



October 14, 2013

TDD No: TO2-09-12-04-0002

PAN No: EE-002693-2177

Tom Dunkelman, U.S. EPA Federal On-Scene Coordinator
U.S. Environmental Protection Agency
Emergency Response Section
901 South Stewart, Suite 4001
Carson City, NV 89701

Subject: **Addendum Letter Report to the Eureka Smelter Site Removal
Assessment Report, Eureka, Eureka County, Nevada, March 2013.
Latitude: 39° 30' 45" North, Longitude: 115° 57' 39" West**

INTRODUCTION

The Ecology and Environment, Inc. (E&E) Superfund Technical Assessment and Response Team (START) has been directed by the United States Environmental Protection Agency (U.S. EPA) to collect additional environmental data to assist in addressing the data gaps identified during the 2012 Eureka Smelter Site Removal Assessment.

In May 2013, the U.S. EPA Emergency Response Section (ERS) Federal On-Scene Coordinator (FOSC) Tom Dunkelman with the Nevada Department of Environmental Protection (NDEP) and START collected additional environmental data on 21 properties in the town of Eureka, Nevada in order to supplement the existing data generated on 108 properties and other locations that were presented in the March 2013 report titled *Eureka Smelter Sites, Removal Assessment Report, Eureka, Eureka County*. This letter report is an addendum to the March 2013 removal assessment report. This trip report presents the new data in tables and updated maps. Site and sampling location maps are presented in Attachment 1, data tables are presented in Attachment 2, contamination maps are presented in Attachment 3, data correlation graphs are in Attachment 4, laboratory reports in Attachment 5 and photographic documentation in Attachment 6.

SAMPLING LOCATIONS

The Eureka Smelter Site study area is located in Eureka, Eureka County, Nevada (Figure 1, Attachment 1). The sampling locations for the May 2013 field work are presented in Figure 2-1, Attachment 1. Figure 2-1 also includes the locations of slag piles and the historic smelter operations.

FIELD ACTIVITY

On May 28, 2013, FOOSC Dunkelman and START mobilized to the site in order to sample 20 additional properties. Samples were collected in accordance with the *May 2013 Sampling and Analysis Plan, Eureka Smelter Sites Assessment, Additional Sampling in Eureka, Eureka County, Nevada, E & E Inc.* (SAP) with no significant sample collection deviations. At the FOOSC's direction, three composite samples were generated for toxicity characteristic leaching procedure (TCLP) and synthetic precipitation leaching procedure (SPLP) extractions and analyses. The additional data is needed by the U.S. EPA in order to estimate disposal and treatment cost. The following analyses and extraction methods were necessary to generate additional required data and are not included in the SAP:

- TCLP by U.S. EPA Method 1311;
- SPLP by U.S. EPA Method 1312; and
- Analysis of extract for Lead, Arsenic, Silver, Cadmium, Barium, chromium, and selenium U.S. EPA Method 6010B and Mercury by U.S. EPA Method 7471A.

Sampling was initiated on May 29th, completed on May 30th and START demobilized on May 31, 2013. A total of 177 unique samples were collected during the mobilization. Twelve properties were sampled on May 29th and eight properties were sampled on May 30th. Prior to the collection of samples, the FOOSC and START identified 43 decision units.

START X-RAY FLUORESCENCE (XRF) ANALYSIS

A total of 177 unique soil samples and 29 field and preparation duplicate samples were analyzed by START using an Innov-X field portable X-Ray Fluorescence (XRF) instrument. Including analysis duplicates and quality assurance samples a total of approximately 260 XRF analyses were completed. Sample analysis and QA/QC procedures with the XRF units were performed in accordance with the manufacturer guidance, U.S. EPA SW-846 Method 6200, project SAP and described in the March 2013 Removal Assessment report.

REGIONAL LABORATORY ANALYSIS

A total of 40 soil samples, including duplicates were analyzed by the U.S. EPA Region 9 Laboratory for arsenic and lead by U.S. EPA Method 6010B Inductively Coupled Plasma-Atomic Emission Spectrometry. Three composite soil samples from the collected samples were generated and submitted to the U.S. EPA Region 9 Laboratory for both TCLP and SPLP extraction with extract analyzed for the eight RCRA metals. Additionally a rinsate blank generated by START in the field was analyzed by the U.S. EPA Region 9 Laboratory for arsenic and lead by U.S. EPA Method 6010B. The samples were also extracted using a bio-accessibility extraction procedure followed by analyses for total arsenic and lead concentration by U.S. EPA Method 6010B.

SUMMARY OF START SAMPLE RESULTS

Arsenic and Lead XRF Data

The data tables for each sampled property are presented in tables in Attachment 2, Table 1-

1 through 1-20.

The U.S. EPA SW-846 XRF Method 6200 suggests that a minimum of 5 to 10 percent of the XRF-analyzed samples be submitted to an analytical laboratory for confirmation analysis to verify the quality of the generated XRF data. During this assessment, approximately 20 percent of the XRF-analyzed samples were submitted for confirmation laboratory analysis.

