gray, clay and ash.

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC36
Location Description: North of HDS

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	+3 to -30
Surface Casing Used?	Y	6" Steel	-1 to +3
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	20 - 30
Sand Pack?	Y	10/20 Colorado Silica Sand	17 - 30
Annular Seal?	Y	Bentonite 3/8" Kwikplug	0.5 - 17
Surface Seal?	Y	Concrete	0 to -0.5

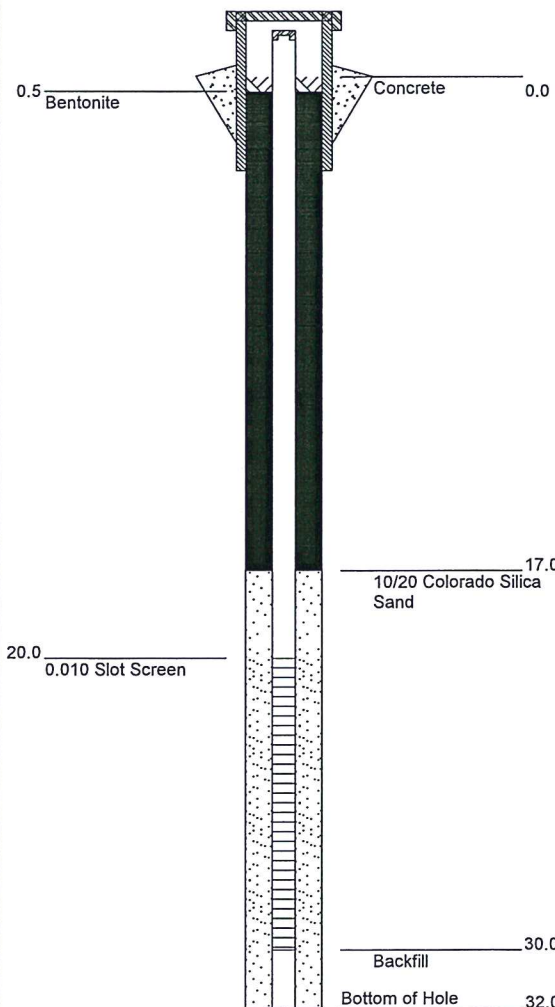
Recorded By: Scott Mason
Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary with ODEX
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling and Mtrg Well
Target Aquifer: Shallow
Hole Diameter (in): 4
Total Depth Drilled (ft): 32

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y SS and Grab Samples SS @ 5' intervals & Grab
Northing: 859665.447	Easting: 1360005.892
Static Water Level Below MP: 20.23	Surface Casing Height (ft): 3
Date: 6/24/2015	Riser Height (ft): 2.8
MP Description: Top of PVC	Ground Surface Elevation (ft): 3916.04
MP Height Above or Below Ground (ft):	MP Elevation (ft): 3919.52

Remarks: Surface was geotextile liner, cut, and folded back to drill. Water encountered at 20.2 feet.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 2.0'	Slag Dry, angular, dark gray slag, green staining at surface.
2.0 - 4.0'	Granular Fill Slightly moist, dark brown to red, coarse sand and brick (?) fragments.
4.0 - 19.0'	Gravel and Sand (dry) Dry to slightly moist, subangular to subround, partially cemented, gravel and sand. Cemented and stained (red-brown) from 15 to 19 feet.
19.0 - 20.0'	Sand Moist to wet, loose, clean, medium sand with occasional pebbles.
20.0 - 22.0'	Clayey Silty Sand and Gravel (saturated) Wet, brown, poorly sorted, clayey silty sandy gravel. Slightly plastic fines.
22.0 - 24.0'	Sand Wet, brown, subangular, medium to coarse sand, no fines.
24.0 - 30.0'	Clayey Silty Sand and Gravel (saturated) Wet, brown, clayey silty sandy gravel. Slightly plastic fines.
30.0 - 32.0'	Volcanic Ash/Clay Very soft, wet to moist, moderately plastic, variegated white-green-gray, clay and ash.

Client: Montana Environmental Trust Group
 Project: East Helena Facility
 County: Lewis & Clark State: Montana
 Property Owner: MT Environmental Trust
 Legal Description: T10N R3W SEC 36
 Location Description: SW of Speiss/Dross Slurry Wall, near DH-38
 Northing: 860001.167 Easting: 1359953.627
 Elevation: 3913.06

Drilling Company: Boland Drilling
 Driller: Chris Tigart
 Drilling Method: Air Rotary with ODEX
 Drilling Fluids Used: None
 Purpose of Hole: Soil Sampling and Mtrg Well
 Hole Diameter (in): 4
 Total Depth Drilled (ft): 35
 Recorded By: Scott Mason

Remarks: Water encountered at 24.4 feet.

DEPTH	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DATE/TIME	NOTES	GRAPHICS	GEOLOGICAL DESCRIPTION
						0.0 - 2.0' Concrete Dry, hard concrete with rebar.
						2.0 - 7.0' Granular Fill Dry, loose sand, gravel and cobbles with red brick.
5	AEH-1506-100s	GRAB	6/23/2015			
						7.0 - 19.5' Gravel and Sand Dry to slightly moist, angular to subangular, partially cemented, brown sand (50%), gravel (40%), and 10% silty fines. Portion of unit may be fill.
10	No Sample AEH-1506-101s	SS GRAB	6/23/2015 6/23/2015	(blow counts: >50)		
						15.0 - 19.5' GM (blow counts: 18/38/32/28)
15	AEH-1506-102s	SS	6/23/2015			
						19.5 - 24.5' Petro-Stained Sand and Gravel Dry to slightly moist, soft to medium dense, sand with 20% gravel and minor ashy/clayey fines. Dark gray to black petroleum staining.
20	AEH-1506-103s	SS	6/23/2015			
						24.5 - 33.0' Clayey Sand and Gravel Wet, medium to very dense, clayey sandy gravel. Slight petro odors at top disappearing with depth. 10% sand. Bright yellow and orange staining in split spoon samples at 25 and 30 feet. Clay ash increasing with depth (10% at 30 feet).
25	AEH-1506-104s	SS	6/23/2015			
						30.0 - 33.0' GM/GC (blow counts: 31/>50)
30	AEH-1506-105s	SS	6/23/2015			
						33.0 - 35.0' Volcanic Ash/Clay Very soft, wet to moist, moderately plastic, variegated white-green-gray, clay and ash.
35	AEH-1506-106s	SS	6/23/2015			

SOIL_BORE_REV2 K:\GINT\PROJECTS\10022.GPJ HYDHLN2.GDT 1/27/16

Client: Montana Environmental Trust Group
Project: East Helena Facility
County: Lewis & Clark State: Montana
Property Owner: MT Environmental Trust
Legal Description: T10N R3W SEC 36
Location Description: N of Speiss-Dross Slurry Wall near TW-1

WELL COMPLETION	Y/N	DESCRIPTION	INTERVAL
Well Installed?	Y	2-inch, flush threaded, Sch 40, PVC	+3 to -30
Surface Casing Used?	Y	6" Steel	-0.5 to +3.5
Screen/Perforations?	Y	0.010-inch slot, Sch 40, PVC	32 - 42
Sand Pack?	Y	10/20 Colorado Silica Sand	29 - 42
Annular Seal?	Y	Bentonite 3/8" Kwikplug	3 - 29
Surface Seal?	Y	Concrete	0 to -0.5

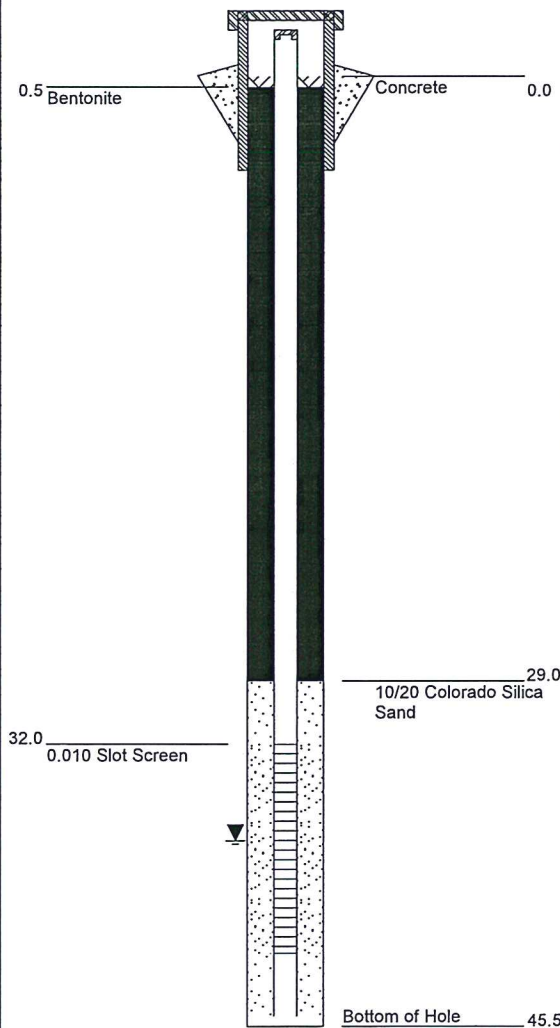
Recorded By: Scott Mason
Drilling Company: Boland Drilling
Driller: Chris Tigart
Drilling Method: Air Rotary with ODEX
Drilling Fluids Used: None
Purpose of Hole: Soil Sampling & Mtrg Well
Target Aquifer: Shallow
Hole Diameter (in): 4
Total Depth Drilled (ft): 45.5

DEVELOPMENT/SAMPLING

Well Developed?	N
Water Samples Taken?	N
Boring Samples Taken?	Y Split Spoon and Grab Samples SS @ 5' intervals & Grab
Northing: 860422.215	Easting: 1359937.191
Static Water Level Below MP: 39.5	Surface Casing Height (ft): 3
Date: 7/15/2015	Riser Height (ft): 2.8
MP Description: Top of PVC	Ground Surface Elevation (ft): 3913.15
MP Height Above or Below Ground (ft): 2.89	MP Elevation (ft): 3916.04

Remarks: Surface was geotextile liner, cut, and folded back to drill. Water was encountered at 39.5 feet.

WELL CONSTRUCTION



GRAPHICS

GEOLOGICAL DESCRIPTION

0.0 - 3.0'	Granular Fill - Slag Dry, dark gray slag, angular to subangular.
3.0 - 12.0'	Silty Sandy Cobbley Gravel Dry, gray to dark gray silty sandy gravel (70%) with cobbles.
12.0 - 15.0'	Sand Slightly moist, loose, medium to coarse clean sand.
15.0 - 22.5'	Gravel and Sand with Silt (dry) Dry, medium dense to dense, subround, gray to red brown, gravel and sand with silt. Some iron staining 15 to 16.3 feet. Minor clay at 20 feet.
22.5 - 33.5'	Gravel and Sand with Petro Odors and Staining Dry, dense to very dense, gray to black stained, gravel with sand and cobbles. Strong petroleum odors throughout interval; indicating historic (pre-slurry wall) water table.
33.5 - 39.5'	Gravel and Sand (dry) Dry to moist, dense to very dense, brown to gray, gravel and sand with minor fines. Similar to above but with no petro odors and stains.
39.5 - 41.5'	Gravel and Sand (saturated) Wet, dense to very dense, brown to gray, gravel and sand with minor fines. Similar to above but saturated.
41.5 - 45.5'	Volcanic Ash/Clay Very soft becoming firm with depth, wet to moist, slightly to moderately plastic, variegated white-green-gray, clay and ash.

APPENDIX B

**2015 SOURCE AREA INVESTIGATION
SOIL SAMPLING AND ANALYSIS SUMMARY**

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn		
AEH-1506-144S	3.5-4	Grab												
AEH-1506-145S	5-5.7	Split Spoon												
AEH-1506-146S	7-9	Grab												
AEH-1506-147S	10-11.5	Split Spoon	19500	11	182	<1	19	17800	14	369	<0.6	59	17.2	8.2
AEH-1506-148S	13-14	Grab												
AEH-1506-149S	15-15.8	Split Spoon												
AEH-1506-150S	28-28.8	Grab												
AEH-1506-151S	30-30.25	Split Spoon												
AEH-1506-152S	32-33	Grab	8300	17	63	<1	43	39500	16	364	<0.6	42	3.8	8.0
AEH-1506-153S	34-35	Grab												
AEH-1506-154S	35-35.3	Split Spoon												
AEH-1506-155S	38-38.5	Grab	8860	11	49	<1	31	13100	9	200	<0.6	29	3.9	8.0
AEH-1506-156S	40-41	Split Spoon	19000	13	109	<1	60	22900	20	615	<0.6	73	17.2	7.5
AEH-1506-157S	44-45	Grab	9270	61	73	1	31	17500	11	320	<0.6	34	4.6	7.6
AEH-1506-158S	45-45.4	Split Spoon												
AEH-1506-159S	46-48	Grab	10100	159	88	<1	65	27300	12	463	0.7	44	6.1	7.6
AEH-1506-161S	50-51.2	Split Spoon	32600	1	32	<1	10	11700	19	202	<0.6	45	41.2	7.6
AEH-1506-162S	51.2-52	Split Spoon												
AEH-1506-163S	52-54	Split Spoon												

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-147S	10-11.5	Total (mg/kg)	11	<0.6	<1	8.2	--	--	--	--	--	--	182	--				
		SPLP Precip Leach (mg/L)	0.006	0.005	<0.001	10	7	3	<100	<1	48	30	<0.02	<1	100.04	2000	17.2%	
		Sat Paste Precip Leach (mg/L)	<0.06	0.23	0.019	7.9	150	82	170	5	92	936	0.049	10	253.42	63.08	17.2%	
AEH-1506-155/156S	38-41	Total (mg/kg)	11-13	<0.6	<1	7.5-8.0	--	--	--	--	--	--	49-109	--				
		SPLP DH-3 Leach (mg/L)	0.009	0.003	<0.001	8.4	54	17	59	5	250	93	0.041	15	100.23	2000	3.9-17.2%	
		Net Leached SPLP (mg/L)	None	0.0001	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.037	0.12	0.23	8.1	220	83	200	12	120	920	0.053	151	199.47	35.29	3.9-17.2%	
		Net Leached Sat Paste (mg/L)	0.02	None	0.23													
AEH-1506-157/159S	44-48	Total (mg/kg)	61-159	<0.6-0.7	<1-1	7.6-8.0	--	--	--	--	--	--	73-88	--				
		SPLP DH-3 Leach (mg/L)	0.12	0.004	<0.001	8.5	52	16	61	6	250	88	0.048	13	100.73	2000	4.6-6.1%	
		Net Leached SPLP (mg/L)	0.11	0.002	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.38	0.31	0.095	8.1	130	52	130	13	110	552	0.052	76	289.02	48.9	4.6-6.1%	
		Net Leached Sat Paste (mg/L)	0.37	0.22	0.095													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-164S	3.5-5	Grab													
AEH-1506-165S	5-5.25	Split Spoon													
AEH-1506-166S	7-9	Grab													
AEH-1506-167S	10-11	Split Spoon													
AEH-1506-168S	10-14	Grab													
AEH-1506-169S	15-15.2	Split Spoon													
AEH-1506-170S	16-19	Grab	10100	9	50	<1	18	17600	22	222	<0.6	43	7.3	8.5	
AEH-1506-171S	20-20.4	Split Spoon													
AEH-1506-172S	22-25	Grab													
AEH-1506-173S	25-26.5	Split Spoon													
AEH-1506-174S	25-27.5	Grab													
AEH-1506-175S	30-30.5	Split Spoon													
AEH-1506-176S	30.5-32	Grab													
AEH-1506-177S	32-34	Grab													
AEH-1506-178S	35-37	Split Spoon													
AEH-1506-179S	37-39	Grab													
AEH-1506-180S	40-42	Split Spoon	11200	11	34	<1	24	13600	6	144	<0.6	32	10.9	7.8	
AEH-1506-501S	40-42 dup	Split Spoon	12500	13	42	<1	27	15600	10	169	<0.6	36	11.8	7.6	
AEH-1506-181S	43-44.5	Grab	11100	33	45	<1	36	15900	13	265	<0.6	45	8.8	8.0	
AEH-1506-182S	45-47	Split Spoon	6710	19	49	<1	31	16000	10	395	<0.6	33	7.7	7.7	
AEH-1506-183S	46.8	Split Spoon	12400	39	119	<1	58	29200	14	583	0.7	39	10.5	7.6	
AEH-1506-184S	45-45.5	Split Spoon	9300	28	62	<1	40	39900	14	1050	<0.6	46	5.3	8.1	
AEH-1506-185S	48-49	Grab	8250	19	58	<1	33	17500	163	401	0.6	44	11.4	7.8	
AEH-1506-186S	49-51	Shelby													
AEH-1506-187S	51-52	Split Spoon													

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-182/183S	45-47	Total (mg/kg)	19-39	<0.6-0.7	<1	7.6-7.7	--	--	--	--	--	--	49-119	--				
		SPLP DH-3 Leach (mg/L)	0.037	0.017	<0.001	8.5	55	15	62	6	250	89	0.037	14	99.94	2000	7.7-10.5%	
		Net Leached SPLP (mg/L)	0.03	None	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.12	1.2	0.036	7.8	190	54	110	15	120	597	0.11	116	240.76	34.87	7.7-10.5%	
		Net Leached Sat Paste (mg/L)	0.08	None	0.036													
AEH-1506-185S	48-49	Total (mg/kg)	19	0.6	<1	7.8	--	--	--	--	--	--	58	--				
		SPLP DH-3 Leach (mg/L)	0.028	0.015	<0.001	8.4	54	16	62	6	250	91	0.053	15	100.58	2000	11.4%	
		Net Leached SPLP (mg/L)	0.02	None	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.071	0.92	0.28	8.0	220	65	120	14	130	688	0.082	139	210.23	35.06	11.4%	
		Net Leached Sat Paste (mg/L)	0.03	None	0.28													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1507-290S	5-5.7	Split Spoon													
AEH-1507-291S	10-11	Split Spoon													
AEH-1507-279S	15-15.9	Split Spoon													
AEH-1507-280S	17-20	Grab													
AEH-1507-281S	20-22.5	Grab													
AEH-1507-282S	22.5-25	Grab													
AEH-1507-283S	25-26	Split Spoon													
AEH-1507-284S	27-28.5	Grab													
AEH-1507-285S	26-27	Grab													
AEH-1507-286S	30-32	Grab													
AEH-1507-287S	32.5-33.5	Grab													
AEH-1507-288S	35-35.3	Split Spoon													
AEH-1507-289S	35.3-35.8	Split Spoon													
AEH-1507-292S	35-36.5	Grab													
AEH-1507-293S	37-38.5	Grab													
AEH-1507-294S	38.5-40	Grab													
AEH-1507-295S	40-40.2	Split Spoon													
AEH-1507-296S	40-42	Grab	11300	15	98	17	40	18700	14	502	0.7	100	4.4	8.1	
AEH-1507-297S	42-44	Grab													
AEH-1507-298S	44-45	Grab													
AEH-1507-299S	45-45.4	Split Spoon	48700	5	287	3	34	10900	45	478	0.6	38	24.2	7.5	
AEH-1507-300S	45.4-47	Split Spoon	27400	2	29	<1	12	13300	39	162	<0.6	35	40.0	7.4	
AEH-1507-301S	47-48.6	Split Spoon													
AEH-1507-302S	49-51	Split Spoon													
AEH-1507-303S	51-53	Split Spoon													
AEH-1507-304S	53-55	Split Spoon	18300	<1	13	<1	6	20400	11	136	<0.6	41	43.4	7.8	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results											Leach Prep Data				
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-296S	40-42	Total (mg/kg)	15	0.7	17	8.1	--	--	--	--	--	--	98	--				
		SPLP Precip Leach (mg/L)	0.055	0.014	0.02	10.7	6	3	<100	3	<4	6	0.19	<1	100.42	2000	4.4%	
		Sat Paste Precip Leach (mg/L)	0.052	0.95	0.053	7.5	92	33	130	9	79	557	0.065	15	367.28	55.78	4.4%	
AEH-1507-299S	45-45.4	Total (mg/kg)	5	0.6	3	7.5	--	--	--	--	--	--	287	--				
		SPLP DH-3 Leach (mg/L)	0.13	0.007	0.002	8.4	53	15	54	6	240	88	0.045	14	50.89	1000	24.2%	
		Net Leached SPLP (mg/L)	0.12	None	0.002													
		Sat Paste DH-3 Leach (mg/L)	0.51	0.53	0.097	7.9	140	51	160	17	96	622	0.13	68	119.02	15.36	24.2%	
		Net Leached Sat Paste (mg/L)	0.51	0.072	0.097													
AEH-1507-304S	53-55	Total (mg/kg)	<1	<0.6	<1	7.8	--	--	--	--	--	--	13	--				
		SPLP DH-3 Leach (mg/L)	0.007	0.01	<0.001	8	62	17	63	6	250	113	0.033	21	100.13	2000	43.4%	
		Net Leached SPLP (mg/L)	None	None	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.019	0.34	0.022	8	520	120	58	19	120	1160	0.042	338	208.4	25.89	43.4%	
		Net Leached Sat Paste (mg/L)	0.015	None	0.022													

Blue shading denotes saturated zone samples; green shading denotes ash/clay sample. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-233S	4-5	Split Spoon													
AEH-1506-234S	5-6.5	Split Spoon													
AEH-1506-235S	10-10.5	Grab													
AEH-1506-236S	12-14.5	Split Spoon													
AEH-1506-237S	15-15.7	Grab													
AEH-1506-238S	21-23.5	Grab													
AEH-1506-239S	25-26.5	Grab													
AEH-1506-240S	28-29	Grab	9720	7	35	<1	43	10900	13	143	<0.6	39	3.8	8.6	
AEH-1507-241S	30-33	Grab													
AEH-1507-242S	33-35	Split Spoon													
AEH-1507-243S	35-36	Split Spoon													
AEH-1507-244S	36-36.1	Grab													
AEH-1507-245S	37-38	cali spoon													
AEH-1507-246S	40-41.2	cali spoon	31000	10	73	<1	48	25600	33	437	<0.6	84	26.5	8.0	
AEH-1507-247S	41.2-42	cali spoon													
AEH-1507-248S	42-43.5	Grab	7870	31	34	<1	22	20400	8	248	<0.6	21	10.5	7.8	
AEH-1507-249S	44-44.5	Split Spoon													
AEH-1507-250S	45-46	Grab	6950	51	22	1	21	9090	9	159	<0.6	16	16.3	7.5	
AEH-1507-251S	46.5-48	Grab													
AEH-1507-252S	52-53	Grab	9530	123	66	2	45	22000	9	471	<0.6	36	7.4	7.5	
AEH-1507-254S	55-56	Split Spoon													
AEH-1507-253S	56-57	Split Spoon	37300	7	31	<1	14	15700	34	59	<0.6	63	37.2	7.8	
AEH-1507-255S	57-59	Split Spoon	23200	<1	27	<1	10	19300	17	90	<0.6	39	31.8	8.0	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-252S	52-53	Total (mg/kg)	123	<0.6	2	7.5	--	--	--	--	--	--	66	--				
		SPLP DH-3 Leach (mg/L)	0.19	0.003	<0.001	8.6	48	15	63	6	240	85	0.043	13	50.2	1000	7.4%	
		Net Leached SPLP (mg/L)	0.18	0.002	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.42	0.084	0.029	8.0	56	21	67	8	91	203	0.062	61	108.38	25.89	7.4%	
		Net Leached Sat Paste (mg/L)	0.41	0.082	0.029													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-213S	5-5.3	Split Spoon													
AEH-1506-214S	8-9.5	Grab													
AEH-1506-215S	10-11.4	Split Spoon													
AEH-1506-216S	11.5-13	Grab													
AEH-1506-217S	13.2-14	Grab													
AEH-1506-218S	15-15.8	Split Spoon	14800	9	133	<1	18	13900	17	299	<0.6	43	16.0	7.4	
AEH-1506-219S	25-25.5	Split Spoon													
AEH-1506-220S	30.7-30.8	Grab													
AEH-1506-221S	32.5-34	Grab													
AEH-1506-222S	34-35	Grab													
AEH-1506-223S	37-38.5	Grab													
AEH-1506-224S	38.5-40	Grab													
AEH-1506-225S	40-40.9	Split Spoon													
AEH-1506-226S	40.9-41	Split Spoon	9190	105	72	11	52	42400	15	632	<0.6	64	8.3	7.7	
AEH-1506-227S	41-41.4	Split Spoon													
AEH-1506-228S	43.5-44.5	Grab	7630	32	77	14	25	12200	6	389	<0.6	53	3.8	7.8	
AEH-1506-229S	45-46.4	Split Spoon	10300	73	72	15	37	17700	13	372	<0.6	90	7.4	7.7	
AEH-1506-230S	47-48.5	Grab	32800	27	42	10	27	19700	27	256	0.9	86	32.4	7.5	
AEH-1506-231S	50-52	Split Spoon													
AEH-1506-232S	52-53	Split Spoon													

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-225/226/227S	40-41.4	Total (mg/kg)	48	<0.6	11	7.7	--	--	--	--	--	--	56	--				
		SPLP Precip Leach (mg/L)	0.25	0.001	0.005	10.5	4	2	<100	2	20	16	0.098	<1	100.07	2000	7.4%	
		Sat Paste Precip Leach (mg/L)	0.37	0.045	0.019	7.6	110	46	110	10	60	606	0.048	11	273.82	42.92	7.4%	
AEH-1506-229S	45-46.4	Total (mg/kg)	73	<0.6	15	7.7	--	--	--	--	--	--	72	--				
		SPLP DH-3 Leach (mg/L)	0.13	0.007	0.002	8.4	53	15	54	6	240	88	0.045	14	99.71	2000	7.4%	
		Net Leached SPLP (mg/L)	0.12	0.004	0.002													
		Sat Paste DH-3 Leach (mg/L)	0.51	0.53	0.097	7.9	140	51	160	17	96	622	0.13	68	328.26	52.1	7.4%	
		Net Leached Sat Paste (mg/L)	0.49	0.37	0.097													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing			0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing			0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1507-256S	5-5.5	Split Spoon													
AEH-1507-257S	6-8	Grab													
AEH-1507-258S	8-9.5	Grab													
AEH-1507-259S	10-11.3	Split Spoon													
AEH-1507-260S	11.3-13.8	Grab													
AEH-1507-261S	13.8-14.2	Grab													
AEH-1507-262S	15-16.3	Split Spoon													
AEH-1507-263S	20-20.5	Split Spoon													
AEH-1507-264S	20-24	Grab													
AEH-1507-265S	26-28	Grab	6440	71	43	<1	37	13000	10	291	21	31	5.0	8.6	
AEH-1507-266S	28-29.5	Grab													
AEH-1507-267S	30-30.3	Split Spoon													
AEH-1507-278S	31.5-32.5	Grab													
AEH-1507-268S	35-35.6	Split Spoon													
AEH-1507-269S	36-36.5	Grab													
AEH-1507-270S	39-40	Grab													
AEH-1507-271S	40-41.5	Split Spoon	16400	6	233	75	79	19900	21	1890	7	158	21.7	8.0	
AEH-1507-272S	41.5-42	Split Spoon													
AEH-1507-273S	42.5-43	Grab	11400	10	67	21	36	14800	8	442	3.4	124	6.3	8.1	
AEH-1507-274S	43-44	Grab	10500	15	457	18	38	16600	13	610	3.5	126	4.8	8.1	
AEH-1507-275S	44.5-45	Grab													
AEH-1507-276S	45-46	Split Spoon	41500	1	74	<1	10	8460	34	272	1.1	49	37.7	7.6	
AEH-1507-502S	45-46 dup	Split Spoon	38700	2	73	<1	7	7600	31	268	1.3	42	38.1	7.6	
AEH-1507-277S	49.5-51.5	Grab													

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-265S	26-28	Total (mg/kg)	71	21	<1	8.6	--	--	--	--	--	--	43	--				
		SPLP Precip Leach (mg/L)	1.3	0.61	<0.001	10.4	8	9	<100	8	25	11	0.35	<1	100	2000	5.0%	
		Sat Paste Precip Leach (mg/L)	7.8	15	0.011	7.8	17	9	230	4	97	442	0.037	5	292.47	58.88	5.0%	
AEH-1507-271/272S	40-42	Total (mg/kg)	6	7	75	8	--	--	--	--	--	--	31	--				
		SPLP Precip Leach (mg/L)	0.019	0.22	0.017	10.6	11	10	<100	6	<4	13	0.2	<1	100.48	2000	13.0%	
		Sat Paste Precip Leach (mg/L)	<0.06	12	0.099	7.4	100	41	250	9	75	869	0.044	8	259.46	43.14	13.0%	
AEH-1507-273/274S	42.5-44	Total (mg/kg)	10-15	3.4-3.5	18-21	8.1	--	--	--	--	--	--	67-457	--				
		SPLP DH-3 Leach (mg/L)	0.009	0.082	<0.001	8.5	47	15	66	6	230	93	0.051	13	49.94	1000	4.8-6.3%	
		Net Leached SPLP (mg/L)	None	0.077	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.037	5.3	0.067	8.2	130	40	210	14	140	763	0.08	17	92.01	25.14	4.8-6.3%	
AEH-1507-276S	45-46	Total (mg/kg)	1	1.1	<1	7.6	--	--	--	--	--	--	74	--				
		SPLP DH-3 Leach (mg/L)	0.005	0.038	<0.001	8.3	64	16	59	5	250	117	0.026	22	100.34	2000	37.7%	
		Net Leached SPLP (mg/L)	None	0.037	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.021	1.1	0.11	7.6	590	140	52	13	72	1290	0.062	400	245.36	20.4	37.7%	
		Net Leached Sat Paste (mg/L)	0.019	1.1	0.11													

Blue shading denotes saturated zone samples; green shading denotes ash/clay sample. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn		
AEH-1507-2791S	1-4	Grab												
AEH-1507-2801S	4-5	Grab												
AEH-1507-2811S	5-6.5	Split Spoon												
AEH-1507-2821S	5-7	Grab												
AEH-1507-2831S	6-10	Grab												
AEH-1507-2841S	10.75-13	Grab												
AEH-1507-2851S	10-10.66	Split Spoon												
AEH-1507-2861S	15-15.25	Split Spoon												
AEH-1507-2991S	15.25-17	Grab												
AEH-1507-2871S	18-20	Grab	18600	20	161	<1	87	34800	27	1340	<0.6	68	13.3	8.5
AEH-1507-2881S	20-20.5	Split Spoon												
AEH-1507-2891S	20.5-21	Split Spoon												
AEH-1507-2901S	21-25	Grab												
AEH-1507-2911S	25-25.05	Split Spoon												
AEH-1507-2921S	28.5-29	Grab												
AEH-1507-2931S	30-31.7	Split Spoon												
AEH-1507-2941S	30-35	Grab												
AEH-1507-2951S	37-39	Grab												
AEH-1507-2961S	35-37	Split Spoon	12200	5	47	<1	29	14500	11	325	<0.6	37	11.7	8.8
AEH-1507-503S	35-37 dup	Split Spoon	12400	5	47	<1	29	14400	11	335	<0.6	37	11.4	8.8
AEH-1507-2971S	40-41.5	Split Spoon	11500	5	47	<1	26	14500	12	298	<0.6	37	14.6	8.6
AEH-1507-331S	41.5-42	Grab												
AEH-1507-332S	42-45	Grab												
AEH-1507-333S	45-45.5	Split Spoon	13300	10	64	<1	31	23700	8	387	0.7	44	14.5	7.8
AEH-1507-334S	46-47	Grab												
AEH-1507-335S	48-50	Grab												
AEH-1507-336S	50-50.25	Split Spoon	9650	6	81	<1	25	22300	15	643	0.6	36	10.6	7.6
AEH-1507-337S	50.5-51	Split Spoon												
AEH-1507-338S	51-52	Split Spoon												
AEH-1507-339S	53-55	Split Spoon												

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-2871S	18-20	Total (mg/kg)	20	<0.6	<1	8.5	--	--	--	--	--	--	161	--				
		SPLP Precip Leach (mg/L)	0.054	0.001	<0.001	10.6	6	6	<100	4	<4	<1	0.19	<1	100.38	2000	13.3%	
		Sat Paste Precip Leach (mg/L)	0.16	0.03	0.11	7.9	18	13	<20	8	110	31	0.13	4	237.66	51.88	13.3%	
AEH-1507-333/336S	45-50.25	Total (mg/kg)	6-10	0.6-0.7	<1	7.6-7.8	--	--	--	--	--	--	64-81	--				
		SPLP DH-3 Leach (mg/L)	0.007	0.006	<0.001	8.2	48	15	72	6	270	87	0.045	14	99.09	2000	10.6-14.5%	
		Net Leached SPLP (mg/L)	None	None	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.039	0.34	0.008	8.1	140	50	120	19	150	440	0.37	97	244.02	37.56	10.6-14.5%	
		Net Leached Sat Paste (mg/L)	None	None	0.008													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn		
AEH-1508-600S	15-17	Grab	15200	11	97	<1	41	24600	11	569	<0.6	42	5.4	7.9
AEH-1508-601S	24-25	Grab	16300	106	150	<1	40	24400	18	432	<0.6	47	6.7	8.2
AEH-1508-602S	24-25 Dup	Grab	14800	104	144	<1	36	21700	14	403	<0.6	42	7.5	8.2
AEH-1508-615S	35-37	Grab	19500	10	70	<1	32	16000	17	689	<0.6	52	14.9	7.8
AEH-1508-603S	45-47	Grab	9030	6	47	<1	21	15100	9	270	<0.6	24	9.0	8.0
AEH-1508-604S	55-60	Grab	8530	6	66	<1	21	13800	12	244	<0.6	29	10.3	7.9
AEH-1508-605S	69-69.5	Grab	11700	12	41	<1	34	25800	23	212	<0.6	7.4	16.5	7.4
AEH-1508-606S	74-76	Grab	5250	<1	20	<1	12	12600	15	34	<0.6	20	10.3	7.2
AEH-1506-607S	80-82	Grab	23400	3	63	<1	62	27000	28	142	<0.6	83	22.7	7.1

NOTES: Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Well drilled using sonic rig; samples collected from continuous core

No leach testing conducted - batch arsenic adsorption testing conducted instead.

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn		
AEH-1508-608S	20-22	Grab	7580	4	65	<1	35	8640	7	493	<0.6	21	14.1	7.8
AEH-1508-609S	30-32	Grab	10600	3	57	<1	37	18600	14	528	<0.6	32	13.6	7.6
AEH-1508-610S	40-42	Grab	7300	34	31	<1	27	11500	10	222	<0.6	23	13.4	7.7
AEH-1508-611S	50-51	Grab	8500	102	74	<1	28	19200	9	516	<0.6	71	10.8	8.0
AEH-1508-612S	50-51 Dup	Grab	8280	109	78	<1	37	18600	9	469	<0.6	75	10.6	8.1
AEH-1508-613S	54.5-56.5	Grab	7150	101	79	<1	33	22100	23	477	<0.6	60	9.6	7.7
AEH-1508-614S	62-65	Grab	24400	<1	47	<1	15	15200	7	62	<0.6	39	28.1	7.5

NOTES: Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Well drilled using sonic rig; samples collected from continuous core

No leach testing conducted - batch arsenic adsorption testing conducted instead.

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1507-340S	0-3	Grab													
AEH-1507-341S	5-5.5	Split Spoon													
AEH-1507-342S	6-10	Grab													
AEH-1507-343S	10-11	Split Spoon	6720	48	56	15	32	15700	149	219	4.1	77	8.8	7.9	
AEH-1507-344S	12.5-13	Grab													
AEH-1507-345S	13.3-14	Grab													
AEH-1507-346S	14-15	Grab													
AEH-1507-347S	15-15.01	Split Spoon													
AEH-1507-348S	15.5-17	Grab													
AEH-1507-349S	17-18	Grab	8270	221	42	259	107	9020	58	77	29.6	128	6.0	6.3	
AEH-1507-350S	18.5-19.5	Grab													
AEH-1507-351S	19.5-20	Grab													
AEH-1507-352S	20-21.3	Split Spoon	15200	204	138	426	50	24200	52	220	5.0	220	11.7	5.2	
AEH-1507-354S	22-23	Grab													
AEH-1507-355S	23.5	Grab													
AEH-1507-356S	23.3-24	Grab													
AEH-1507-357S	24-25	Grab													
AEH-1507-358S	25-26.3	Split Spoon	15500	215	95	10	30	23500	9	322	<0.6	153	10.3	6.5	
AEH-1507-359S	27-28	Grab													
AEH-1507-360S	28-29	Grab	21500	763	172	43	39	38200	31	1280	1.3	212	32.4	7.1	
AEH-1507-3601S	29-30.5	Split Spoon	43400	176	84	4	23	30200	60	492	<0.6	68	45.6	7.2	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-349S	17-18	Total (mg/kg)	221	29.6	259	6.3	--	--	--	--	--	--	42	--				
		SPLP Precip Leach (mg/L)	2.5	0.39	0.3	10.4	9	2	<100	2	7	16	0.1	<1	100.03	2000	6.0%	
		Sat Paste Precip Leach (mg/L)	15	3.8	66	5.3	350	73	41	24	26	1340	0.33	3	305.49	48.05	6.0%	
AEH-1507-352S	20-21.3	Total (mg/kg)	204	5.0	426	5.2	--	--	--	--	--	--	138	--				
		SPLP DH-3 Leach (mg/L)	0.078	0.028	2.7	7.7	51	13	57	7	240	94	0.043	13	100.63	2000	11.7%	
		Net Leached SPLP (mg/L)	0.028	0.027	2.7													
		Sat Paste DH-3 Leach (mg/L)	0.3	0.3	120	4.8	150	38	69	31	12	1030	0.14	28	307.94	39.85	11.7%	
		Net Leached Sat Paste (mg/L)	None	0.3	120													
AEH-1507-360S	28-29	Total (mg/kg)	763	1.3	43	7.1	--	--	--	--	--	--	172	--				
		SPLP DH-3 Leach (mg/L)	0.76	0.008	0.083	8.3	57	13	57	7	260	84	0.067	13	100.2	2000	32.4%	
		Net Leached SPLP (mg/L)	0.64	0.007	0.083													
		Sat Paste DH-3 Leach (mg/L)	1.2	0.026	0.43	7.2	63	16	42	9	34	234	0.18	9	375.01	31.52	32.4%	
		Net Leached Sat Paste (mg/L)	None	0.026	0.43													
AEH-1507-3601S	29-30.5	Total (mg/kg)	176	<0.6	4	7.2	--	--	--	--	--	--	84	--				
		SPLP DH-3 Leach (mg/L)	1.9	0.003	0.004	8.4	55	13	60	5	260	80	0.05	12	100.04	2000	45.6%	
		Net Leached SPLP (mg/L)	1.9	0.002	0.004													
		Sat Paste DH-3 Leach (mg/L)	14	0.007	0.32	7.2	27	7	26	5	36	79	0.064	6	204.49	9.82	45.6%	
		Net Leached Sat Paste (mg/L)	14	0.007	0.32													

Blue shading denotes saturated zone samples; green shading denotes ash/clay sample. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1507-361S	1-4	Grab													
AEH-1507-362S	5-5.8	Split Spoon	6110	11	47	<1	27	15500	31	369	<0.6	93	3.9	7.8	
AEH-1507-363S	5-7	Grab													
AEH-1507-364S	8-9.5	Grab													
AEH-1507-365S	10-11.3	Split Spoon													
AEH-1507-366S	10-12	Grab													
AEH-1507-367S	13-15	Grab													
AEH-1507-368S	15-16.2	Split Spoon	9180	14	58	5	28	17900	95	358	0.7	71	4.4	8.4	
AEH-1507-369S	15-18	Grab													
AEH-1507-370S	18-19	Grab													
AEH-1507-371S	20-20.01	Split Spoon													
AEH-1507-372S	20-22	Grab	6670	120	41	396	80	10800	142	145	45.1	129	10.9	7.7	
AEH-1507-373S	24-25	Grab													
AEH-1507-374S	25-25.6	Split Spoon	11400	141	61	82	52	19300	42	198	10.4	186	10.7	5.7	
AEH-1507-375S	25-28	Grab													
AEH-1507-376S	27-28	Grab													
AEH-1507-377S	28-29	Grab													
AEH-1507-378S	29-30	Grab													
AEH-1507-379S	30-30.8	Split Spoon	10400	192	49	3	40	17700	11	230	<0.6	113	11.8	6.4	
AEH-1507-380S	30.8-31.2	Split Spoon	45600	460	86	<1	27	26600	56	1100	<0.6	65	40.3	6.6	
AEH-1507-381S	31-31.5	Split Spoon													
AEH-1507-382S	31.5-32.5	Split Spoon													
AEH-1507-383S	32.5-33	Split Spoon													

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results											Leach Prep Data				
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1507-372S	20-22	Total (mg/kg)	120	45.1	396	7.7	--	--	--	--	--	--	41	--				
		SPLP DH-3 Leach (mg/L)	0.16	0.31	0.04	8.4	43	13	95	6	290	106	0.041	13	100.88	2000	10.9%	
		Net Leached SPLP (mg/L)	0.08	0.31	0.04													
		Sat Paste DH-3 Leach (mg/L)	0.46	1.6	23	7.3	320	57	39	19	50	1090	0.19	11	283.4	23.68	10.9%	
		Net Leached Sat Paste (mg/L)	None	1.6	23													
AEH-1507-374S	25-25.6	Total (mg/kg)	141	10.4	82	5.7	--	--	--	--	--	--	61	--				
		SPLP DH-3 Leach (mg/L)	0.056	0.044	0.18	8.1	55	14	59	7	250	87	0.045	13	100.9	2000	10.7%	
		Net Leached SPLP (mg/L)	None	0.043	0.18													
		Sat Paste DH-3 Leach (mg/L)	0.076	0.92	12	6.2	130	27	54	26	18	520	0.072	18	221.16	21.52	10.7%	
		Net Leached Sat Paste (mg/L)	None	0.92	12													
AEH-1507-379S	30-30.8	Total (mg/kg)	192	<0.6	3	6.4	--	--	--	--	--	--	49	--				
		SPLP DH-3 Leach (mg/L)	0.18	0.002	<0.001	8.2	53	13	58	7	260	80	0.05	13	100.66	2000	11.8%	
		Net Leached SPLP (mg/L)	0.10	0.001	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.12	0.013	0.065	7.0	16	5	57	10	23	112	0.059	20	213.34	19.14	11.8%	
		Net Leached Sat Paste (mg/L)	None	0.013	0.060													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-117S	0.5-5	Grab													
AEH-1506-118S	5-5.8	Split Spoon													
AEH-1506-119S	8.5-9	Grab													
AEH-1506-120S	10-10.5	Split Spoon													
AEH-1506-121S	12-14	Grab													
AEH-1506-122S	15-16	Split Spoon	9080	257	112	48	135	13100	103	178	59.7	121	10.1	5.7	
AEH-1506-123S	17-18	Grab													
AEH-1506-124S	20-21.8	Split Spoon	16000	549	88	857	47	17800	148	180	19.7	533	6.7	7.2	
AEH-1506-500S	20-21.8 dup	Split Spoon	13900	476	72	702	42	16300	113	173	16.1	479	6.1	7.3	
AEH-1506-125S	22-24	Grab													
AEH-1506-126S	25-26.2	Split Spoon	9950	138	94	556	49	15800	12	137	3.3	485	15.9	6.5	
AEH-1506-127S	27-29	Grab	11900	102	133	269	37	16800	23	229	1.9	471	6.9	6.8	
AEH-1506-128S	30-32	Split Spoon													