TCLP and SPLP Metals Data

The analytical data for composite samples that were extracted by two U.S. EPA leachate procedures (TCLP and SPLP) and analyzed for arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury are presented in Attachment 2, Table 2. The total and extractable lead and arsenic concentrations for the three composite samples are as follows:

	Total Lead	RCRA Lead	TCLP Lead	SPLP Lead
	mg/kg	Criteria	mg/L	mg/L
	mg/L	mg/L	mg/L	mg/L
Composite 1	1,300	5	0.35	0.38
Composite 2	12,000	5	1.4	1.5
Composite 3	3,100	5	1.0	0.79

	Total Arsenic	RCRA Arsenic	TCLP Arsenic	SPLP Arsenic
	mg/kg	Criteria	mg/L	mg/L
	mg/L	mg/L	mg/L	mg/L
Composite 1	260	5	1.1	0.26
Composite 2	1,400	5	0.48	0.44
Composite 3	590	5	0.78	0.44

Arsenic Data Correlation

Linear regression analysis between field XRF and laboratory results for arsenic from 35 of the 36 unique soil samples submitted to the laboratory generated a final coefficient of determination (R²) value of 0.9923 and slope value of 1.0504. The concentration results from one sample with an extremely high concentration of arsenic were considered an outlier and were not used in the comparison. Based on the strong positive correlation of 0.9923 between XRF and laboratory results, the XRF data generated for arsenic concentrations during this assessment exceed the U.S. EPA criteria and is acceptable for use as screening level data (R²=0.7). Based upon the calculated slope of 1.0504, the XRF concentrations for arsenic are documented as exhibiting a slightly low bias. Since the slope is within 20 percent of a 1:1 slope, the documented biases are acceptable and usable without adjustment. The field XRF and laboratory analysis data correlation summary is provided in Attachment 4.

Lead Data Correlation

Linear regression analysis between field XRF and laboratory results for lead from 35 of the 36

unique soil samples submitted to the laboratory generated a final R² value of 0.9952 and slope value of 1.1166. The concentration results from one sample with an extremely high concentration of lead were considered an outlier and were not used in the comparison. Based on the strong positive correlation of 0.9952 between XRF and laboratory results, the XRF data generated for lead concentrations during this assessment exceed the U.S. EPA criteria and is acceptable for use as screening level data (R²=0.7). Based upon the calculated slope of 1.1166, the XRF concentrations for lead are documented as exhibiting a slightly low bias. Since the slope is within 20 percent of a 1:1 slope, the documented biases are acceptable and usable without adjustment. The field XRF and laboratory analysis data correlation summary is provided in Attachment 4.

DISCUSSION OF RESULTS

Data generated during this sampling event were compared to site-specific screening level (SSLs) of 60 mg/kg for arsenic and 400 mg/kg for lead. The collected surface and shallow surface soil concentration data were also compared to elevated site screening levels (ESSLs), which were values 10 times the SSL for arsenic (600 mg/kg) and 7.5 times the SSL for lead (3,000 mg/kg). It should be noted that both the SSLs and ESSLs for arsenic and lead are preliminary screening goals and do not necessarily constitute levels that would drive cleanup actions.

A total of 20 Eureka parcels, consisting of 43 decision units, were sampled. Within the 20 parcels a total of 86 unique composite soil samples and 87 unique discrete soil samples were collected and subjected to XRF analysis. Approximately 74 percent of the 173 analyzed unique soil samples exceeded the SSL for either arsenic or lead. Only two of the 20 sampled parcels did not have a sample that exceeded the SSLs for either arsenic or lead. There were 52 samples from eight of the 20 properties that exceeded the ESSL for either arsenic or lead. One of the eight parcels that exceeded ESSLs was a residential property with multiple residential structures present.

Property locations with lead and arsenic concentration data are graphically presented in figures in Attachment 1. The data for each sampled property parcel is presented in tables in Attachment 2. The data tables in Attachment 2 also include the area measurement of each decision unit and an estimate of the cubic yards of soil above the SSL for each decision unit.

One property that had been sampled in 2012 was re-sampled during the May 2013 sampling event. This property had been recently graded and was being prepared for construction. The concentrations of lead and arsenic in the 1 to 2 inch below ground surface (bgs) interval, and the 2 to 6 inch bgs interval were significantly lower in the May 2013 samples as compared to the 2012 samples. The change is presented in Table 3 in Attachment 2.

The iso-concentration maps for lead and arsenic are presented in Attachment 3, these maps show estimated areas of lead and arsenic concentrations in soil based upon 2012 and 2013 data. The sample populations (in percent) for the new data based on level of contamination are:

	Lead or Arsenic
Percentage of samples collected from parcels that are more than 10 times the SSL (600 mg/kg for arsenic or 3,000 mg/kg for lead).	30 %
Percentage of samples collected from parcels that are between the SSL and 10 times the SSL.	44 %
Percentage of samples collected from parcels that are less than SSL.	26 %

The general conclusions that can be inferred for excavated soil, is that the soil will pass the TCLP and SPLP leachate extraction criteria for RCRA metals.

The location of nineteen residential properties from this sampling event and the 2012 sampling event are presented in Attachment 3, Figure 5.

SUMMARY AND CONCLUSION

On May 29 and May 30, 2013 the U.S. EPA and START conducted additional soil sampling at 20 property parcels in Eureka, Nevada. A total of 173 unique samples were collected and analyzed by XRF. A total of 45 soil samples were submitted to the U.S. EPA Region 9 Laboratory in Richmond, California, for confirmation analysis by U.S. EPA Method 6010B. Soil samples were additionally TCLP and SPLP extracted followed by analyses using U.S. EPA Method 6010B.

The data collected from this sampling will be used by the U.S. EPA Region 9 ERS to supplement data collected in 2012. Data generated during the May, 2013 sampling event will be used to determine whether environmental hazards are present in Eureka, Nevada may pose an “imminent and substantial endangerment to human health or the environment.” As appropriate, the U.S.EPA will use this assessment data to evaluate the potential for a removal action at the site and identify alternative methods to mitigate environmental hazards that meet endangerment criteria.

In summary, a total of 18 of the 20 sampled residential and public properties in the study area contained soils with arsenic and/or lead concentrations that exceeded the respective U.S. EPA SSLs. A total of 3 occupied residential properties contained soils with arsenic and/or lead concentrations above the ESSLs.