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-122S	15-16	Total (mg/kg)	257	59.7	48	5.7	--	--	--	--	--	--	112	--				
		SPLP Precip Leach (mg/L)	1.2	0.3	0.052	10.4	5	2	<100	2	48	33	0.15	<1	100.72	2000	10.1%	
		Sat Paste Precip Leach (mg/L)	3.3	2.3	9.5	5.5	330	80	38	24	21	1280	0.067	5	217.6	48.67	10.1%	
AEH-1506-124/500S	20-21.8	Total (mg/kg)	476-549	16.1-19.7	702-857	7.2-7.3	--	--	--	--	--	--	72-88	--				
		SPLP DH-3 Leach (mg/L)	0.47	0.024	0.49	8.5	57	14	70	6	260	88	0.036	14	100.32	2000	6.1-6.7%	
		Net Leached SPLP (mg/L)	0.44	0.023	0.48													
		Sat Paste DH-3 Leach (mg/L)	0.71	0.21	2.2	7.6	83	20	41	13	55	264	0.093	17	284.59	35.18	6.1-6.7%	
		Net Leached Sat Paste (mg/L)	None	0.21	0.97													
AEH-1506-126/127S	25-29	Total (mg/kg)	102-138	1.9-3.3	269-556	6.5-6.8	--	--	--	--	--	--	94-133	--				
		SPLP DH-3 Leach (mg/L)	0.091	0.008	0.95	8.4	56	13	66	7	250	88	0.051	13	101.4	2000	6.9-15.9%	
		Net Leached SPLP (mg/L)	0.05	0.007	0.93													
		Sat Paste DH-3 Leach (mg/L)	0.16	0.083	9.1	7.1	75	18	80	19	35	390	0.16	16	313.35	50.12	6.9-15.9%	
		Net Leached Sat Paste (mg/L)	None	0.079	7.6													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-112S	3-4	Grab													
AEH-1506-107S	5-6.5	Split Spoon													
AEH-1506-111S	8-9	Grab													
AEH-1506-108S	15-15.7	Split Spoon	16100	871	123	21	74	19300	19	252	0.6	174	5.5	5.0	
AEH-1506-109S	19-20	Grab	9200	399	46	10	425	12800	19	79	18.6	87	5.8	4.6	
AEH-1506-110S	20-21	Split Spoon	10300	120	68	90	27	16100	11	137	0.6	101	4.4	5.2	
AEH-1506-113S	22-23.5	Grab	5690	49	29	145	15	8690	7	78	0.7	76	6.0	5.1	
AEH-1506-114S	25-25.2	Split Spoon													
AEH-1506-115S	26-28	Grab	16200	111	100	241	41	23000	16	196	0.6	305	8.0	5.0	
AEH-1506-116S	30-32	Split Spoon	51100	2	72	1	6	7430	32	172	<0.6	56	51.5	7.1	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-109S	19-20	Total (mg/kg)	399	18.6	10	4.6	--	--	--	--	--	--	46	--				
		SPLP Precip Leach (mg/L)	0.15	0.054	<0.001	10.1	2	<1	<100	1	28	18	<0.02	<1	100.02	2000	5.8%	
		Sat Paste Precip Leach (mg/L)	0.23	0.45	2.4	4.8	92	18	40	21	30	503	0.051	5	246.97	54.39	5.8%	
AEH-1506-110S	20-21	Total (mg/kg)	120	0.6	90	5.2	--	--	--	--	--	--	68	--				
		SPLP DH-3 Leach (mg/L)	0.2	0.004	0.43	7.7	53	13	67	7	230	88	0.042	14	100.15	2000	4.4%	
		Net Leached SPLP (mg/L)	0.16	0.003	0.42													
		Sat Paste DH-3 Leach (mg/L)	0.054	0.044	6.9	5.3	38	9	47	21	15	231	0.04	15	234.74	34.34	4.4%	
		Net Leached Sat Paste (mg/L)	None	0.041	6.3													
AEH-1506-115S	26-28	Total (mg/kg)	111	0.6	241	5.0	--	--	--	--	--	--	100	--				
		SPLP DH-3 Leach (mg/L)	0.017	0.003	2.4	7.3	45	12	65	6	200	96	0.042	14	100.35	2000	8.0%	
		Net Leached SPLP (mg/L)	None	0.002	2.4													
		Sat Paste DH-3 Leach (mg/L)	0.038	0.031	23	4.9	71	19	45	19	14	372	0.061	14	188.76	35.73	8.0%	
		Net Leached Sat Paste (mg/L)	None	0.028	22.3													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-100S	5	Split Spoon													
AEH-1506-101S	10	Grab													
AEH-1506-102S	15-16.3	Split Spoon	14600	397	105	8	41	19600	18	364	12.5	238	6.5	10.0	
AEH-1506-103S	20-21.8	Split Spoon	11600	333	112	66	44	16900	12	137	5.6	1090	6.9	8.2	
AEH-1506-104S	25-26.4	Split Spoon	8270	169	126	591	35	13800	14	155	<0.6	532	12.4	6.8	
AEH-1506-105S	30-30.9	Split Spoon	13000	159	110	780	52	25400	15	254	<0.6	435	13.0	7.2	
AEH-1506-106S	33-35	Split Spoon	37300	161	35	2	13	16200	32	286	<0.6	135	42.3	6.5	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-103S	20-21.8	Total (mg/kg)	333	5.6	66	8.2	--	--	--	--	--	--	112	--				
		SPLP Precip Leach (mg/L)	1.6	0.008	0.26	10.4	5	2	<100	4	46	20	0.2	<1	100.29	2000	6.9%	
		Sat Paste Precip Leach (mg/L)	2.5	0.36	0.16	7	56	13	300	57	60	181	0.24	10	271.17	54.37	6.9%	
AEH-1506-104S	25-26.4	Total (mg/kg)	169	<0.6	591	6.8	--	--	--	--	--	--	126	--				
		SPLP DH-3 Leach (mg/L)	0.15	0.002	0.36	8.1	55	14	73	8	240	100	0.049	14	99.89	2000	12.4%	
		Net Leached SPLP (mg/L)	0.13	0.001	0.36													
		Sat Paste DH-3 Leach (mg/L)	0.28	0.008	15	6.3	180	47	360	72	24	1550	0.053	17	197.53	22.32	12.4%	
		Net Leached Sat Paste (mg/L)	None	0.006	14.7													

Blue shading denotes saturated zone samples. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

Sample #	Depth (ft)	Type	Total Metals (mg/kg)										% Moisture	pH	
			Al	As	Ba	Cd	Cu	Fe	Pb	Mn	Se	Zn			
AEH-1506-129S	3.5-4.5	Grab													
AEH-1506-130S	5-6	Split Spoon													
AEH-1506-131S	13-15	Grab													
AEH-1506-132S	15-16.3	Split Spoon													
AEH-1506-133S	20-20.7	Split Spoon													
AEH-1506-134S	23-24	Grab													
AEH-1506-135S	25-25.8	Split Spoon													
AEH-1506-136S	27-28	Grab	7920	197	39	<1	32	27300	10	537	1.9	33	6.9	9.6	
AEH-1506-137S	30-30.4	Split Spoon													
AEH-1506-138S	33.5-34.5	Grab	17000	321	142	<1	38	27200	13	452	4.8	313	3.6	10.0	
AEH-1506-139S	35-35.7	Split Spoon	19200	217	251	4	31	34600	8	385	4.3	201	6.8	9.8	
AEH-1506-140S	37-38	Grab	14800	173	76	4	21	20300	8	290	3.2	139	4.0	10.0	
AEH-1506-141S	40-40.6	Split Spoon	12500	210	77	<1	21	26200	11	306	3.3	184	12.6	9.8	
AEH-1506-142S	41	Grab													
AEH-1506-143S	44-45.5	Split Spoon	50700	3	68	<1	32	28300	52	278	0.7	89	30.3	7.2	

Blue shading denotes saturated zone sample; green shading denotes ash/clay sample.

Sample #	Depth (ft)	Analysis	Leach Test Results												Leach Prep Data			
			As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl	g soil	mL fluid	wt % moisture initial	
AEH-1506-138S	33.5-34.5	Total (mg/kg)	321	4.8	<1	10	--	--	--	--	--	--	142	--				
		SPLP Precip Leach (mg/L)	4.4	0.069	0.004	10.5	8	6	<100	5	54	17	0.48	<1	100.58	2000	3.6%	
		Sat Paste Precip Leach (mg/L)	72	1.7	0.032	8.6	12	11	160	10	210	59	0.63	6	328.44	52.35	3.6%	
AEH-1506-140S	37-38	Total (mg/kg)	173	3.2	4	10	--	--	--	--	--	--	76	--				
		SPLP DH-3 Leach (mg/L)	0.77	0.027	<0.001	8.6	39	11	90	8	260	83	0.042	13	100.09	2000	4.0%	
		Net Leached SPLP (mg/L)	0.67	0.026	<0.001													
		Sat Paste DH-3 Leach (mg/L)	53	1.6	0.091	8.7	16	12	280	14	380	125	0.42	18	252.58	35.21	4.0%	
		Net Leached Sat Paste (mg/L)	43.1	1.6	0.09													
AEH-1506-143S	44-45.5	Total (mg/kg)	3	0.7	<1	7.2	--	--	--	--	--	--	68	--				
		SPLP DH-3 Leach (mg/L)	0.014	0.001	<0.001	8.2	51	14	61	5	260	86	0.047	13	100.26	2000	30.3%	
		Net Leached SPLP (mg/L)	0.004	0.00001	<0.001													
		Sat Paste DH-3 Leach (mg/L)	0.071	0.005	0.15	7.8	56	15	31	5	72	148	0.084	8	146.02	57.5	30.3%	
		Net Leached Sat Paste (mg/L)	0.065	0.004	0.15													

Blue shading denotes saturated zone samples; green shading denotes ash/clay sample. Net Leached values are leach concentrations corrected for concentrations in residual soil moisture and groundwater leach solution. "None" indicates negative net leached values.

DH-3 Leach Solution Initial Concentrations (mg/L)	As	Se	Cd	pH	Ca	Mg	Na	K	HCO3	SO4	Ba	Cl
Before Leach Testing	0.010	0.001	<0.001	7.5	64	14	22	5	210	71	0.072	13
After Leach Testing	0.010	0.001	<0.001	7.6	63	15	23	5	210	71	0.069	12

APPENDIX C

**SOIL SAMPLE LABORATORY
ANALYTICAL REPORTS**

TOTAL METALS RESULTS



ANALYTICAL SUMMARY REPORT

July 09, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15060538

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 7 samples for Montana Environmental Custodial Trust on 6/26/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15060538-001	AEH-1506-147S	06/25/15 8:00	06/26/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15060538-002	AEH-1506-152S	06/25/15 8:00	06/26/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15060538-003	AEH-1506-155S	06/25/15 8:00	06/26/15	Soil	Same As Above
H15060538-004	AEH-1506-156S	06/25/15 8:00	06/26/15	Soil	Same As Above
H15060538-005	AEH-1506-157S	06/25/15 8:00	06/26/15	Soil	Same As Above
H15060538-006	AEH-1506-159S	06/25/15 8:00	06/26/15	Soil	Same As Above
H15060538-007	AEH-1506-161S	06/25/15 8:00	06/26/15	Soil	Same As Above

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-001
Client Sample ID: AEH-1506-147S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	17.2	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	19500	mg/kg		5		SW6010B	07/01/15 14:14 / sld
Arsenic	11	mg/kg		1		SW6020	07/02/15 01:21 / dck
Barium	182	mg/kg	D	2		SW6020	07/02/15 01:21 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 14:14 / sld
Copper	19	mg/kg		1		SW6010B	07/01/15 14:14 / sld
Iron	17800	mg/kg		5		SW6010B	07/01/15 14:14 / sld
Lead	14	mg/kg		1		SW6020	07/02/15 01:21 / dck
Manganese	369	mg/kg		1		SW6010B	07/01/15 14:14 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 16:59 / dck
Zinc	59	mg/kg		1		SW6010B	07/01/15 14:14 / sld
CORROSIVITY							
pH of Soil and Waste	8.2	s.u.		0.10		SW9045D	07/09/15 10:35 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-002
Client Sample ID: AEH-1506-152S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.8	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8300	mg/kg		5		SW6010B	07/01/15 14:25 / sld
Arsenic	17	mg/kg		1		SW6020	07/02/15 01:25 / dck
Barium	63	mg/kg	D	2		SW6020	07/02/15 01:25 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 14:25 / sld
Copper	43	mg/kg		1		SW6010B	07/01/15 14:25 / sld
Iron	39500	mg/kg		5		SW6010B	07/01/15 14:25 / sld
Lead	16	mg/kg		1		SW6020	07/02/15 01:25 / dck
Manganese	364	mg/kg		1		SW6010B	07/01/15 14:25 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 17:02 / dck
Zinc	42	mg/kg		1		SW6010B	07/01/15 14:25 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 10:36 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-003
Client Sample ID: AEH-1506-155S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.9	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8860	mg/kg		5		SW6010B	07/01/15 14:29 / sld
Arsenic	11	mg/kg		1		SW6020	07/02/15 01:28 / dck
Barium	49	mg/kg	D	2		SW6020	07/02/15 01:28 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 14:29 / sld
Copper	31	mg/kg		1		SW6010B	07/01/15 14:29 / sld
Iron	13100	mg/kg		5		SW6010B	07/01/15 14:29 / sld
Lead	9	mg/kg		1		SW6020	07/02/15 01:28 / dck
Manganese	200	mg/kg		1		SW6010B	07/01/15 14:29 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 17:05 / dck
Zinc	29	mg/kg		1		SW6010B	07/01/15 14:29 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 10:37 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-004
Client Sample ID: AEH-1506-156S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	17.2	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	19000	mg/kg		5		SW6010B	07/01/15 14:32 / sld
Arsenic	13	mg/kg		1		SW6020	07/02/15 01:31 / dck
Barium	109	mg/kg	D	2		SW6020	07/02/15 01:31 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 14:32 / sld
Copper	60	mg/kg		1		SW6010B	07/01/15 14:32 / sld
Iron	22900	mg/kg		5		SW6010B	07/01/15 14:32 / sld
Lead	20	mg/kg		1		SW6020	07/02/15 01:31 / dck
Manganese	615	mg/kg		1		SW6010B	07/01/15 14:32 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 17:08 / dck
Zinc	73	mg/kg		1		SW6010B	07/01/15 14:32 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	07/09/15 10:37 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-005
Client Sample ID: AEH-1506-157S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.6	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9270	mg/kg		5		SW6010B	07/01/15 14:36 / sld
Arsenic	61	mg/kg	D	2		SW6010B	07/01/15 14:36 / sld
Barium	73	mg/kg	D	2		SW6020	07/02/15 01:44 / dck
Cadmium	1	mg/kg		1		SW6020	07/02/15 01:44 / dck
Copper	31	mg/kg		1		SW6010B	07/01/15 14:36 / sld
Iron	17500	mg/kg		5		SW6010B	07/01/15 14:36 / sld
Lead	11	mg/kg		1		SW6020	07/02/15 01:44 / dck
Manganese	320	mg/kg		1		SW6010B	07/01/15 14:36 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 17:11 / dck
Zinc	34	mg/kg		1		SW6010B	07/01/15 14:36 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 10:38 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-006
Client Sample ID: AEH-1506-159S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.1	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10100	mg/kg		5		SW6010B	07/01/15 14:40 / sld
Arsenic	159	mg/kg	D	2		SW6010B	07/01/15 14:40 / sld
Barium	88	mg/kg	D	2		SW6020	07/02/15 01:47 / dck
Cadmium	ND	mg/kg		1		SW6020	07/02/15 01:47 / dck
Copper	65	mg/kg		1		SW6010B	07/01/15 14:40 / sld
Iron	27300	mg/kg		5		SW6010B	07/01/15 14:40 / sld
Lead	12	mg/kg		1		SW6020	07/02/15 01:47 / dck
Manganese	463	mg/kg		1		SW6010B	07/01/15 14:40 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/02/15 17:14 / dck
Zinc	44	mg/kg		1		SW6010B	07/01/15 14:40 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 10:39 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060538-007
Client Sample ID: AEH-1506-161S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/26/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	41.2	wt%		0.2		D2974	07/02/15 08:55 / AHN
3050 EXTRACTABLE METALS							
Aluminum	32600	mg/kg		5		SW6010B	07/01/15 14:44 / sld
Arsenic	1	mg/kg		1		SW6020	07/02/15 01:50 / dck
Barium	32	mg/kg	D	2		SW6020	07/02/15 01:50 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 14:44 / sld
Copper	10	mg/kg		1		SW6020	07/02/15 01:50 / dck
Iron	11700	mg/kg		5		SW6010B	07/01/15 14:44 / sld
Lead	19	mg/kg		1		SW6020	07/02/15 01:50 / dck
Manganese	202	mg/kg		1		SW6010B	07/01/15 14:44 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 17:17 / dck
Zinc	45	mg/kg		1		SW6010B	07/01/15 14:44 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 10:41 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 09, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070028 Quote ID: H1089 - Metals Soil Sampling Spring 2015
Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 8 samples for Montana Environmental Custodial Trust on 7/1/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070028-001	AEH-1506-170S	06/26/15 17:00	07/01/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15070028-002	AEH-1506-180S	06/29/15 17:00	07/01/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15070028-003	AEH-1506-181S	06/29/15 17:00	07/01/15	Soil	Same As Above
H15070028-004	AEH-1506-182S	06/29/15 17:00	07/01/15	Soil	Same As Above
H15070028-005	AEH-1506-183S	06/29/15 17:00	07/01/15	Soil	Same As Above
H15070028-006	AEH-1506-184S	06/29/15 17:00	07/01/15	Soil	Same As Above
H15070028-007	AEH-1506-185S	06/29/15 17:00	07/01/15	Soil	Same As Above
H15070028-008	AEH-1506-501S	06/29/15 17:00	07/01/15	Soil	Same As Above

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-001
Client Sample ID: AEH-1506-170S

Report Date: 07/09/15
Collection Date: 06/26/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.3	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10100	mg/kg		5		SW6010B	07/06/15 14:03 / sld
Arsenic	9	mg/kg		5		SW6020	07/06/15 23:26 / dck
Barium	50	mg/kg		1		SW6010B	07/06/15 14:03 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:03 / sld
Copper	18	mg/kg		5		SW6010B	07/06/15 14:03 / sld
Iron	17600	mg/kg		5		SW6010B	07/06/15 14:03 / sld
Lead	22	mg/kg		5		SW6020	07/06/15 23:26 / dck
Manganese	222	mg/kg		5		SW6010B	07/06/15 14:03 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:26 / dck
Zinc	43	mg/kg		5		SW6010B	07/06/15 14:03 / sld
CORROSIVITY							
pH of Soil and Waste	8.5	s.u.		0.10		SW9045D	07/09/15 10:43 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-002
Client Sample ID: AEH-1506-180S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.9	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11200	mg/kg		5		SW6010B	07/06/15 14:07 / sld
Arsenic	11	mg/kg		5		SW6020	07/06/15 23:29 / dck
Barium	34	mg/kg		1		SW6010B	07/06/15 14:07 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:07 / sld
Copper	24	mg/kg		5		SW6010B	07/06/15 14:07 / sld
Iron	13600	mg/kg		5		SW6010B	07/06/15 14:07 / sld
Lead	6	mg/kg		5		SW6020	07/06/15 23:29 / dck
Manganese	144	mg/kg		5		SW6010B	07/06/15 14:07 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:29 / dck
Zinc	32	mg/kg		5		SW6010B	07/06/15 14:07 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/09/15 10:44 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-003
Client Sample ID: AEH-1506-181S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	8.8	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11100	mg/kg		5		SW6010B	07/06/15 14:10 / sld
Arsenic	33	mg/kg		5		SW6020	07/06/15 23:32 / dck
Barium	45	mg/kg		1		SW6010B	07/06/15 14:10 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:10 / sld
Copper	36	mg/kg		5		SW6010B	07/06/15 14:10 / sld
Iron	15900	mg/kg		5		SW6010B	07/06/15 14:10 / sld
Lead	13	mg/kg		5		SW6020	07/06/15 23:32 / dck
Manganese	265	mg/kg		5		SW6010B	07/06/15 14:10 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:32 / dck
Zinc	45	mg/kg		5		SW6010B	07/06/15 14:10 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 10:45 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-004
Client Sample ID: AEH-1506-182S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.7	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	6710	mg/kg		5		SW6010B	07/06/15 14:14 / sld
Arsenic	19	mg/kg		5		SW6020	07/06/15 23:35 / dck
Barium	49	mg/kg		1		SW6010B	07/06/15 14:14 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:14 / sld
Copper	31	mg/kg		5		SW6010B	07/06/15 14:14 / sld
Iron	16000	mg/kg		5		SW6010B	07/06/15 14:14 / sld
Lead	10	mg/kg		5		SW6020	07/06/15 23:35 / dck
Manganese	395	mg/kg		5		SW6010B	07/06/15 14:14 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:35 / dck
Zinc	33	mg/kg		5		SW6010B	07/06/15 14:14 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	07/09/15 10:47 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-005
Client Sample ID: AEH-1506-183S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.5	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	12400	mg/kg		5		SW6010B	07/06/15 14:18 / sld
Arsenic	39	mg/kg		5		SW6020	07/06/15 23:39 / dck
Barium	119	mg/kg		1		SW6010B	07/06/15 14:18 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:18 / sld
Copper	58	mg/kg		5		SW6010B	07/06/15 14:18 / sld
Iron	29200	mg/kg		5		SW6010B	07/06/15 14:18 / sld
Lead	14	mg/kg		5		SW6020	07/06/15 23:39 / dck
Manganese	583	mg/kg		5		SW6010B	07/06/15 14:18 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/06/15 23:39 / dck
Zinc	39	mg/kg		5		SW6010B	07/06/15 14:18 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 10:49 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-006
Client Sample ID: AEH-1506-184S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	5.3	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9300	mg/kg		5		SW6010B	07/06/15 14:21 / sld
Arsenic	28	mg/kg		5		SW6020	07/06/15 23:51 / dck
Barium	62	mg/kg		1		SW6010B	07/06/15 14:21 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:21 / sld
Copper	40	mg/kg		5		SW6010B	07/06/15 14:21 / sld
Iron	39900	mg/kg		5		SW6010B	07/06/15 14:21 / sld
Lead	14	mg/kg		5		SW6020	07/06/15 23:51 / dck
Manganese	1050	mg/kg		5		SW6010B	07/06/15 14:21 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:51 / dck
Zinc	46	mg/kg		5		SW6010B	07/06/15 14:21 / sld
CORROSIVITY							
pH of Soil and Waste	8.1	s.u.		0.10		SW9045D	07/09/15 10:50 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-007
Client Sample ID: AEH-1506-185S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.4	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8250	mg/kg		5		SW6010B	07/06/15 14:25 / sld
Arsenic	19	mg/kg		5		SW6020	07/06/15 23:54 / dck
Barium	58	mg/kg		1		SW6010B	07/06/15 14:25 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:25 / sld
Copper	33	mg/kg		5		SW6010B	07/06/15 14:25 / sld
Iron	17500	mg/kg		5		SW6010B	07/06/15 14:25 / sld
Lead	163	mg/kg		5		SW6020	07/06/15 23:54 / dck
Manganese	401	mg/kg		5		SW6010B	07/06/15 14:25 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/06/15 23:54 / dck
Zinc	44	mg/kg		5		SW6010B	07/06/15 14:25 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/09/15 10:52 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070028-008
Client Sample ID: AEH-1506-501S

Report Date: 07/09/15
Collection Date: 06/29/15 17:00
Date Received: 07/01/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.8	wt%		0.2		D2974	07/06/15 10:25 / AHN
3050 EXTRACTABLE METALS							
Aluminum	12500	mg/kg		5		SW6010B	07/06/15 14:29 / sld
Arsenic	13	mg/kg		5		SW6020	07/06/15 23:58 / dck
Barium	42	mg/kg		1		SW6010B	07/06/15 14:29 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/06/15 14:29 / sld
Copper	27	mg/kg		5		SW6010B	07/06/15 14:29 / sld
Iron	15600	mg/kg		5		SW6010B	07/06/15 14:29 / sld
Lead	10	mg/kg		5		SW6020	07/06/15 23:58 / dck
Manganese	169	mg/kg		5		SW6010B	07/06/15 14:29 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/06/15 23:58 / dck
Zinc	36	mg/kg		5		SW6010B	07/06/15 14:29 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 10:53 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 29, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070194

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 22 samples for Montana Environmental Custodial Trust on 7/10/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070194-001	AEH-1507-2965	07/07/15 8:00	07/10/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15070194-002	AEH-1507-299S	07/07/15 8:00	07/10/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15070194-003	AEH-1507-300S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-004	AEH-1507-304S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-005	AEH-1507-2871S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-006	AEH-1507-2961S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-007	AEH-1507-2971S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-008	AEH-1507-333S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-009	AEH-1507-336S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-010	AEH-1507-503S	07/07/15 8:00	07/10/15	Soil	Same As Above
H15070194-011	AEH-1507-343S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-012	AEH-1507-349S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-013	AEH-1507-352S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-014	AEH-1507-358S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-015	AEH-1507-360S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-016	AEH-1507-3601S	07/08/15 8:00	07/10/15	Soil	Same As Above
H15070194-017	AEH-1507-362S	07/09/15 8:00	07/10/15	Soil	Same As Above
H15070194-018	AEH-1507-368S	07/09/15 8:00	07/10/15	Soil	Same As Above
H15070194-019	AEH-1507-372S	07/09/15 8:00	07/10/15	Soil	Same As Above
H15070194-020	AEH-1507-374S	07/09/15 8:00	07/10/15	Soil	Same As Above
H15070194-021	AEH-1507-379S	07/09/15 8:00	07/10/15	Soil	Same As Above
H15070194-022	AEH-1507-380S	07/09/15 8:00	07/10/15	Soil	Same As Above



ANALYTICAL SUMMARY REPORT

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-001
Client Sample ID: AEH-1507-2965

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.4	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	11300	mg/kg		5		SW6010B	07/16/15 02:15 / sld
Arsenic	15	mg/kg		1		SW6020	07/17/15 02:22 / dck
Barium	98	mg/kg		1		SW6010B	07/16/15 02:15 / sld
Cadmium	17	mg/kg		1		SW6010B	07/16/15 02:15 / sld
Copper	40	mg/kg		1		SW6010B	07/16/15 02:15 / sld
Iron	18700	mg/kg		5		SW6010B	07/16/15 02:15 / sld
Lead	14	mg/kg		1		SW6020	07/17/15 02:22 / dck
Manganese	502	mg/kg		1		SW6010B	07/16/15 02:15 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/17/15 02:22 / dck
Zinc	100	mg/kg		1		SW6010B	07/16/15 02:15 / sld
CORROSIVITY							
pH of Soil and Waste	8.1	s.u.		0.10		SW9045D	07/20/15 09:16 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-002
Client Sample ID: AEH-1507-299S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	24.2	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	48700	mg/kg		5		SW6010B	07/16/15 02:19 / sld
Arsenic	5	mg/kg		1		SW6020	07/17/15 02:26 / dck
Barium	287	mg/kg		1		SW6010B	07/16/15 02:19 / sld
Cadmium	3	mg/kg		1		SW6010B	07/16/15 02:19 / sld
Copper	34	mg/kg		1		SW6010B	07/16/15 02:19 / sld
Iron	10900	mg/kg		5		SW6010B	07/16/15 02:19 / sld
Lead	45	mg/kg		1		SW6020	07/17/15 02:26 / dck
Manganese	478	mg/kg		1		SW6010B	07/16/15 02:19 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/17/15 02:26 / dck
Zinc	38	mg/kg		1		SW6010B	07/16/15 02:19 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	07/20/15 09:16 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-003
Client Sample ID: AEH-1507-300S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	40.0	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	27400	mg/kg		5		SW6010B	07/16/15 02:23 / sld
Arsenic	2	mg/kg		1		SW6020	07/17/15 02:29 / dck
Barium	29	mg/kg		1		SW6010B	07/16/15 02:23 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:23 / sld
Copper	12	mg/kg		1		SW6010B	07/16/15 02:23 / sld
Iron	13300	mg/kg		5		SW6010B	07/16/15 02:23 / sld
Lead	39	mg/kg		1		SW6020	07/17/15 02:29 / dck
Manganese	162	mg/kg		1		SW6010B	07/16/15 02:23 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 02:29 / dck
Zinc	35	mg/kg		1		SW6010B	07/16/15 02:23 / sld
CORROSIVITY							
pH of Soil and Waste	7.4	s.u.		0.10		SW9045D	07/20/15 09:17 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-004
Client Sample ID: AEH-1507-304S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	43.4	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	18300	mg/kg		5		SW6010B	07/16/15 02:26 / sld
Arsenic	ND	mg/kg		1		SW6020	07/17/15 02:32 / dck
Barium	13	mg/kg		1		SW6010B	07/16/15 02:26 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:26 / sld
Copper	6	mg/kg		1		SW6010B	07/16/15 02:26 / sld
Iron	20400	mg/kg		5		SW6010B	07/16/15 02:26 / sld
Lead	11	mg/kg		1		SW6020	07/17/15 02:32 / dck
Manganese	136	mg/kg		1		SW6010B	07/16/15 02:26 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 02:32 / dck
Zinc	41	mg/kg		1		SW6010B	07/16/15 02:26 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/20/15 09:18 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-005
Client Sample ID: AEH-1507-2871S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	13.3	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	18600	mg/kg		5		SW6010B	07/28/15 16:29 / sld
Arsenic	20	mg/kg		1		SW6020	07/28/15 23:30 / dck
Barium	161	mg/kg		1		SW6010B	07/28/15 16:29 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/28/15 16:29 / sld
Copper	87	mg/kg		1		SW6010B	07/28/15 16:29 / sld
Iron	34800	mg/kg		5		SW6010B	07/28/15 16:29 / sld
Lead	27	mg/kg	D	3		SW6010B	07/28/15 16:29 / sld
Manganese	1340	mg/kg		1		SW6010B	07/28/15 16:29 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/28/15 23:30 / dck
Zinc	68	mg/kg		1		SW6010B	07/28/15 16:29 / sld
CORROSIVITY							
pH of Soil and Waste	8.5	s.u.		0.10		SW9045D	07/20/15 09:19 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-006
Client Sample ID: AEH-1507-2961S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.7	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	12200	mg/kg		5		SW6010B	07/16/15 02:30 / sld
Arsenic	5	mg/kg		1		SW6020	07/17/15 02:35 / dck
Barium	47	mg/kg		1		SW6010B	07/16/15 02:30 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:30 / sld
Copper	29	mg/kg		1		SW6010B	07/16/15 02:30 / sld
Iron	14500	mg/kg		5		SW6010B	07/16/15 02:30 / sld
Lead	11	mg/kg		1		SW6020	07/17/15 02:35 / dck
Manganese	325	mg/kg		1		SW6010B	07/16/15 02:30 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 02:35 / dck
Zinc	37	mg/kg		1		SW6010B	07/16/15 02:30 / sld
CORROSIVITY							
pH of Soil and Waste	8.8	s.u.		0.10		SW9045D	07/20/15 09:20 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-007
Client Sample ID: AEH-1507-2971S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	14.6	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	11500	mg/kg		5		SW6010B	07/16/15 02:34 / sld
Arsenic	5	mg/kg		1		SW6020	07/17/15 02:48 / dck
Barium	47	mg/kg		1		SW6010B	07/16/15 02:34 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:34 / sld
Copper	26	mg/kg		1		SW6010B	07/16/15 02:34 / sld
Iron	14500	mg/kg		5		SW6010B	07/16/15 02:34 / sld
Lead	12	mg/kg		1		SW6020	07/17/15 02:48 / dck
Manganese	298	mg/kg		1		SW6010B	07/16/15 02:34 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 02:48 / dck
Zinc	37	mg/kg		1		SW6010B	07/16/15 02:34 / sld
CORROSIVITY							
pH of Soil and Waste	8.6	s.u.		0.10		SW9045D	07/20/15 09:21 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-008
Client Sample ID: AEH-1507-333S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	14.5	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	13300	mg/kg		5		SW6010B	07/16/15 02:38 / sld
Arsenic	10	mg/kg		1		SW6020	07/17/15 02:52 / dck
Barium	64	mg/kg		1		SW6010B	07/16/15 02:38 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:38 / sld
Copper	31	mg/kg		1		SW6010B	07/16/15 02:38 / sld
Iron	23700	mg/kg		5		SW6010B	07/16/15 02:38 / sld
Lead	8	mg/kg		1		SW6020	07/17/15 02:52 / dck
Manganese	387	mg/kg		1		SW6010B	07/16/15 02:38 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/17/15 02:52 / dck
Zinc	44	mg/kg		1		SW6010B	07/16/15 02:38 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/20/15 09:21 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-009
Client Sample ID: AEH-1507-336S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.6	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	9650	mg/kg		5		SW6010B	07/16/15 02:41 / sld
Arsenic	6	mg/kg		1		SW6020	07/17/15 02:55 / dck
Barium	81	mg/kg		1		SW6010B	07/16/15 02:41 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:41 / sld
Copper	25	mg/kg		1		SW6010B	07/16/15 02:41 / sld
Iron	22300	mg/kg		5		SW6010B	07/16/15 02:41 / sld
Lead	15	mg/kg		1		SW6020	07/17/15 02:55 / dck
Manganese	643	mg/kg		1		SW6010B	07/16/15 02:41 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/17/15 02:55 / dck
Zinc	36	mg/kg		1		SW6010B	07/16/15 02:41 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/20/15 09:22 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-010
Client Sample ID: AEH-1507-503S

Report Date: 07/29/15
Collection Date: 07/07/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.4	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	12400	mg/kg		5		SW6010B	07/16/15 02:45 / sld
Arsenic	5	mg/kg		1		SW6020	07/17/15 02:58 / dck
Barium	47	mg/kg		1		SW6010B	07/16/15 02:45 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 02:45 / sld
Copper	29	mg/kg		1		SW6010B	07/16/15 02:45 / sld
Iron	14400	mg/kg		5		SW6010B	07/16/15 02:45 / sld
Lead	11	mg/kg		1		SW6020	07/17/15 02:58 / dck
Manganese	335	mg/kg		1		SW6010B	07/16/15 02:45 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 02:58 / dck
Zinc	37	mg/kg		1		SW6010B	07/16/15 02:45 / sld
CORROSIVITY							
pH of Soil and Waste	8.8	s.u.		0.10		SW9045D	07/20/15 09:23 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-011
Client Sample ID: AEH-1507-343S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	8.8	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	6720	mg/kg		5		SW6010B	07/20/15 23:35 / sld
Arsenic	48	mg/kg		1		SW6020	07/17/15 03:01 / dck
Barium	56	mg/kg		1		SW6020	07/17/15 03:01 / dck
Cadmium	15	mg/kg		1		SW6020	07/17/15 03:01 / dck
Copper	32	mg/kg		1		SW6020	07/17/15 03:01 / dck
Iron	15700	mg/kg		5		SW6020	07/17/15 03:01 / dck
Lead	149	mg/kg		1		SW6020	07/17/15 03:01 / dck
Manganese	219	mg/kg		1		SW6010B	07/20/15 23:35 / sld
Selenium	4.1	mg/kg		0.6		SW6020	07/17/15 03:01 / dck
Zinc	77	mg/kg		1		SW6020	07/17/15 03:01 / dck
CORROSIVITY							
pH of Soil and Waste	7.9	s.u.		0.10		SW9045D	07/20/15 09:27 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-012
Client Sample ID: AEH-1507-349S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.0	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	8270	mg/kg		5		SW6010B	07/20/15 23:39 / sld
Arsenic	221	mg/kg		1		SW6020	07/17/15 03:05 / dck
Barium	42	mg/kg		1		SW6020	07/17/15 03:05 / dck
Cadmium	259	mg/kg		1		SW6020	07/17/15 03:05 / dck
Copper	107	mg/kg		1		SW6020	07/17/15 03:05 / dck
Iron	9020	mg/kg		5		SW6020	07/17/15 03:05 / dck
Lead	58	mg/kg		1		SW6020	07/17/15 03:05 / dck
Manganese	77	mg/kg		1		SW6010B	07/20/15 23:39 / sld
Selenium	29.6	mg/kg		0.6		SW6020	07/17/15 03:05 / dck
Zinc	128	mg/kg		1		SW6020	07/17/15 03:05 / dck
CORROSIVITY							
pH of Soil and Waste	6.3	s.u.		0.10		SW9045D	07/20/15 09:28 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-013
Client Sample ID: AEH-1507-352S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.7	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	15200	mg/kg		5		SW6010B	07/20/15 23:43 / sld
Arsenic	204	mg/kg		1		SW6020	07/17/15 03:08 / dck
Barium	138	mg/kg		1		SW6020	07/17/15 03:08 / dck
Cadmium	426	mg/kg		1		SW6020	07/17/15 03:08 / dck
Copper	50	mg/kg		1		SW6020	07/17/15 03:08 / dck
Iron	24200	mg/kg		5		SW6020	07/17/15 03:08 / dck
Lead	52	mg/kg		1		SW6020	07/17/15 03:08 / dck
Manganese	220	mg/kg		1		SW6010B	07/20/15 23:43 / sld
Selenium	5.0	mg/kg		0.6		SW6020	07/17/15 03:08 / dck
Zinc	220	mg/kg		1		SW6020	07/17/15 03:08 / dck
CORROSIVITY							
pH of Soil and Waste	5.2	s.u.		0.10		SW9045D	07/20/15 09:29 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-014
Client Sample ID: AEH-1507-358S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.3	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	15500	mg/kg		5		SW6010B	07/20/15 23:46 / sld
Arsenic	215	mg/kg		1		SW6020	07/17/15 03:11 / dck
Barium	95	mg/kg		1		SW6020	07/17/15 03:11 / dck
Cadmium	10	mg/kg		1		SW6020	07/17/15 03:11 / dck
Copper	30	mg/kg		1		SW6020	07/17/15 03:11 / dck
Iron	23500	mg/kg		5		SW6020	07/17/15 03:11 / dck
Lead	9	mg/kg		1		SW6020	07/17/15 03:11 / dck
Manganese	322	mg/kg		1		SW6010B	07/20/15 23:46 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 03:11 / dck
Zinc	153	mg/kg		1		SW6020	07/17/15 03:11 / dck
CORROSIVITY							
pH of Soil and Waste	6.5	s.u.		0.10		SW9045D	07/20/15 09:30 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-015
Client Sample ID: AEH-1507-360S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	32.4	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	21500	mg/kg		5		SW6010B	07/20/15 23:58 / sld
Arsenic	763	mg/kg		1		SW6020	07/17/15 03:14 / dck
Barium	172	mg/kg		1		SW6020	07/17/15 03:14 / dck
Cadmium	43	mg/kg		1		SW6020	07/17/15 03:14 / dck
Copper	39	mg/kg		1		SW6020	07/17/15 03:14 / dck
Iron	38200	mg/kg		5		SW6020	07/17/15 03:14 / dck
Lead	31	mg/kg		1		SW6020	07/17/15 03:14 / dck
Manganese	1280	mg/kg		1		SW6010B	07/20/15 23:58 / sld
Selenium	1.3	mg/kg		0.6		SW6020	07/17/15 03:14 / dck
Zinc	212	mg/kg		1		SW6020	07/17/15 03:14 / dck
CORROSIVITY							
pH of Soil and Waste	7.1	s.u.		0.10		SW9045D	07/20/15 09:31 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-016
Client Sample ID: AEH-1507-3601S