Based upon results for TCLP and SPLP leachate extractions on the sampled soil; excavated soil from Eureka properties should not exceed the RCRA leachate criteria requirements for metals.

The new data supports the conclusions indicated in the March 2013 Removal Assessment

report titled *Eureka Smelter Site, Removal Assessment Report, Eureka, Eureka County*.

This letter report concludes all work performed on this project related to the May 2013 sampling in Eureka, California. Please contact me at 510-893-6700 extension 4707 if you have any questions or require additional information.

Sincerely,

Howard Edwards
START Member

Attachments:

Attachment 1: Site Location and Sampling Location Maps

Site Location Map:	Figure 1:
Sampling Location Map:	Figure 2-1:

Attachment 2: Tables

Data Summary Tables:	Tables 1-1 through 1-20
TCLP and SPLP Data Table:	Table 2-1 and 2-2
Property Re-Sampling Data:	Table 3

Attachment 3: Town of Eureka Maps

Iso-Concentration for Arsenic:	Figure 3
Iso-Concentration for Lead:	Figure 4
Elevated Contamination on Developed Properties:	Figure 5

Attachment 4: Confirmatory Summary of XRF to ICP Data

Laboratory Data Summary:	Table 4
Correlation for Lead:	Figure 6
Correlation for Arsenic:	Figure 7

Attachment 5: Laboratory Analysis, Data Validation Reports

Attachment 6: Photo Documentation

DVD Disk (attached)

Attachment 1

Site Location and Sampling Location Maps

Site Location Map:

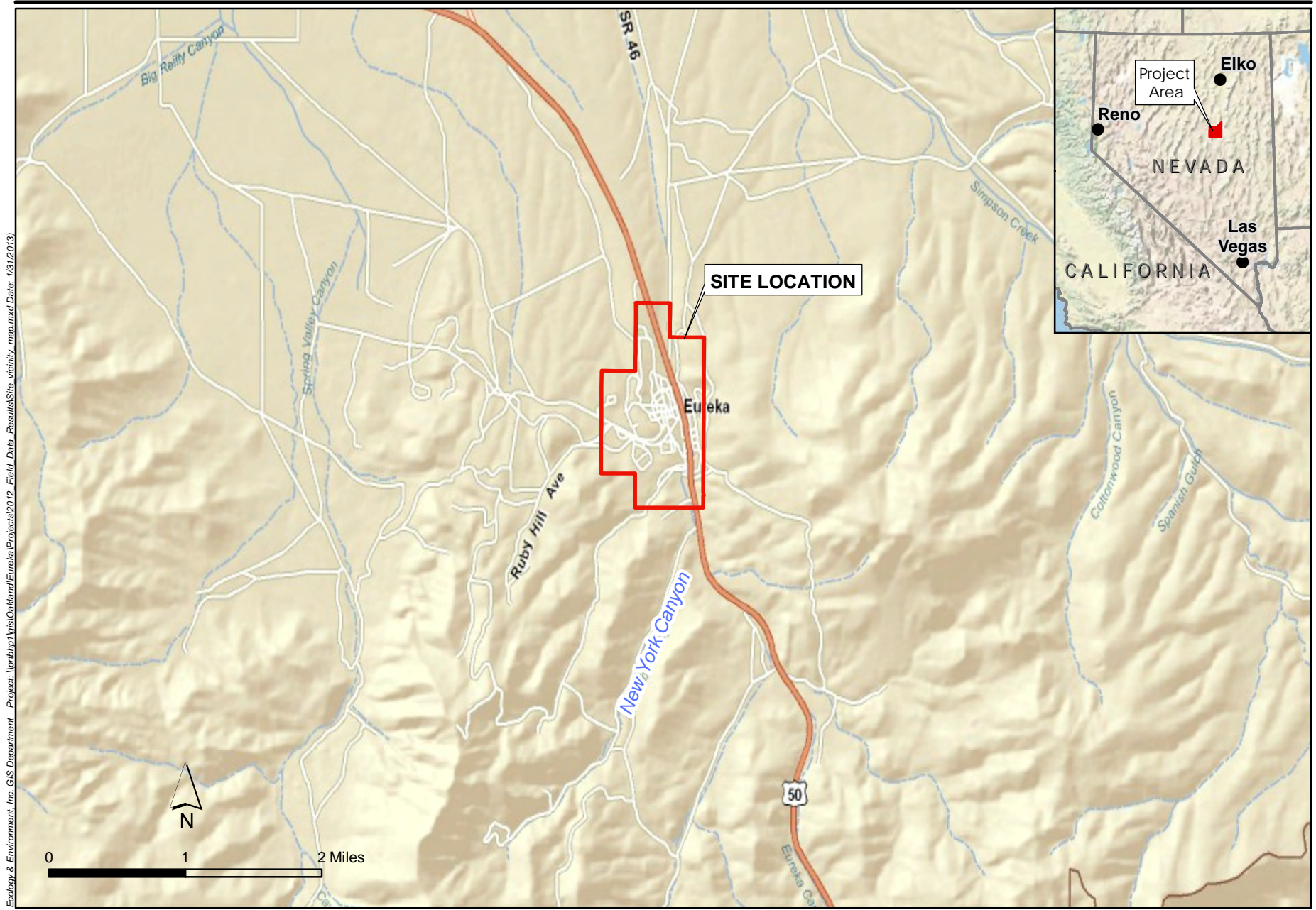
Figure 1

Sampling Location Map:

Figure 2-1

Parcel Maps:

**Figures 2-2
through 2-21**



Ecology & Environment, Inc. GIS Department Project: \p\rbp1\gis\Oakland\Eureka\Projects\2012 Field Data Results\Site_vicinity_map.mxd Date: 1/31/2013

Figure 1
Site Location Map
Eureka Smelter Sites
Eureka, Eureka County, Nevada



Attachment 2

Tables

Data Summary Tables:	Tables 1-1 through 1-20
TCLP Data:	Table 2-1
SPLP Data:	Table 2-2
Property Re-Sampling Data:	Table 3

**Table 1-1 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-011-01				
ESS-101101-S0-0	S0	0 to 2 inches	740	170
ESS-101101-S0-2	S0	2 to 6 inches	390	86
ESS-101101-S0-6	S0	6 to 12 inches	550	100
ESS-101101-G6-0	G6	0 to 2 inches	260	60
ESS-101101-G6-2	G6	2 to 6 inches	250	56
ESS-101101-G6-6	G6	6 to 12 inches	110	46
ESS-101101-G7-0	G7	0 to 2 inches	2,500	420
ESS-101101-G7-2	G7	2 to 6 inches	520	98
ESS-101101-G7-6	G7	6 to 12 inches	450	84
ESS-101101-G8-0	G8	0 to 2 inches	9,150	1,750
ESS-101101-G8-2	G8	2 to 6 inches	1,600	300
ESS-101101-G8-6	G8	6 to 12 inches	1,400	280
ESS-101101-G9-0	G9	0 to 2 inches	6,800	1,300
ESS-101101-G9-2	G9	2 to 6 inches	2,100	420
Not Sampled	G9	6 to 12 inches	No Sample	No Sample

Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL
S0	3,481	1	129
G6	5,187	0.5	96
G7	5,187	1	192
G8	5,187	1	192
G9	5,187	1	192

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-2 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-012-30				
ESS-101230-S0-0	S0	0 to 2 inches	145	32
ESS-101230-S0-2	S0	2 to 6 inches	180	39
ESS-101230-S0-6	S0	6 to 12 inches	470	110
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	0	0	0	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

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Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

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**Table 1-3 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-022-17				
ESS-102217-S0-0	S0	0 to 2 inches	230	36
ESS-102217-S0-2	S0	2 to 6 inches	160	42
ESS-102217-S0-6	S0	6 to 12 inches	110	23
ESS-102217-S1-0	S1	0 to 2 inches	750	98
ESS-102217-S1-2	S1	2 to 6 inches	720	120
ESS-102217-S1-6	S1	6 to 12 inches	100	25
ESS-102217-P6-0	P6	0 to 2 inches	70	13
ESS-102217-P6-2	P6	2 to 6 inches	32	11
ESS-102217-P6-2	P6	6 to 12 inches	30	8

Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL
S0	0	0	0
S1	1,915	1	71
P6	0	0	0

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-4 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-022-06				
ESS-102206-S0-0	S0	0 to 2 inches	56	16
ESS-102206-S0-2	S0	2 to 6 inches	94	17
ESS-102206-S0-6	S0	6 to 12 inches	45	17
ESS-102206-S1-0	S1	0 to 2 inches	49	10
ESS-102206-S1-2	S1	2 to 6 inches	37	14
ESS-102206-S1-6	S1	6 to 12 inches	28	9
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	0	0	0	
S1	0	0	0	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

*** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

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**Table 1-5 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-037-02				
ESS-103702-P6-0	P6	0 to 2 inches	1,400	210
ESS-103702-P6-2	P6	2 to 6 inches	1,600	220
ESS-103702-P6-6	P6	6 to 12 inches	2,900	460
ESS-103702-S0-0	S0	0 to 2 inches	1,600	200
ESS-103702-S0-2	S0	2 to 6 inches	2,500	390
ESS-103702-S0-6	S0	6 to 12 inches	2,700	410
ESS-103702-S1-0	S1	0 to 2 inches	740	100
ESS-103702-S1-2	S1	2 to 6 inches	1,100	170
ESS-103702-S1-6	S1	6 to 12 inches	1,500	210
ESS-103702-S2-0	S2	0 to 2 inches	1,300	190
ESS-103702-S2-2	S2	2 to 6 inches	1,700	270
ESS-103702-S2-6	S2	6 to 12 inches	2,000	300
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL *	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
P6	NA	1	NA	
S0	3,751	1	139	
S1	3,276	1	121	
S2	3,566	1	132	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known.

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead.

Bold, underlined and italics = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

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**Table 1-6 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-064-05				
ESS-106405-S0-0	S0	0 to 2 inches	260	39
ESS-106405-S0-2	S0	2 to 6 inches	610	69
ESS-106405-S0-6	S0	6 to 12 inches	840	120
ESS-106405-S1-0	S1	0 to 2 inches	460	61
ESS-106405-S1-2	S1	2 to 6 inches	400	79
ESS-106405-S1-6	S1	6 to 12 inches	930	140
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	1,982	1	73	
S1	2,481	1	92	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

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* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

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**Table 1-7 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-065-12				
ESS-106512-S0-0	S0	0 to 2 inches	<i>2,400</i>	<i>250</i>
Not Sampled	S0	2 to 6 inches	No Sample	No Sample
ESS-106512-S0-6	S0	6 to 12 inches	<i>4,000</i>	<i>540</i>
ESS-106512-S1-0	S1	0 to 2 inches	<i>640</i>	<i>85</i>
ESS-106512-S1-2	S1	2 to 6 inches	<i>1,200</i>	<i>190</i>
ESS-106512-S1-6	S1	6 to 12 inches	<i>4,600</i>	<i>1,000</i>
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	4,596	1	170	
S1	1,827	1	68	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known.