Report Date: 07/29/15
Collection Date: 07/08/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	45.6	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	43400	mg/kg		5		SW6010B	07/21/15 00:01 / sld
Arsenic	176	mg/kg		1		SW6020	07/17/15 03:27 / dck
Barium	84	mg/kg		1		SW6020	07/17/15 03:27 / dck
Cadmium	4	mg/kg		1		SW6020	07/17/15 03:27 / dck
Copper	23	mg/kg		1		SW6020	07/17/15 03:27 / dck
Iron	30200	mg/kg		5		SW6020	07/17/15 03:27 / dck
Lead	60	mg/kg		1		SW6020	07/17/15 03:27 / dck
Manganese	492	mg/kg		1		SW6010B	07/21/15 00:01 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 03:27 / dck
Zinc	68	mg/kg		1		SW6020	07/17/15 03:27 / dck
CORROSIVITY							
pH of Soil and Waste	7.2	s.u.		0.10		SW9045D	07/20/15 09:32 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-017
Client Sample ID: AEH-1507-362S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.9	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	6110	mg/kg		5		SW6010B	07/16/15 01:01 / sld
Arsenic	11	mg/kg		1		SW6020	07/17/15 04:26 / dck
Barium	47	mg/kg		1		SW6010B	07/16/15 01:01 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 01:01 / sld
Copper	27	mg/kg		1		SW6010B	07/16/15 01:01 / sld
Iron	15500	mg/kg		5		SW6010B	07/16/15 01:01 / sld
Lead	31	mg/kg		1		SW6020	07/17/15 04:26 / dck
Manganese	369	mg/kg		1		SW6010B	07/16/15 01:01 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 04:26 / dck
Zinc	93	mg/kg		1		SW6010B	07/16/15 01:01 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/20/15 09:35 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-018
Client Sample ID: AEH-1507-368S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.4	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	9180	mg/kg		5		SW6010B	07/16/15 01:05 / sld
Arsenic	14	mg/kg		1		SW6020	07/17/15 04:29 / dck
Barium	58	mg/kg		1		SW6010B	07/16/15 01:05 / sld
Cadmium	5	mg/kg		1		SW6010B	07/16/15 01:05 / sld
Copper	28	mg/kg		1		SW6010B	07/16/15 01:05 / sld
Iron	17900	mg/kg		5		SW6010B	07/16/15 01:05 / sld
Lead	95	mg/kg		1		SW6020	07/17/15 04:29 / dck
Manganese	358	mg/kg		1		SW6010B	07/16/15 01:05 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/17/15 04:29 / dck
Zinc	71	mg/kg		1		SW6010B	07/16/15 01:05 / sld
CORROSIVITY							
pH of Soil and Waste	8.4	s.u.		0.10		SW9045D	07/20/15 09:36 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-019
Client Sample ID: AEH-1507-372S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.9	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	6670	mg/kg		5		SW6010B	07/16/15 01:08 / sld
Arsenic	120	mg/kg		1		SW6020	07/17/15 04:33 / dck
Barium	41	mg/kg		1		SW6010B	07/16/15 01:08 / sld
Cadmium	396	mg/kg		1		SW6010B	07/16/15 01:08 / sld
Copper	80	mg/kg		1		SW6010B	07/16/15 01:08 / sld
Iron	10800	mg/kg		5		SW6010B	07/16/15 01:08 / sld
Lead	142	mg/kg		1		SW6020	07/17/15 04:33 / dck
Manganese	145	mg/kg		1		SW6010B	07/16/15 01:08 / sld
Selenium	45.1	mg/kg		0.6		SW6020	07/17/15 04:33 / dck
Zinc	129	mg/kg		1		SW6010B	07/16/15 01:08 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	07/20/15 09:37 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-020
Client Sample ID: AEH-1507-374S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.7	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	11400	mg/kg		5		SW6010B	07/16/15 01:12 / sld
Arsenic	141	mg/kg		1		SW6020	07/17/15 04:36 / dck
Barium	61	mg/kg		1		SW6010B	07/16/15 01:12 / sld
Cadmium	82	mg/kg		1		SW6010B	07/16/15 01:12 / sld
Copper	52	mg/kg		1		SW6010B	07/16/15 01:12 / sld
Iron	19300	mg/kg		5		SW6010B	07/16/15 01:12 / sld
Lead	42	mg/kg		1		SW6020	07/17/15 04:36 / dck
Manganese	198	mg/kg		1		SW6010B	07/16/15 01:12 / sld
Selenium	10.4	mg/kg		0.6		SW6020	07/17/15 04:36 / dck
Zinc	186	mg/kg		1		SW6010B	07/16/15 01:12 / sld
CORROSIVITY							
pH of Soil and Waste	5.7	s.u.		0.10		SW9045D	07/20/15 09:38 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-021
Client Sample ID: AEH-1507-379S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	11.8	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	10400	mg/kg		5		SW6010B	07/16/15 01:16 / sld
Arsenic	192	mg/kg		1		SW6020	07/17/15 04:39 / dck
Barium	49	mg/kg		1		SW6010B	07/16/15 01:16 / sld
Cadmium	3	mg/kg		1		SW6010B	07/16/15 01:16 / sld
Copper	40	mg/kg		1		SW6010B	07/16/15 01:16 / sld
Iron	17700	mg/kg		5		SW6010B	07/16/15 01:16 / sld
Lead	11	mg/kg		1		SW6020	07/17/15 04:39 / dck
Manganese	230	mg/kg		1		SW6010B	07/16/15 01:16 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 04:39 / dck
Zinc	113	mg/kg		1		SW6010B	07/16/15 01:16 / sld
CORROSIVITY							
pH of Soil and Waste	6.4	s.u.		0.10		SW9045D	07/20/15 09:41 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070194-022
Client Sample ID: AEH-1507-380S

Report Date: 07/29/15
Collection Date: 07/09/15 08:00
Date Received: 07/10/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	40.3	wt%		0.2		D2974	07/15/15 11:23 / sld
3050 EXTRACTABLE METALS							
Aluminum	45600	mg/kg		5		SW6010B	07/16/15 01:27 / sld
Arsenic	460	mg/kg		1		SW6020	07/17/15 04:42 / dck
Barium	86	mg/kg		1		SW6010B	07/16/15 01:27 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/16/15 01:27 / sld
Copper	27	mg/kg		1		SW6010B	07/16/15 01:27 / sld
Iron	26600	mg/kg		5		SW6010B	07/16/15 01:27 / sld
Lead	56	mg/kg		1		SW6020	07/17/15 04:42 / dck
Manganese	1100	mg/kg		1		SW6010B	07/16/15 01:27 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/17/15 04:42 / dck
Zinc	65	mg/kg		1		SW6010B	07/16/15 01:27 / sld
CORROSIVITY							
pH of Soil and Waste	6.6	s.u.		0.10		SW9045D	07/20/15 09:42 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 21, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070052

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 18 samples for Montana Environmental Custodial Trust on 7/2/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070052-001	AEH-1506-218S	06/30/15 8:00	07/02/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15070052-002	AEH-1506-226S	06/30/15 8:00	07/02/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15070052-003	AEH-1506-228S	06/30/15 8:00	07/02/15	Soil	Same As Above
H15070052-004	AEH-1506-229S	06/30/15 8:00	07/02/15	Soil	Same As Above
H15070052-005	AEH-1506-230S	06/30/15 8:00	07/02/15	Soil	Same As Above
H15070052-006	AEH-1506-240S	06/30/15 8:00	07/02/15	Soil	Same As Above
H15070052-007	AEH-1507-246S	07/01/15 8:00	07/02/15	Soil	Same As Above
H15070052-008	AEH-1507-248S	07/01/15 8:00	07/02/15	Soil	Same As Above
H15070052-009	AEH-1507-250S	07/01/15 8:00	07/02/15	Soil	Same As Above
H15070052-010	AEH-1507-252S	07/01/15 8:00	07/02/15	Soil	Same As Above
H15070052-011	AEH-1507-253S	07/01/15 8:00	07/02/15	Soil	Same As Above
H15070052-012	AEH-1507-265S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-013	AEH-1507-271S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-014	AEH-1507-273S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-015	AEH-1507-274S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-016	AEH-1507-276S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-017	AEH-1507-502S	07/02/15 8:00	07/02/15	Soil	Same As Above
H15070052-018	AEH-1507-255S	07/01/15 8:00	07/02/15	Soil	Same As Above

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

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

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



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515
College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

ANALYTICAL SUMMARY REPORT

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-001
Client Sample ID: AEH-1506-218S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	16.0	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	14800	mg/kg		5		SW6010B	07/13/15 14:37 / sld
Arsenic	9	mg/kg		1		SW6020	07/09/15 00:46 / dck
Barium	133	mg/kg		1		SW6010B	07/07/15 11:19 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 12:08 / sld
Copper	18	mg/kg		1		SW6010B	07/08/15 12:08 / sld
Iron	13900	mg/kg		5		SW6010B	07/08/15 12:08 / sld
Lead	17	mg/kg		1		SW6020	07/14/15 19:29 / dck
Manganese	299	mg/kg		1		SW6010B	07/07/15 11:19 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:27 / dck
Zinc	43	mg/kg		1		SW6010B	07/07/15 11:19 / sld
CORROSIVITY							
pH of Soil and Waste	7.4	s.u.		0.10		SW9045D	07/09/15 11:08 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-002
Client Sample ID: AEH-1506-226S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	8.3	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9190	mg/kg		5		SW6010B	07/13/15 14:40 / sld
Arsenic	105	mg/kg		1		SW6010B	07/08/15 12:12 / sld
Barium	72	mg/kg		1		SW6010B	07/07/15 11:22 / sld
Cadmium	11	mg/kg		1		SW6010B	07/08/15 12:12 / sld
Copper	52	mg/kg		1		SW6010B	07/08/15 12:12 / sld
Iron	42400	mg/kg		5		SW6010B	07/13/15 14:40 / sld
Lead	15	mg/kg		1		SW6020	07/14/15 19:33 / dck
Manganese	632	mg/kg		1		SW6010B	07/07/15 11:22 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:30 / dck
Zinc	64	mg/kg		1		SW6010B	07/07/15 11:22 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	07/09/15 11:10 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-003
Client Sample ID: AEH-1506-228S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.8	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7630	mg/kg		5		SW6010B	07/13/15 14:44 / sld
Arsenic	32	mg/kg		1		SW6010B	07/08/15 12:16 / sld
Barium	77	mg/kg		1		SW6010B	07/07/15 11:34 / sld
Cadmium	14	mg/kg		1		SW6010B	07/08/15 12:16 / sld
Copper	25	mg/kg		1		SW6010B	07/08/15 12:16 / sld
Iron	12200	mg/kg		5		SW6010B	07/08/15 12:16 / sld
Lead	6	mg/kg	D	3		SW6010B	07/07/15 11:34 / sld
Manganese	389	mg/kg		1		SW6010B	07/07/15 11:34 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:33 / dck
Zinc	53	mg/kg		1		SW6010B	07/07/15 11:34 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/09/15 11:11 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-004
Client Sample ID: AEH-1506-229S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.4	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10300	mg/kg		5		SW6010B	07/13/15 14:48 / sld
Arsenic	73	mg/kg		1		SW6010B	07/08/15 12:19 / sld
Barium	72	mg/kg		1		SW6010B	07/07/15 11:37 / sld
Cadmium	15	mg/kg		1		SW6010B	07/08/15 12:19 / sld
Copper	37	mg/kg		1		SW6010B	07/08/15 12:19 / sld
Iron	17700	mg/kg		5		SW6010B	07/08/15 12:19 / sld
Lead	13	mg/kg		1		SW6020	07/14/15 19:39 / dck
Manganese	372	mg/kg		1		SW6010B	07/07/15 11:37 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:36 / dck
Zinc	90	mg/kg		1		SW6010B	07/07/15 11:37 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	07/09/15 11:12 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-005
Client Sample ID: AEH-1506-230S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	32.4	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	32800	mg/kg		5		SW6010B	07/13/15 14:51 / sld
Arsenic	27	mg/kg		1		SW6010B	07/08/15 12:23 / sld
Barium	42	mg/kg		1		SW6010B	07/07/15 11:41 / sld
Cadmium	10	mg/kg		1		SW6010B	07/08/15 12:23 / sld
Copper	27	mg/kg		1		SW6010B	07/08/15 12:23 / sld
Iron	19700	mg/kg		5		SW6010B	07/08/15 12:23 / sld
Lead	27	mg/kg		1		SW6020	07/14/15 19:42 / dck
Manganese	256	mg/kg		1		SW6010B	07/07/15 11:41 / sld
Selenium	0.9	mg/kg		0.6		SW6020	07/20/15 22:39 / dck
Zinc	86	mg/kg		1		SW6010B	07/07/15 11:41 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	07/09/15 11:14 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-006
Client Sample ID: AEH-1506-240S

Report Date: 07/21/15
Collection Date: 06/30/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.8	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9720	mg/kg		5		SW6010B	07/13/15 14:55 / sld
Arsenic	7	mg/kg		1		SW6020	07/09/15 01:02 / dck
Barium	35	mg/kg		1		SW6010B	07/07/15 11:45 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 12:27 / sld
Copper	43	mg/kg		1		SW6010B	07/08/15 12:27 / sld
Iron	10900	mg/kg		5		SW6010B	07/08/15 12:27 / sld
Lead	13	mg/kg		1		SW6020	07/14/15 19:45 / dck
Manganese	143	mg/kg		1		SW6010B	07/07/15 11:45 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:42 / dck
Zinc	39	mg/kg		1		SW6010B	07/07/15 11:45 / sld
CORROSIVITY							
pH of Soil and Waste	8.6	s.u.		0.10		SW9045D	07/09/15 11:15 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-007
Client Sample ID: AEH-1507-246S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	26.5	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	31000	mg/kg		5		SW6010B	07/13/15 15:06 / sld
Arsenic	10	mg/kg		1		SW6020	07/09/15 01:05 / dck
Barium	73	mg/kg		1		SW6010B	07/07/15 11:48 / sld
Cadmium	ND	mg/kg		1		SW6020	07/09/15 01:05 / dck
Copper	48	mg/kg		1		SW6010B	07/13/15 15:06 / sld
Iron	25600	mg/kg		5		SW6010B	07/13/15 15:06 / sld
Lead	33	mg/kg		1		SW6020	07/14/15 19:48 / dck
Manganese	437	mg/kg		1		SW6010B	07/07/15 11:48 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:46 / dck
Zinc	84	mg/kg		1		SW6010B	07/07/15 11:48 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 11:15 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-008
Client Sample ID: AEH-1507-248S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.5	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7870	mg/kg		5		SW6010B	07/13/15 15:10 / sld
Arsenic	31	mg/kg		1		SW6010B	07/08/15 12:34 / sld
Barium	34	mg/kg		1		SW6010B	07/07/15 11:52 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 12:34 / sld
Copper	22	mg/kg		1		SW6010B	07/08/15 12:34 / sld
Iron	20400	mg/kg		5		SW6010B	07/08/15 12:34 / sld
Lead	8	mg/kg		1		SW6020	07/14/15 20:01 / dck
Manganese	248	mg/kg		1		SW6010B	07/07/15 11:52 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 22:59 / dck
Zinc	21	mg/kg		1		SW6010B	07/07/15 11:52 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/09/15 11:17 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-009
Client Sample ID: AEH-1507-250S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	16.3	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	6950	mg/kg		5		SW6010B	07/13/15 15:14 / sld
Arsenic	51	mg/kg		1		SW6010B	07/08/15 12:38 / sld
Barium	22	mg/kg		1		SW6010B	07/07/15 11:56 / sld
Cadmium	1	mg/kg		1		SW6010B	07/08/15 12:38 / sld
Copper	21	mg/kg		1		SW6010B	07/08/15 12:38 / sld
Iron	9090	mg/kg		5		SW6010B	07/08/15 12:38 / sld
Lead	9	mg/kg		1		SW6020	07/14/15 20:04 / dck
Manganese	159	mg/kg		1		SW6010B	07/07/15 11:56 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 23:02 / dck
Zinc	16	mg/kg		1		SW6010B	07/07/15 11:56 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	07/09/15 11:18 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-010
Client Sample ID: AEH-1507-252S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.4	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9530	mg/kg		5		SW6010B	07/13/15 15:17 / sld
Arsenic	123	mg/kg		1		SW6010B	07/08/15 12:42 / sld
Barium	66	mg/kg		1		SW6010B	07/07/15 11:59 / sld
Cadmium	2	mg/kg		1		SW6010B	07/08/15 12:42 / sld
Copper	45	mg/kg		1		SW6010B	07/08/15 12:42 / sld
Iron	22000	mg/kg		5		SW6010B	07/08/15 12:42 / sld
Lead	9	mg/kg		1		SW6020	07/14/15 20:07 / dck
Manganese	471	mg/kg		1		SW6010B	07/07/15 11:59 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 23:05 / dck
Zinc	36	mg/kg		1		SW6010B	07/07/15 11:59 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	07/09/15 11:20 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-011
Client Sample ID: AEH-1507-253S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	37.2	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	37300	mg/kg		5		SW6010B	07/13/15 15:21 / sld
Arsenic	7	mg/kg		1		SW6020	07/09/15 01:28 / dck
Barium	31	mg/kg		1		SW6010B	07/07/15 12:03 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 12:53 / sld
Copper	14	mg/kg		1		SW6010B	07/08/15 12:53 / sld
Iron	15700	mg/kg		5		SW6010B	07/08/15 12:53 / sld
Lead	34	mg/kg	D	3		SW6010B	07/16/15 17:24 / sld
Manganese	59	mg/kg		1		SW6010B	07/13/15 15:21 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 23:08 / dck
Zinc	63	mg/kg		1		SW6010B	07/16/15 17:24 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	07/09/15 11:23 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-012
Client Sample ID: AEH-1507-265S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	5.0	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	6440	mg/kg		5		SW6010B	07/13/15 15:25 / sld
Arsenic	71	mg/kg		1		SW6010B	07/08/15 12:56 / sld
Barium	43	mg/kg		1		SW6010B	07/07/15 12:07 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 12:56 / sld
Copper	37	mg/kg		1		SW6010B	07/08/15 12:56 / sld
Iron	13000	mg/kg		5		SW6010B	07/08/15 12:56 / sld
Lead	10	mg/kg		1		SW6020	07/14/15 20:14 / dck
Manganese	291	mg/kg		1		SW6010B	07/07/15 12:07 / sld
Selenium	21.0	mg/kg		0.6		SW6020	07/20/15 23:11 / dck
Zinc	31	mg/kg		1		SW6010B	07/07/15 12:07 / sld
CORROSIVITY							
pH of Soil and Waste	8.6	s.u.		0.10		SW9045D	07/09/15 11:24 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-013
Client Sample ID: AEH-1507-271S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	21.7	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16400	mg/kg		5		SW6010B	07/13/15 15:28 / sld
Arsenic	6	mg/kg		1		SW6020	07/09/15 01:34 / dck
Barium	233	mg/kg		1		SW6010B	07/13/15 15:28 / sld
Cadmium	75	mg/kg		1		SW6010B	07/13/15 15:28 / sld
Copper	79	mg/kg		1		SW6010B	07/13/15 15:28 / sld
Iron	19900	mg/kg		5		SW6010B	07/13/15 15:28 / sld
Lead	21	mg/kg	D	3		SW6010B	07/13/15 15:28 / sld
Manganese	1890	mg/kg		1		SW6010B	07/13/15 15:28 / sld
Selenium	7.0	mg/kg		0.6		SW6020	07/20/15 23:14 / dck
Zinc	158	mg/kg		1		SW6010B	07/13/15 15:28 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 11:24 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-014
Client Sample ID: AEH-1507-273S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.3	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11400	mg/kg		5		SW6010B	07/13/15 15:32 / sld
Arsenic	10	mg/kg		1		SW6020	07/09/15 01:38 / dck
Barium	67	mg/kg		1		SW6010B	07/07/15 12:22 / sld
Cadmium	21	mg/kg		1		SW6010B	07/08/15 13:04 / sld
Copper	36	mg/kg		1		SW6010B	07/08/15 13:04 / sld
Iron	14800	mg/kg		5		SW6010B	07/08/15 13:04 / sld
Lead	8	mg/kg		1		SW6020	07/14/15 20:20 / dck
Manganese	442	mg/kg		1		SW6010B	07/07/15 12:22 / sld
Selenium	3.4	mg/kg		0.6		SW6020	07/20/15 23:17 / dck
Zinc	124	mg/kg		1		SW6010B	07/07/15 12:22 / sld
CORROSIVITY							
pH of Soil and Waste	8.1	s.u.		0.10		SW9045D	07/09/15 11:25 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-015
Client Sample ID: AEH-1507-274S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.8	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10500	mg/kg		5		SW6010B	07/13/15 15:36 / sld
Arsenic	15	mg/kg		1		SW6010B	07/08/15 13:07 / sld
Barium	457	mg/kg		1		SW6010B	07/07/15 12:25 / sld
Cadmium	18	mg/kg		1		SW6010B	07/08/15 13:07 / sld
Copper	38	mg/kg		1		SW6010B	07/08/15 13:07 / sld
Iron	16600	mg/kg		5		SW6010B	07/08/15 13:07 / sld
Lead	13	mg/kg		1		SW6020	07/14/15 20:23 / dck
Manganese	610	mg/kg		1		SW6010B	07/07/15 12:25 / sld
Selenium	3.5	mg/kg		0.6		SW6020	07/20/15 23:21 / dck
Zinc	126	mg/kg		1		SW6010B	07/07/15 12:25 / sld
CORROSIVITY							
pH of Soil and Waste	8.1	s.u.		0.10		SW9045D	07/09/15 11:27 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-016
Client Sample ID: AEH-1507-276S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	37.7	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	41500	mg/kg		5		SW6010B	07/13/15 15:39 / sld
Arsenic	1	mg/kg		1		SW6020	07/09/15 01:44 / dck
Barium	74	mg/kg		1		SW6010B	07/07/15 12:29 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 13:11 / sld
Copper	10	mg/kg		1		SW6010B	07/08/15 13:11 / sld
Iron	8460	mg/kg		5		SW6010B	07/08/15 13:11 / sld
Lead	34	mg/kg		1		SW6020	07/14/15 20:26 / dck
Manganese	272	mg/kg		1		SW6010B	07/07/15 12:29 / sld
Selenium	1.1	mg/kg		0.6		SW6020	07/20/15 23:24 / dck
Zinc	49	mg/kg		1		SW6010B	07/07/15 12:29 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 11:28 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-017
Client Sample ID: AEH-1507-502S

Report Date: 07/21/15
Collection Date: 07/02/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	38.1	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	38700	mg/kg		5		SW6010B	07/13/15 15:51 / sld
Arsenic	2	mg/kg		1		SW6020	07/09/15 01:57 / dck
Barium	73	mg/kg		1		SW6010B	07/16/15 17:43 / sld
Cadmium	ND	mg/kg		1		SW6010B	07/08/15 13:15 / sld
Copper	7	mg/kg		1		SW6010B	07/08/15 13:15 / sld
Iron	7600	mg/kg		5		SW6010B	07/08/15 13:15 / sld
Lead	31	mg/kg	D	3		SW6010B	07/13/15 15:51 / sld
Manganese	268	mg/kg		1		SW6010B	07/07/15 12:33 / sld
Selenium	1.3	mg/kg		0.6		SW6020	07/20/15 23:37 / dck
Zinc	42	mg/kg		1		SW6010B	07/07/15 12:33 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	07/09/15 11:29 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070052-018
Client Sample ID: AEH-1507-255S

Report Date: 07/21/15
Collection Date: 07/01/15 08:00
Date Received: 07/02/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	31.8	wt%		0.2		D2974	07/07/15 11:29 / AHN
3050 EXTRACTABLE METALS							
Aluminum	23200	mg/kg		5		SW6010B	07/10/15 10:03 / sld
Arsenic	ND	mg/kg		1		SW6020	07/09/15 02:29 / dck
Barium	27	mg/kg	D	2		SW6020	07/09/15 02:29 / dck
Cadmium	ND	mg/kg		1		SW6020	07/09/15 02:29 / dck
Copper	10	mg/kg		1		SW6010B	07/13/15 16:09 / sld
Iron	19300	mg/kg		5		SW6010B	07/10/15 10:03 / sld
Lead	17	mg/kg		1		SW6020	07/14/15 20:29 / dck
Manganese	90	mg/kg		1		SW6010B	07/10/15 10:03 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/20/15 23:56 / dck
Zinc	39	mg/kg		1		SW6010B	07/10/15 10:03 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	07/09/15 11:31 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

August 27, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15080322 Quote ID: H1089 - Metals Soil Sampling Spring 2015
Project Name: 10022 2015 SAI

Energy Laboratories Inc Helena MT received the following 15 samples for Montana Environmental Custodial Trust on 8/18/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15080322-001	AEH-1508-600S	08/14/15 9:00	08/18/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15080322-002	AEH-1508-601S	08/14/15 9:30	08/18/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15080322-003	AEH-1508-602S	08/14/15 9:40	08/18/15	Soil	Same As Above
H15080322-004	AEH-1508-603S	08/14/15 10:00	08/18/15	Soil	Same As Above
H15080322-005	AEH-1508-604S	08/14/15 11:00	08/18/15	Soil	Same As Above
H15080322-006	AEH-1508-605S	08/14/15 11:30	08/18/15	Soil	Same As Above
H15080322-007	AEH-1508-606S	08/14/15 13:00	08/18/15	Soil	Same As Above
H15080322-008	AEH-1508-607S	08/14/15 14:00	08/18/15	Soil	Same As Above
H15080322-009	AEH-1508-608S	08/17/15 8:00	08/18/15	Soil	Same As Above
H15080322-010	AEH-1508-609S	08/17/15 8:20	08/18/15	Soil	Same As Above
H15080322-011	AEH-1508-610S	08/17/15 9:00	08/18/15	Soil	Same As Above
H15080322-012	AEH-1508-611S	08/17/15 10:00	08/18/15	Soil	Same As Above
H15080322-013	AEH-1508-612S	08/17/15 11:00	08/18/15	Soil	Same As Above
H15080322-014	AEH-1508-613S	08/17/15 11:30	08/18/15	Soil	Same As Above
H15080322-015	AEH-1508-614S	08/17/15 12:00	08/18/15	Soil	Same As Above

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-001
Client Sample ID: AEH-1508-600S

Report Date: 08/27/15
Collection Date: 08/14/15 09:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	5.4	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	14200	mg/kg		5		SW6010B	08/20/15 18:45 / sld
Arsenic	11	mg/kg		1		SW6020	08/24/15 16:38 / dck
Barium	97	mg/kg		1		SW6010B	08/20/15 18:45 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 18:45 / sld
Copper	41	mg/kg		1		SW6010B	08/20/15 18:45 / sld
Iron	24600	mg/kg		5		SW6010B	08/20/15 18:45 / sld
Lead	11	mg/kg		1		SW6020	08/24/15 16:38 / dck
Manganese	569	mg/kg		1		SW6010B	08/20/15 18:45 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 16:38 / dck
Zinc	42	mg/kg		1		SW6010B	08/20/15 18:45 / sld
CORROSIVITY							
pH of Soil and Waste	7.9	s.u.		0.10		SW9045D	08/24/15 10:27 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-002
Client Sample ID: AEH-1508-601S

Report Date: 08/27/15
Collection Date: 08/14/15 09:30
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.7	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16300	mg/kg		5		SW6010B	08/20/15 18:49 / sld
Arsenic	106	mg/kg		1		SW6020	08/24/15 16:41 / dck
Barium	150	mg/kg		1		SW6010B	08/20/15 18:49 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 18:49 / sld
Copper	40	mg/kg		1		SW6010B	08/20/15 18:49 / sld
Iron	24400	mg/kg		5		SW6010B	08/20/15 18:49 / sld
Lead	18	mg/kg		1		SW6020	08/24/15 16:41 / dck
Manganese	432	mg/kg		1		SW6010B	08/20/15 18:49 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 16:41 / dck
Zinc	47	mg/kg		1		SW6010B	08/20/15 18:49 / sld
CORROSIVITY							
pH of Soil and Waste	8.2	s.u.		0.10		SW9045D	08/24/15 10:28 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-003
Client Sample ID: AEH-1508-602S

Report Date: 08/27/15
Collection Date: 08/14/15 09:40
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.5	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	14800	mg/kg		5		SW6010B	08/20/15 18:52 / sld
Arsenic	104	mg/kg		1		SW6020	08/24/15 16:54 / dck
Barium	144	mg/kg		1		SW6010B	08/20/15 18:52 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 18:52 / sld
Copper	36	mg/kg		1		SW6010B	08/20/15 18:52 / sld
Iron	21700	mg/kg		5		SW6010B	08/20/15 18:52 / sld
Lead	14	mg/kg		1		SW6020	08/24/15 16:54 / dck
Manganese	403	mg/kg		1		SW6010B	08/20/15 18:52 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 16:54 / dck
Zinc	42	mg/kg		1		SW6010B	08/20/15 18:52 / sld
CORROSIVITY							
pH of Soil and Waste	8.2	s.u.		0.10		SW9045D	08/24/15 10:29 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-004
Client Sample ID: AEH-1508-603S

Report Date: 08/27/15
Collection Date: 08/14/15 10:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	9.0	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9030	mg/kg		5		SW6010B	08/20/15 18:56 / sld
Arsenic	6	mg/kg		1		SW6020	08/24/15 16:57 / dck
Barium	47	mg/kg		1		SW6010B	08/20/15 18:56 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 18:56 / sld
Copper	21	mg/kg		1		SW6010B	08/20/15 18:56 / sld
Iron	15100	mg/kg		5		SW6010B	08/20/15 18:56 / sld
Lead	9	mg/kg		1		SW6020	08/24/15 16:57 / dck
Manganese	270	mg/kg		1		SW6010B	08/20/15 18:56 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 16:57 / dck
Zinc	24	mg/kg		1		SW6010B	08/20/15 18:56 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	08/24/15 10:30 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-005
Client Sample ID: AEH-1508-604S

Report Date: 08/27/15
Collection Date: 08/14/15 11:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.3	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8530	mg/kg		5		SW6010B	08/20/15 19:00 / sld
Arsenic	6	mg/kg		1		SW6020	08/24/15 17:00 / dck
Barium	66	mg/kg		1		SW6010B	08/20/15 19:00 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:00 / sld
Copper	21	mg/kg		1		SW6010B	08/20/15 19:00 / sld
Iron	13800	mg/kg		5		SW6010B	08/20/15 19:00 / sld
Lead	12	mg/kg		1		SW6020	08/24/15 17:00 / dck
Manganese	244	mg/kg		1		SW6010B	08/20/15 19:00 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:00 / dck
Zinc	29	mg/kg		1		SW6010B	08/20/15 19:00 / sld
CORROSIVITY							
pH of Soil and Waste	7.9	s.u.		0.10		SW9045D	08/24/15 10:31 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-006
Client Sample ID: AEH-1508-605S

Report Date: 08/27/15
Collection Date: 08/14/15 11:30
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	16.5	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11700	mg/kg		5		SW6010B	08/20/15 19:03 / sld
Arsenic	12	mg/kg		1		SW6020	08/24/15 17:03 / dck
Barium	41	mg/kg		1		SW6010B	08/20/15 19:03 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:03 / sld
Copper	34	mg/kg		1		SW6010B	08/20/15 19:03 / sld
Iron	25800	mg/kg		5		SW6010B	08/20/15 19:03 / sld
Lead	23	mg/kg		1		SW6020	08/24/15 17:03 / dck
Manganese	212	mg/kg		1		SW6010B	08/20/15 19:03 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:03 / dck
Zinc	56	mg/kg		1		SW6010B	08/20/15 19:03 / sld
CORROSIVITY							
pH of Soil and Waste	7.4	s.u.		0.10		SW9045D	08/24/15 10:31 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-007
Client Sample ID: AEH-1508-606S

Report Date: 08/27/15
Collection Date: 08/14/15 13:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.3	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	5250	mg/kg		5		SW6010B	08/20/15 19:07 / sld
Arsenic	ND	mg/kg		1		SW6020	08/24/15 17:07 / dck
Barium	20	mg/kg		1		SW6010B	08/20/15 19:07 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:07 / sld
Copper	12	mg/kg		1		SW6010B	08/20/15 19:07 / sld
Iron	12600	mg/kg		5		SW6010B	08/20/15 19:07 / sld
Lead	15	mg/kg		1		SW6020	08/24/15 17:07 / dck
Manganese	34	mg/kg		1		SW6010B	08/20/15 19:07 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:07 / dck
Zinc	20	mg/kg		1		SW6010B	08/20/15 19:07 / sld
CORROSIVITY							
pH of Soil and Waste	7.2	s.u.		0.10		SW9045D	08/24/15 10:32 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-008
Client Sample ID: AEH-1508-607S

Report Date: 08/27/15
Collection Date: 08/14/15 14:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	22.7	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	23400	mg/kg		5		SW6010B	08/20/15 19:11 / sld
Arsenic	3	mg/kg		1		SW6020	08/24/15 17:10 / dck
Barium	63	mg/kg		1		SW6010B	08/20/15 19:11 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:11 / sld
Copper	62	mg/kg		1		SW6010B	08/20/15 19:11 / sld
Iron	27000	mg/kg		5		SW6010B	08/20/15 19:11 / sld
Lead	28	mg/kg		1		SW6020	08/24/15 17:10 / dck
Manganese	142	mg/kg		1		SW6010B	08/20/15 19:11 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:10 / dck
Zinc	83	mg/kg		1		SW6010B	08/20/15 19:11 / sld
CORROSIVITY							
pH of Soil and Waste	7.1	s.u.		0.10		SW9045D	08/24/15 10:34 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-009
Client Sample ID: AEH-1508-608S

Report Date: 08/27/15
Collection Date: 08/17/15 08:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	14.1	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7580	mg/kg		5		SW6010B	08/20/15 19:15 / sld
Arsenic	4	mg/kg		1		SW6020	08/24/15 17:13 / dck
Barium	65	mg/kg		1		SW6010B	08/20/15 19:15 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:15 / sld
Copper	35	mg/kg		1		SW6010B	08/20/15 19:15 / sld
Iron	8640	mg/kg		5		SW6010B	08/20/15 19:15 / sld
Lead	7	mg/kg		1		SW6020	08/24/15 17:13 / dck
Manganese	493	mg/kg		1		SW6010B	08/20/15 19:15 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:13 / dck
Zinc	21	mg/kg		1		SW6010B	08/20/15 19:15 / sld
CORROSIVITY							
pH of Soil and Waste	7.8	s.u.		0.10		SW9045D	08/24/15 10:38 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-010
Client Sample ID: AEH-1508-609S

Report Date: 08/27/15
Collection Date: 08/17/15 08:20
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	13.6	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10600	mg/kg		5		SW6010B	08/20/15 19:26 / sld
Arsenic	3	mg/kg		1		SW6020	08/24/15 17:16 / dck
Barium	57	mg/kg		1		SW6010B	08/20/15 19:26 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:26 / sld
Copper	37	mg/kg		1		SW6010B	08/20/15 19:26 / sld
Iron	18600	mg/kg		5		SW6010B	08/20/15 19:26 / sld
Lead	14	mg/kg		1		SW6020	08/24/15 17:16 / dck
Manganese	528	mg/kg		1		SW6010B	08/20/15 19:26 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:16 / dck
Zinc	32	mg/kg		1		SW6010B	08/20/15 19:26 / sld
CORROSIVITY							
pH of Soil and Waste	7.6	s.u.		0.10		SW9045D	08/24/15 10:39 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-011
Client Sample ID: AEH-1508-610S

Report Date: 08/27/15
Collection Date: 08/17/15 09:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	13.4	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7300	mg/kg		5		SW6010B	08/20/15 19:29 / sld
Arsenic	34	mg/kg		1		SW6020	08/24/15 17:19 / dck
Barium	31	mg/kg		1		SW6010B	08/20/15 19:29 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:29 / sld
Copper	27	mg/kg		1		SW6010B	08/20/15 19:29 / sld
Iron	11500	mg/kg		5		SW6010B	08/20/15 19:29 / sld
Lead	10	mg/kg		1		SW6020	08/24/15 17:19 / dck
Manganese	222	mg/kg		1		SW6010B	08/20/15 19:29 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:19 / dck
Zinc	23	mg/kg		1		SW6010B	08/20/15 19:29 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	08/24/15 10:40 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-012
Client Sample ID: AEH-1508-611S

Report Date: 08/27/15
Collection Date: 08/17/15 10:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.8	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8500	mg/kg		5		SW6010B	08/20/15 19:33 / sld
Arsenic	102	mg/kg		1		SW6020	08/24/15 17:23 / dck
Barium	74	mg/kg		1		SW6010B	08/20/15 19:33 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:33 / sld
Copper	28	mg/kg		1		SW6010B	08/20/15 19:33 / sld
Iron	19200	mg/kg		5		SW6010B	08/20/15 19:33 / sld
Lead	9	mg/kg		1		SW6020	08/24/15 17:23 / dck
Manganese	516	mg/kg		1		SW6010B	08/20/15 19:33 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:23 / dck
Zinc	71	mg/kg		1		SW6010B	08/20/15 19:33 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	08/24/15 10:41 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-013
Client Sample ID: AEH-1508-612S

Report Date: 08/27/15
Collection Date: 08/17/15 11:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.6	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8280	mg/kg		5		SW6010B	08/20/15 19:37 / sld
Arsenic	109	mg/kg		1		SW6020	08/24/15 17:35 / dck
Barium	78	mg/kg		1		SW6010B	08/20/15 19:37 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:37 / sld
Copper	37	mg/kg		1		SW6010B	08/20/15 19:37 / sld
Iron	18600	mg/kg		5		SW6010B	08/20/15 19:37 / sld
Lead	9	mg/kg		1		SW6020	08/24/15 17:35 / dck
Manganese	469	mg/kg		1		SW6010B	08/20/15 19:37 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:35 / dck
Zinc	75	mg/kg		1		SW6010B	08/20/15 19:37 / sld
CORROSIVITY							
pH of Soil and Waste	8.1	s.u.		0.10		SW9045D	08/24/15 10:42 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-014
Client Sample ID: AEH-1508-613S

Report Date: 08/27/15
Collection Date: 08/17/15 11:30
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	9.6	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7150	mg/kg		5		SW6010B	08/20/15 19:41 / sld
Arsenic	101	mg/kg		1		SW6020	08/24/15 17:39 / dck
Barium	79	mg/kg		1		SW6010B	08/20/15 19:41 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:41 / sld
Copper	33	mg/kg		1		SW6010B	08/20/15 19:41 / sld
Iron	22100	mg/kg		5		SW6010B	08/20/15 19:41 / sld
Lead	23	mg/kg		1		SW6020	08/24/15 17:39 / dck
Manganese	477	mg/kg		1		SW6010B	08/20/15 19:41 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:39 / dck
Zinc	60	mg/kg		1		SW6010B	08/20/15 19:41 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	08/24/15 10:43 / sah

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080322-015
Client Sample ID: AEH-1508-614S

Report Date: 08/27/15
Collection Date: 08/17/15 12:00
Date Received: 08/18/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	28.1	wt%		0.2		D2974	08/20/15 11:45 / AHN
3050 EXTRACTABLE METALS							
Aluminum	24400	mg/kg		5		SW6010B	08/20/15 19:44 / sld
Arsenic	ND	mg/kg		1		SW6020	08/24/15 17:42 / dck
Barium	47	mg/kg		1		SW6010B	08/20/15 19:44 / sld
Cadmium	ND	mg/kg		1		SW6010B	08/20/15 19:44 / sld
Copper	15	mg/kg		1		SW6010B	08/20/15 19:44 / sld
Iron	15200	mg/kg		5		SW6010B	08/20/15 19:44 / sld
Lead	7	mg/kg		1		SW6020	08/24/15 17:42 / dck
Manganese	62	mg/kg		1		SW6010B	08/20/15 19:44 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/24/15 17:42 / dck
Zinc	39	mg/kg		1		SW6010B	08/20/15 19:44 / sld
CORROSIVITY							
pH of Soil and Waste	7.5	s.u.		0.10		SW9045D	08/24/15 10:44 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 09, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15060513 Quote ID: H1089 - Metals Soil Sampling Spring 2015
Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 22 samples for Montana Environmental Custodial Trust on 6/25/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15060513-001	AEH-1506-102S	06/23/15 8:00	06/25/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15060513-002	AEH-1506-103S	06/23/15 8:00	06/25/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals
H15060513-003	AEH-1506-104S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-004	AEH-1506-105S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-005	AEH-1506-106S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-006	AEH-1506-108S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-007	AEH-1506-109S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-008	AEH-1506-110S	06/23/15 8:00	06/25/15	Soil	Same As Above
H15060513-009	AEH-1506-113S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-010	AEH-1506-115S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-011	AEH-1506-116S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-012	AEH-1506-122S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-013	AEH-1506-124S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-014	AEH-1506-126S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-015	AEH-1506-127S	06/24/15 8:00	06/25/15	Soil	Same As Above
H15060513-016	AEH-1506-136S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-017	AEH-1506-138S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-018	AEH-1506-139S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-019	AEH-1506-140S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-020	AEH-1506-141S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-021	AEH-1506-143S	06/25/15 8:00	06/25/15	Soil	Same As Above
H15060513-022	AEH-1506-500S	06/24/15 8:00	06/25/15	Soil	Same As Above