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead.

Bold, underlined and italics = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-8 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-071-01				
ESS-107101-S0-0	S0	0 to 2 inches	360	57
ESS-107101-S0-2	S0	2 to 6 inches	530	75
ESS-107101-S0-6	S0	6 to 12 inches	1,400	180
ESS-107101-S1-0	S1	0 to 2 inches	940	97
ESS-107101-S1-2	S1	2 to 6 inches	190	30
ESS-107101-S1-6	S1	6 to 12 inches	260	38
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	3,580	1	133	
S1	1,771	0.5	33	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 1-9 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-074-04				
ESS-107404-S0-0	S0	0 to 2 inches	920	96
ESS-107404-S0-2	S0	2 to 6 inches	1,700	220
ESS-107404-S0-6	S0	6 to 12 inches	2,400	320
Not Sampled	S1	0 to 2 inches	No Sample	No Sample
ESS-107404-S1-2	S1	2 to 6 inches	1,400	140
ESS-107404-S1-6	S1	6 to 12 inches	<u>3,500</u>	500
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	5,555	1	206	
S1	4,024	1	149	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 1-10 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-075-04				
ESS-107504-S0-0	S0	0 to 2 inches	1,200	200
ESS-107504-S0-2	S0	2 to 6 inches	930	140
ESS-107504-S0-6	S0	6 to 12 inches	1,100	190
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S01	2,603	1	96	

Notes:
mg/kg = milligrams per kilogram
START = Superfund Technical Assessment and Response Team
XRF = X-Ray Fluorescence
APN = Assessor's Parcel Number
SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg
NA = Sample was not analyzed or the size of the area associated with the locations is not known
Bold = Above the SSL
Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead
Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead
* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.
** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 1-11 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-094-01				
ESS-109401-S0-0	S0	0 to 2 inches	530	100
ESS-109401-S0-2	S0	2 to 6 inches	490	98
ESS-109401-S0-6	S0	6 to 12 inches	270	49
ESS-109401-S1-0	S1	0 to 2 inches	<i>2,600</i>	<i>420</i>
ESS-109401-S1-2	S1	2 to 6 inches	<i>3,300</i>	<i>600</i>
ESS-109401-S1-6	S1	6 to 12 inches	<i>2,200</i>	<i>400</i>
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL *	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	5,320	1	197	
S1	2,584	1	96	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-12 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-107-04				
ESS-110704-S0-0	S0	0 to 2 inches	460	86
ESS-110704-S0-2	S0	2 to 6 inches	660	110
ESS-110704-S0-6	S0	6 to 12 inches	700	93
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	312	1	12	

Notes:

mg/kg = milligrams per kilogram

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XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 1-13 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-122-01				
ESS-112201-G6-0	G6	0 to 2 inches	<i>1,700</i>	<i>220</i>
ESS-112201-G6-2	G6	2 to 6 inches	<i>2,400</i>	<i>340</i>
ESS-112201-G6-6	G6	6 to 12 inches	<i>4,000</i>	<i>640</i>
ESS-112201-G7-0	G7	0 to 2 inches	<i>830</i>	<i>90</i>
ESS-112201-G7-2	G7	2 to 6 inches	<i>120</i>	<i>20</i>
ESS-112201-G7-6	G7	6 to 12 inches	<i>130</i>	<i>17</i>
ESS-112201-G8-0	G8	0 to 2 inches	<i>3,800</i>	<i>510</i>
ESS-112201-G8-2	G8	2 to 6 inches	<i>6,100</i>	<i>850</i>
ESS-112201-G8-6	G8	6 to 12 inches	<i>5,600</i>	<i>940</i>
ESS-112201-G9-0	G9	0 to 2 inches	<i>16,500</i>	<i>2,700</i>
ESS-112201-G9-2	G9	2 to 6 inches	<i>31,000</i>	<i>6,000</i>
ESS-112201-G9-6	G9	6 to 12 inches	<i>1,900</i>	<i>280</i>
ESS-112201-G10-0	G10	0 to 2 inches	<i>6,200</i>	<i>360</i>
ESS-112201-G10-2	G10	2 to 6 inches	<i>1,700</i>	<i>87</i>
ESS-112201-G10-6	G10	6 to 12 inches	<i>1,200</i>	<i>87</i>
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
G6	3,473	1	129	
G7	3,473	0.5	64	
G8	3,473	1	129	
G9	3,473	1	129	
G10	3,473	1	129	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-14 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-085-01				
ESS-108501-S0-0	S0	0 to 2 inches	270	39
ESS-108501-S0-2	S0	2 to 6 inches	300	38
ESS-108501-S0-6	S0	6 to 12 inches	490	41
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	0	0	0	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 1-15 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-122-02				
ESS-112202-G6-0	G6	0 to 2 inches	<u>6,700</u>	<u>1,000</u>
ESS-112202-G6-2	G6	2 to 6 inches	<u>4,600</u>	<u>720</u>
ESS-112202-G6-6	G6	6 to 12 inches	<u>2,000</u>	<u>350</u>
ESS-112202-G7-0	G7	0 to 2 inches	<u>27,000</u>	<u>3,500</u>
ESS-112202-G7-2	G7	2 to 6 inches	<u>19,000</u>	<u>2,000</u>
Not Sampled	G7	6 to 12 inches	No Sample	No Sample
Not Sampled	G8	0 to 2 inches	No Sample	No Sample
ESS-112202-G8-2	G8	2 to 6 inches	<u>6,700</u>	<u>560</u>
ESS-112202-G8-6	G8	6 to 12 inches	<u>1,400</u>	<u>140</u>
ESS-102202-G9-0	G9	0 to 2 inches	<u>980</u>	<u>170</u>
ESS-102202-G9-2	G9	2 to 6 inches	360	<u>69</u>
ESS-102202-G9-6	G9	6 to 12 inches	150	47
Not Sampled	G10	0 to 2 inches	No Sample	No Sample
ESS-102202-G10-2	G10	2 to 6 inches	<u>66,000</u>	<u>16,000</u>
ESS-102202-G10-6	G10	6 to 12 inches	<u>30,000</u>	<u>6,200</u>
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL *	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
G6	5,462	1	202	
G7	5,462	1	202	
G8	5,462	1	202	
G9	5,462	1	202	
G10	5,462	1	202	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-16 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-123-03				
ESS-112303-S0-0	S0	0 to 2 inches	<u>10,000</u>	<u>1,650</u>
ESS-112303-S0-2	S0	2 to 6 inches	<u>9,800</u>	<u>1,600</u>
ESS-112303-S0-6	S0	6 to 12 inches	<u>2,600</u>	<u>400</u>
ESS-112303-G6-0	G6	0 to 2 inches	<u>63,500</u>	<u>18,000</u>
ESS-112303-G6-2	G6	2 to 6 inches	<u>100,000</u>	<u>38,000</u>
ESS-112303-G6-6	G6	6 to 12 inches	<u>>100,000</u>	<u>32,000</u>
ESS-112303-G7-0	G7	0 to 2 inches	<u>7,600</u>	<u>1,300</u>
ESS-112303-G7-2	G7	2 to 6 inches	<u>13,000</u>	<u>2,000</u>
ESS-112303-G7-6	G7	6 to 12 inches	<u>11,000</u>	<u>1,700</u>
ESS-112303-G8-2	G8	0 to 2 inches	<u>11,000</u>	<u>1,500</u>
ESS-112303-G8-2	G8	2 to 6 inches	<u>10,500</u>	<u>1,300</u>
ESS-112303-G8-6	G8	6 to 12 inches	<u>36,000</u>	<u>6,100</u>
ESS-112303-G9-0	G9	0 to 2 inches	<u>8,100</u>	<u>1,300</u>
ESS-112303-G9-2	G9	2 to 6 inches	<u>10,000</u>	<u>1,700</u>
ESS-112303-G9-6	G9	6 to 12 inches	<u>4,500</u>	<u>690</u>
ESS-112303-G10-0	G10	0 to 2 inches	<u>2,100</u>	<u>160</u>
ESS-112303-G10-2	G10	2 to 6 inches	<u>1,300</u>	<u>150</u>
ESS-112303-G10-6	G10	6 to 12 inches	<u>1,600</u>	<u>170</u>
ESS-112303-P6-0	P6	0 to 2 inches	<u>5,000</u>	<u>760</u>
ESS-112303-P6-2	P6	2 to 6 inches	<u>6,600</u>	<u>950</u>
ESS-112303-P6-6	P6	6 to 12 inches	<u>4,500</u>	<u>710</u>
ESS-112303-P7-0	P7	0 to 2 inches	<u>2,100</u>	<u>270</u>
ESS-112303-P7-2	P7	2 to 6 inches	<u>7,500</u>	<u>1,100</u>
ESS-112303-P7-6	P7	6 to 12 inches	<u>7,500</u>	<u>1,000</u>
ESS-112303-P8-0	P8	0 to 2 inches	<u>5,300</u>	<u>870</u>
ESS-112303-P8-2	P8	2 to 6 inches	<u>4,500</u>	<u>670</u>
ESS-112303-P8-6	P8	6 to 12 inches	<u>2,300</u>	<u>360</u>

Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL
S0	2,396	1	89
G6	7,983	1	296
G7	7,983	1	296
G8	7,983	1	296
G9	7,983	1	296
G10	7,983	1	296
P6	NA	1	NA
P7	NA	1	NA
P8	NA	1	NA