ANALYTICAL SUMMARY REPORT

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-001
Client Sample ID: AEH-1506-102S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.5	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	14600	mg/kg		5		SW6010B	07/01/15 15:21 / sld
Arsenic	397	mg/kg	D	2		SW6010B	07/01/15 15:21 / sld
Barium	105	mg/kg	D	2		SW6020	07/01/15 22:13 / dck
Cadmium	8	mg/kg		1		SW6010B	07/01/15 15:21 / sld
Copper	41	mg/kg		1		SW6010B	07/01/15 15:21 / sld
Iron	19600	mg/kg		5		SW6010B	07/01/15 15:21 / sld
Lead	18	mg/kg		1		SW6020	07/01/15 22:13 / dck
Manganese	364	mg/kg		1		SW6010B	07/01/15 15:21 / sld
Selenium	12.5	mg/kg	D	0.7		SW6020	07/01/15 22:13 / dck
Zinc	238	mg/kg		1		SW6010B	07/01/15 15:21 / sld
CORROSIVITY							
pH of Soil and Waste	10	s.u.		0.10		SW9045D	07/08/15 15:10 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-002
Client Sample ID: AEH-1506-103S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.9	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11600	mg/kg		5		SW6010B	07/01/15 15:39 / sld
Arsenic	333	mg/kg	D	2		SW6010B	07/01/15 15:39 / sld
Barium	112	mg/kg	D	2		SW6020	07/01/15 22:32 / dck
Cadmium	66	mg/kg		1		SW6010B	07/01/15 15:39 / sld
Copper	44	mg/kg		1		SW6010B	07/01/15 15:39 / sld
Iron	16900	mg/kg		5		SW6010B	07/01/15 15:39 / sld
Lead	12	mg/kg		1		SW6020	07/01/15 22:32 / dck
Manganese	137	mg/kg		1		SW6010B	07/01/15 15:39 / sld
Selenium	5.6	mg/kg	D	0.7		SW6020	07/01/15 22:32 / dck
Zinc	1090	mg/kg		1		SW6010B	07/01/15 15:39 / sld
CORROSIVITY							
pH of Soil and Waste	8.2	s.u.		0.10		SW9045D	07/08/15 15:11 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-003
Client Sample ID: AEH-1506-104S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	12.4	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8270	mg/kg		5		SW6010B	07/01/15 15:43 / sld
Arsenic	169	mg/kg	D	2		SW6010B	07/01/15 15:43 / sld
Barium	126	mg/kg	D	2		SW6020	07/01/15 22:36 / dck
Cadmium	591	mg/kg		1		SW6010B	07/01/15 15:43 / sld
Copper	35	mg/kg		1		SW6010B	07/01/15 15:43 / sld
Iron	13800	mg/kg		5		SW6010B	07/01/15 15:43 / sld
Lead	14	mg/kg		1		SW6020	07/01/15 22:36 / dck
Manganese	155	mg/kg		1		SW6010B	07/01/15 15:43 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 16:22 / dck
Zinc	532	mg/kg		1		SW6010B	07/01/15 15:43 / sld
CORROSIVITY							
pH of Soil and Waste	6.8	s.u.		0.10		SW9045D	07/08/15 15:12 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-004
Client Sample ID: AEH-1506-105S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	13.0	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	13000	mg/kg		5		SW6010B	07/01/15 15:54 / sld
Arsenic	159	mg/kg	D	2		SW6010B	07/01/15 15:54 / sld
Barium	110	mg/kg	D	2		SW6020	07/01/15 22:48 / dck
Cadmium	780	mg/kg		1		SW6010B	07/01/15 15:54 / sld
Copper	52	mg/kg		1		SW6010B	07/01/15 15:54 / sld
Iron	25400	mg/kg		5		SW6010B	07/01/15 15:54 / sld
Lead	15	mg/kg		1		SW6020	07/01/15 22:48 / dck
Manganese	254	mg/kg		1		SW6010B	07/01/15 15:54 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 16:25 / dck
Zinc	435	mg/kg		1		SW6010B	07/01/15 15:54 / sld
CORROSIVITY							
pH of Soil and Waste	7.2	s.u.		0.10		SW9045D	07/08/15 15:14 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-005
Client Sample ID: AEH-1506-106S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	42.3	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	37300	mg/kg		5		SW6010B	07/01/15 15:58 / sld
Arsenic	161	mg/kg	D	2		SW6010B	07/01/15 15:58 / sld
Barium	35	mg/kg	D	2		SW6020	07/01/15 22:52 / dck
Cadmium	2	mg/kg		1		SW6020	07/01/15 22:52 / dck
Copper	13	mg/kg		1		SW6020	07/01/15 22:52 / dck
Iron	16200	mg/kg		5		SW6010B	07/01/15 15:58 / sld
Lead	32	mg/kg		1		SW6020	07/01/15 22:52 / dck
Manganese	286	mg/kg		1		SW6010B	07/01/15 15:58 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 16:28 / dck
Zinc	135	mg/kg		1		SW6010B	07/01/15 15:58 / sld
CORROSIVITY							
pH of Soil and Waste	6.5	s.u.		0.10		SW9045D	07/08/15 15:15 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-006
Client Sample ID: AEH-1506-108S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	5.5	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16100	mg/kg		5		SW6010B	07/01/15 16:01 / sld
Arsenic	871	mg/kg	D	2		SW6010B	07/01/15 16:01 / sld
Barium	123	mg/kg	D	2		SW6020	07/01/15 22:55 / dck
Cadmium	21	mg/kg		1		SW6010B	07/01/15 16:01 / sld
Copper	74	mg/kg		1		SW6010B	07/01/15 16:01 / sld
Iron	19300	mg/kg		5		SW6010B	07/01/15 16:01 / sld
Lead	19	mg/kg		1		SW6020	07/01/15 22:55 / dck
Manganese	252	mg/kg		1		SW6010B	07/01/15 16:01 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/02/15 16:31 / dck
Zinc	174	mg/kg		1		SW6010B	07/01/15 16:01 / sld
CORROSIVITY							
pH of Soil and Waste	5.0	s.u.		0.10		SW9045D	07/08/15 15:16 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-007
Client Sample ID: AEH-1506-109S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	5.8	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9200	mg/kg		5		SW6010B	07/01/15 16:05 / sld
Arsenic	399	mg/kg	D	2		SW6010B	07/01/15 16:05 / sld
Barium	46	mg/kg	D	2		SW6020	07/01/15 22:58 / dck
Cadmium	10	mg/kg		1		SW6010B	07/01/15 16:05 / sld
Copper	425	mg/kg		1		SW6010B	07/01/15 16:05 / sld
Iron	12800	mg/kg		5		SW6010B	07/01/15 16:05 / sld
Lead	19	mg/kg		1		SW6020	07/01/15 22:58 / dck
Manganese	79	mg/kg		1		SW6010B	07/01/15 16:05 / sld
Selenium	18.6	mg/kg	D	0.7		SW6020	07/01/15 22:58 / dck
Zinc	87	mg/kg		1		SW6010B	07/01/15 16:05 / sld
CORROSIVITY							
pH of Soil and Waste	4.6	s.u.		0.10		SW9045D	07/08/15 15:17 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-008
Client Sample ID: AEH-1506-110S

Report Date: 07/09/15
Collection Date: 06/23/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.4	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	10300	mg/kg		5		SW6010B	07/01/15 16:09 / sld
Arsenic	120	mg/kg	D	2		SW6010B	07/01/15 16:09 / sld
Barium	68	mg/kg	D	2		SW6020	07/01/15 23:01 / dck
Cadmium	90	mg/kg		1		SW6010B	07/01/15 16:09 / sld
Copper	27	mg/kg		1		SW6010B	07/01/15 16:09 / sld
Iron	16100	mg/kg		5		SW6010B	07/01/15 16:09 / sld
Lead	11	mg/kg		1		SW6020	07/01/15 23:01 / dck
Manganese	137	mg/kg		1		SW6010B	07/01/15 16:09 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/02/15 16:34 / dck
Zinc	101	mg/kg		1		SW6010B	07/01/15 16:09 / sld
CORROSIVITY							
pH of Soil and Waste	5.2	s.u.		0.10		SW9045D	07/08/15 15:18 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-009
Client Sample ID: AEH-1506-113S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.0	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	5960	mg/kg		5		SW6010B	07/01/15 16:12 / sld
Arsenic	49	mg/kg	D	2		SW6010B	07/01/15 16:12 / sld
Barium	29	mg/kg	D	2		SW6020	07/01/15 23:04 / dck
Cadmium	145	mg/kg		1		SW6010B	07/01/15 16:12 / sld
Copper	15	mg/kg		1		SW6010B	07/01/15 16:12 / sld
Iron	8690	mg/kg		5		SW6010B	07/01/15 16:12 / sld
Lead	7	mg/kg		1		SW6020	07/01/15 23:04 / dck
Manganese	78	mg/kg		1		SW6010B	07/01/15 16:12 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/02/15 16:37 / dck
Zinc	76	mg/kg		1		SW6010B	07/01/15 16:12 / sld
CORROSIVITY							
pH of Soil and Waste	5.1	s.u.		0.10		SW9045D	07/08/15 15:19 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-010
Client Sample ID: AEH-1506-115S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	8.0	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16200	mg/kg		5		SW6010B	07/01/15 16:16 / sld
Arsenic	111	mg/kg	D	2		SW6010B	07/01/15 16:16 / sld
Barium	100	mg/kg	D	2		SW6020	07/01/15 23:07 / dck
Cadmium	241	mg/kg		1		SW6010B	07/01/15 16:16 / sld
Copper	41	mg/kg		1		SW6010B	07/01/15 16:16 / sld
Iron	23000	mg/kg		5		SW6010B	07/01/15 16:16 / sld
Lead	16	mg/kg		1		SW6020	07/01/15 23:07 / dck
Manganese	196	mg/kg		1		SW6010B	07/01/15 16:16 / sld
Selenium	0.6	mg/kg		0.6		SW6020	07/02/15 16:40 / dck
Zinc	305	mg/kg		1		SW6010B	07/01/15 16:16 / sld
CORROSIVITY							
pH of Soil and Waste	5.0	s.u.		0.10		SW9045D	07/08/15 15:20 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-011
Client Sample ID: AEH-1506-116S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	51.5	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	51100	mg/kg		5		SW6010B	07/01/15 16:20 / sld
Arsenic	2	mg/kg		1		SW6020	07/01/15 23:11 / dck
Barium	72	mg/kg	D	2		SW6020	07/01/15 23:11 / dck
Cadmium	1	mg/kg		1		SW6020	07/01/15 23:11 / dck
Copper	6	mg/kg		1		SW6020	07/01/15 23:11 / dck
Iron	7430	mg/kg		5		SW6010B	07/01/15 16:20 / sld
Lead	32	mg/kg		1		SW6020	07/01/15 23:11 / dck
Manganese	172	mg/kg		1		SW6010B	07/01/15 16:20 / sld
Selenium	ND	mg/kg		0.6		SW6020	07/02/15 16:43 / dck
Zinc	56	mg/kg		1		SW6010B	07/01/15 16:20 / sld
CORROSIVITY							
pH of Soil and Waste	7.1	s.u.		0.10		SW9045D	07/08/15 15:24 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-012
Client Sample ID: AEH-1506-122S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	10.1	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9080	mg/kg		5		SW6010B	07/01/15 16:24 / sld
Arsenic	257	mg/kg	D	2		SW6010B	07/01/15 16:24 / sld
Barium	112	mg/kg	D	2		SW6020	07/01/15 23:14 / dck
Cadmium	48	mg/kg		1		SW6010B	07/01/15 16:24 / sld
Copper	135	mg/kg		1		SW6010B	07/01/15 16:24 / sld
Iron	13100	mg/kg		5		SW6010B	07/01/15 16:24 / sld
Lead	103	mg/kg	D	3		SW6010B	07/01/15 16:24 / sld
Manganese	178	mg/kg		1		SW6010B	07/01/15 16:24 / sld
Selenium	59.7	mg/kg	D	0.7		SW6020	07/01/15 23:14 / dck
Zinc	121	mg/kg		1		SW6010B	07/01/15 16:24 / sld
CORROSIVITY							
pH of Soil and Waste	5.7	s.u.		0.10		SW9045D	07/08/15 15:25 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-013
Client Sample ID: AEH-1506-124S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.7	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16000	mg/kg		5		SW6010B	07/01/15 16:27 / sld
Arsenic	549	mg/kg	D	2		SW6010B	07/01/15 16:27 / sld
Barium	88	mg/kg	D	2		SW6020	07/01/15 23:17 / dck
Cadmium	857	mg/kg		1		SW6010B	07/01/15 16:27 / sld
Copper	47	mg/kg		1		SW6010B	07/01/15 16:27 / sld
Iron	17800	mg/kg		5		SW6010B	07/01/15 16:27 / sld
Lead	148	mg/kg		1		SW6020	07/01/15 23:17 / dck
Manganese	180	mg/kg		1		SW6010B	07/01/15 16:27 / sld
Selenium	19.7	mg/kg	D	0.7		SW6020	07/01/15 23:17 / dck
Zinc	533	mg/kg		1		SW6010B	07/01/15 16:27 / sld
CORROSIVITY							
pH of Soil and Waste	7.2	s.u.		0.10		SW9045D	07/08/15 15:26 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-014
Client Sample ID: AEH-1506-126S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	15.9	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	9950	mg/kg		5		SW6010B	07/01/15 16:38 / sld
Arsenic	138	mg/kg	D	2		SW6010B	07/01/15 16:38 / sld
Barium	94	mg/kg	D	2		SW6020	07/01/15 23:30 / dck
Cadmium	556	mg/kg		1		SW6010B	07/01/15 16:38 / sld
Copper	49	mg/kg		1		SW6010B	07/01/15 16:38 / sld
Iron	15800	mg/kg		5		SW6010B	07/01/15 16:38 / sld
Lead	12	mg/kg		1		SW6020	07/01/15 23:30 / dck
Manganese	137	mg/kg		1		SW6010B	07/01/15 16:38 / sld
Selenium	3.3	mg/kg	D	0.7		SW6020	07/01/15 23:30 / dck
Zinc	485	mg/kg		1		SW6010B	07/01/15 16:38 / sld
CORROSIVITY							
pH of Soil and Waste	6.5	s.u.		0.10		SW9045D	07/08/15 15:27 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-015
Client Sample ID: AEH-1506-127S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.9	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	11900	mg/kg		5		SW6010B	07/01/15 16:42 / sld
Arsenic	102	mg/kg	D	2		SW6010B	07/01/15 16:42 / sld
Barium	133	mg/kg	D	2		SW6020	07/01/15 23:33 / dck
Cadmium	269	mg/kg		1		SW6010B	07/01/15 16:42 / sld
Copper	37	mg/kg		1		SW6010B	07/01/15 16:42 / sld
Iron	16800	mg/kg		5		SW6010B	07/01/15 16:42 / sld
Lead	23	mg/kg		1		SW6020	07/01/15 23:33 / dck
Manganese	229	mg/kg		1		SW6010B	07/01/15 16:42 / sld
Selenium	1.9	mg/kg	D	0.7		SW6020	07/01/15 23:33 / dck
Zinc	471	mg/kg		1		SW6010B	07/01/15 16:42 / sld
CORROSIVITY							
pH of Soil and Waste	6.8	s.u.		0.10		SW9045D	07/08/15 15:28 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-016
Client Sample ID: AEH-1506-136S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.9	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	7920	mg/kg		5		SW6010B	07/01/15 16:46 / sld
Arsenic	197	mg/kg	D	2		SW6010B	07/01/15 16:46 / sld
Barium	39	mg/kg	D	2		SW6020	07/01/15 23:36 / dck
Cadmium	ND	mg/kg		1		SW6010B	07/01/15 16:46 / sld
Copper	32	mg/kg		1		SW6010B	07/01/15 16:46 / sld
Iron	27300	mg/kg		5		SW6010B	07/01/15 16:46 / sld
Lead	10	mg/kg		1		SW6020	07/01/15 23:36 / dck
Manganese	537	mg/kg		1		SW6010B	07/01/15 16:46 / sld
Selenium	1.9	mg/kg	D	0.7		SW6020	07/01/15 23:36 / dck
Zinc	33	mg/kg		1		SW6010B	07/01/15 16:46 / sld
CORROSIVITY							
pH of Soil and Waste	9.6	s.u.		0.10		SW9045D	07/08/15 15:29 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-017
Client Sample ID: AEH-1506-138S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	3.6	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	17000	mg/kg		5		SW6010B	07/01/15 16:50 / sld
Arsenic	321	mg/kg	D	2		SW6010B	07/01/15 16:50 / sld
Barium	142	mg/kg		1		SW6010B	07/01/15 16:50 / sld
Cadmium	ND	mg/kg		1		SW6020	07/01/15 23:39 / dck
Copper	38	mg/kg		1		SW6010B	07/01/15 16:50 / sld
Iron	27200	mg/kg		5		SW6010B	07/01/15 16:50 / sld
Lead	13	mg/kg		1		SW6020	07/01/15 23:39 / dck
Manganese	452	mg/kg		1		SW6010B	07/01/15 16:50 / sld
Selenium	4.8	mg/kg	D	0.7		SW6020	07/01/15 23:39 / dck
Zinc	313	mg/kg		1		SW6010B	07/01/15 16:50 / sld
CORROSIVITY							
pH of Soil and Waste	10	s.u.		0.10		SW9045D	07/08/15 15:29 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-018
Client Sample ID: AEH-1506-139S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.8	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	19200	mg/kg		5		SW6010B	07/01/15 13:55 / sld
Arsenic	217	mg/kg	D	2		SW6010B	07/01/15 13:55 / sld
Barium	251	mg/kg	D	2		SW6020	07/02/15 01:05 / dck
Cadmium	4	mg/kg		1		SW6010B	07/01/15 13:55 / sld
Copper	31	mg/kg		1		SW6010B	07/01/15 13:55 / sld
Iron	34600	mg/kg		5		SW6010B	07/01/15 13:55 / sld
Lead	8	mg/kg		1		SW6020	07/02/15 01:05 / dck
Manganese	385	mg/kg		1		SW6010B	07/01/15 13:55 / sld
Selenium	4.3	mg/kg	D	0.7		SW6020	07/02/15 01:05 / dck
Zinc	201	mg/kg		1		SW6010B	07/01/15 13:55 / sld
CORROSIVITY							
pH of Soil and Waste	9.8	s.u.		0.10		SW9045D	07/08/15 15:31 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-019
Client Sample ID: AEH-1506-140S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	4.0	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	14800	mg/kg		5		SW6010B	06/30/15 21:18 / sld
Arsenic	173	mg/kg	D	2		SW6010B	06/30/15 21:18 / sld
Barium	76	mg/kg		1		SW6010B	06/30/15 21:18 / sld
Cadmium	4	mg/kg		1		SW6020	07/02/15 00:18 / dck
Copper	21	mg/kg		1		SW6010B	06/30/15 21:18 / sld
Iron	20300	mg/kg		5		SW6010B	06/30/15 21:18 / sld
Lead	8	mg/kg		1		SW6020	07/02/15 00:18 / dck
Manganese	290	mg/kg		1		SW6010B	06/30/15 21:18 / sld
Selenium	3.2	mg/kg	D	0.7		SW6020	07/02/15 00:18 / dck
Zinc	139	mg/kg		1		SW6010B	06/30/15 21:18 / sld
CORROSIVITY							
pH of Soil and Waste	10	s.u.		0.10		SW9045D	07/08/15 15:31 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-020
Client Sample ID: AEH-1506-141S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	12.6	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	12500	mg/kg		5		SW6010B	06/30/15 21:22 / sld
Arsenic	210	mg/kg	D	2		SW6010B	06/30/15 21:22 / sld
Barium	77	mg/kg		1		SW6010B	06/30/15 21:22 / sld
Cadmium	ND	mg/kg		1		SW6020	07/02/15 00:21 / dck
Copper	21	mg/kg		1		SW6010B	06/30/15 21:22 / sld
Iron	26200	mg/kg		5		SW6010B	06/30/15 21:22 / sld
Lead	11	mg/kg		1		SW6020	07/02/15 00:21 / dck
Manganese	306	mg/kg		1		SW6010B	06/30/15 21:22 / sld
Selenium	3.3	mg/kg	D	0.7		SW6020	07/02/15 00:21 / dck
Zinc	184	mg/kg		1		SW6010B	06/30/15 21:22 / sld
CORROSIVITY							
pH of Soil and Waste	9.8	s.u.		0.10		SW9045D	07/08/15 15:32 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-021
Client Sample ID: AEH-1506-143S

Report Date: 07/09/15
Collection Date: 06/25/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	30.3	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	50700	mg/kg		5		SW6010B	06/30/15 21:25 / sld
Arsenic	3	mg/kg		1		SW6020	07/02/15 00:24 / dck
Barium	68	mg/kg		1		SW6010B	06/30/15 21:25 / sld
Cadmium	ND	mg/kg		1		SW6020	07/02/15 00:24 / dck
Copper	32	mg/kg		1		SW6010B	06/30/15 21:25 / sld
Iron	28300	mg/kg		5		SW6010B	06/30/15 21:25 / sld
Lead	52	mg/kg	D	3		SW6010B	06/30/15 21:25 / sld
Manganese	278	mg/kg		1		SW6010B	06/30/15 21:25 / sld
Selenium	0.7	mg/kg		0.6		SW6020	07/02/15 16:46 / dck
Zinc	89	mg/kg		1		SW6010B	06/30/15 21:25 / sld
CORROSIVITY							
pH of Soil and Waste	7.2	s.u.		0.10		SW9045D	07/08/15 15:35 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060513-022
Client Sample ID: AEH-1506-500S

Report Date: 07/09/15
Collection Date: 06/24/15 08:00
Date Received: 06/25/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	6.1	wt%		0.2		D2974	07/01/15 09:41 / AHN
3050 EXTRACTABLE METALS							
Aluminum	13900	mg/kg		5		SW6010B	06/30/15 21:29 / sld
Arsenic	476	mg/kg	D	2		SW6010B	06/30/15 21:29 / sld
Barium	72	mg/kg		1		SW6010B	06/30/15 21:29 / sld
Cadmium	702	mg/kg		1		SW6010B	06/30/15 21:29 / sld
Copper	42	mg/kg		1		SW6010B	06/30/15 21:29 / sld
Iron	16300	mg/kg		5		SW6010B	06/30/15 21:29 / sld
Lead	113	mg/kg	D	3		SW6010B	06/30/15 21:29 / sld
Manganese	173	mg/kg		1		SW6010B	06/30/15 21:29 / sld
Selenium	16.1	mg/kg	D	0.7		SW6020	07/02/15 00:27 / dck
Zinc	479	mg/kg		1		SW6010B	06/30/15 21:29 / sld
CORROSIVITY							
pH of Soil and Waste	7.3	s.u.		0.10		SW9045D	07/08/15 15:36 / sah

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

August 27, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15080219

Project Name: 10022 2015 SAI

Energy Laboratories Inc Helena MT received the following 2 samples for Montana Environmental Custodial Trust on 8/12/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15080219-001	AEH-1506-225S/226S/227S	06/30/15 17:00	08/12/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals Soil Preparation
H15080219-002	AEH-1507-271S/272S	07/02/15 17:00	08/12/15	Soil	Metals by ICP/ICPMS, Total Moisture pH of Soil and Waste Digestion, Total Metals

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080219-001
Client Sample ID: AEH-1506-225S/226S/227S

Report Date: 08/27/15
Collection Date: 06/30/15 17:00
Date Received: 08/12/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	7.4	wt%		0.2		D2974	08/14/15 08:32 / AHN
3050 EXTRACTABLE METALS							
Aluminum	8990	mg/kg		5		SW6010B	08/14/15 17:21 / sld
Arsenic	48	mg/kg		1		SW6020	08/18/15 01:47 / dck
Barium	56	mg/kg		1		SW6010B	08/14/15 17:21 / sld
Cadmium	11	mg/kg		1		SW6010B	08/14/15 17:21 / sld
Copper	40	mg/kg		1		SW6010B	08/14/15 17:21 / sld
Iron	24100	mg/kg		5		SW6010B	08/14/15 17:21 / sld
Lead	10	mg/kg		1		SW6020	08/18/15 01:47 / dck
Manganese	342	mg/kg		1		SW6010B	08/14/15 17:21 / sld
Selenium	ND	mg/kg		0.6		SW6020	08/18/15 01:47 / dck
Zinc	56	mg/kg		1		SW6010B	08/14/15 17:21 / sld
CORROSIVITY							
pH of Soil and Waste	7.7	s.u.		0.10		SW9045D	08/24/15 10:25 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 2015 SAI
Lab ID: H15080219-002
Client Sample ID: AEH-1507-271S/272S

Report Date: 08/27/15
Collection Date: 07/02/15 17:00
Date Received: 08/12/15
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	13.0	wt%		0.2		D2974	08/14/15 08:32 / AHN
3050 EXTRACTABLE METALS							
Aluminum	16100	mg/kg		5		SW6010B	08/14/15 17:25 / sld
Arsenic	6	mg/kg		1		SW6020	08/18/15 01:50 / dck
Barium	116	mg/kg		1		SW6010B	08/14/15 17:25 / sld
Cadmium	31	mg/kg		1		SW6010B	08/14/15 17:25 / sld
Copper	51	mg/kg		1		SW6010B	08/14/15 17:25 / sld
Iron	21600	mg/kg		5		SW6010B	08/14/15 17:25 / sld
Lead	13	mg/kg		1		SW6020	08/18/15 01:50 / dck
Manganese	838	mg/kg		1		SW6010B	08/14/15 17:25 / sld
Selenium	4.8	mg/kg		0.6		SW6020	08/18/15 01:50 / dck
Zinc	112	mg/kg		1		SW6010B	08/14/15 17:25 / sld
CORROSIVITY							
pH of Soil and Waste	8.0	s.u.		0.10		SW9045D	08/24/15 10:27 / sah

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LEACHABLE METAL RESULTS



ANALYTICAL SUMMARY REPORT

September 11, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15080222

Project Name: 10022 EH 2015 SAI Leach Test

Energy Laboratories Inc Helena MT received the following 11 samples for Montana Environmental Custodial Trust on 8/12/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15080222-001	AEH-1506-103S	06/23/15 8:00	08/12/15	Soil	Metals by ICP/ICPMS, Total Alkalinity Conductivity Anions by Ion Chromatography pH Digestion, Total Metals Saturated Paste Extraction SPLP Extraction, Regular
H15080222-002	AEH-1506-109S	06/23/15 8:00	08/12/15	Soil	Same As Above
H15080222-003	AEH-1506-122S	06/24/15 8:00	08/12/15	Soil	Same As Above
H15080222-004	AEH-1506-138S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080222-005	AEH-1506-147S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080222-006	AEH-1506-225S/226S/227S	06/30/15 8:00	08/12/15	Soil	Same As Above
H15080222-007	AEH-1507-265S	07/02/15 8:00	08/12/15	Soil	Same As Above
H15080222-008	AEH-1507-271S/272S	07/02/15 8:00	08/12/15	Soil	Same As Above
H15080222-009	AEH-1507-296S	07/07/15 8:00	08/12/15	Soil	Same As Above
H15080222-010	AEH-1507-349S	07/08/15 8:00	08/12/15	Soil	Same As Above
H15080222-011	AEH-1507-2871S	07/07/15 8:00	08/12/15	Soil	Same As Above

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

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

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

Report Approved By:



CLIENT: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI Leach Test
Work Order: H15080222

Report Date: 09/11/15

CASE NARRATIVE

All samples were prepared using SPLP Extraction Fluid.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-103S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-001
Collection Date: 06/23/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	56	mg/L		1		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Magnesium	13	mg/L		1		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Potassium	57	mg/L		1		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Arsenic	2.5	mg/L		0.001		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Barium	0.24	mg/L		0.005		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Cadmium	0.16	mg/L		0.001		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Selenium	0.36	mg/L	D	0.002		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
Sodium	300	mg/L		1		SW6020	09/09/15 22:07 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 161		30395
pH	7.0	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 4		150827_1_PH-W
Alkalinity, Total as CaCO3	53	mg/L		4		A2320 B	09/01/15 17:12 / SR			PHSC_101-H_150901A : 132		R109008
Bicarbonate as HCO3	60	mg/L		4		A2320 B	09/01/15 17:12 / SR			PHSC_101-H_150901A : 132		R109008
Chloride	10	mg/L		1		E300.0	09/02/15 17:39 / SR			IC102-H_150902A : 43		R109075
Sulfate	181	mg/L		1		E300.0	09/02/15 17:39 / SR			IC102-H_150902A : 43		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	5	mg/L		1		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Magnesium	2	mg/L		1		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Potassium	4	mg/L		1		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Arsenic	1.6	mg/L		0.001		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Barium	0.20	mg/L		0.005		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Cadmium	0.26	mg/L		0.001		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Selenium	0.008	mg/L		0.001		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 02:55 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 250		30443
pH	10.4	s.u.		0.1		A4500-H B	09/04/15 13:39 / SR			PHSC_101-H_150904A : 82		R109113
Alkalinity, Total as CaCO3	140	mg/L		4		A2320 B	09/04/15 11:11 / SR			PHSC_101-H_150904A : 31		R109113
Bicarbonate as HCO3	46	mg/L		4		A2320 B	09/04/15 11:11 / SR			PHSC_101-H_150904A : 31		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 18:13 / SR			IC102-H_150904A : 31		R109146
Sulfate	20	mg/L		1		E300.0	09/04/15 18:13 / SR			IC102-H_150904A : 31		R109146

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: B - The analyte was detected in the method blank.

D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-109S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-002
Collection Date: 06/23/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	92	mg/L		1		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Magnesium	18	mg/L		1		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Potassium	21	mg/L		1		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Arsenic	0.23	mg/L		0.001		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Barium	0.051	mg/L		0.005		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Cadmium	2.4	mg/L		0.001		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Selenium	0.45	mg/L	D	0.002		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
Sodium	40	mg/L		1		SW6020	09/09/15 22:10 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 162		30395
pH	4.8	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 5		150827_1_PH-W
Alkalinity, Total as CaCO3	29	mg/L		4		A2320 B	09/01/15 17:17 / SR			PHSC_101-H_150901A : 134		R109008
Bicarbonate as HCO3	30	mg/L		4		A2320 B	09/01/15 17:17 / SR			PHSC_101-H_150901A : 134		R109008
Chloride	5	mg/L		1		E300.0	09/02/15 17:50 / SR			IC102-H_150902A : 44		R109075
Sulfate	503	mg/L		1		E300.0	09/02/15 17:50 / SR			IC102-H_150902A : 44		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	2	mg/L		1		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Magnesium	ND	mg/L		1		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Potassium	1	mg/L		1		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Arsenic	0.15	mg/L		0.001		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Barium	ND	mg/L	B	0.02		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Selenium	0.054	mg/L		0.001		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:12 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 255		30443
pH	10.1	s.u.		0.1		A4500-H B	09/04/15 13:41 / SR			PHSC_101-H_150904A : 84		R109113
Alkalinity, Total as CaCO3	64	mg/L		4		A2320 B	09/04/15 11:18 / SR			PHSC_101-H_150904A : 33		R109113
Bicarbonate as HCO3	28	mg/L		4		A2320 B	09/04/15 11:18 / SR			PHSC_101-H_150904A : 33		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 18:24 / SR			IC102-H_150904A : 32		R109146
Sulfate	18	mg/L		1		E300.0	09/04/15 18:24 / SR			IC102-H_150904A : 32		R109146

Report RL - Analyte reporting limit.

Definitions: B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.

D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-122S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-003
Collection Date: 06/24/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	330	mg/L		1		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Magnesium	80	mg/L		1		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Potassium	24	mg/L		1		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Arsenic	3.3	mg/L	B	0.001		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Barium	0.067	mg/L		0.005		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Cadmium	9.5	mg/L		0.001		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Selenium	2.3	mg/L	D	0.002		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
Sodium	38	mg/L		1		SW6020	09/09/15 22:13 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 163		30395
pH	5.5	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 6		150827_1_PH-W
Alkalinity, Total as CaCO3	22	mg/L		4		A2320 B	09/01/15 17:22 / SR			PHSC_101-H_150901A : 136		R109008
Bicarbonate as HCO3	21	mg/L		4		A2320 B	09/01/15 17:22 / SR			PHSC_101-H_150901A : 136		R109008
Chloride	5	mg/L		1		E300.0	09/02/15 18:01 / SR			IC102-H_150902A : 45		R109075
Sulfate	1280	mg/L		1		E300.0	09/02/15 18:01 / SR			IC102-H_150902A : 45		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	5	mg/L		1		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Magnesium	2	mg/L		1		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Potassium	2	mg/L		1		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Arsenic	1.2	mg/L	E	0.001		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Barium	0.15	mg/L		0.005		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Cadmium	0.052	mg/L		0.001		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Selenium	0.30	mg/L		0.001		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:15 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 256		30443
pH	10.4	s.u.		0.1		A4500-H B	09/04/15 13:44 / SR			PHSC_101-H_150904A : 86		R109113
Alkalinity, Total as CaCO3	180	mg/L		4		A2320 B	09/04/15 11:24 / SR			PHSC_101-H_150904A : 35		R109113
Bicarbonate as HCO3	48	mg/L		4		A2320 B	09/04/15 11:24 / SR			PHSC_101-H_150904A : 35		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 18:58 / SR			IC102-H_150904A : 35		R109146
Sulfate	33	mg/L		1		E300.0	09/04/15 18:58 / SR			IC102-H_150904A : 35		R109146

Report RL - Analyte reporting limit.

Definitions: B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.

D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-138S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-004
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	12	mg/L		1		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Magnesium	11	mg/L		1		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Potassium	10	mg/L		1		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Arsenic	72	mg/L	D	0.002		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Barium	0.63	mg/L		0.005		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Cadmium	0.032	mg/L		0.001		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Selenium	1.7	mg/L	D	0.003		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
Sodium	160	mg/L		1		SW6020	09/09/15 22:16 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 164		30395
pH	8.6	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 7		150827_1_PH-W
Alkalinity, Total as CaCO3	180	mg/L		4		A2320 B	09/01/15 17:27 / SR			PHSC_101-H_150901A : 138		R109008
Bicarbonate as HCO3	210	mg/L		4		A2320 B	09/01/15 17:27 / SR			PHSC_101-H_150901A : 138		R109008
Chloride	6	mg/L		1		E300.0	09/02/15 18:12 / SR			IC102-H_150902A : 46		R109075
Sulfate	59	mg/L		1		E300.0	09/02/15 18:12 / SR			IC102-H_150902A : 46		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	8	mg/L		1		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Magnesium	6	mg/L		1		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Potassium	5	mg/L		1		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Arsenic	4.4	mg/L	E	0.001		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Barium	0.48	mg/L		0.005		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Cadmium	0.004	mg/L		0.001		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Selenium	0.069	mg/L		0.001		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:18 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 257		30443
pH	10.5	s.u.		0.1		A4500-H B	09/04/15 13:46 / SR			PHSC_101-H_150904A : 88		R109113
Alkalinity, Total as CaCO3	170	mg/L		4		A2320 B	09/04/15 11:31 / SR			PHSC_101-H_150904A : 37		R109113
Bicarbonate as HCO3	54	mg/L		4		A2320 B	09/04/15 11:31 / SR			PHSC_101-H_150904A : 37		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 19:09 / SR			IC102-H_150904A : 36		R109146
Sulfate	17	mg/L		1		E300.0	09/04/15 19:09 / SR			IC102-H_150904A : 36		R109146

Report RL - Analyte reporting limit.
Definitions: B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.
D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.
E - Estimated value. Result exceeds the instrument upper quantitation limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-147S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-005
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	150	mg/L		1		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Magnesium	82	mg/L		1		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Potassium	5	mg/L		1		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Arsenic	ND	mg/L	B	0.06		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Barium	0.049	mg/L		0.005		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Cadmium	0.019	mg/L		0.001		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Selenium	0.23	mg/L	D	0.002		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
Sodium	170	mg/L		1		SW6020	09/09/15 22:20 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 165		30395
pH	7.9	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 8		150827_1_PH-W
Alkalinity, Total as CaCO3	80	mg/L		4		A2320 B	09/01/15 17:33 / SR			PHSC_101-H_150901A : 140		R109008
Bicarbonate as HCO3	92	mg/L		4		A2320 B	09/01/15 17:33 / SR			PHSC_101-H_150901A : 140		R109008
Chloride	10	mg/L		1		E300.0	09/02/15 18:46 / SR			IC102-H_150902A : 49		R109075
Sulfate	936	mg/L		1		E300.0	09/02/15 18:46 / SR			IC102-H_150902A : 49		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	7	mg/L		1		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Magnesium	3	mg/L		1		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Potassium	ND	mg/L		1		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Arsenic	0.006	mg/L		0.001		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Barium	ND	mg/L	B	0.02		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Selenium	0.005	mg/L		0.001		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:31 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 261		30443
pH	10.0	s.u.		0.1		A4500-H B	09/04/15 13:49 / SR			PHSC_101-H_150904A : 90		R109113
Alkalinity, Total as CaCO3	97	mg/L		4		A2320 B	09/04/15 11:38 / SR			PHSC_101-H_150904A : 39		R109113
Bicarbonate as HCO3	48	mg/L		4		A2320 B	09/04/15 11:38 / SR			PHSC_101-H_150904A : 39		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 19:20 / SR			IC102-H_150904A : 37		R109146
Sulfate	30	mg/L		1		E300.0	09/04/15 19:20 / SR			IC102-H_150904A : 37		R109146

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: B - The analyte was detected in the method blank.

D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-225S/226S/227S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-006
Collection Date: 06/30/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	110	mg/L		1		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Magnesium	46	mg/L		1		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Potassium	10	mg/L		1		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Arsenic	0.37	mg/L		0.001		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Barium	0.048	mg/L		0.005		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Cadmium	0.019	mg/L		0.001		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Selenium	0.045	mg/L	D	0.002		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
Sodium	110	mg/L		1		SW6020	09/09/15 22:33 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 169		30395
pH	7.6	s.u.		0.1		A4500-H B	09/01/15 14:10 / sah			SOIL PH METER_150902A : 9		150827_1_PH-W
Alkalinity, Total as CaCO3	53	mg/L		4		A2320 B	09/01/15 17:38 / SR			PHSC_101-H_150901A : 142		R109008
Bicarbonate as HCO3	60	mg/L		4		A2320 B	09/01/15 17:38 / SR			PHSC_101-H_150901A : 142		R109008
Chloride	11	mg/L		1		E300.0	09/02/15 19:08 / SR			IC102-H_150902A : 51		R109075
Sulfate	606	mg/L		1		E300.0	09/02/15 19:08 / SR			IC102-H_150902A : 51		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	4	mg/L		1		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Magnesium	2	mg/L		1		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Potassium	2	mg/L		1		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Arsenic	0.25	mg/L		0.001		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Barium	0.098	mg/L		0.005		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Cadmium	0.005	mg/L		0.001		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:34 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 262		30443
pH	10.5	s.u.		0.1		A4500-H B	09/04/15 13:51 / SR			PHSC_101-H_150904A : 92		R109113
Alkalinity, Total as CaCO3	110	mg/L		4		A2320 B	09/04/15 11:45 / SR			PHSC_101-H_150904A : 41		R109113
Bicarbonate as HCO3	20	mg/L		4		A2320 B	09/04/15 11:45 / SR			PHSC_101-H_150904A : 41		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 19:42 / SR			IC102-H_150904A : 39		R109146
Sulfate	16	mg/L		1		E300.0	09/04/15 19:42 / SR			IC102-H_150904A : 39		R109146

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: B - The analyte was detected in the method blank.

D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-265S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-007
Collection Date: 07/02/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	17	mg/L		1		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Magnesium	9	mg/L		1		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Potassium	4	mg/L		1		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Arsenic	7.8	mg/L		0.001		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Barium	0.037	mg/L		0.005		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Cadmium	0.011	mg/L		0.001		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Selenium	15	mg/L	D	0.002		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
Sodium	230	mg/L		1		SW6020	09/09/15 22:36 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 170		30395
pH	7.8	s.u.		0.1		A4500-H B	09/01/15 14:11 / sah			JIL PH METER_150902A : 10		150827_1_PH-W
Alkalinity, Total as CaCO3	83	mg/L		4		A2320 B	09/01/15 17:43 / SR			PHSC_101-H_150901A : 144		R109008
Bicarbonate as HCO3	97	mg/L		4		A2320 B	09/01/15 17:43 / SR			PHSC_101-H_150901A : 144		R109008
Chloride	5	mg/L		1		E300.0	09/02/15 19:19 / SR			IC102-H_150902A : 52		R109075
Sulfate	442	mg/L		1		E300.0	09/02/15 19:19 / SR			IC102-H_150902A : 52		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	8	mg/L		1		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Magnesium	9	mg/L		1		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Potassium	8	mg/L		1		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Arsenic	1.3	mg/L	E	0.001		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Barium	0.35	mg/L		0.005		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Selenium	0.61	mg/L		0.001		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:38 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 263		30443
pH	10.4	s.u.		0.1		A4500-H B	09/04/15 13:53 / SR			PHSC_101-H_150904A : 94		R109113
Alkalinity, Total as CaCO3	95	mg/L		4		A2320 B	09/04/15 11:51 / SR			PHSC_101-H_150904A : 43		R109113
Bicarbonate as HCO3	25	mg/L		4		A2320 B	09/04/15 11:51 / SR			PHSC_101-H_150904A : 43		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 19:53 / SR			IC102-H_150904A : 40		R109146
Sulfate	11	mg/L		1		E300.0	09/04/15 19:53 / SR			IC102-H_150904A : 40		R109146

Report RL - Analyte reporting limit.

Definitions: B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.

D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-271S/272S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-008
Collection Date: 07/02/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	100	mg/L		1		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Magnesium	41	mg/L		1		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Potassium	9	mg/L		1		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Arsenic	ND	mg/L	B	0.06		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Barium	0.044	mg/L		0.005		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Cadmium	0.099	mg/L		0.001		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Selenium	12	mg/L	D	0.002		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
Sodium	250	mg/L		1		SW6020	09/09/15 22:39 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 171		30395
pH	7.4	s.u.		0.1		A4500-H B	09/01/15 14:11 / sah			JIL PH METER_150902A : 11		150827_1_PH-W
Alkalinity, Total as CaCO3	66	mg/L		4		A2320 B	09/01/15 17:49 / SR			PHSC_101-H_150901A : 146		R109008
Bicarbonate as HCO3	75	mg/L		4		A2320 B	09/01/15 17:49 / SR			PHSC_101-H_150901A : 146		R109008
Chloride	8	mg/L		1		E300.0	09/02/15 19:30 / SR			IC102-H_150902A : 53		R109075
Sulfate	869	mg/L		1		E300.0	09/02/15 19:30 / SR			IC102-H_150902A : 53		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	11	mg/L		1		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Magnesium	10	mg/L		1		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Potassium	6	mg/L		1		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Arsenic	0.019	mg/L		0.001		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Barium	0.20	mg/L		0.005		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Cadmium	0.017	mg/L		0.001		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Selenium	0.22	mg/L		0.001		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:41 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 264		30443
pH	10.6	s.u.		0.1		A4500-H B	09/04/15 13:56 / SR			PHSC_101-H_150904A : 96		R109113
Alkalinity, Total as CaCO3	85	mg/L		4		A2320 B	09/04/15 11:58 / SR			PHSC_101-H_150904A : 45		R109113
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	09/04/15 11:58 / SR			PHSC_101-H_150904A : 45		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 20:04 / SR			IC102-H_150904A : 41		R109146
Sulfate	13	mg/L		1		E300.0	09/04/15 20:04 / SR			IC102-H_150904A : 41		R109146

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: B - The analyte was detected in the method blank.

D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-296S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-009
Collection Date: 07/07/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	92	mg/L		1		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Magnesium	33	mg/L		1		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Potassium	9	mg/L		1		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Arsenic	0.052	mg/L	B	0.001		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Barium	0.065	mg/L		0.005		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Cadmium	0.053	mg/L		0.001		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Selenium	0.95	mg/L	D	0.002		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
Sodium	130	mg/L		1		SW6020	09/09/15 22:43 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 172		30395
pH	7.5	s.u.		0.1		A4500-H B	09/01/15 14:11 / sah			JIL PH METER_150902A : 12		150827_1_PH-W
Alkalinity, Total as CaCO3	69	mg/L		4		A2320 B	09/01/15 17:56 / SR			PHSC_101-H_150901A : 148		R109008
Bicarbonate as HCO3	79	mg/L		4		A2320 B	09/01/15 17:56 / SR			PHSC_101-H_150901A : 148		R109008
Chloride	15	mg/L		1		E300.0	09/02/15 19:41 / SR			IC102-H_150902A : 54		R109075
Sulfate	557	mg/L		1		E300.0	09/02/15 19:41 / SR			IC102-H_150902A : 54		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	6	mg/L		1		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Magnesium	3	mg/L		1		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Potassium	3	mg/L		1		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Arsenic	0.055	mg/L		0.001		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Barium	0.19	mg/L		0.005		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Cadmium	0.020	mg/L		0.001		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Selenium	0.014	mg/L		0.001		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:44 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 265		30443
pH	10.7	s.u.		0.1		A4500-H B	09/04/15 13:58 / SR			PHSC_101-H_150904A : 98		R109113
Alkalinity, Total as CaCO3	84	mg/L		4		A2320 B	09/04/15 12:04 / SR			PHSC_101-H_150904A : 47		R109113
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	09/04/15 12:04 / SR			PHSC_101-H_150904A : 47		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 20:15 / SR			IC102-H_150904A : 42		R109146
Sulfate	6	mg/L		1		E300.0	09/04/15 20:15 / SR			IC102-H_150904A : 42		R109146

Report RL - Analyte reporting limit.