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, underlined and italics = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-17 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-126-01				
ESS-112601-G6-0	G6	0 to 2 inches	<i>1,700</i>	<i>240</i>
ESS-112601-G6-2	G6	2 to 6 inches	<i>2,200</i>	<i>300</i>
ESS-112601-G6-6	G6	6 to 12 inches	<i>940</i>	<i>130</i>
ESS-112601-G7-0	G7	0 to 2 inches	<i>20,000</i>	<i>4,100</i>
ESS-112601-G7-2	G7	2 to 6 inches	<i>18,000</i>	<i>3,400</i>
ESS-112601-G7-6	G7	6 to 12 inches	<i>15,000</i>	<i>2,700</i>
ESS-112601-G8-0	G8	0 to 2 inches	<i>17,000</i>	<i>3,600</i>
ESS-112601-G8-2	G8	2 to 6 inches	<i>7,900</i>	<i>1,500</i>
ESS-112601-G8-6	G8	6 to 12 inches	<i>8,300</i>	<i>1,700</i>
ESS-112601-G9-0	G9	0 to 2 inches	<i>11,500</i>	<i>2,000</i>
ESS-112601-G9-2	G9	2 to 6 inches	<i>8,400</i>	<i>1,400</i>
ESS-112601-G9-6	G9	6 to 12 inches	<i>1,000</i>	<i>190</i>
ESS-112601-G10-0	G10	0 to 2 inches	<i>21,000</i>	<i>4,000</i>
ESS-112601-G10-2	G10	2 to 6 inches	<i>5,300</i>	<i>790</i>
ESS-112601-G10-6	G10	6 to 12 inches	<i>3,600</i>	<i>550</i>
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
G6	7,113	1	263	
G7	7,113	1	263	
G8	7,113	1	263	
G9	7,113	1	263	
G10	7,113	1	263	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-18 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-135-01				
ESS-113501-S0-0	S0	0 to 2 inches	500	60
ESS-113501-S0-2	S0	2 to 6 inches	440	63
ESS-113501-S0-6	S0	6 to 12 inches	200	44
ESS-113501-S1-0	S1	0 to 2 inches	160	47
ESS-113501-S1-2	S1	2 to 6 inches	70	27
ESS-113501-S1-6	S1	6 to 12 inches	73	32
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL *	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	2,155	1	80	
S1	0	0	0	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-19 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TQ2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-172-03				
ESS-117203-S0-0	S0	0 to 2 inches	140	33
ESS-117203-S0-2	S0	2 to 6 inches	98	24
ESS-117203-S0-6	S0	6 to 12 inches	160	27
ESS-117203-S1-0	S1	0 to 2 inches	250	39
ESS-117203-S1-2	S1	2 to 6 inches	200	30
ESS-117203-S1-6	S1	6 to 12 inches	160	23
ESS-117203-S2-0	S2	0 to 2 inches	160	34
ESS-117203-S2-2	S2	2 to 6 inches	160	50
ESS-117203-S2-6	S2	6 to 12 inches	120	87
ESS-117203-S3-0	S3	0 to 2 inches	130	34
ESS-117203-S3-2	S3	2 to 6 inches	160	47
ESS-117203-S3-6	S3	6 to 12 inches	230	51
ESS-117203-P6-0	P6	0 to 2 inches	460	56
ESS-117203-P6-2	P6	2 to 6 inches	480	60
ESS-117203-P6-6	P6	6 to 12 inches	570	86
ESS-117203-P7-0	P7	0 to 2 inches	64	27
Not Sampled	P7	2 to 6 inches	No Sample	No Sample
Not Sampled	P7	6 to 12 inches	No Sample	No Sample
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL*	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	0	0	0	
S1	0	0	0	
S2	0	0	0	
S3	0	0	0	
P6	NA	NA	NA	
P7	NA	NA	NA	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics, and underlined = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

**Table 1-20 Eureka Residential Property Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample Identification Number	Decision Unit or Sample Location	Depth Interval	START XRF Lead Results (mg/kg) dry weight	START XRF Arsenic Results (mg/kg) dry weight
APN: 001-172-04				
ESS-117204-S0-0	S0	0 to 2 inches	690	120
Not Sampled	S0	2 to 6 inches	No Sample	No Sample
Not Sampled	S0	6 to 12 inches	No Sample	No Sample
Decision Unit or Sample Location	Square Feet of Arsenic and Lead Over SSL *	Estimated Depth of Arsenic and Lead Over SSL (feet) **	Estimated Cubic Yards of Arsenic and Lead Over SSL	
S0	5,173	1	192	

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known

Bold = Above the SSL

Bold and italics = Above 180 mg/kg for arsenic by XRF and 1,400 mg/kg for lead

Bold, italics = Above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

* The square footage for grid sample locations of undeveloped properties are estimates based upon the square footage of the property divided by the number of sample locations.

** Depth of arsenic and lead over the SSL are for a removal volume estimate which assumes the removal action level is 60 mg/kg for arsenic by XRF and 400 mg/kg for lead by XRF. Depth is based upon documented arsenic and lead concentrations over the SSL. Arsenic and lead concentrations over the SSL at 0 to 2 inches is considered contaminated to 0.5 feet. Arsenic and lead concentrations over the SSL at 2 inches or more is considered contaminated to 1 foot. If the 0 to 6 inch interval is not contaminated above the SSL then the excavation depth is 0.0 feet.

Ecology and Environment Inc. 2013

**Table 2-1 Toxicity Characteristic Leaching Procedure (TCLP) Survey Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample	Total Arsenic	Total Lead	Type of Sample	Arsenic	Lead	Barium	Cadmium	Chromium	Selenium	Silver	Mercury
RCRA Criteria	NA	NA		5.0	5.0	100	1.0	5.0	1.0	5.0	0.2
Quantitation Limit	NA	NA		2	3	5	0.5	1	2	0.5	0.001
Units	mg/kg	mg/kg		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ESS-C1-SSL	260J	1,300	Above Site Screening Level	1.1 J	0.35J	1.3	0.36J	ND	ND	ND	ND
ESS-C3-3SSL	590	3,100	Above Elevated Site Screening Level	0.78	1.0	1.7	0.084	ND	ND	ND	ND
ESS-C2-ESSL	1,400	12,000	Above Three Times the Site Screening Level	0.48	1.4	1.4	0.11	ND	ND	ND	ND

Notes:

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

START = Superfund Technical Assessment and Response Team

RCRA = Resource Conservation and Recovery Act

NA = Not Applicable

Bold = Above the benchmark.

J = Value is estimated.

Ecology and Environment Inc. 2013

**Table 2-2 Synthetic Precipitation Leaching Procedure (SPLP) Survey Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sample	Total Arsenic	Total Lead	Type of Sample	Arsenic	Lead	Barium	Cadmium	Chromium	Selenium	Silver	Mercury
RCRA Criteria	NA	NA		5.0	5.0	100	1.0	5.0	1.0	5.0	0.2
Quantitation Limit	NA	NA		2	3	5	0.5	1	2	0.5	0.001
Units	mg/kg	mg/kg		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ESS-C1-SSL	260	1,300	Above Site Screening Level	0.26J	0.38	0.16	.0002J	ND	ND	ND	0.00031
ESS-C3-ESSL	590	3,100	Above Elevated Site Screening Level	0.44	0.79	0.15	0.007J	ND	ND	ND	0.00064
ESS-C2-3SSL	1,400	12,000	Above Three Times the Site Screening Level	0.44	1.5	0.13	0.008	ND	ND	ND	0.00079

Notes:

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

START = Superfund Technical Assessment and Response Team

RCRA = Resource Conservation and Recovery Act

NA = Not Applicable

Bold = Above the benchmark.