Definitions: B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.

D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-349S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-010
Collection Date: 07/08/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	350	mg/L		1		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Magnesium	73	mg/L		1		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Potassium	24	mg/L		1		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Arsenic	15	mg/L		0.001		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Barium	0.33	mg/L		0.005		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Cadmium	66	mg/L		0.001		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Selenium	3.8	mg/L	D	0.002		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
Sodium	41	mg/L		1		SW6020	09/09/15 22:46 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 173		30395
pH	5.3	s.u.		0.1		A4500-H B	09/01/15 14:11 / sah			JIL PH METER_150902A : 13		150827_1_PH-W
Alkalinity, Total as CaCO3	25	mg/L		4		A2320 B	09/01/15 18:02 / SR			PHSC_101-H_150901A : 150		R109008
Bicarbonate as HCO3	26	mg/L		4		A2320 B	09/01/15 18:02 / SR			PHSC_101-H_150901A : 150		R109008
Chloride	3	mg/L		1		E300.0	09/02/15 19:52 / SR			IC102-H_150902A : 55		R109075
Sulfate	1340	mg/L		1		E300.0	09/02/15 19:52 / SR			IC102-H_150902A : 55		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	9	mg/L		1		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Magnesium	2	mg/L		1		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Potassium	2	mg/L		1		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Arsenic	2.5	mg/L	E	0.001		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Barium	0.10	mg/L		0.005		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Cadmium	0.30	mg/L		0.001		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Selenium	0.39	mg/L		0.001		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:47 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 266		30443
pH	10.4	s.u.		0.1		A4500-H B	09/04/15 14:01 / SR			PHSC_101-H_150904A : 100		R109113
Alkalinity, Total as CaCO3	54	mg/L		4		A2320 B	09/04/15 12:10 / SR			PHSC_101-H_150904A : 49		R109113
Bicarbonate as HCO3	7	mg/L		4		A2320 B	09/04/15 12:10 / SR			PHSC_101-H_150904A : 49		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 20:27 / SR			IC102-H_150904A : 43		R109146
Sulfate	16	mg/L		1		E300.0	09/04/15 20:27 / SR			IC102-H_150904A : 43		R109146

Report Definitions: RL - Analyte reporting limit.
B - The analyte was detected in the method blank.

MCL - Maximum contaminant level.
D - RL increased due to sample matrix.

ND - Not detected at the reporting limit.
E - Estimated value. Result exceeds the instrument upper quantitation limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-2871S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080222-011
Collection Date: 07/07/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	18	mg/L		1		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Magnesium	13	mg/L		1		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Potassium	8	mg/L		1		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Arsenic	0.16	mg/L	D	0.002		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Barium	0.13	mg/L		0.005		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Cadmium	0.11	mg/L		0.001		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Selenium	0.030	mg/L	D	0.003		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
Sodium	ND	mg/L	B	20		SW6020	09/09/15 23:02 / dck	09/04/15 07:58	SW3010A	ICPMS204-B_150909A : 178		30395
pH	7.9	s.u.		0.1		A4500-H B	09/01/15 14:11 / sah			JIL PH METER_150902A : 15		150827_1_PH-W
Alkalinity, Total as CaCO3	94	mg/L		4		A2320 B	09/01/15 18:07 / SR			PHSC_101-H_150901A : 152		R109008
Bicarbonate as HCO3	110	mg/L		4		A2320 B	09/01/15 18:07 / SR			PHSC_101-H_150901A : 152		R109008
Chloride	4	mg/L		1		E300.0	09/02/15 20:03 / SR			IC102-H_150902A : 56		R109075
Sulfate	31	mg/L		1		E300.0	09/02/15 20:03 / SR			IC102-H_150902A : 56		R109075
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	6	mg/L		1		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Magnesium	6	mg/L		1		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Potassium	4	mg/L		1		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Arsenic	0.054	mg/L		0.001		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Barium	0.19	mg/L		0.005		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
Sodium	ND	mg/L	B	100		SW6020	09/10/15 03:51 / dck	09/08/15 08:00	SW3010A	ICPMS204-B_150909A : 267		30443
pH	10.6	s.u.		0.1		A4500-H B	09/04/15 14:03 / SR			PHSC_101-H_150904A : 102		R109113
Alkalinity, Total as CaCO3	120	mg/L		4		A2320 B	09/04/15 12:16 / SR			PHSC_101-H_150904A : 51		R109113
Bicarbonate as HCO3	ND	mg/L		4		A2320 B	09/04/15 12:16 / SR			PHSC_101-H_150904A : 51		R109113
Chloride	ND	mg/L		1		E300.0	09/04/15 20:38 / SR			IC102-H_150904A : 44		R109146
Sulfate	ND	mg/L		1		E300.0	09/04/15 20:38 / SR			IC102-H_150904A : 44		R109146

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: B - The analyte was detected in the method blank.

D - RL increased due to sample matrix.

PREP BATCH REPORT

Prep Code: **PRP-SAT-PASTE**
 Prep Batch **30368** Prep Temp **NA °C**

Technician: **Skyler Pester**
 Batch Units:

Prep Start Date: **8/31/2015 2:46:51 PM**
 Prep End Date: **9/1/2015 3:29:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30368			50	0	0	50	1		8/31/2015	9/1/2015
Saturated paste made up with SPLP Extraction solution. Final volume is extraction solution added to reach saturation.										
H15080222-001B	Soil		270	0	0	54.37	0.20050153		8/31/2015	9/1/2015
Analyze for: ALK, pH, IC and Metals										
H15080222-002B	Soil		250	0	0	54.39	0.22022918		8/31/2015	9/1/2015
H15080222-003B	Soil		220	0	0	48.67	0.22366728		8/31/2015	9/1/2015
H15080222-004B	Soil		330	0	0	52.35	0.15938984		8/31/2015	9/1/2015
H15080222-005B	Soil		250	0	0	63.08	0.24891484		8/31/2015	9/1/2015
H15080222-006B	Soil		270	0	0	42.92	0.15674531		8/31/2015	9/1/2015
H15080222-007B	Soil		290	0	0	58.88	0.20131979		8/31/2015	9/1/2015
H15080222-008B	Soil		260	0	0	43.14	0.1662684		8/31/2015	9/1/2015
H15080222-009B	Soil		370	0	0	55.78	0.15187323		8/31/2015	9/1/2015
H15080222-010B	Soil		310	0	0	48.05	0.15728829		8/31/2015	9/1/2015
H15080222-011B	Soil		240	0	0	51.88	0.21829504		8/31/2015	9/1/2015
H15080222-011Bdup	Soil		260	0	0	59.66	0.22596773		8/31/2015	9/1/2015

Spk ID	Spike Name	SampType	AmtAdd	Exp Date
SPLP EXT - 8/26/	SPLP Extraction Fluid Concentrate	ALL		8/26/2016

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
 Prep Batch **30378** Prep Temp **NA °C**

Technician: **Skyler Pester**
 Batch Units: **ML**

Prep Start Date: **9/1/2015 2:21:19 PM**
 Prep End Date: **9/2/2015 6:00:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30378			2000	0	0	2000	1		9/1/2015	9/2/2015
Rotated and extracted with SPLP extraction solution - 18hrs										
H15080222-001A	Soil		100	0	0	2000	19.9421677		9/1/2015	9/2/2015
H15080222-002A	Soil		100	0	0	2000	19.9960008		9/1/2015	9/2/2015
H15080222-003A	Soil		100	0	0	2000	19.8570294		9/1/2015	9/2/2015
H15080222-004A	Soil		100	0	0	2000	19.8846689		9/1/2015	9/2/2015
H15080222-005A	Soil		100	0	0	2000	19.9920032		9/1/2015	9/2/2015
H15080222-006A	Soil		100	0	0	2000	19.9860098		9/1/2015	9/2/2015
H15080222-007A	Soil		100	0	0	2000	20		9/1/2015	9/2/2015
H15080222-008A	Soil		100	0	0	2000	19.9044586		9/1/2015	9/2/2015
H15080222-009A	Soil		100	0	0	2000	19.9163513		9/1/2015	9/2/2015
H15080222-010A	Soil		100	0	0	2000	19.9940018		9/1/2015	9/2/2015
H15080222-011A	Soil		100	0	0	2000	19.9242877		9/1/2015	9/2/2015
H15080222-011Adup	Soil		100	0	0	2000	19.9421677		9/1/2015	9/2/2015

Spk ID	Spike Name	SampType	AmtAdd	Exp Date
SPLP EXT - 8/26/	SPLP Extraction Fluid Concentrate	ALL	150 ul	8/26/2016



ANALYTICAL SUMMARY REPORT

September 11, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15080228

Project Name: 10022 EH 2015 SAI Leach Test

Energy Laboratories Inc Helena MT received the following 27 samples for Montana Environmental Custodial Trust on 8/12/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15080228-001	DH-3	08/11/15 17:00	08/12/15	Aqueous	Metals by ICP/ICPMS, Total Alkalinity Conductivity Anions by Ion Chromatography pH Digestion, Total Metals
H15080228-002	AEH-1506-104S	06/23/15 8:00	08/12/15	Soil	Metals by ICP/ICPMS, Total Alkalinity Conductivity Anions by Ion Chromatography pH Digestion, Total Metals Saturated Paste Extraction SPLP Extraction, Regular
H15080228-003	AEH-1506-110S	06/23/15 8:00	08/12/15	Soil	Same As Above
H15080228-004	AEH-1506-115S	06/24/15 8:00	08/12/15	Soil	Same As Above
H15080228-005	AEH-1506-124S/500S	06/24/15 8:00	08/12/15	Soil	Same As Above
H15080228-006	AEH-1506-126S/127S	06/24/15 8:00	08/12/15	Soil	Same As Above
H15080228-007	AEH-1506-140S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080228-008	AEH-1506-143S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080228-009	AEH-1506-155S/156S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080228-010	AEH-1506-157S/159S	06/25/15 8:00	08/12/15	Soil	Same As Above
H15080228-011	AEH-1506-182S/183S	06/29/15 17:00	08/12/15	Soil	Same As Above
H15080228-012	AEH-1506-185S	06/29/15 17:00	08/12/15	Soil	Same As Above
H15080228-013	AEH-1506-229S	06/30/15 8:00	08/12/15	Soil	Same As Above
H15080228-014	AEH-1507-252S	07/01/15 8:00	08/12/15	Soil	Same As Above
H15080228-015	AEH-1507-273S/274S	07/02/15 8:00	08/12/15	Soil	Same As Above
H15080228-016	AEH-1507-276S	07/02/15 8:00	08/12/15	Soil	Same As Above
H15080228-017	AEH-1507-299S	07/07/15 8:00	08/12/15	Soil	Same As Above
H15080228-018	AEH-1507-304S	07/07/15 8:00	08/12/15	Soil	Same As Above
H15080228-020	AEH--1507-333S/336S	07/07/15 8:00	08/12/15	Soil	Same As Above
H15080228-021	AEH-1507-352S	07/08/15 8:00	08/12/15	Soil	Same As Above



ANALYTICAL SUMMARY REPORT

H15080228-022	AEH-1507-360S	07/08/15 8:00	08/12/15	Soil	Same As Above
H15080228-023	AEH-1507-372S	07/09/15 8:00	08/12/15	Soil	Same As Above
H15080228-024	AEH-1507-374S	07/09/15 8:00	08/12/15	Soil	Same As Above
H15080228-025	AEH-1507-379S	07/09/15 8:00	08/12/15	Soil	Same As Above
H15080228-026	AEH-1507-3601S	07/08/15 8:00	08/12/15	Soil	Same As Above
H15080228-027	DH-3 After analysis	08/11/15 17:00	08/12/15	Aqueous	Metals by ICP/ICPMS, Total Alkalinity, Conductivity, Anions by Ion Chromatography, pH, Digestion, Total Metals
H15080228-028	DH-3 Collected 9/2/2015	08/12/15 14:50	08/12/15	Aqueous	Same As Above

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

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

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

Report Approved By:



CLIENT: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI Leach Test
Work Order: H15080228

Report Date: 09/11/15

CASE NARRATIVE

All samples were extracted using groundwater (DH-3) that was provided by Hydrometrics.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: DH-3
Project: 10022 EH 2015 SAI Leach Test
Matrix: Aqueous

Lab ID: H15080228-001
Collection Date: 08/11/15 17:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.5	s.u.		0.1		A4500-H B	08/17/15 12:56 / SR			PHSC_101-H_150817A : 41		R108566
Conductivity @ 25 C	558	umhos/cm		1		A2510 B	08/17/15 12:56 / SR			PHSC_101-H_150817A : 42		R108566
INORGANICS												
Alkalinity, Total as CaCO3	170	mg/L		4		A2320 B	08/25/15 12:50 / SR			PHSC_101-H_150825A : 49		R108797
Bicarbonate as HCO3	210	mg/L		4		A2320 B	08/25/15 12:50 / SR			PHSC_101-H_150825A : 49		R108797
Chloride	13	mg/L		1		E300.0	08/14/15 17:33 / SR			IC102-H_150814A : 18		R108569
Sulfate	71	mg/L		1		E300.0	08/14/15 17:33 / SR			IC102-H_150814A : 18		R108569
METALS, TOTAL												
Arsenic	0.010	mg/L		0.001		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Barium	0.072	mg/L		0.005		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Calcium	64	mg/L		1		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Magnesium	14	mg/L		1		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Potassium	5	mg/L		1		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443
Sodium	22	mg/L		1		SW6020	09/10/15 04:10 / dck	09/08/15 08:20	SW3010A	ICPMS204-B_150909A : 273		30443

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-104S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-002
Collection Date: 06/23/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	180	mg/L		1		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Magnesium	47	mg/L		1		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Potassium	72	mg/L		1		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Arsenic	0.28	mg/L		0.001		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Barium	0.053	mg/L		0.005		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Cadmium	15	mg/L		0.001		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Selenium	0.008	mg/L	D	0.002		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
Sodium	360	mg/L		1		SW6020	09/10/15 10:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 294		30344
pH	6.3	s.u.		0.1		A4500-H B	08/28/15 06:40 / sah			SOIL PH METER_150828A : 4		150827_1_PH-W
Alkalinity, Total as CaCO3	24	mg/L		4		A2320 B	08/28/15 09:48 / SR			PHSC_101-H_150828A : 11		R108908
Bicarbonate as HCO3	24	mg/L		4		A2320 B	08/28/15 09:48 / SR			PHSC_101-H_150828A : 11		R108908
Chloride	17	mg/L		1		E300.0	08/28/15 12:54 / SR			IC102-H_150828A : 18		R108982
Sulfate	1550	mg/L		1		E300.0	08/28/15 12:54 / SR			IC102-H_150828A : 18		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	55	mg/L		1		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Magnesium	14	mg/L		1		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Potassium	8	mg/L		1		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Arsenic	0.15	mg/L		0.001		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Barium	0.049	mg/L		0.005		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Cadmium	0.36	mg/L		0.001		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Selenium	0.002	mg/L		0.001		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
Sodium	73	mg/L		1		SW6020	09/09/15 23:34 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 188		30407
pH	8.1	s.u.		0.1		A4500-H B	09/01/15 15:00 / SR			PHSC_101-H_150901A : 84		R109008
Conductivity @ 25 C	726	umhos/cm		1		A2510 B	09/01/15 15:00 / SR			PHSC_101-H_150901A : 85		R109008
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/01/15 18:28 / SR			PHSC_101-H_150901A : 158		R109008
Bicarbonate as HCO3	240	mg/L		4		A2320 B	09/01/15 18:28 / SR			PHSC_101-H_150901A : 158		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 13:24 / SR			IC102-H_150902A : 20		R109075
Sulfate	100	mg/L		1		E300.0	09/02/15 13:24 / SR			IC102-H_150902A : 20		R109075

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-110S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-003
Collection Date: 06/23/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	38	mg/L		1		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Magnesium	9	mg/L		1		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Potassium	21	mg/L		1		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Arsenic	0.054	mg/L		0.001		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Barium	0.040	mg/L		0.005		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Cadmium	6.9	mg/L		0.001		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Selenium	0.044	mg/L	D	0.002		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
Sodium	47	mg/L		1		SW6020	09/10/15 10:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 295		30344
pH	5.3	s.u.		0.1		A4500-H B	08/28/15 06:40 / sah			SOIL PH METER_150828A : 5		150827_1_PH-W
Alkalinity, Total as CaCO3	16	mg/L		4		A2320 B	08/28/15 09:52 / SR			PHSC_101-H_150828A : 13		R108908
Bicarbonate as HCO3	15	mg/L		4		A2320 B	08/28/15 09:52 / SR			PHSC_101-H_150828A : 13		R108908
Chloride	15	mg/L		1		E300.0	08/28/15 13:16 / SR			IC102-H_150828A : 20		R108982
Sulfate	231	mg/L		1		E300.0	08/28/15 13:16 / SR			IC102-H_150828A : 20		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	53	mg/L		1		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Magnesium	13	mg/L		1		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Potassium	7	mg/L		1		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Arsenic	0.20	mg/L		0.001		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Barium	0.042	mg/L		0.005		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Cadmium	0.43	mg/L		0.001		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Selenium	0.004	mg/L		0.001		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
Sodium	67	mg/L		1		SW6020	09/09/15 23:50 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 193		30407
pH	7.7	s.u.		0.1		A4500-H B	09/01/15 15:02 / SR			PHSC_101-H_150901A : 86		R109008
Conductivity @ 25 C	678	umhos/cm		1		A2510 B	09/01/15 15:02 / SR			PHSC_101-H_150901A : 87		R109008
Alkalinity, Total as CaCO3	190	mg/L		4		A2320 B	09/01/15 18:34 / SR			PHSC_101-H_150901A : 160		R109008
Bicarbonate as HCO3	230	mg/L		4		A2320 B	09/01/15 18:34 / SR			PHSC_101-H_150901A : 160		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 13:35 / SR			IC102-H_150902A : 21		R109075
Sulfate	88	mg/L		1		E300.0	09/02/15 13:35 / SR			IC102-H_150902A : 21		R109075

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-115S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-004
Collection Date: 06/24/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	71	mg/L		1		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Magnesium	19	mg/L		1		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Potassium	19	mg/L		1		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Arsenic	0.038	mg/L		0.001		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Barium	0.061	mg/L		0.005		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Cadmium	23	mg/L		0.001		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Selenium	0.031	mg/L	D	0.002		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
Sodium	45	mg/L		1		SW6020	09/10/15 10:45 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 296		30344
pH	4.9	s.u.		0.1		A4500-H B	08/28/15 06:41 / sah			SOIL PH METER_150828A : 6		150827_1_PH-W
Alkalinity, Total as CaCO3	15	mg/L		4		A2320 B	08/28/15 09:58 / SR			PHSC_101-H_150828A : 15		R108908
Bicarbonate as HCO3	14	mg/L		4		A2320 B	08/28/15 09:58 / SR			PHSC_101-H_150828A : 15		R108908
Chloride	14	mg/L		1		E300.0	08/28/15 13:27 / SR			IC102-H_150828A : 21		R108982
Sulfate	372	mg/L		1		E300.0	08/28/15 13:27 / SR			IC102-H_150828A : 21		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	45	mg/L		1		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Magnesium	12	mg/L		1		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Potassium	6	mg/L		1		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Arsenic	0.017	mg/L		0.001		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Barium	0.042	mg/L		0.005		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Cadmium	2.4	mg/L		0.001		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Selenium	0.003	mg/L		0.001		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
Sodium	65	mg/L		1		SW6020	09/09/15 23:54 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 194		30407
pH	7.3	s.u.		0.1		A4500-H B	09/01/15 15:05 / SR			PHSC_101-H_150901A : 88		R109008
Conductivity @ 25 C	643	umhos/cm		1		A2510 B	09/01/15 15:05 / SR			PHSC_101-H_150901A : 89		R109008
Alkalinity, Total as CaCO3	160	mg/L		4		A2320 B	09/01/15 18:41 / SR			PHSC_101-H_150901A : 162		R109008
Bicarbonate as HCO3	200	mg/L		4		A2320 B	09/01/15 18:41 / SR			PHSC_101-H_150901A : 162		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 13:46 / SR			IC102-H_150902A : 22		R109075
Sulfate	96	mg/L		1		E300.0	09/02/15 13:46 / SR			IC102-H_150902A : 22		R109075

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-124S/500S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-005
Collection Date: 06/24/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	83	mg/L		1		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Magnesium	20	mg/L		1		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Potassium	13	mg/L		1		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Arsenic	0.71	mg/L	D	0.002		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Barium	0.093	mg/L		0.005		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Cadmium	2.2	mg/L		0.001		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Selenium	0.21	mg/L	D	0.003		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
Sodium	41	mg/L		1		SW6020	09/10/15 10:48 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 297		30344
pH	7.6	s.u.		0.1		A4500-H B	08/28/15 06:42 / sah			SOIL PH METER_150828A : 7		150827_1_PH-W
Alkalinity, Total as CaCO3	49	mg/L		4		A2320 B	08/28/15 10:04 / SR			PHSC_101-H_150828A : 17		R108908
Bicarbonate as HCO3	55	mg/L		4		A2320 B	08/28/15 10:04 / SR			PHSC_101-H_150828A : 17		R108908
Chloride	17	mg/L		1		E300.0	08/28/15 13:38 / SR			IC102-H_150828A : 22		R108982
Sulfate	264	mg/L		1		E300.0	08/28/15 13:38 / SR			IC102-H_150828A : 22		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	57	mg/L		1		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Magnesium	14	mg/L		1		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Potassium	6	mg/L		1		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Arsenic	0.47	mg/L		0.001		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Barium	0.036	mg/L		0.005		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Cadmium	0.49	mg/L		0.001		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Selenium	0.024	mg/L		0.001		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
Sodium	70	mg/L		1		SW6020	09/09/15 23:57 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 195		30407
pH	8.5	s.u.		0.1		A4500-H B	09/01/15 15:07 / SR			PHSC_101-H_150901A : 90		R109008
Conductivity @ 25 C	705	umhos/cm		1		A2510 B	09/01/15 15:07 / SR			PHSC_101-H_150901A : 91		R109008
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/01/15 18:47 / SR			PHSC_101-H_150901A : 164		R109008
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/01/15 18:47 / SR			PHSC_101-H_150901A : 164		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 13:57 / SR			IC102-H_150902A : 23		R109075
Sulfate	88	mg/L		1		E300.0	09/02/15 13:57 / SR			IC102-H_150902A : 23		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-126S/127S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-006
Collection Date: 06/24/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	75	mg/L		1		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Magnesium	18	mg/L		1		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Potassium	19	mg/L		1		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Arsenic	0.16	mg/L		0.001		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Barium	0.16	mg/L		0.005		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Cadmium	9.1	mg/L		0.001		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Selenium	0.083	mg/L	D	0.002		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
Sodium	80	mg/L		1		SW6020	09/10/15 10:51 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 298		30344
pH	7.1	s.u.		0.1		A4500-H B	08/28/15 06:43 / sah			SOIL PH METER_150828A : 8		150827_1_PH-W
Alkalinity, Total as CaCO3	32	mg/L		4		A2320 B	08/28/15 10:09 / SR			PHSC_101-H_150828A : 19		R108908
Bicarbonate as HCO3	35	mg/L		4		A2320 B	08/28/15 10:09 / SR			PHSC_101-H_150828A : 19		R108908
Chloride	16	mg/L		1		E300.0	08/28/15 13:50 / SR			IC102-H_150828A : 23		R108982
Sulfate	390	mg/L		1		E300.0	08/28/15 13:50 / SR			IC102-H_150828A : 23		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	56	mg/L		1		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Magnesium	13	mg/L		1		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Potassium	7	mg/L		1		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Arsenic	0.091	mg/L		0.001		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Barium	0.051	mg/L		0.005		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Cadmium	0.95	mg/L		0.001		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Selenium	0.008	mg/L		0.001		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
Sodium	66	mg/L		1		SW6020	09/10/15 00:00 / dck	09/04/15 08:00	SW3010A	ICPMS204-B_150909A : 196		30407
pH	8.4	s.u.		0.1		A4500-H B	09/01/15 15:10 / SR			PHSC_101-H_150901A : 92		R109008
Conductivity @ 25 C	678	umhos/cm		1		A2510 B	09/01/15 15:10 / SR			PHSC_101-H_150901A : 93		R109008
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/01/15 18:55 / SR			PHSC_101-H_150901A : 166		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 18:55 / SR			PHSC_101-H_150901A : 166		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 14:08 / SR			IC102-H_150902A : 24		R109075
Sulfate	88	mg/L		1		E300.0	09/02/15 14:08 / SR			IC102-H_150902A : 24		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-140S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-007
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	16	mg/L		1		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Magnesium	12	mg/L		1		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Potassium	14	mg/L		1		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Arsenic	53	mg/L	D	0.002		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Barium	0.42	mg/L		0.005		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Cadmium	0.091	mg/L		0.001		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Selenium	1.6	mg/L	D	0.003		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
Sodium	280	mg/L		1		SW6020	09/10/15 11:07 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 303		30344
pH	8.7	s.u.		0.1		A4500-H B	08/28/15 06:44 / sah			SOIL PH METER_150828A : 9		150827_1_PH-W
Alkalinity, Total as CaCO3	320	mg/L		4		A2320 B	08/28/15 10:13 / SR			PHSC_101-H_150828A : 21		R108908
Bicarbonate as HCO3	380	mg/L		4		A2320 B	08/28/15 10:13 / SR			PHSC_101-H_150828A : 21		R108908
Chloride	18	mg/L		1		E300.0	08/28/15 14:01 / SR			IC102-H_150828A : 24		R108982
Sulfate	125	mg/L		1		E300.0	08/28/15 14:01 / SR			IC102-H_150828A : 24		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	39	mg/L		1		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Magnesium	11	mg/L		1		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Potassium	8	mg/L		1		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Arsenic	0.77	mg/L		0.001		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Barium	0.042	mg/L		0.005		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Selenium	0.027	mg/L		0.001		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
Sodium	90	mg/L		1		SW6020	09/10/15 00:16 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 201		30407
pH	8.6	s.u.		0.1		A4500-H B	09/01/15 15:14 / SR			PHSC_101-H_150901A : 96		R109008
Conductivity @ 25 C	674	umhos/cm		1		A2510 B	09/01/15 15:14 / SR			PHSC_101-H_150901A : 97		R109008
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/01/15 19:11 / SR			PHSC_101-H_150901A : 170		R109008
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/01/15 19:11 / SR			PHSC_101-H_150901A : 170		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 14:30 / SR			IC102-H_150902A : 26		R109075
Sulfate	83	mg/L		1		E300.0	09/02/15 14:30 / SR			IC102-H_150902A : 26		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-143S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-008
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	56	mg/L		1		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Magnesium	15	mg/L		1		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Potassium	5	mg/L		1		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Arsenic	0.071	mg/L		0.001		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Barium	0.084	mg/L		0.005		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Cadmium	0.15	mg/L		0.001		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Selenium	0.005	mg/L	D	0.002		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
Sodium	31	mg/L		1		SW6020	09/10/15 11:10 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 304		30344
pH	7.8	s.u.		0.1		A4500-H B	08/28/15 06:45 / sah			JIL PH METER_150828A : 10		150827_1_PH-W
Alkalinity, Total as CaCO3	63	mg/L		4		A2320 B	08/28/15 10:20 / SR			PHSC_101-H_150828A : 23		R108908
Bicarbonate as HCO3	72	mg/L		4		A2320 B	08/28/15 10:20 / SR			PHSC_101-H_150828A : 23		R108908
Chloride	8	mg/L		1		E300.0	08/28/15 14:12 / SR			IC102-H_150828A : 25		R108982
Sulfate	148	mg/L		1		E300.0	08/28/15 14:12 / SR			IC102-H_150828A : 25		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	51	mg/L		1		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Magnesium	14	mg/L		1		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Potassium	5	mg/L		1		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Arsenic	0.014	mg/L		0.001		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Barium	0.047	mg/L		0.005		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
Sodium	61	mg/L		1		SW6020	09/10/15 00:19 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 202		30407
pH	8.2	s.u.		0.1		A4500-H B	09/01/15 15:17 / SR			PHSC_101-H_150901A : 98		R109008
Conductivity @ 25 C	632	umhos/cm		1		A2510 B	09/01/15 15:17 / SR			PHSC_101-H_150901A : 99		R109008
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/01/15 19:41 / SR			PHSC_101-H_150901A : 175		R109008
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/01/15 19:41 / SR			PHSC_101-H_150901A : 175		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 14:41 / SR			IC102-H_150902A : 27		R109075
Sulfate	86	mg/L		1		E300.0	09/02/15 14:41 / SR			IC102-H_150902A : 27		R109075

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-155S/156S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-009
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	220	mg/L		1		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Magnesium	83	mg/L		1		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Potassium	12	mg/L		1		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Arsenic	0.037	mg/L		0.001		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Barium	0.053	mg/L		0.005		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Cadmium	0.23	mg/L		0.001		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Selenium	0.12	mg/L	D	0.002		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
Sodium	200	mg/L		1		SW6020	09/10/15 11:14 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 305		30344
pH	8.1	s.u.		0.1		A4500-H B	08/28/15 06:46 / sah			JIL PH METER_150828A : 11		150827_1_PH-W
Alkalinity, Total as CaCO3	110	mg/L		4		A2320 B	08/28/15 10:25 / SR			PHSC_101-H_150828A : 25		R108908
Bicarbonate as HCO3	120	mg/L		4		A2320 B	08/28/15 10:25 / SR			PHSC_101-H_150828A : 25		R108908
Chloride	151	mg/L		1		E300.0	08/28/15 14:23 / SR			IC102-H_150828A : 26		R108982
Sulfate	920	mg/L		1		E300.0	08/28/15 14:23 / SR			IC102-H_150828A : 26		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	54	mg/L		1		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Magnesium	17	mg/L		1		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Potassium	5	mg/L		1		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Arsenic	0.009	mg/L		0.001		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Barium	0.041	mg/L		0.005		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Selenium	0.003	mg/L		0.001		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
Sodium	59	mg/L		1		SW6020	09/10/15 00:23 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 203		30407
pH	8.4	s.u.		0.1		A4500-H B	09/01/15 15:19 / SR			PHSC_101-H_150901A : 100		R109008
Conductivity @ 25 C	670	umhos/cm		1		A2510 B	09/01/15 15:19 / SR			PHSC_101-H_150901A : 101		R109008
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/01/15 19:51 / SR			PHSC_101-H_150901A : 177		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 19:51 / SR			PHSC_101-H_150901A : 177		R109008
Chloride	15	mg/L		1		E300.0	09/02/15 14:52 / SR			IC102-H_150902A : 28		R109075
Sulfate	93	mg/L		1		E300.0	09/02/15 14:52 / SR			IC102-H_150902A : 28		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-157S/159S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-010
Collection Date: 06/25/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	130	mg/L		1		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Magnesium	52	mg/L		1		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Potassium	13	mg/L		1		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Arsenic	0.38	mg/L		0.001		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Barium	0.052	mg/L		0.005		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Cadmium	0.095	mg/L		0.001		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Selenium	0.31	mg/L	D	0.002		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
Sodium	130	mg/L		1		SW6020	09/10/15 11:26 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 309		30344
pH	8.1	s.u.		0.1		A4500-H B	08/28/15 06:46 / sah			JIL PH METER_150828A : 12		150827_1_PH-W
Alkalinity, Total as CaCO3	93	mg/L		4		A2320 B	08/28/15 10:29 / SR			PHSC_101-H_150828A : 27		R108908
Bicarbonate as HCO3	110	mg/L		4		A2320 B	08/28/15 10:29 / SR			PHSC_101-H_150828A : 27		R108908
Chloride	76	mg/L		1		E300.0	08/28/15 14:34 / SR			IC102-H_150828A : 27		R108982
Sulfate	552	mg/L		1		E300.0	08/28/15 14:34 / SR			IC102-H_150828A : 27		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	52	mg/L		1		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Magnesium	16	mg/L		1		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Potassium	6	mg/L		1		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Arsenic	0.12	mg/L		0.001		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Barium	0.048	mg/L		0.005		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Selenium	0.004	mg/L		0.001		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
Sodium	61	mg/L		1		SW6020	09/10/15 00:26 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 204		30407
pH	8.5	s.u.		0.1		A4500-H B	09/01/15 15:22 / SR			PHSC_101-H_150901A : 102		R109008
Conductivity @ 25 C	666	umhos/cm		1		A2510 B	09/01/15 15:22 / SR			PHSC_101-H_150901A : 103		R109008
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/01/15 19:59 / SR			PHSC_101-H_150901A : 179		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 19:59 / SR			PHSC_101-H_150901A : 179		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 15:04 / SR			IC102-H_150902A : 29		R109075
Sulfate	88	mg/L		1		E300.0	09/02/15 15:04 / SR			IC102-H_150902A : 29		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-182S/183S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-011
Collection Date: 06/29/15 17:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	190	mg/L		1		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Magnesium	54	mg/L		1		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Potassium	15	mg/L		1		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Arsenic	0.12	mg/L		0.001		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Barium	0.11	mg/L		0.005		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Cadmium	0.036	mg/L		0.001		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Selenium	1.2	mg/L		0.001		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
Sodium	110	mg/L		1		SW6020	09/10/15 11:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 311		30344
pH	7.8	s.u.		0.1		A4500-H B	08/28/15 06:48 / sah			JIL PH METER_150828A : 15		150827_1_PH-W
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	08/28/15 10:39 / SR			PHSC_101-H_150828A : 31		R108908
Bicarbonate as HCO3	120	mg/L		4		A2320 B	08/28/15 10:39 / SR			PHSC_101-H_150828A : 31		R108908
Chloride	116	mg/L		1		E300.0	08/28/15 14:56 / SR			IC102-H_150828A : 29		R108982
Sulfate	597	mg/L		1		E300.0	08/28/15 14:56 / SR			IC102-H_150828A : 29		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	55	mg/L		1		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Magnesium	15	mg/L		1		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Potassium	6	mg/L		1		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Arsenic	0.037	mg/L		0.001		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Barium	0.037	mg/L		0.005		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Selenium	0.017	mg/L		0.001		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
Sodium	62	mg/L		1		SW6020	09/10/15 00:29 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 205		30407
pH	8.5	s.u.		0.1		A4500-H B	09/01/15 15:24 / SR			PHSC_101-H_150901A : 104		R109008
Conductivity @ 25 C	664	umhos/cm		1		A2510 B	09/01/15 15:24 / SR			PHSC_101-H_150901A : 105		R109008
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/01/15 20:06 / SR			PHSC_101-H_150901A : 181		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 20:06 / SR			PHSC_101-H_150901A : 181		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 15:15 / SR			IC102-H_150902A : 30		R109075
Sulfate	89	mg/L		1		E300.0	09/02/15 15:15 / SR			IC102-H_150902A : 30		R109075

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-185S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-012
Collection Date: 06/29/15 17:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	220	mg/L		1		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Magnesium	65	mg/L		1		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Potassium	14	mg/L		1		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Arsenic	0.071	mg/L		0.001		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Barium	0.082	mg/L		0.005		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Cadmium	0.28	mg/L		0.001		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Selenium	0.92	mg/L	D	0.002		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
Sodium	120	mg/L		1		SW6020	09/10/15 11:36 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 312		30344
pH	8.0	s.u.		0.1		A4500-H B	08/28/15 06:49 / sah			JIL PH METER_150828A : 16		150827_1_PH-W
Alkalinity, Total as CaCO3	110	mg/L		4		A2320 B	08/28/15 10:43 / SR			PHSC_101-H_150828A : 33		R108908
Bicarbonate as HCO3	130	mg/L		4		A2320 B	08/28/15 10:43 / SR			PHSC_101-H_150828A : 33		R108908
Chloride	139	mg/L		1		E300.0	08/28/15 15:30 / SR			IC102-H_150828A : 32		R108982
Sulfate	688	mg/L		1		E300.0	08/28/15 15:30 / SR			IC102-H_150828A : 32		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	54	mg/L		1		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Magnesium	16	mg/L		1		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Potassium	6	mg/L		1		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Arsenic	0.028	mg/L		0.001		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Barium	0.053	mg/L		0.005		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Selenium	0.015	mg/L		0.001		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
Sodium	62	mg/L		1		SW6020	09/10/15 00:45 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 210		30407
pH	8.4	s.u.		0.1		A4500-H B	09/01/15 15:26 / SR			PHSC_101-H_150901A : 106		R109008
Conductivity @ 25 C	655	umhos/cm		1		A2510 B	09/01/15 15:26 / SR			PHSC_101-H_150901A : 107		R109008
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/01/15 20:14 / SR			PHSC_101-H_150901A : 183		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 20:14 / SR			PHSC_101-H_150901A : 183		R109008
Chloride	15	mg/L		1		E300.0	09/02/15 15:59 / SR			IC102-H_150902A : 34		R109075
Sulfate	91	mg/L		1		E300.0	09/02/15 15:59 / SR			IC102-H_150902A : 34		R109075

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1506-229S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-013
Collection Date: 06/30/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	140	mg/L		1		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Magnesium	51	mg/L		1		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Potassium	17	mg/L		1		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Arsenic	0.51	mg/L		0.001		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Barium	0.13	mg/L		0.005		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Cadmium	0.097	mg/L		0.001		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Selenium	0.53	mg/L	D	0.002		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
Sodium	160	mg/L		1		SW6020	09/10/15 11:39 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 313		30344
pH	7.9	s.u.		0.1		A4500-H B	08/28/15 06:49 / sah			JIL PH METER_150828A : 17		150827_1_PH-W
Alkalinity, Total as CaCO3	83	mg/L		4		A2320 B	08/28/15 10:48 / SR			PHSC_101-H_150828A : 35		R108908
Bicarbonate as HCO3	96	mg/L		4		A2320 B	08/28/15 10:48 / SR			PHSC_101-H_150828A : 35		R108908
Chloride	68	mg/L		1		E300.0	08/28/15 15:41 / SR			IC102-H_150828A : 33		R108982
Sulfate	622	mg/L		1		E300.0	08/28/15 15:41 / SR			IC102-H_150828A : 33		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	53	mg/L		1		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Magnesium	15	mg/L		1		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Potassium	6	mg/L		1		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Arsenic	0.13	mg/L		0.001		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Barium	0.045	mg/L		0.005		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Cadmium	0.002	mg/L		0.001		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Selenium	0.007	mg/L		0.001		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
Sodium	54	mg/L		1		SW6020	09/10/15 00:49 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 211		30407
pH	8.4	s.u.		0.1		A4500-H B	09/01/15 15:29 / SR			PHSC_101-H_150901A : 108		R109008
Conductivity @ 25 C	639	umhos/cm		1		A2510 B	09/01/15 15:29 / SR			PHSC_101-H_150901A : 109		R109008
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/01/15 20:22 / SR			PHSC_101-H_150901A : 185		R109008
Bicarbonate as HCO3	240	mg/L		4		A2320 B	09/01/15 20:22 / SR			PHSC_101-H_150901A : 185		R109008
Chloride	14	mg/L		1		E300.0	09/02/15 16:21 / SR			IC102-H_150902A : 36		R109075
Sulfate	88	mg/L		1		E300.0	09/02/15 16:21 / SR			IC102-H_150902A : 36		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-252S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-014
Collection Date: 07/01/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	56	mg/L		1		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Magnesium	21	mg/L		1		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Potassium	8	mg/L		1		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Arsenic	0.42	mg/L	D	0.002		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Barium	0.062	mg/L		0.005		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Cadmium	0.029	mg/L		0.001		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Selenium	0.084	mg/L	D	0.003		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
Sodium	67	mg/L		1		SW6020	09/10/15 11:42 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 314		30344
pH	8.0	s.u.		0.1		A4500-H B	08/28/15 06:50 / sah			JIL PH METER_150828A : 18		150827_1_PH-W
Alkalinity, Total as CaCO3	78	mg/L		4		A2320 B	08/28/15 10:52 / SR			PHSC_101-H_150828A : 37		R108908
Bicarbonate as HCO3	91	mg/L		4		A2320 B	08/28/15 10:52 / SR			PHSC_101-H_150828A : 37		R108908
Chloride	24	mg/L		1		E300.0	08/28/15 15:52 / SR			IC102-H_150828A : 34		R108982
Sulfate	203	mg/L		1		E300.0	08/28/15 15:52 / SR			IC102-H_150828A : 34		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	48	mg/L		1		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Magnesium	15	mg/L		1		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Potassium	6	mg/L		1		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Arsenic	0.19	mg/L		0.001		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Barium	0.043	mg/L		0.005		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Selenium	0.003	mg/L		0.001		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
Sodium	63	mg/L		1		SW6020	09/10/15 00:52 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 212		30407
pH	8.6	s.u.		0.1		A4500-H B	09/01/15 15:31 / SR			PHSC_101-H_150901A : 110		R109008
Conductivity @ 25 C	630	umhos/cm		1		A2510 B	09/01/15 15:31 / SR			PHSC_101-H_150901A : 111		R109008
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/01/15 20:29 / SR			PHSC_101-H_150901A : 187		R109008
Bicarbonate as HCO3	240	mg/L		4		A2320 B	09/01/15 20:29 / SR			PHSC_101-H_150901A : 187		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 16:32 / SR			IC102-H_150902A : 37		R109075
Sulfate	85	mg/L		1		E300.0	09/02/15 16:32 / SR			IC102-H_150902A : 37		R109075

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-273S/274S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-015
Collection Date: 07/02/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	130	mg/L		1		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Magnesium	40	mg/L		1		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Potassium	14	mg/L		1		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Arsenic	0.037	mg/L	D	0.002		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Barium	0.080	mg/L		0.005		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Cadmium	0.067	mg/L		0.001		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Selenium	5.3	mg/L	D	0.003		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
Sodium	210	mg/L		1		SW6020	09/10/15 11:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 315		30344
pH	8.2	s.u.		0.1		A4500-H B	08/28/15 06:51 / sah			JIL PH METER_150828A : 19		150827_1_PH-W
Alkalinity, Total as CaCO3	120	mg/L		4		A2320 B	08/28/15 10:57 / SR			PHSC_101-H_150828A : 39		R108908
Bicarbonate as HCO3	140	mg/L		4		A2320 B	08/28/15 10:57 / SR			PHSC_101-H_150828A : 39		R108908
Chloride	17	mg/L		1		E300.0	08/28/15 16:03 / SR			IC102-H_150828A : 35		R108982
Sulfate	763	mg/L		1		E300.0	08/28/15 16:03 / SR			IC102-H_150828A : 35		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	47	mg/L		1		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Magnesium	15	mg/L		1		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Potassium	6	mg/L		1		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Arsenic	0.009	mg/L		0.001		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Barium	0.051	mg/L		0.005		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Selenium	0.082	mg/L		0.001		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
Sodium	66	mg/L		1		SW6020	09/10/15 01:05 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 216		30407
pH	8.5	s.u.		0.1		A4500-H B	09/01/15 15:34 / SR			PHSC_101-H_150901A : 112		R109008
Conductivity @ 25 C	638	umhos/cm		1		A2510 B	09/01/15 15:34 / SR			PHSC_101-H_150901A : 113		R109008
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/01/15 20:36 / SR			PHSC_101-H_150901A : 189		R109008
Bicarbonate as HCO3	230	mg/L		4		A2320 B	09/01/15 20:36 / SR			PHSC_101-H_150901A : 189		R109008
Chloride	13	mg/L		1		E300.0	09/02/15 16:44 / SR			IC102-H_150902A : 38		R109075
Sulfate	93	mg/L		1		E300.0	09/02/15 16:44 / SR			IC102-H_150902A : 38		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-276S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-016
Collection Date: 07/02/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	590	mg/L		1		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Magnesium	140	mg/L		1		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Potassium	13	mg/L		1		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Arsenic	0.021	mg/L		0.001		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Barium	0.062	mg/L		0.005		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Cadmium	0.11	mg/L		0.001		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Selenium	1.1	mg/L	D	0.002		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
Sodium	52	mg/L		1		SW6020	09/10/15 11:49 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 316		30344
pH	7.6	s.u.		0.1		A4500-H B	08/28/15 06:51 / sah			JIL PH METER_150828A : 20		150827_1_PH-W
Alkalinity, Total as CaCO3	63	mg/L		4		A2320 B	08/28/15 11:01 / SR			PHSC_101-H_150828A : 41		R108908
Bicarbonate as HCO3	72	mg/L		4		A2320 B	08/28/15 11:01 / SR			PHSC_101-H_150828A : 41		R108908
Chloride	400	mg/L		1		E300.0	08/28/15 16:14 / SR			IC102-H_150828A : 36		R108982
Sulfate	1290	mg/L		1		E300.0	08/28/15 16:14 / SR			IC102-H_150828A : 36		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	64	mg/L		1		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Magnesium	16	mg/L		1		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Potassium	5	mg/L		1		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Arsenic	0.005	mg/L		0.001		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Barium	0.026	mg/L		0.005		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Selenium	0.038	mg/L		0.001		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
Sodium	59	mg/L		1		SW6020	09/10/15 01:08 / dck	09/04/15 08:01	SW3010A	ICPMS204-B_150909A : 217		30407
pH	8.3	s.u.		0.1		A4500-H B	09/01/15 15:36 / SR			PHSC_101-H_150901A : 114		R109008
Conductivity @ 25 C	725	umhos/cm		1		A2510 B	09/01/15 15:36 / SR			PHSC_101-H_150901A : 115		R109008
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/01/15 20:44 / SR			PHSC_101-H_150901A : 191		R109008
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/01/15 20:44 / SR			PHSC_101-H_150901A : 191		R109008
Chloride	22	mg/L		1		E300.0	09/02/15 16:55 / SR			IC102-H_150902A : 39		R109075
Sulfate	117	mg/L		1		E300.0	09/02/15 16:55 / SR			IC102-H_150902A : 39		R109075

Report RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

Definitions: D - RL increased due to sample matrix.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-299S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-017
Collection Date: 07/07/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	260	mg/L		1		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Magnesium	63	mg/L		1		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Potassium	10	mg/L		1		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Arsenic	0.027	mg/L	D	0.002		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Barium	0.061	mg/L		0.005		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Cadmium	0.088	mg/L		0.001		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Selenium	0.25	mg/L	D	0.003		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
Sodium	59	mg/L		1		SW6020	09/10/15 11:55 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 318		30344
pH	8.0	s.u.		0.1		A4500-H B	08/28/15 06:53 / sah			JIL PH METER_150828A : 22		150827_1_PH-W
Alkalinity, Total as CaCO3	78	mg/L		4		A2320 B	08/28/15 11:10 / SR			PHSC_101-H_150828A : 45		R108908
Bicarbonate as HCO3	90	mg/L		4		A2320 B	08/28/15 11:10 / SR			PHSC_101-H_150828A : 45		R108908
Chloride	152	mg/L		1		E300.0	08/28/15 16:36 / SR			IC102-H_150828A : 38		R108982
Sulfate	648	mg/L		1		E300.0	08/28/15 16:36 / SR			IC102-H_150828A : 38		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	54	mg/L		1		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Magnesium	15	mg/L		1		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Potassium	5	mg/L		1		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Arsenic	0.005	mg/L		0.001		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Barium	0.031	mg/L		0.005		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Selenium	0.006	mg/L		0.001		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
Sodium	62	mg/L		1		SW6020	09/10/15 01:15 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 219		30407
pH	8.4	s.u.		0.1		A4500-H B	09/01/15 15:41 / SR			PHSC_101-H_150901A : 118		R109008
Conductivity @ 25 C	656	umhos/cm		1		A2510 B	09/01/15 15:41 / SR			PHSC_101-H_150901A : 119		R109008
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/01/15 20:56 / SR			PHSC_101-H_150901A : 195		R109008
Bicarbonate as HCO3	240	mg/L		4		A2320 B	09/01/15 20:56 / SR			PHSC_101-H_150901A : 195		R109008
Chloride	15	mg/L		1		E300.0	09/02/15 17:17 / SR			IC102-H_150902A : 41		R109075
Sulfate	97	mg/L		1		E300.0	09/02/15 17:17 / SR			IC102-H_150902A : 41		R109075

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-304S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-018
Collection Date: 07/07/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	520	mg/L		1		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Magnesium	120	mg/L		1		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Potassium	19	mg/L		1		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Arsenic	0.019	mg/L		0.001		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Barium	0.042	mg/L		0.005		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Cadmium	0.022	mg/L		0.001		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Selenium	0.34	mg/L	D	0.002		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
Sodium	58	mg/L		1		SW6020	09/10/15 12:08 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 322		30344
pH	8.0	s.u.		0.1		A4500-H B	08/28/15 06:53 / sah			JIL PH METER_150828A : 23		150827_1_PH-W
Alkalinity, Total as CaCO3	100	mg/L		4		A2320 B	08/28/15 11:14 / SR			PHSC_101-H_150828A : 47		R108908
Bicarbonate as HCO3	120	mg/L		4		A2320 B	08/28/15 11:14 / SR			PHSC_101-H_150828A : 47		R108908
Chloride	338	mg/L		1		E300.0	08/28/15 16:47 / SR			IC102-H_150828A : 39		R108982
Sulfate	1160	mg/L		1		E300.0	08/28/15 16:47 / SR			IC102-H_150828A : 39		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	62	mg/L		1		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Magnesium	17	mg/L		1		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Potassium	6	mg/L		1		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Arsenic	0.007	mg/L		0.001		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Barium	0.033	mg/L		0.005		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Selenium	0.010	mg/L		0.001		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
Sodium	63	mg/L		1		SW6020	09/10/15 01:18 / dck	09/04/15 08:03	SW3010A	ICPMS204-B_150909A : 220		30407
pH	8.0	s.u.		0.1		A4500-H B	09/04/15 13:15 / SR			PHSC_101-H_150904A : 62		R109113
Conductivity @ 25 C	725	umhos/cm		1		A2510 B	09/04/15 13:15 / SR			PHSC_101-H_150904A : 63		R109113
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/04/15 10:00 / SR			PHSC_101-H_150904A : 11		R109113
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/04/15 10:00 / SR			PHSC_101-H_150904A : 11		R109113
Chloride	21	mg/L		1		E300.0	09/04/15 16:11 / SR			IC102-H_150904A : 20		R109146
Sulfate	113	mg/L		1		E300.0	09/04/15 16:11 / SR			IC102-H_150904A : 20		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH--1507-333S/336S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-020
Collection Date: 07/07/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	140	mg/L		1		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Magnesium	50	mg/L		1		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Potassium	19	mg/L		1		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Arsenic	0.039	mg/L		0.001		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Barium	0.37	mg/L		0.005		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Cadmium	0.008	mg/L		0.001		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Selenium	0.34	mg/L	D	0.002		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
Sodium	120	mg/L		1		SW6020	09/10/15 12:24 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 327		30344
pH	8.1	s.u.		0.1		A4500-H B	08/28/15 06:54 / sah			JIL PH METER_150828A : 24		150827_1_PH-W
Alkalinity, Total as CaCO3	130	mg/L		4		A2320 B	08/28/15 11:19 / SR			PHSC_101-H_150828A : 49		R108908
Bicarbonate as HCO3	150	mg/L		4		A2320 B	08/28/15 11:19 / SR			PHSC_101-H_150828A : 49		R108908
Chloride	97	mg/L		1		E300.0	08/28/15 17:10 / SR			IC102-H_150828A : 41		R108982
Sulfate	440	mg/L		1		E300.0	08/28/15 17:10 / SR			IC102-H_150828A : 41		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	48	mg/L		1		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Magnesium	15	mg/L		1		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Potassium	6	mg/L		1		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Arsenic	0.007	mg/L		0.001		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Barium	0.045	mg/L		0.005		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Selenium	0.006	mg/L		0.001		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
Sodium	72	mg/L		1		SW6020	09/10/15 01:47 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 229		30408
pH	8.2	s.u.		0.1		A4500-H B	09/04/15 13:17 / SR			PHSC_101-H_150904A : 64		R109113
Conductivity @ 25 C	665	umhos/cm		1		A2510 B	09/04/15 13:17 / SR			PHSC_101-H_150904A : 65		R109113
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/04/15 10:07 / SR			PHSC_101-H_150904A : 13		R109113
Bicarbonate as HCO3	270	mg/L		4		A2320 B	09/04/15 10:07 / SR			PHSC_101-H_150904A : 13		R109113
Chloride	14	mg/L		1		E300.0	09/04/15 16:33 / SR			IC102-H_150904A : 22		R109146
Sulfate	87	mg/L		1		E300.0	09/04/15 16:33 / SR			IC102-H_150904A : 22		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-352S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-021
Collection Date: 07/08/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	150	mg/L		1		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Magnesium	38	mg/L		1		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Potassium	31	mg/L		1		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Arsenic	0.30	mg/L		0.001		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Barium	0.14	mg/L		0.005		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Cadmium	120	mg/L		0.001		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Selenium	0.30	mg/L	D	0.002		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
Sodium	69	mg/L		1		SW6020	09/10/15 12:27 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 328		30344
pH	4.8	s.u.		0.1		A4500-H B	08/28/15 06:55 / sah			JIL PH METER_150828A : 26		150827_1_PH-W
Alkalinity, Total as CaCO3	14	mg/L		4		A2320 B	08/28/15 11:23 / SR			PHSC_101-H_150828A : 51		R108908
Bicarbonate as HCO3	12	mg/L		4		A2320 B	08/28/15 11:23 / SR			PHSC_101-H_150828A : 51		R108908
Chloride	28	mg/L		1		E300.0	08/28/15 17:21 / SR			IC102-H_150828A : 42		R108982
Sulfate	1030	mg/L		1		E300.0	08/28/15 17:21 / SR			IC102-H_150828A : 42		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	51	mg/L		1		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Magnesium	13	mg/L		1		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Potassium	7	mg/L		1		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Arsenic	0.078	mg/L		0.001		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Barium	0.043	mg/L		0.005		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Cadmium	2.7	mg/L		0.001		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Selenium	0.028	mg/L		0.001		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
Sodium	57	mg/L		1		SW6020	09/10/15 02:03 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 234		30408
pH	7.7	s.u.		0.1		A4500-H B	09/04/15 13:20 / SR			PHSC_101-H_150904A : 66		R109113
Conductivity @ 25 C	648	umhos/cm		1		A2510 B	09/04/15 13:20 / SR			PHSC_101-H_150904A : 67		R109113
Alkalinity, Total as CaCO3	200	mg/L		4		A2320 B	09/04/15 10:13 / SR			PHSC_101-H_150904A : 15		R109113
Bicarbonate as HCO3	240	mg/L		4		A2320 B	09/04/15 10:13 / SR			PHSC_101-H_150904A : 15		R109113
Chloride	13	mg/L		1		E300.0	09/04/15 16:44 / SR			IC102-H_150904A : 23		R109146
Sulfate	94	mg/L		1		E300.0	09/04/15 16:44 / SR			IC102-H_150904A : 23		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-360S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-022
Collection Date: 07/08/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	63	mg/L		1		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Magnesium	16	mg/L		1		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Potassium	9	mg/L		1		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Arsenic	1.2	mg/L		0.001		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Barium	0.18	mg/L		0.005		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Cadmium	0.43	mg/L		0.001		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Selenium	0.026	mg/L	D	0.002		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
Sodium	42	mg/L		1		SW6020	09/10/15 12:30 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 329		30344
pH	7.2	s.u.		0.1		A4500-H B	08/28/15 06:57 / sah			JIL PH METER_150828A : 27		150827_1_PH-W
Alkalinity, Total as CaCO3	32	mg/L		4		A2320 B	08/28/15 11:29 / SR			PHSC_101-H_150828A : 53		R108908
Bicarbonate as HCO3	34	mg/L		4		A2320 B	08/28/15 11:29 / SR			PHSC_101-H_150828A : 53		R108908
Chloride	9	mg/L		1		E300.0	08/28/15 17:32 / SR			IC102-H_150828A : 43		R108982
Sulfate	234	mg/L		1		E300.0	08/28/15 17:32 / SR			IC102-H_150828A : 43		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	57	mg/L		1		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Magnesium	13	mg/L		1		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Potassium	7	mg/L		1		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Arsenic	0.76	mg/L		0.001		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Barium	0.067	mg/L		0.005		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Cadmium	0.083	mg/L		0.001		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Selenium	0.008	mg/L		0.001		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
Sodium	57	mg/L		1		SW6020	09/10/15 02:06 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 235		30408
pH	8.3	s.u.		0.1		A4500-H B	09/04/15 13:22 / SR			PHSC_101-H_150904A : 68		R109113
Conductivity @ 25 C	663	umhos/cm		1		A2510 B	09/04/15 13:22 / SR			PHSC_101-H_150904A : 69		R109113
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/04/15 10:19 / SR			PHSC_101-H_150904A : 17		R109113
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/04/15 10:19 / SR			PHSC_101-H_150904A : 17		R109113
Chloride	13	mg/L		1		E300.0	09/04/15 16:55 / SR			IC102-H_150904A : 24		R109146
Sulfate	84	mg/L		1		E300.0	09/04/15 16:55 / SR			IC102-H_150904A : 24		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-372S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-023
Collection Date: 07/09/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	320	mg/L		1		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Magnesium	57	mg/L		1		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Potassium	19	mg/L		1		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Arsenic	0.46	mg/L	D	0.002		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Barium	0.19	mg/L		0.005		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Cadmium	23	mg/L		0.001		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Selenium	1.6	mg/L	D	0.003		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
Sodium	39	mg/L		1		SW6020	09/10/15 12:33 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 330		30344
pH	7.3	s.u.		0.1		A4500-H B	08/28/15 06:58 / sah			JIL PH METER_150828A : 28		150827_1_PH-W
Alkalinity, Total as CaCO3	45	mg/L		4		A2320 B	08/28/15 11:52 / SR			PHSC_101-H_150828A : 58		R108908
Bicarbonate as HCO3	50	mg/L		4		A2320 B	08/28/15 11:52 / SR			PHSC_101-H_150828A : 58		R108908
Chloride	11	mg/L		1		E300.0	08/28/15 18:05 / SR			IC102-H_150828A : 46		R108982
Sulfate	1090	mg/L		1		E300.0	08/28/15 18:05 / SR			IC102-H_150828A : 46		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	43	mg/L		1		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Magnesium	13	mg/L		1		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Potassium	6	mg/L		1		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Arsenic	0.16	mg/L		0.001		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Barium	0.041	mg/L		0.005		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Cadmium	0.040	mg/L		0.001		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Selenium	0.31	mg/L		0.001		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
Sodium	95	mg/L		1		SW6020	09/10/15 02:10 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 236		30408
pH	8.4	s.u.		0.1		A4500-H B	09/04/15 13:25 / SR			PHSC_101-H_150904A : 70		R109113
Conductivity @ 25 C	735	umhos/cm		1		A2510 B	09/04/15 13:25 / SR			PHSC_101-H_150904A : 71		R109113
Alkalinity, Total as CaCO3	240	mg/L		4		A2320 B	09/04/15 10:26 / SR			PHSC_101-H_150904A : 19		R109113
Bicarbonate as HCO3	290	mg/L		4		A2320 B	09/04/15 10:26 / SR			PHSC_101-H_150904A : 19		R109113
Chloride	13	mg/L		1		E300.0	09/04/15 17:07 / SR			IC102-H_150904A : 25		R109146
Sulfate	106	mg/L		1		E300.0	09/04/15 17:07 / SR			IC102-H_150904A : 25		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-374S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-024
Collection Date: 07/09/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	130	mg/L		1		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Magnesium	27	mg/L		1		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Potassium	26	mg/L		1		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Arsenic	0.076	mg/L	D	0.002		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Barium	0.072	mg/L		0.005		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Cadmium	12	mg/L		0.001		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Selenium	0.92	mg/L	D	0.003		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
Sodium	54	mg/L		1		SW6020	09/10/15 12:40 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 332		30344
pH	6.2	s.u.		0.1		A4500-H B	08/28/15 07:00 / sah			JIL PH METER_150828A : 30		150827_1_PH-W
Alkalinity, Total as CaCO3	19	mg/L		4		A2320 B	08/28/15 12:02 / SR			PHSC_101-H_150828A : 62		R108908
Bicarbonate as HCO3	18	mg/L		4		A2320 B	08/28/15 12:02 / SR			PHSC_101-H_150828A : 62		R108908
Chloride	18	mg/L		1		E300.0	08/28/15 18:27 / SR			IC102-H_150828A : 48		R108982
Sulfate	520	mg/L		1		E300.0	08/28/15 18:27 / SR			IC102-H_150828A : 48		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	55	mg/L		1		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Magnesium	14	mg/L		1		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Potassium	7	mg/L		1		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Arsenic	0.056	mg/L		0.001		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Barium	0.045	mg/L		0.005		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Cadmium	0.18	mg/L		0.001		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Selenium	0.044	mg/L		0.001		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
Sodium	59	mg/L		1		SW6020	09/10/15 02:16 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 238		30408
pH	8.1	s.u.		0.1		A4500-H B	09/04/15 13:29 / SR			PHSC_101-H_150904A : 74		R109113
Conductivity @ 25 C	654	umhos/cm		1		A2510 B	09/04/15 13:29 / SR			PHSC_101-H_150904A : 75		R109113
Alkalinity, Total as CaCO3	210	mg/L		4		A2320 B	09/04/15 10:44 / SR			PHSC_101-H_150904A : 23		R109113
Bicarbonate as HCO3	250	mg/L		4		A2320 B	09/04/15 10:44 / SR			PHSC_101-H_150904A : 23		R109113
Chloride	13	mg/L		1		E300.0	09/04/15 17:29 / SR			IC102-H_150904A : 27		R109146
Sulfate	87	mg/L		1		E300.0	09/04/15 17:29 / SR			IC102-H_150904A : 27		R109146

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-379S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-025
Collection Date: 07/09/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	16	mg/L		1		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Magnesium	5	mg/L		1		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Potassium	10	mg/L		1		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Arsenic	0.12	mg/L	D	0.002		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Barium	0.059	mg/L		0.005		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Cadmium	0.065	mg/L		0.001		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Selenium	0.013	mg/L	D	0.003		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
Sodium	57	mg/L		1		SW6020	09/10/15 12:43 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 333		30344
pH	7.0	s.u.		0.1		A4500-H B	08/28/15 07:01 / sah			JIL PH METER_150828A : 31		150827_1_PH-W
Alkalinity, Total as CaCO3	23	mg/L		4		A2320 B	08/28/15 12:08 / SR			PHSC_101-H_150828A : 64		R108908
Bicarbonate as HCO3	23	mg/L		4		A2320 B	08/28/15 12:08 / SR			PHSC_101-H_150828A : 64		R108908
Chloride	20	mg/L		1		E300.0	08/28/15 18:50 / SR			IC102-H_150828A : 50		R108982
Sulfate	112	mg/L		1		E300.0	08/28/15 18:50 / SR			IC102-H_150828A : 50		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	53	mg/L		1		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Magnesium	13	mg/L		1		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Potassium	7	mg/L		1		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Arsenic	0.18	mg/L		0.001		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Barium	0.050	mg/L		0.005		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Selenium	0.002	mg/L		0.001		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
Sodium	58	mg/L		1		SW6020	09/10/15 02:19 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 239		30408
pH	8.2	s.u.		0.1		A4500-H B	09/04/15 13:32 / SR			PHSC_101-H_150904A : 76		R109113
Conductivity @ 25 C	648	umhos/cm		1		A2510 B	09/04/15 13:32 / SR			PHSC_101-H_150904A : 77		R109113
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/04/15 10:51 / SR			PHSC_101-H_150904A : 25		R109113
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/04/15 10:51 / SR			PHSC_101-H_150904A : 25		R109113
Chloride	13	mg/L		1		E300.0	09/04/15 17:40 / SR			IC102-H_150904A : 28		R109146
Sulfate	80	mg/L		1		E300.0	09/04/15 17:40 / SR			IC102-H_150904A : 28		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-3601S
Project: 10022 EH 2015 SAI Leach Test
Matrix: Soil

Lab ID: H15080228-026
Collection Date: 07/08/15 08:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
SATURATED PASTE EXTRACT												
Calcium	27	mg/L		1		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Magnesium	7	mg/L		1		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Potassium	5	mg/L		1		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Arsenic	14	mg/L	D	0.002		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Barium	0.064	mg/L		0.005		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Cadmium	0.32	mg/L		0.001		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Selenium	0.007	mg/L	D	0.003		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
Sodium	26	mg/L		1		SW6020	09/10/15 12:46 / dck	09/02/15 09:37	SW3010A	ICPMS204-B_150909A : 334		30344
pH	7.2	s.u.		0.1		A4500-H B	08/28/15 07:02 / sah			JIL PH METER_150828A : 32		150827_1_PH-W
Alkalinity, Total as CaCO3	34	mg/L		4		A2320 B	08/28/15 12:14 / SR			PHSC_101-H_150828A : 66		R108908
Bicarbonate as HCO3	36	mg/L		4		A2320 B	08/28/15 12:14 / SR			PHSC_101-H_150828A : 66		R108908
Chloride	6	mg/L		1		E300.0	08/28/15 19:01 / SR			IC102-H_150828A : 51		R108982
Sulfate	79	mg/L		1		E300.0	08/28/15 19:01 / SR			IC102-H_150828A : 51		R108982
SPLP EXTRACTABLE CONSTITUENTS												
Calcium	55	mg/L		1		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Magnesium	13	mg/L		1		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Potassium	5	mg/L		1		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Arsenic	1.9	mg/L		0.001		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Barium	0.050	mg/L		0.005		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Cadmium	0.004	mg/L		0.001		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Selenium	0.003	mg/L		0.001		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
Sodium	60	mg/L		1		SW6020	09/10/15 02:23 / dck	09/04/15 08:04	SW3010A	ICPMS204-B_150909A : 240		30408
pH	8.4	s.u.		0.1		A4500-H B	09/04/15 13:34 / SR			PHSC_101-H_150904A : 78		R109113
Conductivity @ 25 C	656	umhos/cm		1		A2510 B	09/04/15 13:34 / SR			PHSC_101-H_150904A : 79		R109113
Alkalinity, Total as CaCO3	220	mg/L		4		A2320 B	09/04/15 10:57 / SR			PHSC_101-H_150904A : 27		R109113
Bicarbonate as HCO3	260	mg/L		4		A2320 B	09/04/15 10:57 / SR			PHSC_101-H_150904A : 27		R109113
Chloride	12	mg/L		1		E300.0	09/04/15 17:51 / SR			IC102-H_150904A : 29		R109146
Sulfate	80	mg/L		1		E300.0	09/04/15 17:51 / SR			IC102-H_150904A : 29		R109146

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: DH-3 After analysis
Project: 10022 EH 2015 SAI Leach Test
Matrix: Aqueous

Lab ID: H15080228-027
Collection Date: 08/11/15 17:00
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.6	s.u.		0.1		A4500-H B	09/01/15 12:38 / SR			PHSC_101-H_150901A : 50		R109008
Conductivity @ 25 C	545	umhos/cm		1		A2510 B	09/01/15 12:38 / SR			PHSC_101-H_150901A : 51		R109008
INORGANICS												
Alkalinity, Total as CaCO3	170	mg/L		4		A2320 B	09/01/15 11:37 / SR			PHSC_101-H_150901A : 43		R109008
Bicarbonate as HCO3	210	mg/L		4		A2320 B	09/01/15 11:37 / SR			PHSC_101-H_150901A : 43		R109008
Chloride	12	mg/L		1		E300.0	09/01/15 17:07 / SR			IC102-H_150901A : 19		R109049
Sulfate	71	mg/L		1		E300.0	09/01/15 17:07 / SR			IC102-H_150901A : 19		R109049
METALS, TOTAL												
Arsenic	0.010	mg/L		0.001		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Barium	0.069	mg/L		0.005		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Calcium	63	mg/L		1		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Magnesium	15	mg/L		1		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Potassium	5	mg/L		1		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408
Sodium	23	mg/L		1		SW6020	09/10/15 02:36 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 244		30408

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: DH-3 Collected 9/2/2015
Project: 10022 EH 2015 SAI Leach Test
Matrix: Aqueous

Lab ID: H15080228-028
Collection Date: 08/12/15 14:50
Date Received: 08/12/15
Report Date: 09/11/15

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	09/03/15 13:46 / SR			PHSC_101-H_150903A : 42		R109073
Conductivity @ 25 C	542	umhos/cm		1		A2510 B	09/03/15 13:46 / SR			PHSC_101-H_150903A : 43		R109073
INORGANICS												
Alkalinity, Total as CaCO3	180	mg/L		4		A2320 B	09/03/15 10:52 / SR			PHSC_101-H_150903A : 9		R109073
Bicarbonate as HCO3	210	mg/L		4		A2320 B	09/03/15 10:52 / SR			PHSC_101-H_150903A : 9		R109073
Chloride	12	mg/L		1		E300.0	09/03/15 16:12 / SR			IC102-H_150903A : 42		R109117
Sulfate	70	mg/L		1		E300.0	09/03/15 16:12 / SR			IC102-H_150903A : 42		R109117
METALS, TOTAL												
Arsenic	0.009	mg/L		0.001		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Barium	0.069	mg/L		0.005		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Cadmium	ND	mg/L		0.001		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Calcium	63	mg/L		1		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Magnesium	15	mg/L		1		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Potassium	5	mg/L		1		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Selenium	0.001	mg/L		0.001		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408
Sodium	23	mg/L		1		SW6020	09/10/15 02:39 / dck	09/04/15 08:15	SW3010A	ICPMS204-B_150909A : 245		30408

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

PREP BATCH REPORT

Prep Code: **PRP-SAT-PASTE**
 Prep Batch **30321** Prep Temp **NA °C**

Technician: **Skyler Pester**
 Batch Units:

Prep Start Date: **8/26/2015 5:06:24 PM**
 Prep End Date: **8/27/2015 3:02:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30321			50	0	0	50	1		8/26/2015	8/27/2015
Saturated paste made up with client provided DH-3 water. Final volume is DH-3 water added to reach saturation.										
H15080228-002B	Soil		200	0	0	22.32	0.11299549		8/26/2015	8/27/2015
Analyze for: ALK, pH, IC and Metals										
H15080228-003B	Soil		230	0	0	34.34	0.14628951		8/26/2015	8/27/2015
H15080228-004B	Soil		190	0	0	35.73	0.18928798		8/26/2015	8/27/2015
H15080228-005B	Soil		280	0	0	35.18	0.12361643		8/26/2015	8/27/2015
H15080228-006B	Soil		310	0	0	50.12	0.15994894		8/26/2015	8/27/2015
H15080228-007B	Soil		250	0	0	35.21	0.13940138		8/26/2015	8/27/2015
H15080228-008B	Soil		150	0	0	57.5	0.39378167		8/26/2015	8/27/2015
H15080228-009B	Soil		200	0	0	35.29	0.17691883		8/26/2015	8/27/2015
H15080228-010B	Soil		290	0	0	48.9	0.16919244		8/26/2015	8/27/2015
H15080228-011B	Soil		240	0	0	34.87	0.14483303		8/26/2015	8/27/2015
H15080228-012B	Soil		210	0	0	35.06	0.16676973		8/26/2015	8/27/2015
H15080228-013B	Soil		330	0	0	52.1	0.15871565		8/26/2015	8/27/2015
H15080228-014B	Soil		110	0	0	25.89	0.23888171		8/26/2015	8/27/2015
H15080228-015B	Soil		92	0	0	25.14	0.27323117		8/26/2015	8/27/2015
H15080228-016B	Soil		250	0	0	20.4	0.08314314		8/26/2015	8/27/2015
H15080228-017B	Soil		120	0	0	15.36	0.12905394		8/26/2015	8/27/2015
H15080228-018B	Soil		210	0	0	25.89	0.12423225		8/26/2015	8/27/2015
H15080228-020B	Soil		240	0	0	37.56	0.15392181		8/26/2015	8/27/2015
H15080228-021B	Soil		310	0	0	39.85	0.12940833		8/26/2015	8/27/2015
H15080228-022B	Soil		380	0	0	31.52	0.08405109		8/26/2015	8/27/2015
H15080228-023B	Soil		260	0	0	21.8	0.08378493		8/26/2015	8/27/2015
H15080228-024B	Soil		220	0	0	21.52	0.09730512		8/26/2015	8/27/2015

PREP BATCH REPORT

Prep Code: **PRP-SAT-PASTE**
Prep Batch **30321** Prep Temp **NA °C**

Technician: **Skyler Pester**
Batch Units:

Prep Start Date: **8/26/2015 5:06:24 PM**
Prep End Date: **8/27/2015 3:02:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
H15080228-025B	Soil		210	0	0	19.14	0.08971595		8/26/2015	8/27/2015
H15080228-026B	Soil		200	0	0	9.82	0.04802191		8/26/2015	8/27/2015
H15080228-010Bdup	Soil		290	0	0	48.15	0.16464916		8/26/2015	8/27/2015
H15080228-016Bdup	Soil		200	0	0	15.71	0.07904403		8/26/2015	8/27/2015
H15080228-023Bdup	Soil		280	0	0	23.68	0.08355681		8/26/2015	8/27/2015

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
Prep Batch **30369** Prep Temp **NA °C**

Technician: **Skyler Pester**
Batch Units: **ML**

Prep Start Date: **8/31/2015 2:49:33 PM**
Prep End Date: **9/1/2015 3:29:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30369			2000	0	0	2000	1		8/31/2015	9/1/2015
Rotated and extracted with client provided DH-3 water - 18hrs										
H15080228-002A	Soil		100	0	0	2000	20.0220242		8/31/2015	9/1/2015
H15080228-003A	Soil		100	0	0	2000	19.9700449		8/31/2015	9/1/2015
H15080228-004A	Soil		100	0	0	2000	19.9302442		8/31/2015	9/1/2015
H15080228-005A	Soil		100	0	0	2000	19.9362042		8/31/2015	9/1/2015
H15080228-006A	Soil		100	0	0	2000	19.7238659		8/31/2015	9/1/2015
H15080228-007A	Soil		100	0	0	2000	19.9820162		8/31/2015	9/1/2015
H15080228-008A	Soil		100	0	0	2000	19.9481349		8/31/2015	9/1/2015
H15080228-009A	Soil		100	0	0	2000	19.9541056		8/31/2015	9/1/2015
H15080228-010A	Soil		100	0	0	2000	19.8550581		8/31/2015	9/1/2015
H15080228-011A	Soil		100	0	0	2000	20.0120072		8/31/2015	9/1/2015
H15080228-012A	Soil		100	0	0	2000	19.8846689		8/31/2015	9/1/2015
H15080228-013A	Soil		100	0	0	2000	20.0581687		8/31/2015	9/1/2015
H15080228-014A	Soil		50	0	0	1000	19.9203187		8/31/2015	9/1/2015
H15080228-015A	Soil		50	0	0	1000	20.0240288		8/31/2015	9/1/2015
H15080228-016A	Soil		100	0	0	2000	19.9322304		8/31/2015	9/1/2015
H15080228-017A	Soil		51	0	0	1000	19.650226		8/31/2015	9/1/2015
H15080228-006Adup	Soil		100	0	0	2000	19.9322304		8/31/2015	9/1/2015
H15080228-016Adup	Soil		100	0	0	2000	19.8609732		8/31/2015	9/1/2015

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
Prep Batch **30377** Prep Temp **NA °C**

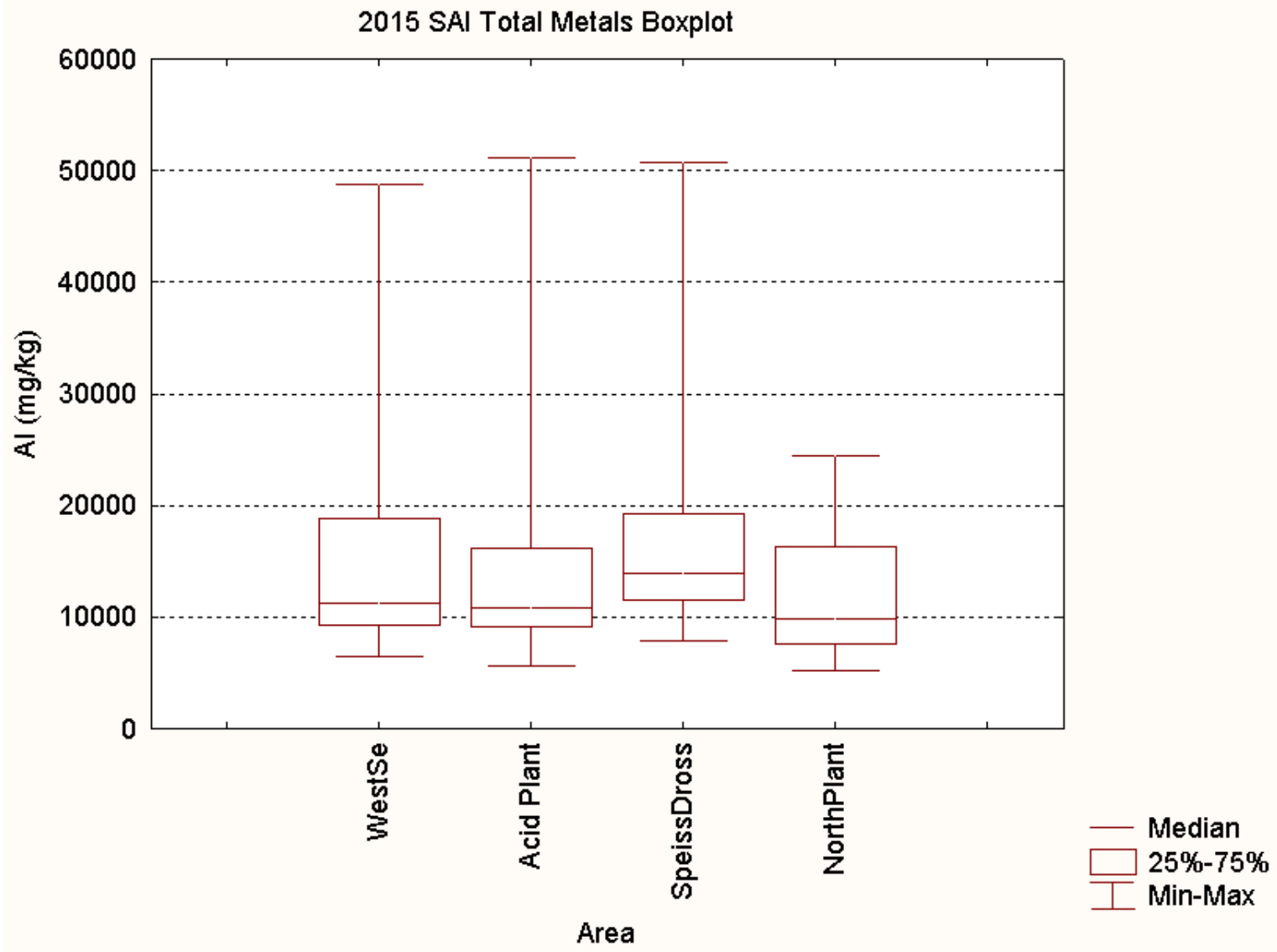
Technician: **Skyler Pester**
Batch Units: **ML**

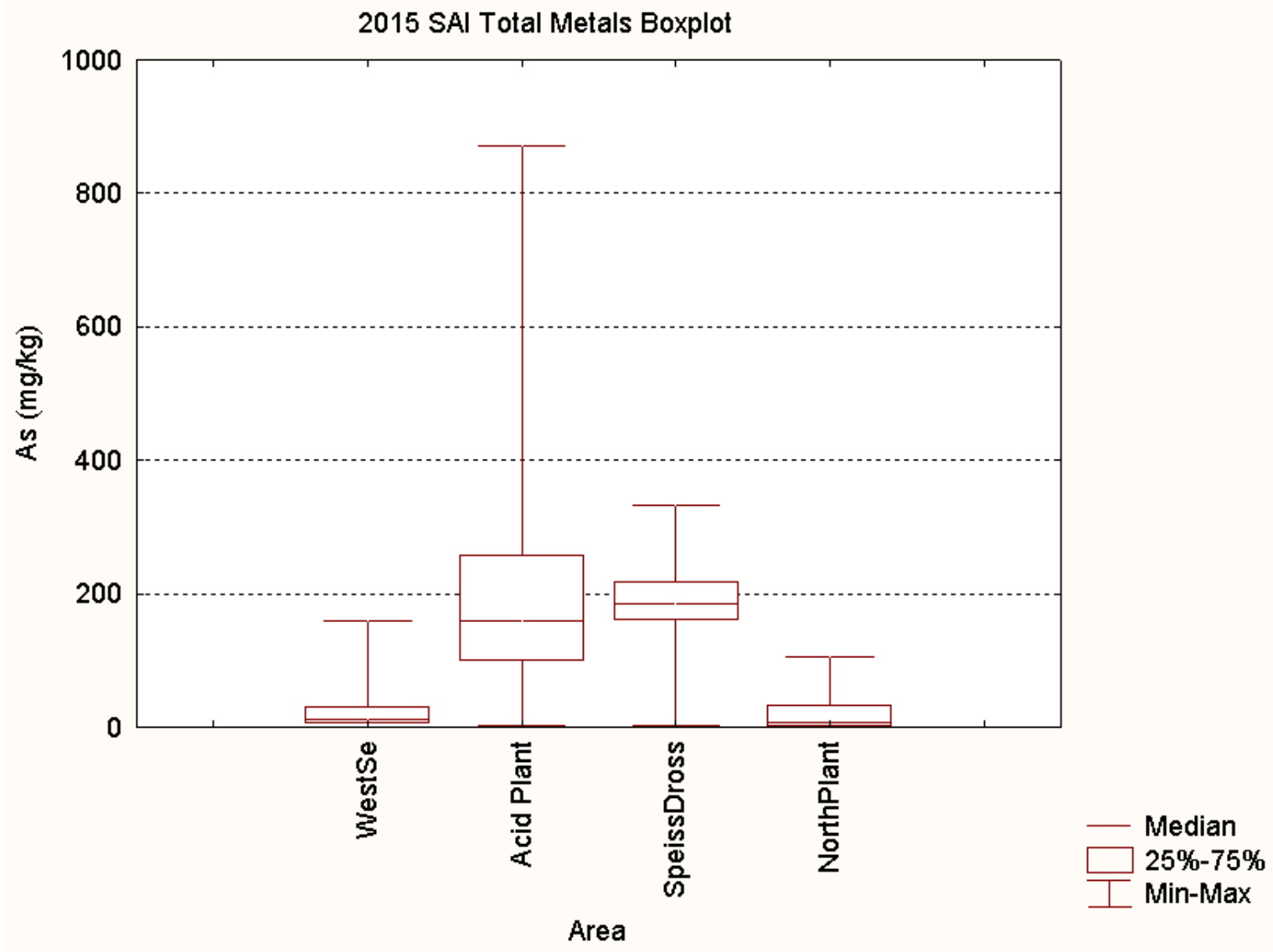
Prep Start Date: **9/1/2015 2:21:19 PM**
Prep End Date: **9/2/2015 12:01:00 PM**

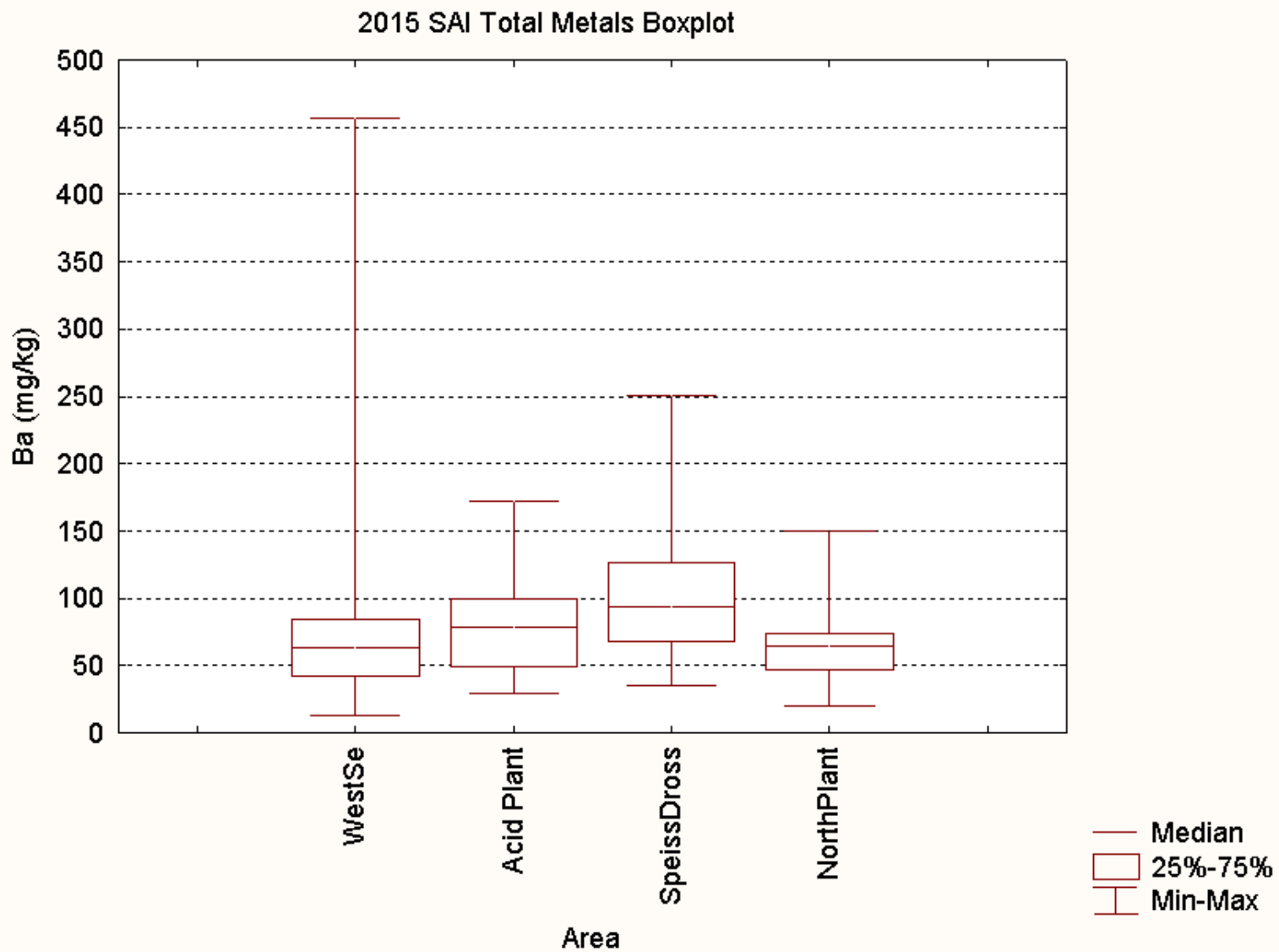
Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30377			2000	0	0	2000	1		9/1/2015	9/2/2015
Rotated and extracted with client provided DH-3 water - 18hrs										
H15080228-018A	Soil		100	0	0	2000	19.9740338		9/1/2015	9/2/2015
H15080228-020A	Soil		99	0	0	2000	20.1836714		9/1/2015	9/2/2015
H15080228-021A	Soil		100	0	0	2000	19.8747888		9/1/2015	9/2/2015
H15080228-022A	Soil		100	0	0	2000	19.9600798		9/1/2015	9/2/2015
H15080228-023A	Soil		100	0	0	2000	19.8255353		9/1/2015	9/2/2015
H15080228-024A	Soil		100	0	0	2000	19.8216056		9/1/2015	9/2/2015
H15080228-025A	Soil		100	0	0	2000	19.8688655		9/1/2015	9/2/2015
H15080228-026A	Soil		100	0	0	2000	19.9920032		9/1/2015	9/2/2015
H15080228-023Adup	Soil		100	0	0	2000	19.8590011		9/1/2015	9/2/2015

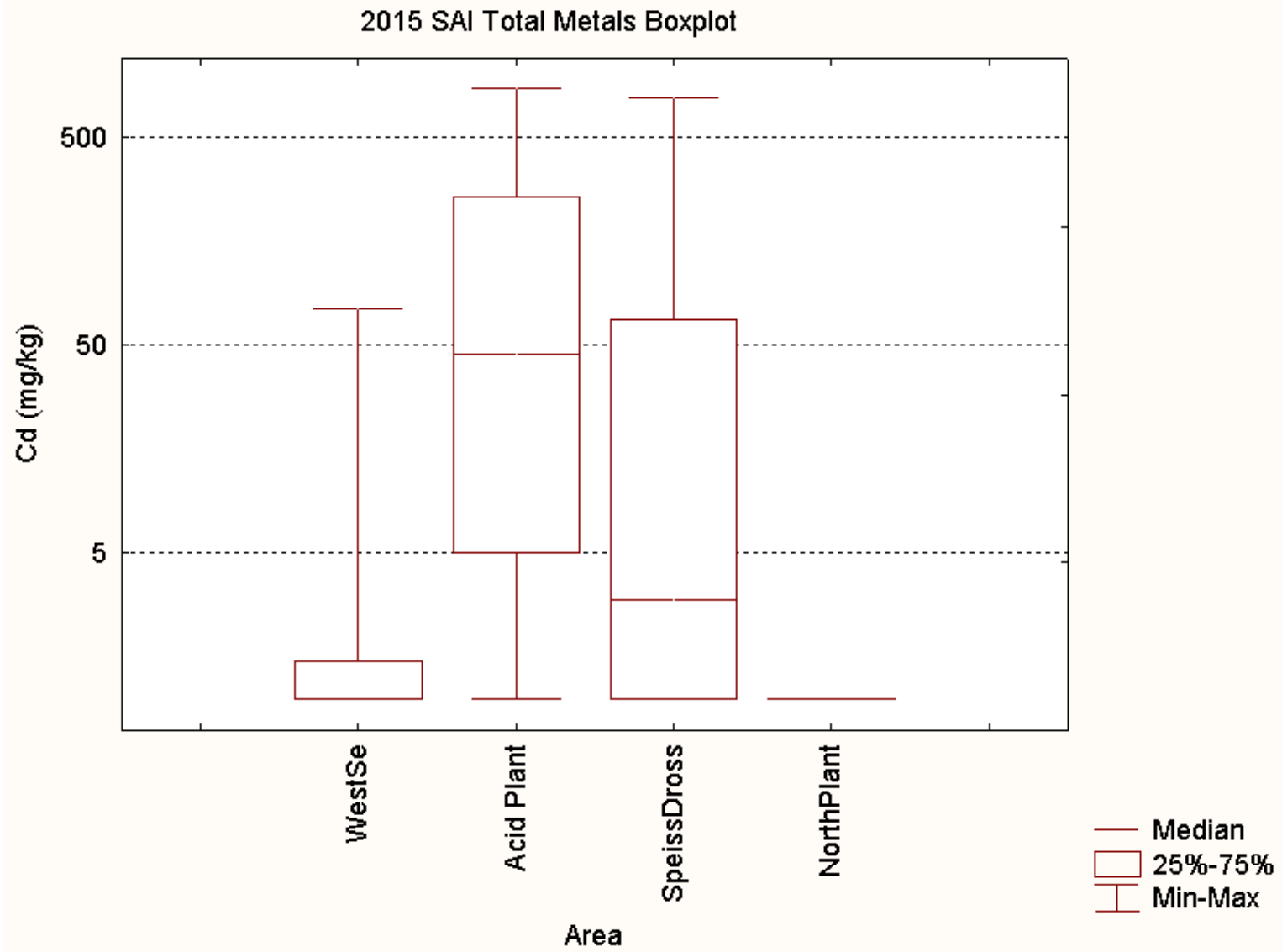
APPENDIX D

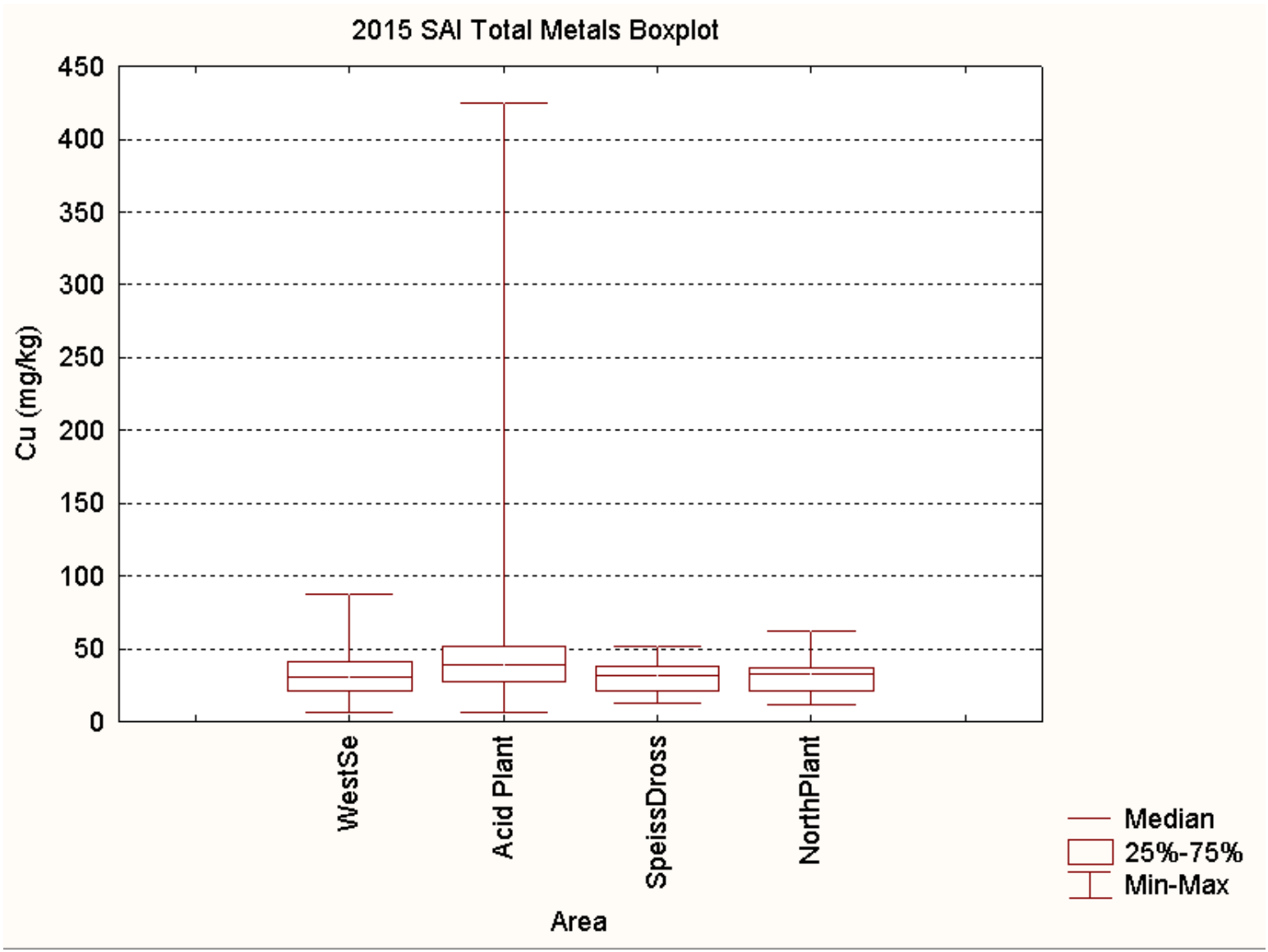
**2015 SOURCE AREA INVESTIGATION SOIL SAMPLE
TOTAL METALS AND pH BOXPLOTS**

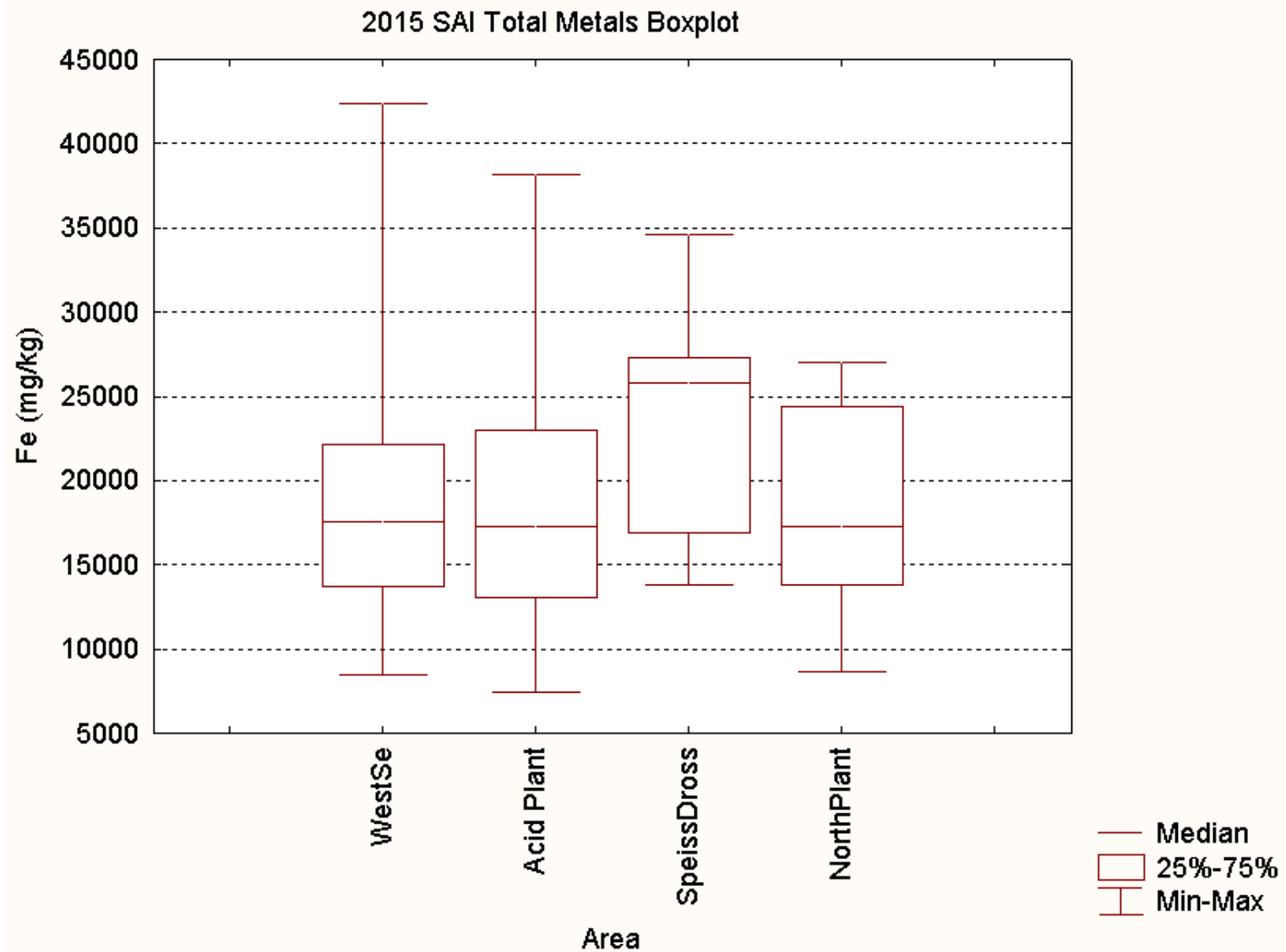


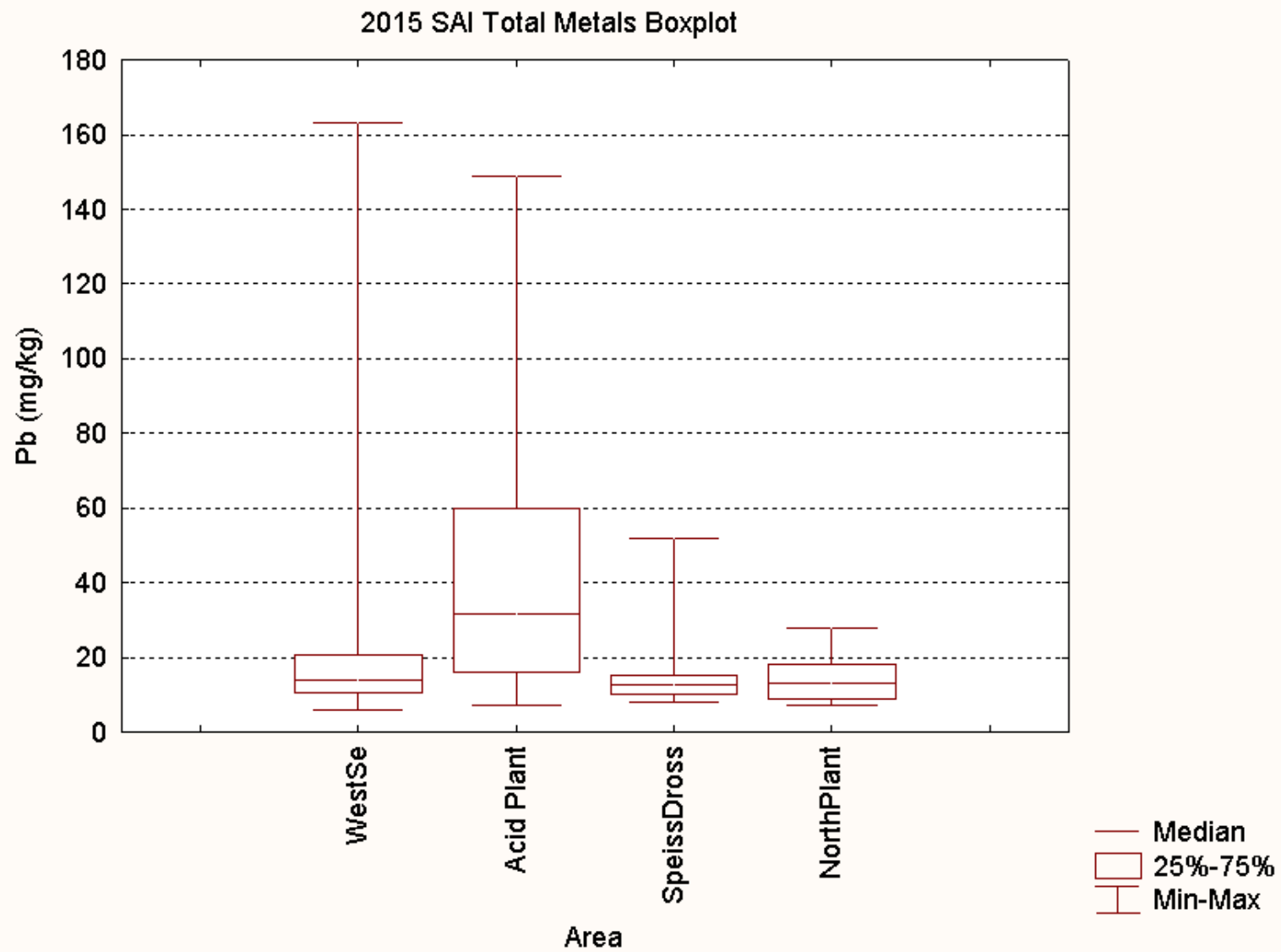


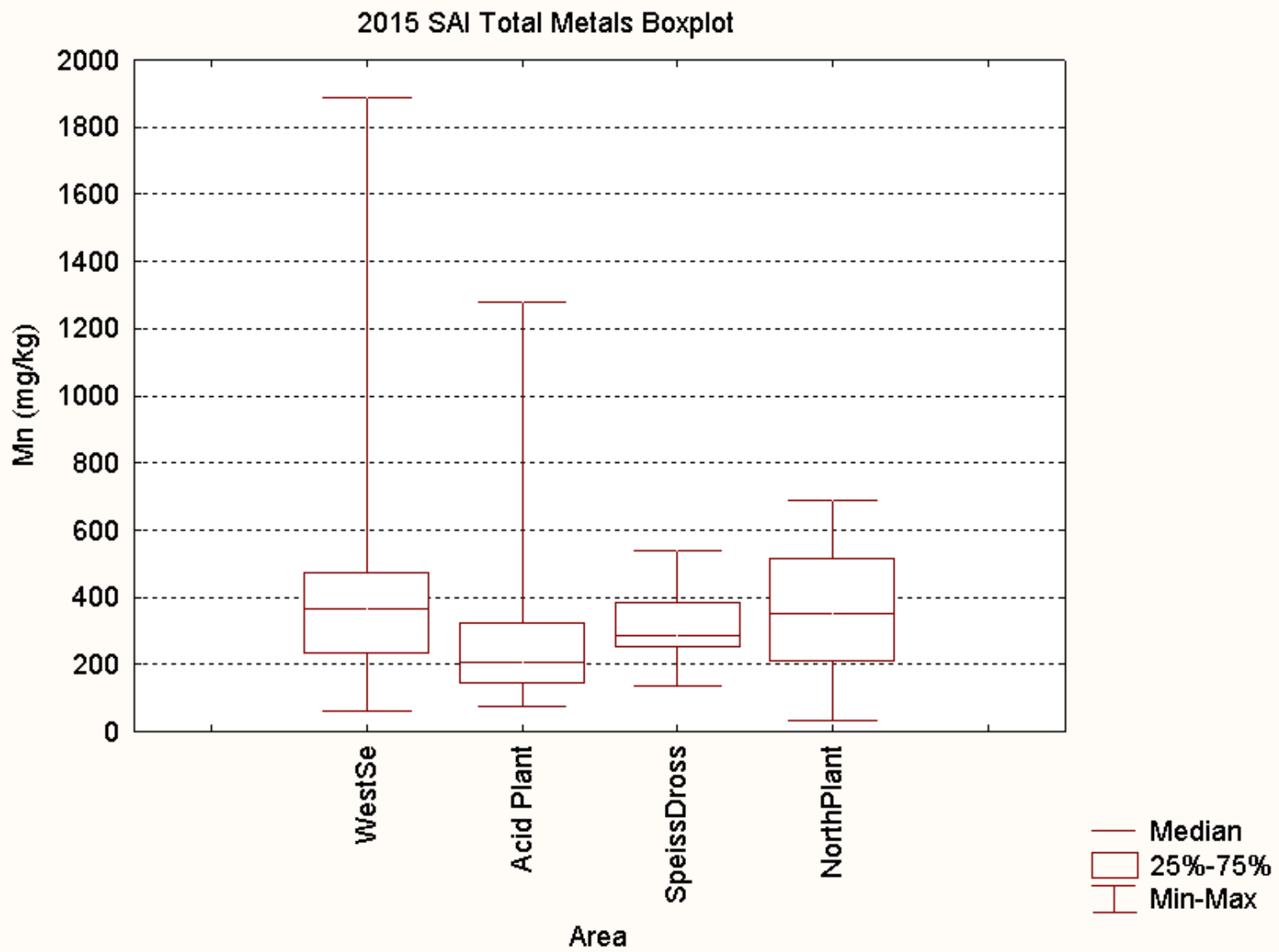


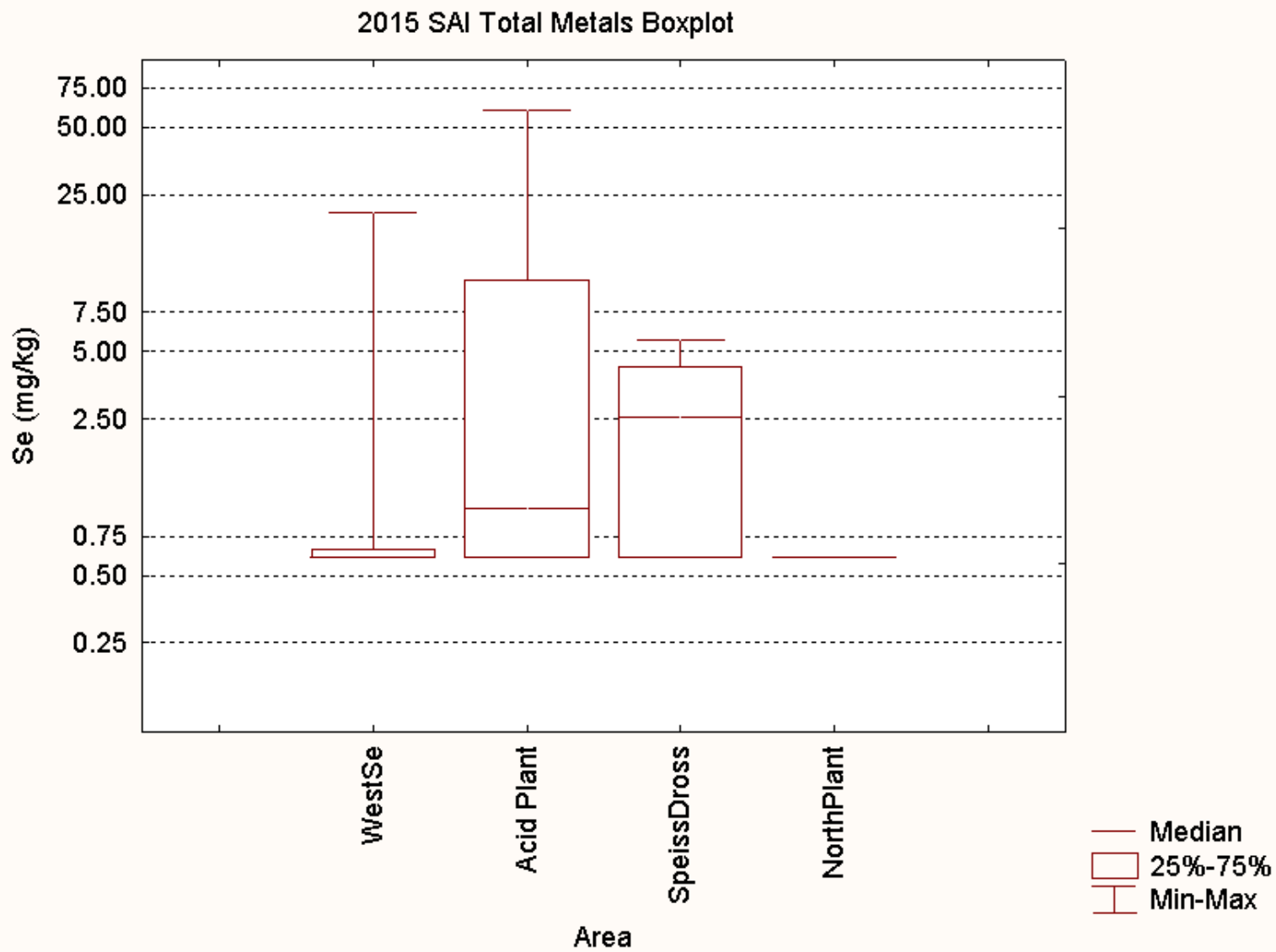


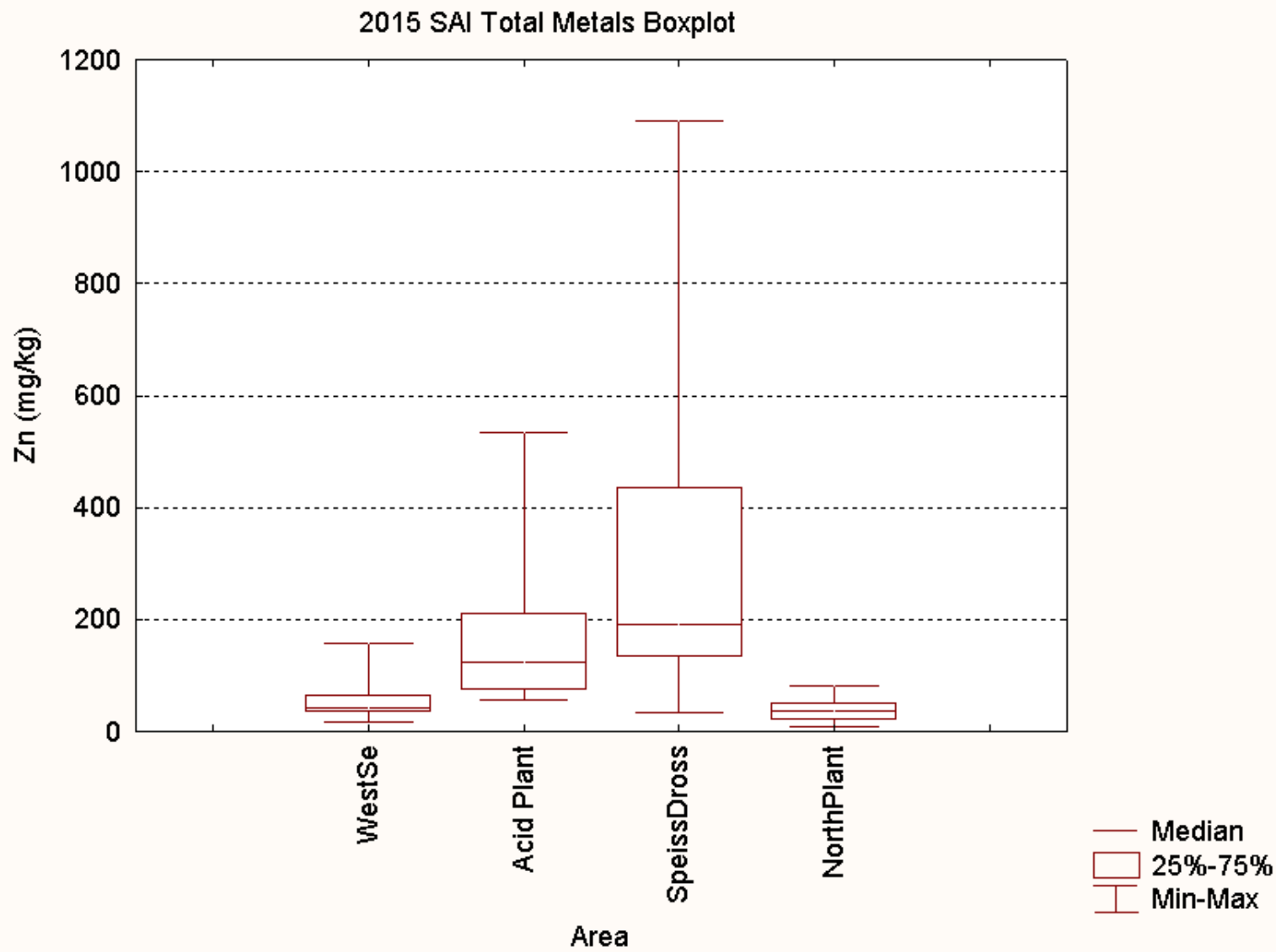


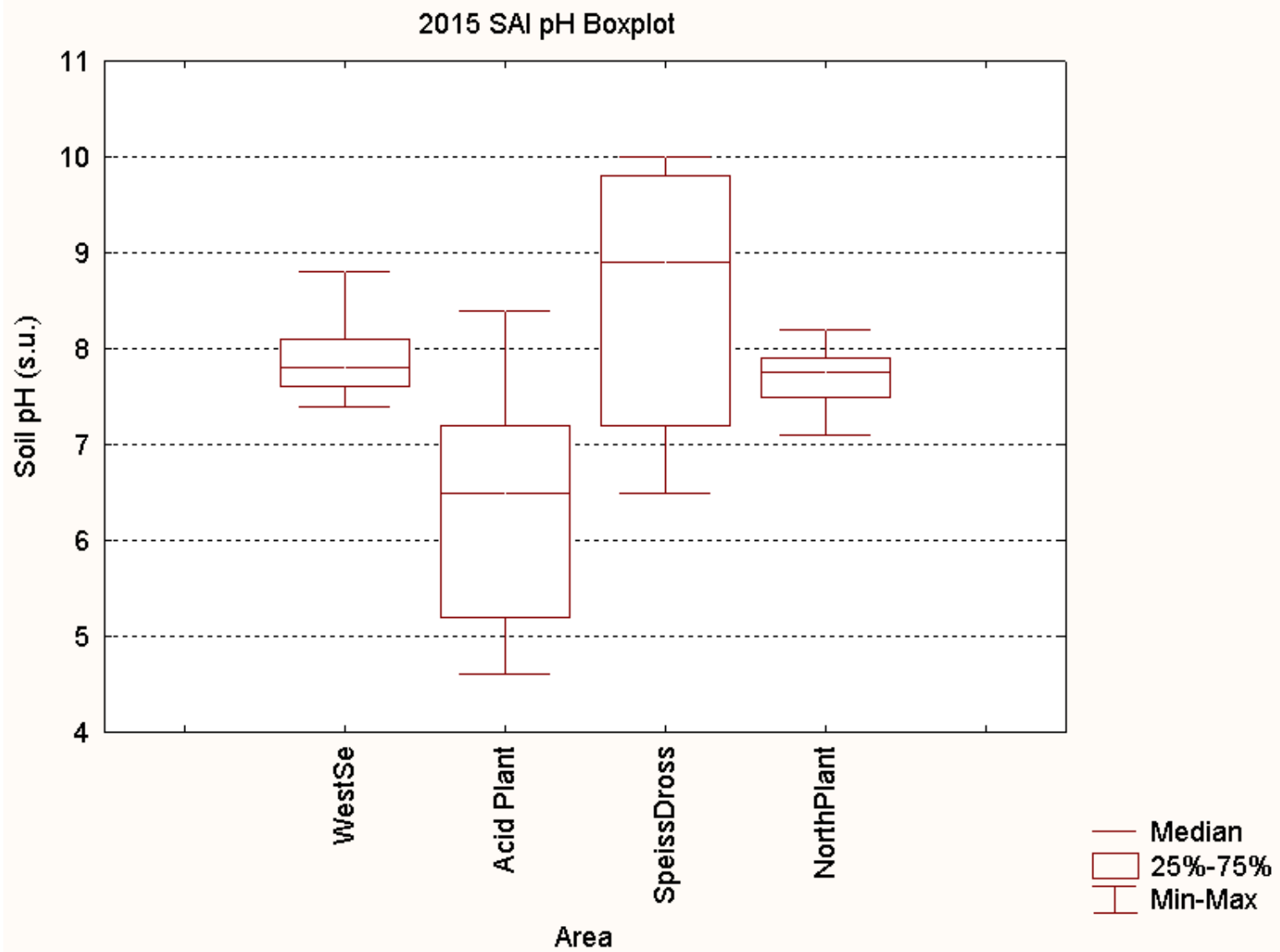












APPENDIX E

**ARSENIC BATCH ADSORPTION TESTING RESULTS
AND LABORATORY ANALYTICAL REPORTS**

SUMMARY TABLE

2015 SAI Adsorption Tests

Adsorption With High Initial GW As Concentration (DH-64)

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	R2
AEH-1508-601S	1:4	53.0	106	18.4	6.140	67%	0.200	152.3	2.183	0.788	2.108	0.109	128.3	0.44	0.04032	0.004	0.006	0.97	0.3272
	1:10	21.0		18.4	11.300	39%	0.200	173.6	2.240	1.053					0.06509				Slope (Kd)
Water: DH-64	1:20	11.0		18.4	14.400	22%	0.200	178.7	2.252	1.158					0.08057				1.4
EHSB-18 (24-25')	1:40	5.3		18.4	16.400	11%	0.200	181.5	2.259	1.215					0.09037				
	1:60	3.6		18.4	17.400	5%	0.200	161.6	2.208	1.241					0.10770				
	1:100	2.1		18.4	17.700	4%	0.200	172.7	2.237	1.248					0.10251				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	R2
AEH-1508-615S	1:4	57.0	10	18.4	7.540	59%	0.200	48.1	1.682	0.877	1.097	0.647	12.5	0.73	0.15674	0.128	0.005	0.36	0.6787
	1:10	23.0		18.4	12.800	30%	0.200	58.7	1.769	1.107					0.21807				Slope (Kd)
Water: DH-64	1:20	11.0		18.4	14.900	19%	0.200	73.6	1.867	1.173					0.20235				3.7
EHSB-18 (35-37')	1:40	5.7		18.4	16.800	9%	0.200	66.1	1.820	1.225					0.25401				
	1:60	3.8		18.4	17.100	7%	0.200	78.4	1.894	1.233					0.21805				
	1:100	2.3		18.4	17.400	5%	0.200	97.0	1.987	1.241					0.17946				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	R2
AEH-1508-611S	1:4	55.0	102	18.4	7.420	60%	0.200	141.9	2.152	0.870	1.926	0.246	84.3	0.21	0.05228	0.020	0.005	0.62	0.1997
	1:10	22.0		18.4	13.400	27%	0.200	147.5	2.169	1.127					0.09088				Slope (Kd)
Water: DH-64	1:20	11.0		18.4	15.600	15%	0.200	152.9	2.184	1.193					0.10202				3.8
EHSB-19 (50-51')	1:40	5.5		18.4	17.100	7%	0.200	149.3	2.174	1.233					0.11456				
	1:60	3.7		18.4	17.300	6%	0.200	161.5	2.208	1.238					0.10715				
	1:100	2.2		18.4	17.000	8%	0.200	229.3	2.360	1.230					0.07415				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	R2
AEH-1508-610S	1:4	57.0	34	18.4	13.500	27%	0.200	51.2	1.709	1.130	0.333	1.196	2.15	0.33	0.26371	0.315	-0.003	0.01	0.3241
	1:10	23.0		18.4	16.500	10%	0.200	50.5	1.703	1.217					0.32659				Slope (Kd)
Water: DH-64	1:20	11.0		18.4	16.900	8%	0.200	61.3	1.787	1.228					0.27582				5.1
EHSB-19 (40-42')	1:40	5.7		18.4	17.800	3%	0.200	55.1	1.741	1.250					0.32333				
	1:60	3.8		18.4	17.600	4%	0.200	76.1	1.881	1.246					0.23126				
	1:100	2.3		18.4	17.800	3%	0.200	86.2	1.935	1.250					0.20656				

NOTE: final adsorbed As concentrations (x/m) include both initial measured soil arsenic concentration and mass of arsenic removed from groundwater test solution (assuming all arsenic is reactive and at equilibrium)

2015 SAI Adsorption Tests

Adsorption With Low Initial GW As Concentration (SDMW-1)

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	
AEH-1508-601S	1:4	53.0	106	2.99	0.540	82%	0.200	115.2	2.062	-0.268	2.082	0.069	120.8	0.81	0.00469	0.001	0.008	1.00	0.7398
	1:10	21.0		2.99	1.180	61%	0.200	123.2	2.091	0.072					0.00957				Slope (Kd)
Water: SDMW-1	1:20	11.0		2.99	1.830	39%	0.200	127.1	2.104	0.262					0.01440				5.9
EHSB-18 (24-25')	1:40	5.3		2.99	2.460	18%	0.200	126.0	2.100	0.391					0.01952				
	1:60	3.6		2.99	2.630	12%	0.200	126.0	2.100	0.420					0.02087				
	1:100	2.1		2.99	2.700	10%	0.200	133.6	2.126	0.431					0.02021				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	
AEH-1508-615S	1:4	57.0	10	2.99	0.783	74%	0.200	17.7	1.249	-0.106	1.334	0.564	21.6	0.94	0.04413	0.029	0.016	0.92	0.9067
	1:10	23.0		2.99	1.210	60%	0.200	25.5	1.406	0.083					0.04749				Slope (Kd)
Water: SDMW-1	1:20	11.0		2.99	1.760	41%	0.200	32.4	1.510	0.246					0.05438				9.3
EHSB-18 (35-37')	1:40	5.7		2.99	2.350	21%	0.200	32.5	1.511	0.371					0.07241				
	1:60	3.8		2.99	2.520	16%	0.200	34.7	1.541	0.401					0.07255				
	1:100	2.3		2.99	2.660	11%	0.200	38.7	1.588	0.425					0.06874				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	
AEH-1508-611S	1:4	55.0	102	2.99	0.780	74%	0.200	110.0	2.042	-0.108	2.049	0.009	112.0	0.02	0.00709	-0.0003	0.009	0.99	0.0003
	1:10	22.0		2.99	1.680	44%	0.200	113.9	2.057	0.225					0.01475				Slope (Kd)
Water: SDMW-1	1:20	11.0		2.99	2.150	28%	0.200	117.3	2.069	0.332					0.01833				0.1
EHSB-19 (50-51')	1:40	5.5		2.99	2.700	10%	0.200	112.5	2.051	0.431					0.02399				
	1:60	3.7		2.99	2.750	8%	0.200	115.0	2.061	0.439					0.02392				
	1:100	2.2		2.99	2.930	2%	0.200	107.5	2.031	0.467					0.02727				

Adsorption Results	Ratio	Soil (g) Soil Used	Initial Soil As	Initial Co (mg/L)	Final C (mg/L)	72 hrs % ads	Vol (L)	x/m (mg/kg)	log x/m	log C	Freundlich Parameters				Traditional Langmuir Parameters				Linear Fit
											log Kf	1/n	Kf	R2	C/(x/m)	1/(KLxM)	1/M	R2	
AEH-1508-610S	1:4	57.0	34	2.99	2.230	25%	0.200	36.7	1.564	0.348	1.470	0.266	29.5	0.22	0.06082	0.018	0.019	0.66	0.2022
	1:10	23.0		2.99	2.660	11%	0.200	36.9	1.567	0.425					0.07215				Slope (Kd)
Water: SDMW-1	1:20	11.0		2.99	2.780	7%	0.200	37.8	1.578	0.444					0.07351				4.0
EHSB-19 (40-42')	1:40	5.7		2.99	2.870	4%	0.200	38.2	1.582	0.458					0.07511				
	1:60	3.8		2.99	2.820	6%	0.200	42.9	1.633	0.450					0.06566				
	1:100	2.3		2.99	2.940	2%	0.200	38.3	1.584	0.468					0.07667				

NOTE: final adsorbed As concentrations (x/m) include both initial measured soil arsenic concentration and mass of arsenic removed from groundwater test solution (assuming all arsenic is reactive and at equilibrium)

LABORATORY REPORTS



ANALYTICAL SUMMARY REPORT

September 18, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15090217 Quote ID: H1152 - Adsorption Testing

Project Name: 2015 Adsorption Testing DH-64 Groundwater

Energy Laboratories Inc Helena MT received the following 25 samples for Montana Environmental Custodial Trust on 9/10/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15090217-001	AEH-1508-601S (1:4)	08/14/15 9:30	09/10/15	Soil	Metals by ICP/ICPMS, SPLP Sample Filtering Soil Preparation SPLP Extraction, Regular
H15090217-002	AEH-1508-601S (1:10)	08/14/15 9:30	09/10/15	Soil	Metals by ICP/ICPMS, SPLP Sample Filtering SPLP Extraction, Regular
H15090217-003	AEH-1508-601S (1:20)	08/14/15 9:30	09/10/15	Soil	Same As Above
H15090217-004	AEH-1508-601S (1:40)	08/14/15 9:30	09/10/15	Soil	Same As Above
H15090217-005	AEH-1508-601S (1:60)	08/14/15 9:30	09/10/15	Soil	Same As Above
H15090217-006	AEH-1508-601S (1:100)	08/14/15 9:30	09/10/15	Soil	Same As Above
H15090217-007	AEH-1508-610S (1:4)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-008	AEH-1508-610S (1:10)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-009	AEH-1508-610S (1:20)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-010	AEH-1508-610S (1:40)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-011	AEH-1508-610S (1:60)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-012	AEH-1508-610S (1:100)	08/17/15 9:00	09/10/15	Soil	Same As Above
H15090217-013	AEH-1508-611S (1:4)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-014	AEH-1508-611S (1:10)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-015	AEH-1508-611S (1:20)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-016	AEH-1508-611S (1:40)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-017	AEH-1508-611S (1:60)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-018	AEH-1508-611S (1:100)	08/17/15 10:00	09/10/15	Soil	Same As Above
H15090217-019	AEH-1508-615S (1:4)	08/20/15 8:00	09/10/15	Soil	Same As Above
H15090217-020	AEH-1508-615S (1:10)	08/20/15 8:00	09/10/15	Soil	Same As Above
H15090217-021	AEH-1508-615S (1:20)	08/20/15 8:00	09/10/15	Soil	Same As Above
H15090217-022	AEH-1508-615S (1:40)	08/20/15 8:00	09/10/15	Soil	Same As Above
H15090217-023	AEH-1508-615S (1:60)	08/20/15 8:00	09/10/15	Soil	Same As Above
H15090217-024	AEH-1508-615S (1:100)	08/20/15 8:00	09/10/15	Soil	Same As Above



ANALYTICAL SUMMARY REPORT

H15090217-025 DH-64 Adsorption Control 08/17/15 8:00 09/10/15 Soil Same As Above

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

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

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

Report Approved By:



CLIENT: Montana Environmental Custodial Trust
Project: 2015 Adsorption Testing DH-64 Groundwater
Work Order: H15090217

Report Date: 09/18/15

CASE NARRATIVE

Prep Comments for Sample H15090217-001A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-002A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-003A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-004A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-005A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-006A, Test SPLP-EXT-REG: The prep hold time was exceeded by 18.0 days.
Prep Comments for Sample H15090217-007A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-008A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-009A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-010A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-011A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-012A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-013A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-014A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-015A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-016A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-017A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-018A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.
Prep Comments for Sample H15090217-019A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-020A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-021A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-022A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-023A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-024A, Test SPLP-EXT-REG: The prep hold time was exceeded by 12.0 days.
Prep Comments for Sample H15090217-025A, Test SPLP-EXT-REG: The prep hold time was exceeded by 15.0 days.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 2015 Adsorption Testing DH-64 Groundwater
Workorder: H15090217

Report Date: 09/18/15
Date Received: 09/10/15

Sample ID	Client Sample ID	Analysis		As-SPLP
		Units		mg/L
		Up	Low	Results
H15090217-001	AEH-1508-601S (1:4)	0	0	6.14
H15090217-002	AEH-1508-601S (1:10)	0	0	11.3
H15090217-003	AEH-1508-601S (1:20)	0	0	14.4
H15090217-004	AEH-1508-601S (1:40)	0	0	16.4
H15090217-005	AEH-1508-601S (1:60)	0	0	17.4
H15090217-006	AEH-1508-601S (1:100)	0	0	17.7
H15090217-007	AEH-1508-610S (1:4)	0	0	13.5
H15090217-008	AEH-1508-610S (1:10)	0	0	16.5
H15090217-009	AEH-1508-610S (1:20)	0	0	16.9
H15090217-010	AEH-1508-610S (1:40)	0	0	17.8
H15090217-011	AEH-1508-610S (1:60)	0	0	17.6
H15090217-012	AEH-1508-610S (1:100)	0	0	17.8
H15090217-013	AEH-1508-611S (1:4)	0	0	7.42
H15090217-014	AEH-1508-611S (1:10)	0	0	13.4
H15090217-015	AEH-1508-611S (1:20)	0	0	15.6
H15090217-016	AEH-1508-611S (1:40)	0	0	17.1
H15090217-017	AEH-1508-611S (1:60)	0	0	17.3
H15090217-018	AEH-1508-611S (1:100)	0	0	17.0
H15090217-019	AEH-1508-615S (1:4)	0	0	7.54
H15090217-020	AEH-1508-615S (1:10)	0	0	12.8
H15090217-021	AEH-1508-615S (1:20)	0	0	14.9
H15090217-022	AEH-1508-615S (1:40)	0	0	16.8
H15090217-023	AEH-1508-615S (1:60)	0	0	17.1
H15090217-024	AEH-1508-615S (1:100)	0	0	17.4
H15090217-025	DH-64 Adsorption Control	0	0	18.4

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
 Prep Batch **30504** Prep Temp **NA °C**

Technician: **Skyler Pester**
 Batch Units: **ML**

Prep Start Date: **9/12/2015 9:28:00 AM**
 Prep End Date: **9/15/2015 4:58:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30504			200	0	0	200	1		9/12/2015	9/15/2015
	200mL E-Pure Di water, No soil added.									
H15090217-001A	Soil		53	0	0	200	3.74812594		9/12/2015	9/15/2015
	Samples rotated for 72 hours with DH-64 client water. Then filtered through 0.45um filters and preserved for metals analysis.									
H15090217-002A	Soil		21	0	0	200	9.37207123		9/12/2015	9/15/2015
H15090217-003A	Soil		11	0	0	200	18.7441425		9/12/2015	9/15/2015
H15090217-004A	Soil		5.3	0	0	200	37.4531835		9/12/2015	9/15/2015
H15090217-005A	Soil		3.6	0	0	200	56.1797753		9/12/2015	9/15/2015
H15090217-006A	Soil		2.1	0	0	200	93.4579439		9/12/2015	9/15/2015
H15090217-007A	Soil		57	0	0	200	3.52858151		9/12/2015	9/15/2015
H15090217-008A	Soil		23	0	0	200	8.82223202		9/12/2015	9/15/2015
H15090217-009A	Soil		11	0	0	200	17.6366843		9/12/2015	9/15/2015
H15090217-010A	Soil		5.7	0	0	200	35.2733686		9/12/2015	9/15/2015
H15090217-011A	Soil		3.8	0	0	200	52.9100529		9/12/2015	9/15/2015
H15090217-012A	Soil		2.3	0	0	200	88.1057269		9/12/2015	9/15/2015
H15090217-013A	Soil		55	0	0	200	3.6101083		9/12/2015	9/15/2015
H15090217-014A	Soil		22	0	0	200	9.02527076		9/12/2015	9/15/2015
H15090217-015A	Soil		11	0	0	200	18.0505415		9/12/2015	9/15/2015
H15090217-016A	Soil		5.5	0	0	200	36.1010830		9/12/2015	9/15/2015
H15090217-017A	Soil		3.7	0	0	200	54.2005420		9/12/2015	9/15/2015
H15090217-018A	Soil		2.2	0	0	200	90.0900901		9/12/2015	9/15/2015
H15090217-019A	Soil		57	0	0	200	3.48189415		9/12/2015	9/15/2015
H15090217-020A	Soil		23	0	0	200	8.70322019		9/12/2015	9/15/2015
H15090217-021A	Soil		11	0	0	200	17.4064404		9/12/2015	9/15/2015
H15090217-022A	Soil		5.7	0	0	200	34.8432056		9/12/2015	9/15/2015

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
Prep Batch **30504** Prep Temp **NA °C**

Technician: **Skyler Pester**
Batch Units: **ML**

Prep Start Date: **9/12/2015 9:28:00 AM**
Prep End Date: **9/15/2015 4:58:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
H15090217-023A	Soil		3.8	0	0	200	52.2193212		9/12/2015	9/15/2015
H15090217-024A	Soil		2.3	0	0	200	86.9565217		9/12/2015	9/15/2015
H15090217-025A	Soil		200	0	0	200	1		9/12/2015	9/15/2015
	200mL DH-64 Water, No Soil Added.									
H15090217-009Adup	Soil		11	0	0	200	17.6366843		9/15/2015	9/15/2015
H15090217-023Adup	Soil		3.8	0	0	200	52.2193212		9/15/2015	9/15/2015



ANALYTICAL SUMMARY REPORT

September 18, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15090232

Project Name: 2015 Adsorption Testing SDMW-1 Groundwater

Energy Laboratories Inc Helena MT received the following 25 samples for Montana Environmental Custodial Trust on 9/10/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15090232-001	AEH-1508-601S (1:4)	09/11/15 0:00	09/10/15	Soil	Metals by ICP/ICPMS, SPLP Sample Filtering Soil Preparation SPLP Extraction, Regular
H15090232-002	AEH-1508-601S (1:10)	09/11/15 0:00	09/10/15	Soil	Metals by ICP/ICPMS, SPLP Sample Filtering SPLP Extraction, Regular
H15090232-003	AEH-1508-601S (1:20)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-004	AEH-1508-601S (1:40)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-005	AEH-1508-601S (1:60)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-006	AEH-1508-601S (1:100)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-007	AEH-1508-610S (1:4)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-008	AEH-1508-610S (1:10)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-009	AEH-1508-610S (1:20)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-010	AEH-1508-610S (1:40)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-011	AEH-1508-610S (1:60)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-012	AEH-1508-610S (1:100)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-013	AEH-1508-611S (1:4)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-014	AEH-1508-611S (1:10)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-015	AEH-1508-611S (1:20)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-016	AEH-1508-611S (1:40)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-017	AEH-1508-611S (1:60)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-018	AEH-1508-611S (1:100)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-019	AEH-1508-615S (1:4)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-020	AEH-1508-615S (1:10)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-021	AEH-1508-615S (1:20)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-022	AEH-1508-615S (1:40)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-023	AEH-1508-615S (1:60)	09/11/15 0:00	09/10/15	Soil	Same As Above
H15090232-024	AEH-1508-615S (1:100)	09/11/15 0:00	09/10/15	Soil	Same As Above



ANALYTICAL SUMMARY REPORT

H15090232-025	SDMW-1 Adsorption Control	09/10/15 8:00	09/10/15	Soil	Same As Above
---------------	---------------------------	---------------	----------	------	---------------

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 2015 Adsorption Testing SDMW-1 Groundwater
Workorder: H15090232

Report Date: 09/18/15
Date Received: 09/10/15

Sample ID	Client Sample ID	Analysis		As-SPLP
		Units		mg/L
		Up	Low	Results
H15090232-001	AEH-1508-601S (1:4)	0	0	0.540
H15090232-002	AEH-1508-601S (1:10)	0	0	1.18
H15090232-003	AEH-1508-601S (1:20)	0	0	1.83
H15090232-004	AEH-1508-601S (1:40)	0	0	2.46
H15090232-005	AEH-1508-601S (1:60)	0	0	2.63
H15090232-006	AEH-1508-601S (1:100)	0	0	2.70
H15090232-007	AEH-1508-610S (1:4)	0	0	2.23
H15090232-008	AEH-1508-610S (1:10)	0	0	2.66
H15090232-009	AEH-1508-610S (1:20)	0	0	2.78
H15090232-010	AEH-1508-610S (1:40)	0	0	2.87
H15090232-011	AEH-1508-610S (1:60)	0	0	2.82
H15090232-012	AEH-1508-610S (1:100)	0	0	2.94
H15090232-013	AEH-1508-611S (1:4)	0	0	0.780
H15090232-014	AEH-1508-611S (1:10)	0	0	1.68
H15090232-015	AEH-1508-611S (1:20)	0	0	2.15
H15090232-016	AEH-1508-611S (1:40)	0	0	2.70
H15090232-017	AEH-1508-611S (1:60)	0	0	2.75
H15090232-018	AEH-1508-611S (1:100)	0	0	2.93
H15090232-019	AEH-1508-615S (1:4)	0	0	0.783
H15090232-020	AEH-1508-615S (1:10)	0	0	1.21
H15090232-021	AEH-1508-615S (1:20)	0	0	1.76
H15090232-022	AEH-1508-615S (1:40)	0	0	2.35
H15090232-023	AEH-1508-615S (1:60)	0	0	2.52
H15090232-024	AEH-1508-615S (1:100)	0	0	2.66
H15090232-025	SDMW-1 Adsorption Control	0	0	2.99

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
 Prep Batch **30505** Prep Temp **NA °C**

Technician: **Skyler Pester**
 Batch Units: **ML**

Prep Start Date: **9/12/2015 9:28:00 AM**
 Prep End Date: **9/15/2015 4:58:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
MB-30505	200mL E-Pure DI water, No Soil Added		200	0	0	200	1		9/12/2015	9/15/2015
H15090232-001A	Soil		53	0	0	200	3.74812594		9/12/2015	9/15/2015
Samples rotated for 72 hours with SDMW-1 client water. Then filtered through 0.45um filters and preserved for metals analysis.										
H15090232-002A	Soil		21	0	0	200	9.37207123		9/12/2015	9/15/2015
H15090232-003A	Soil		11	0	0	200	18.7441425		9/12/2015	9/15/2015
H15090232-004A	Soil		5.3	0	0	200	37.4531835		9/12/2015	9/15/2015
H15090232-005A	Soil		3.6	0	0	200	56.1797753		9/12/2015	9/15/2015
H15090232-006A	Soil		2.1	0	0	200	93.4579439		9/12/2015	9/15/2015
H15090232-007A	Soil		57	0	0	200	3.52858151		9/12/2015	9/15/2015
H15090232-008A	Soil		23	0	0	200	8.82223202		9/12/2015	9/15/2015
H15090232-009A	Soil		11	0	0	200	17.6366843		9/12/2015	9/15/2015
H15090232-010A	Soil		5.7	0	0	200	35.2733686		9/12/2015	9/15/2015
H15090232-011A	Soil		3.8	0	0	200	52.9100529		9/12/2015	9/15/2015
H15090232-012A	Soil		2.3	0	0	200	88.1057269		9/12/2015	9/15/2015
H15090232-013A	Soil		55	0	0	200	3.6101083		9/12/2015	9/15/2015
H15090232-014A	Soil		22	0	0	200	9.02527076		9/12/2015	9/15/2015
H15090232-015A	Soil		11	0	0	200	18.0505415		9/12/2015	9/15/2015
H15090232-016A	Soil		5.5	0	0	200	36.1010830		9/12/2015	9/15/2015
H15090232-017A	Soil		3.7	0	0	200	54.2005420		9/12/2015	9/15/2015
H15090232-018A	Soil		2.2	0	0	200	90.0900901		9/12/2015	9/15/2015
H15090232-019A	Soil		57	0	0	200	3.48189415		9/12/2015	9/15/2015
H15090232-020A	Soil		23	0	0	200	8.70322019		9/12/2015	9/15/2015
H15090232-021A	Soil		11	0	0	200	17.4064404		9/12/2015	9/15/2015
H15090232-022A	Soil		5.7	0	0	200	34.8432056		9/12/2015	9/15/2015

PREP BATCH REPORT

Prep Code: **SPLP-EXT-REG**
Prep Batch **30505** Prep Temp **NA °C**

Technician: **Skyler Pester**
Batch Units: **ML**

Prep Start Date: **9/12/2015 9:28:00 AM**
Prep End Date: **9/15/2015 4:58:00 PM**

Sample ID	Matrix	pH	Initial Samp Amt	Sol Added	Sol Recovered	Final Vol (mL)	Factor	Balance	Prep Start Date	Prep End Date
H15090232-023A	Soil		3.8	0	0	200	52.2193212		9/12/2015	9/15/2015
H15090232-024A	Soil		2.3	0	0	200	86.9565217		9/12/2015	9/15/2015
H15090232-025A	Soil		200	0	0	200	1		9/12/2015	9/15/2015
	200mL SDMW-1 Water, No Soil Added									
H15090232-002Adup	Soil		21	0	0	200	9.37207123		9/15/2015	9/15/2015
H15090232-016Adup	Soil		5.5	0	0	200	36.1010830		9/15/2015	9/15/2015

APPENDIX F

**GROUNDWATER SAMPLE LABORATORY
ANALYTICAL REPORTS**



Case Narrative

On June 26, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 26-Jun-15

Sample ID: **EHSB-10**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212265

Temperature: 3.2°C

Laboratory ID: 22G271

Condition: Intact

Date / Time Sampled: 25-Jun-15 @ 17:45

Date / Time Received: 26-Jun-15 @ 09:50

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters


Arsenic, Dissolved, mg/L	0.025	0.001	26-Jun-15 @ 11:00	EPA 200.8
Selenium, Dissolved, mg/L	0.371	0.001	26-Jun-15 @ 11:00	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by: 



Case Narrative

On June 30, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Harry Howell", written in a cursive style.

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 30-Jun-15

Sample ID: EHSB - 11

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212298

Temperature: 4.9 °C

Laboratory ID: 22G300

Condition: Intact

Date / Time Sampled: 29-Jun-15 @ 15:00

Date / Time Received: 30-Jun-15 @ 11:00

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	----------------------	-----	-----------------------	---------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.076	0.001	30-Jun-15 @ 11:30	EPA 200.8
Selenium, Dissolved, mg/L	4.675	0.001	30-Jun-15 @ 11:30	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by: 



Case Narrative

On July 1, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: **Hydrometrics, Inc**

Date Reported: 01-Jul-15

Sample ID: **EHSB - 13**

Project ID: EH 2015 SAI

Chain of Custody #: 212313

Site ID: None Given

Temperature: 3.9 °C

Laboratory ID: 22H115

Date / Time Sampled: 01-Jul-15 @ 14:00

Condition: Intact

Date / Time Received: 01-Jul-15 @ 15:10

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.002	0.001	01-Jul-15 @ 15:50	EPA 200.8
Selenium, Dissolved, mg/L	0.004	0.001	01-Jul-15 @ 15:50	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



Case Narrative

On July 1, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 01-Jul-15

Sample ID: **EHSB - 14**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212304

Temperature: 2.2 °C

Laboratory ID: 22H103

Condition: Intact

Date / Time Sampled: 30-Jun-15 @ 13:00

Date / Time Received: 01-Jul-15 @ 09:10

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	----------------------	-----	-----------------------	---------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.027	0.001	01-Jul-15 @ 09:45	EPA 200.8
Selenium, Dissolved, mg/L	0.508	0.001	01-Jul-15 @ 09:45	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



Case Narrative

On July 7, 2015, two water samples from a project identified as "EH 2015 SAI" were received by our laboratory for analysis. The chain of custody indicated the samples were to be analyzed for Dissolved Arsenic and Selenium. The samples were received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 07-Jul-15

Sample ID: **EHSB - 15A**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212340

Temperature: 2.6 °C

Laboratory ID: 22H174	Date / Time Sampled: 02-Jul-15 @ 10:25
Condition: Intact	Date / Time Received: 07-Jul-15 @ 10:00

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.054	0.001	07-Jul-15 @ 11:00	EPA 200.8
Selenium, Dissolved, mg/L	1.20	0.001	07-Jul-15 @ 11:00	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 07-Jul-15

Sample ID: **EHSB - 15B**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212340

Temperature: 2.6 °C

Laboratory ID: 22H175

Condition: Intact

Date / Time Sampled: 02-Jul-15 @ 10:45

Date / Time Received: 07-Jul-15 @ 10:00

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.050	0.001	07-Jul-15 @ 11:00	EPA 200.8
Selenium, Dissolved, mg/L	1.45	0.001	07-Jul-15 @ 11:00	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



Case Narrative

On July 8, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: **Hydrometrics, Inc**

Date Reported: 08-Jul-15

Sample ID: **EHSB - 17**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212348

Temperature: 3.4 °C

Laboratory ID: 22H187	Date / Time Sampled: 07-Jul-15 @ 17:15
Condition: Intact	Date / Time Received: 08-Jul-15 @ 14:35

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters

Arsenic, Dissolved, mg/L	0.028	0.001	08-Jul-15 @ 15:40	EPA 200.8
Selenium, Dissolved, mg/L	4.855	0.001	08-Jul-15 @ 15:40	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



Case Narrative

On July 9, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 09-Jul-15

Sample ID: **EHSB - 22**

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212361

Temperature: 1.5 °C

Laboratory ID: 22H204

Condition: Intact

Date / Time Sampled: 09-Jul-15 @ 08:30

Date / Time Received: 09-Jul-15 @ 14:35

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	-------------------	-----	--------------------	------------------

Physical Parameters

Arsenic, Dissolved, mg/L	6.900	0.001	09-Jul-15 @ 15:30	EPA 200.8
Selenium, Dissolved, mg/L	<0.001	0.001	09-Jul-15 @ 15:30	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by:



Case Narrative

On July 10, 2015, one water sample from a project identified as "EH 2015 SAI" was received by our laboratory for analysis. The chain of custody indicated the sample was to be analyzed for Dissolved Arsenic, Cadmium and Selenium. The sample was received cool, intact and hand delivered.

Results are shown on the following page.

Should you have any questions regarding this analysis feel free to give us a call at 449-6282 or 800-814-6282.

We appreciate the fact that you have chosen us as your analytical lab.

Sincerely yours,

Harry Howell
Laboratory Manager



WATER ANALYSIS

Client: Hydrometrics, Inc

Date Reported: 10-Jul-15

Sample ID: EHSB - 23

Project ID: EH 2015 SAI

Site ID: None Given

Chain of Custody #: 212366

Temperature: 6.0 °C

Laboratory ID: 22H211

Condition: Intact

Date / Time Sampled: 10-Jul-15 @ 07:30

Date / Time Received: 10-Jul-15 @ 10:55

Parameter	Analytical Result	PQL	Date/Time Analyzed	Method Reference
-----------	----------------------	-----	-----------------------	---------------------

Physical Parameters


Arsenic, Dissolved, mg/L	12.250	0.001	10-Jul-15 @ 11:55	EPA 200.8
Selenium, Dissolved, mg/L	<0.001	0.001	10-Jul-15 @ 11:55	EPA 200.8
Cadmium, Dissolved, mg/L	0.0060	0.001	10-Jul-15 @ 11:55	EPA 200.8

Comments:

References:

Methods for Chemical Analysis of Water and Wastes, US EPA, 600/4-79-020, March 1983.

SM - Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, 18th ed., 1992.

Reviewed by: 



ANALYTICAL SUMMARY REPORT

July 06, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15060479 Quote ID: H1095 - CAMP East Helena 2015

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 1 sample for Montana Environmental Custodial Trust on 6/24/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15060479-001	EHSB-26	06/23/15 13:30	06/24/15	Groundwater	Metals by ICP/ICPMS, Dissolved Conductivity Anions by Ion Chromatography Solids, Total Dissolved

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: EHSB-26
Lab ID: H15060479-001
Matrix: Groundwater

Project: 10022 EH 2015 SAI
Collection Date: 06/23/15 13:30 **DateReceived:** 06/24/15
Report Date: 07/06/15

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	676	mg/L	D	40		A2540 C	06/25/15 15:19 / SR		124 (14410200)_150625B : 29		TDS150625A
INORGANICS											
Chloride	12	mg/L		1		E300.0	06/26/15 00:01 / SR		IC102-H_150625A : 63		R107176
Sulfate	225	mg/L		1		E300.0	06/26/15 00:01 / SR		IC102-H_150625A : 63		R107176
METALS, DISSOLVED											
Arsenic	0.981	mg/L		0.002		E200.8	06/27/15 16:26 / dck	06/24/15 15:42	ICPMS204-B_150626A : 338		R107197
Cadmium	0.556	mg/L		0.001		E200.8	06/29/15 22:18 / dck	06/24/15 15:42	ICPMS204-B_150629A : 241		R107234
Calcium	15	mg/L		1		E200.8	06/27/15 16:26 / dck	06/24/15 15:42	ICPMS204-B_150626A : 338		R107197
Iron	0.06	mg/L		0.02		E200.8	06/27/15 16:26 / dck	06/24/15 15:42	ICPMS204-B_150626A : 338		R107197
Lead	ND	mg/L		0.005		E200.8	06/29/15 22:18 / dck	06/24/15 15:42	ICPMS204-B_150629A : 241		R107234
Manganese	0.79	mg/L		0.01		E200.8	06/27/15 16:26 / dck	06/24/15 15:42	ICPMS204-B_150626A : 338		R107197
Selenium	0.002	mg/L		0.001		E200.8	07/01/15 15:16 / dck	06/24/15 15:42	ICPMS204-B_150701A : 74		R107310
Sodium	162	mg/L		1		E200.8	06/29/15 22:18 / dck	06/24/15 15:42	ICPMS204-B_150629A : 241		R107234
Zinc	0.05	mg/L		0.01		E200.8	06/27/15 16:26 / dck	06/24/15 15:42	ICPMS204-B_150626A : 338		R107197

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 08, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15060539

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 1 sample for Montana Environmental Custodial Trust on 6/26/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15060539-001	EHSB-10	06/25/15 17:35	06/26/15	Aqueous	Conductivity Anions by Ion Chromatography

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15060539-001
Client Sample ID: EHSB-10

Report Date: 07/08/15
Collection Date: 06/25/15 17:35
Date Received: 06/26/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	251	mg/L		1		E300.0	06/29/15 20:01 / SRW
Sulfate	1170	mg/L		1		E300.0	06/29/15 20:01 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 09, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070027 Quote ID: H1095 - CAMP East Helena 2015

Project Name: 10022 Helena 2015 SAI

Energy Laboratories Inc Helena MT received the following 3 samples for Montana Environmental Custodial Trust on 7/1/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070027-001	EHSB-11	06/29/15 15:00	07/01/15	Aqueous	Conductivity Anions by Ion Chromatography
H15070027-002	EHSB-14	06/30/15 13:00	07/01/15	Aqueous	Same As Above
H15070027-003	EHSB-13	07/01/15 14:00	07/01/15	Aqueous	Same As Above

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 Helena 2015 SAI
Lab ID: H15070027-001
Client Sample ID: EHSB-11

Report Date: 07/09/15
Collection Date: 06/29/15 15:00
Date Received: 07/01/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	231	mg/L		1		E300.0	07/02/15 22:08 / SRW
Sulfate	1190	mg/L		1		E300.0	07/02/15 22:08 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 Helena 2015 SAI
Lab ID: H15070027-002
Client Sample ID: EHSB-14

Report Date: 07/09/15
Collection Date: 06/30/15 13:00
Date Received: 07/01/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	332	mg/L		1		E300.0	07/02/15 22:41 / SRW
Sulfate	1450	mg/L		1		E300.0	07/02/15 22:41 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 Helena 2015 SAI
Lab ID: H15070027-003
Client Sample ID: EHSB-13

Report Date: 07/09/15
Collection Date: 07/01/15 14:00
Date Received: 07/01/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	11	mg/L		1		E300.0	07/02/15 23:36 / SRW
Sulfate	151	mg/L		1		E300.0	07/02/15 23:36 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 16, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070102

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 1 sample for Montana Environmental Custodial Trust on 7/7/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070102-001	EHSB-15	07/02/15 10:25	07/07/15	Aqueous	Conductivity Anions by Ion Chromatography

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070102-001
Client Sample ID: EHSB-15

Report Date: 07/16/15
Collection Date: 07/02/15 10:25
Date Received: 07/07/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	680	mg/L		1		E300.0	07/07/15 23:20 / SRW
Sulfate	1830	mg/L		1		E300.0	07/07/15 23:20 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

July 20, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070191

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 3 samples for Montana Environmental Custodial Trust on 7/10/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070191-001	EHSB-17	07/07/15 17:00	07/10/15	Aqueous	Conductivity Anions by Ion Chromatography
H15070191-002	EHSB-22	07/09/15 8:30	07/10/15	Aqueous	Same As Above
H15070191-003	EHSB-23	07/09/15 7:30	07/10/15	Aqueous	Same As Above

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

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

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

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070191-001
Client Sample ID: EHSB-17

Report Date: 07/20/15
Collection Date: 07/07/15 17:00
Date Received: 07/10/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	199	mg/L		1		E300.0	07/14/15 00:40 / SRW
Sulfate	1300	mg/L		1		E300.0	07/14/15 00:40 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070191-002
Client Sample ID: EHSB-22

Report Date: 07/20/15
Collection Date: 07/09/15 08:30
Date Received: 07/10/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	7	mg/L		1		E300.0	07/14/15 00:52 / SRW
Sulfate	134	mg/L		1		E300.0	07/14/15 00:52 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Project: 10022 EH 2015 SAI
Lab ID: H15070191-003
Client Sample ID: EHSB-23

Report Date: 07/20/15
Collection Date: 07/09/15 07:30
Date Received: 07/10/15
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
INORGANICS							
Chloride	7	mg/L		1		E300.0	07/14/15 01:03 / SRW
Sulfate	194	mg/L		1		E300.0	07/14/15 01:03 / SRW

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

APPENDIX G

**SPEISS-DROSS SLURRY WALL EVALUATION
LABORATORY ANALYTICAL REPORTS**



ANALYTICAL SUMMARY REPORT

August 10, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15070522

Project Name: 10022 EH 2015 SAI

Energy Laboratories Inc Helena MT received the following 3 samples for Montana Environmental Custodial Trust on 7/29/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15070522-001	AEH-1507-600	07/28/15 13:55	07/29/15	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Anions by Ion Chromatography pH Metals Digestion by EPA 200.2 Solids, Total Dissolved
H15070522-002	AEH-1507-601	07/28/15 15:45	07/29/15	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved
H15070522-003	AEH-1507-602	07/28/15 16:10	07/29/15	Aqueous	Same As Above

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

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

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

Report Approved By:

Assistant Branch Manager - Helena, MT

Digitally signed by
Amanda B. Blackburn
Date: 2015.08.10 13:37:26 -06:00



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-600
Lab ID: H15070522-001
Matrix: Aqueous

DH-79

Project: 10022 EH 2015 SAI
Collection Date: 07/28/15 13:55
Date Received: 07/29/15
Report Date: 08/10/15

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	9.2	s.u.	H	0.1		A4500-H B	07/30/15 11:06 / SR		PHSC_101-H_150730A : 9		R108062
Conductivity @ 25 C	2230	umhos/cm		1		A2510 B	07/30/15 11:06 / SR		PHSC_101-H_150730A : 10		R108062
Solids, Total Dissolved TDS @ 180 C	1530	mg/L	D	20		A2540 C	07/30/15 13:29 / SR		-124 (14410200)_150730B : 3		TDS150730A
INORGANICS											
Alkalinity, Total as CaCO3	410	mg/L		1		A2320 B	07/30/15 17:33 / SR		PHSC_101-H_150730A : 53		R108062
Bicarbonate as HCO3	400	mg/L		1		A2320 B	07/30/15 17:33 / SR		PHSC_101-H_150730A : 53		R108062
Chloride	39	mg/L		1		E300.0	07/30/15 16:15 / SR		IC102-H_150730A : 32		R108105
Sulfate	547	mg/L		1		E300.0	07/30/15 16:15 / SR		IC102-H_150730A : 32		R108105
METALS, DISSOLVED											
Antimony	0.004	mg/L		0.001		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956
Arsenic	38.9	mg/L	D	0.01		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Cadmium	0.014	mg/L		0.001		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956
Calcium	3	mg/L		1		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Copper	0.049	mg/L		0.001		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956
Iron	1.35	mg/L		0.02		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Lead	0.016	mg/L		0.001		E200.8	08/06/15 19:28 / sld	07/31/15 07:58	ICPMS204-B_150806A : 179		29956
Magnesium	ND	mg/L		1		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Manganese	0.054	mg/L		0.001		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956
Potassium	8	mg/L		1		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Selenium	0.060	mg/L		0.001		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956
Sodium	503	mg/L		1		E200.7	08/03/15 10:44 / sld	07/31/15 07:58	ICP2-HE_150731C : 37		29956
Zinc	0.05	mg/L		0.01		E200.8	08/04/15 18:06 / sld	07/31/15 07:58	ICPMS204-B_150804B : 134		29956

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
H - Analysis performed past recommended holding time.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-601
Lab ID: H15070522-002
Matrix: Aqueous

DH-17

Project: 10022 EH 2015 SAI
Collection Date: 07/28/15 15:45
Date Received: 07/29/15
Report Date: 08/10/15

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	7.4	s.u.	H	0.1		A4500-H B	07/30/15 11:11 / SR		PHSC_101-H_150730A : 13		R108062
Conductivity @ 25 C	1350	umhos/cm		1		A2510 B	07/30/15 11:11 / SR		PHSC_101-H_150730A : 14		R108062
Solids, Total Dissolved TDS @ 180 C	896	mg/L		10		A2540 C	07/30/15 13:30 / SR		-124 (14410200)_150730B : 5		TDS150730A
INORGANICS											
Alkalinity, Total as CaCO3	320	mg/L		1		A2320 B	07/30/15 17:44 / SR		PHSC_101-H_150730A : 55		R108062
Bicarbonate as HCO3	390	mg/L		1		A2320 B	07/30/15 17:44 / SR		PHSC_101-H_150730A : 55		R108062
Chloride	16	mg/L		1		E300.0	07/30/15 16:49 / SR		IC102-H_150730A : 35		R108105
Sulfate	277	mg/L		1		E300.0	07/30/15 16:49 / SR		IC102-H_150730A : 35		R108105
METALS, DISSOLVED											
Antimony	ND	mg/L		0.001		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Arsenic	30.6	mg/L	D	0.01		E200.7	07/30/15 13:43 / sld		ICP2-HE_150730B : 35		R108084
Cadmium	ND	mg/L		0.001		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Calcium	12	mg/L		1		E200.7	07/30/15 13:43 / sld		ICP2-HE_150730B : 35		R108084
Copper	0.005	mg/L		0.001		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Iron	0.81	mg/L		0.02		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Lead	0.006	mg/L		0.001		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Magnesium	4	mg/L		1		E200.7	07/30/15 13:43 / sld		ICP2-HE_150730B : 35		R108084
Manganese	0.494	mg/L		0.001		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136
Potassium	7	mg/L		1		E200.7	07/30/15 13:43 / sld		ICP2-HE_150730B : 35		R108084
Selenium	ND	mg/L		0.001		E200.8	08/04/15 17:26 / sld		ICPMS204-B_150804B : 122		R108213
Sodium	286	mg/L		1		E200.7	07/30/15 13:43 / sld		ICP2-HE_150730B : 35		R108084
Zinc	0.21	mg/L		0.01		E200.8	07/31/15 16:06 / dck		ICPMS204-B_150731C : 90		R108136

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
H - Analysis performed past recommended holding time.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1507-602
Lab ID: H15070522-003
Matrix: Aqueous

TW-01

Project: 10022 EH 2015 SAI
Collection Date: 07/28/15 16:10
Date Received: 07/29/15
Report Date: 08/10/15

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	9.3	s.u.	H	0.1		A4500-H B	07/30/15 11:13 / SR		PHSC_101-H_150730A : 15		R108062
Conductivity @ 25 C	4210	umhos/cm		1		A2510 B	07/30/15 11:13 / SR		PHSC_101-H_150730A : 16		R108062
Solids, Total Dissolved TDS @ 180 C	2990	mg/L	D	20		A2540 C	07/30/15 13:30 / SR		-124 (14410200)_150730B : 6		TDS150730A
INORGANICS											
Alkalinity, Total as CaCO3	600	mg/L		1		A2320 B	07/30/15 17:53 / SR		PHSC_101-H_150730A : 57		R108062
Bicarbonate as HCO3	500	mg/L		1		A2320 B	07/30/15 17:53 / SR		PHSC_101-H_150730A : 57		R108062
Chloride	77	mg/L		1		E300.0	07/30/15 17:00 / SR		IC102-H_150730A : 36		R108105
Sulfate	1310	mg/L		1		E300.0	07/30/15 17:00 / SR		IC102-H_150730A : 36		R108105
METALS, DISSOLVED											
Antimony	0.002	mg/L		0.001		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Arsenic	95.6	mg/L	D	0.02		E200.7	07/30/15 13:46 / sld		ICP2-HE_150730B : 36		R108084
Cadmium	0.001	mg/L		0.001		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Calcium	10	mg/L		1		E200.7	07/30/15 13:46 / sld		ICP2-HE_150730B : 36		R108084
Copper	0.003	mg/L		0.001		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Iron	0.09	mg/L		0.02		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Lead	0.003	mg/L		0.001		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Magnesium	8	mg/L		1		E200.7	07/30/15 13:46 / sld		ICP2-HE_150730B : 36		R108084
Manganese	0.048	mg/L		0.001		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136
Potassium	11	mg/L		1		E200.7	07/30/15 13:46 / sld		ICP2-HE_150730B : 36		R108084
Selenium	0.038	mg/L		0.001		E200.8	08/04/15 17:41 / sld		ICPMS204-B_150804B : 126		R108213
Sodium	967	mg/L		1		E200.7	07/30/15 13:46 / sld		ICP2-HE_150730B : 36		R108084
Zinc	0.02	mg/L		0.01		E200.8	07/31/15 16:09 / dck		ICPMS204-B_150731C : 91		R108136

Report Definitions: RL - Analyte reporting limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
H - Analysis performed past recommended holding time.

ND - Not detected at the reporting limit.



ANALYTICAL SUMMARY REPORT

August 25, 2015

Montana Environmental Custodial Trust
Gallusha, Higgins, Gallusha
Helena, MT 59601

Work Order: H15080236 Quote ID: H1095 - CAMP East Helena 2015

Project Name: 10022 TW01 Pumping Test

Energy Laboratories Inc Helena MT received the following 2 samples for Montana Environmental Custodial Trust on 8/13/2015 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H15080236-001	AEH-1508-604	08/01/15 15:10	08/13/15	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity, Conductivity, Anions by Ion Chromatography, pH, Solids, Total Dissolved
H15080236-002	AEH-1508-605	08/01/15 14:15	08/13/15	Aqueous	Same As Above

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

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

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

Report Approved By:

Assistant Branch Manager - Helena, MT

Digitally signed by
Amanda B. Blackburn
Date: 2015.08.25 12:03:22 -06:00



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1508-604
Lab ID: H15080236-001
Matrix: Aqueous

TW-01

Project: 10022 TW01 Pumping Test
Collection Date: 08/01/15 15:10
DateReceived: 08/13/15
Report Date: 08/25/15

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	9.2	s.u.	H	0.1		A4500-H B	08/14/15 10:09 / edp		PHSC_101-H_150814A : 39		R108510
Conductivity @ 25 C	4080	umhos/cm		1		A2510 B	08/14/15 10:09 / edp		PHSC_101-H_150814A : 40		R108510
Solids, Total Dissolved TDS @ 180 C	2880	mg/L	DH	40		A2540 C	08/14/15 10:51 / edp		I24 (14410200)_150814B : 13		TDS150814A
INORGANICS											
Alkalinity, Total as CaCO3	630	mg/L		1		A2320 B	08/14/15 15:16 / edp		PHSC_101-H_150814A : 123		R108510
Bicarbonate as HCO3	720	mg/L		1		A2320 B	08/14/15 15:16 / edp		PHSC_101-H_150814A : 123		R108510
Chloride	74	mg/L		1		E300.0	08/14/15 20:42 / SR		IC102-H_150814A : 35		R108569
Sulfate	1210	mg/L	D	2		E300.0	08/14/15 20:42 / SR		IC102-H_150814A : 35		R108569
METALS, DISSOLVED											
Antimony	ND	mg/L		0.003		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Arsenic	94.1	mg/L	D	0.01		E200.7	08/14/15 21:36 / sld		ICP2-HE_150814B : 79		R108560
Cadmium	0.002	mg/L		0.001		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Calcium	9	mg/L		1		E200.7	08/14/15 21:36 / sld		ICP2-HE_150814B : 79		R108560
Copper	0.003	mg/L		0.001		E200.8	08/20/15 13:20 / dck		ICPMS204-B_150820A : 101		R108689
Iron	0.07	mg/L		0.02		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Lead	ND	mg/L		0.005		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Magnesium	6	mg/L		1		E200.7	08/14/15 21:36 / sld		ICP2-HE_150814B : 79		R108560
Manganese	0.05	mg/L		0.01		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Potassium	12	mg/L		1		E200.7	08/14/15 21:36 / sld		ICP2-HE_150814B : 79		R108560
Selenium	0.028	mg/L		0.001		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664
Sodium	952	mg/L		1		E200.7	08/14/15 21:36 / sld		ICP2-HE_150814B : 79		R108560
Zinc	0.01	mg/L		0.01		E200.8	08/20/15 03:54 / dck		ICPMS204-B_150819A : 316		R108664

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
H - Analysis performed past recommended holding time.

ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Montana Environmental Custodial Trust
Client Sample ID: AEH-1508-605
Lab ID: H15080236-002
Matrix: Aqueous

Project: 10022 TW01 Pumping Test
Collection Date: 08/01/15 14:15 **DateReceived:** 08/13/15
Report Date: 08/25/15

DH-79

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
pH	9.1	s.u.	H	0.1		A4500-H B	08/14/15 10:12 / edp		PHSC_101-H_150814A : 41		R108510
Conductivity @ 25 C	2250	umhos/cm		1		A2510 B	08/14/15 10:12 / edp		PHSC_101-H_150814A : 42		R108510
Solids, Total Dissolved TDS @ 180 C	1540	mg/L	DH	20		A2540 C	08/14/15 10:51 / edp		I24 (14410200)_150814B : 14		TDS150814A
INORGANICS											
Alkalinity, Total as CaCO3	450	mg/L		1		A2320 B	08/14/15 15:37 / edp		PHSC_101-H_150814A : 125		R108510
Bicarbonate as HCO3	210	mg/L		1		A2320 B	08/14/15 15:37 / edp		PHSC_101-H_150814A : 125		R108510
Chloride	40	mg/L		1		E300.0	08/14/15 20:53 / SR		IC102-H_150814A : 36		R108569
Sulfate	579	mg/L		1		E300.0	08/14/15 20:53 / SR		IC102-H_150814A : 36		R108569
METALS, DISSOLVED											
Antimony	ND	mg/L		0.003		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Arsenic	42.2	mg/L	D	0.01		E200.7	08/14/15 21:40 / sld		ICP2-HE_150814B : 80		R108560
Cadmium	0.011	mg/L		0.001		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Calcium	3	mg/L		1		E200.7	08/14/15 21:40 / sld		ICP2-HE_150814B : 80		R108560
Copper	0.044	mg/L		0.001		E200.8	08/20/15 13:26 / dck		ICPMS204-B_150820A : 103		R108689
Iron	0.51	mg/L		0.02		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Lead	0.009	mg/L		0.005		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Magnesium	ND	mg/L		1		E200.7	08/14/15 21:40 / sld		ICP2-HE_150814B : 80		R108560
Manganese	0.05	mg/L		0.01		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Potassium	7	mg/L		1		E200.7	08/14/15 21:40 / sld		ICP2-HE_150814B : 80		R108560
Selenium	0.119	mg/L		0.001		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664
Sodium	501	mg/L		1		E200.7	08/14/15 21:40 / sld		ICP2-HE_150814B : 80		R108560
Zinc	0.04	mg/L		0.01		E200.8	08/20/15 04:07 / dck		ICPMS204-B_150819A : 320		R108664

Report RL - Analyte reporting limit.
Definitions: D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
H - Analysis performed past recommended holding time.

ND - Not detected at the reporting limit.