J = Value is estimated.

Ecology and Environment Inc. 2013

**Table 3 Property Re-Sampling Data
Eureka Smelter Sites
Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

561 Ridgetop Road (APN: 001-012-30)

Sample Identification Number	Depth Interval	2012 START XRF Arsenic Results (mg/kg) dry weight	2013 START XRF Arsenic Results (mg/kg) dry weight	Percent (%) Reduction
ESS-101230-S0-0	0 to 2 inches	430	32	93%
ESS-101230-S0-2	2 to 6 inches	360	39	89%
ESS-101230-S0-6	6 to 12 inches	220	110	50%
ESS-101230-S01-0	0 to 2 inches	1300	145	89%
ESS-101230-S01-2	2 to 6 inches	990	180	82%
ESS-101230-S01-6	6 to 12 inches	610	470	23%

Notes:

mg/kg = milligrams per kilogram

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

APN = Assessor's Parcel Number

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

NA = Sample was not analyzed or the size of the area associated with the locations is not known.

Bold = Above the SSL

Ecology and Environment Inc. 2013

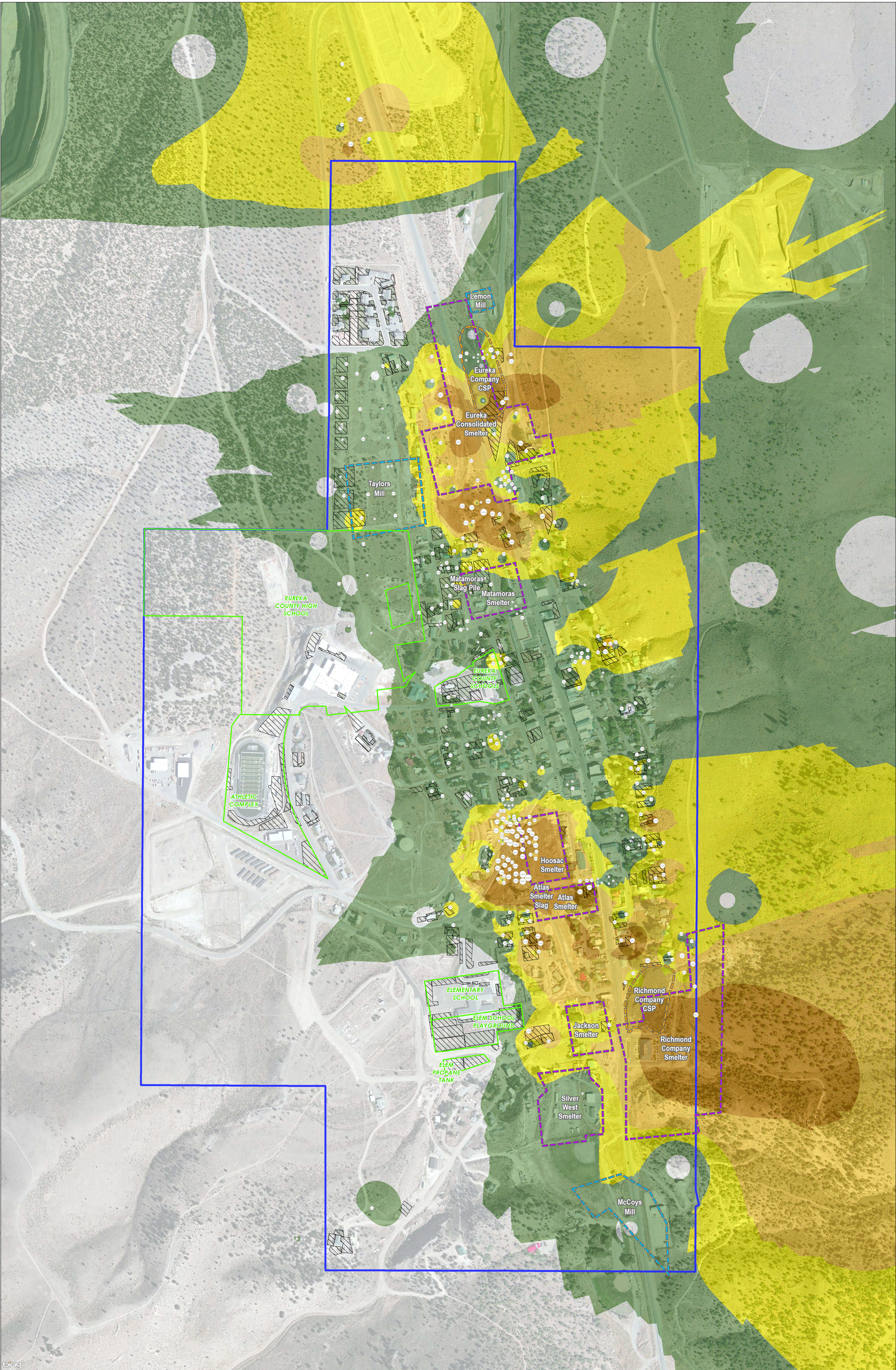
Attachment 3

Town of Eureka Maps

Iso-Concentration for Arsenic: Figure 3

Iso-Concentration for Lead: Figure 4

**Elevated Contamination on
Developed Properties: Figure 5**



Legend

- Arsenic Concentration (mg/kg)

 - Non detect to 60
 - 60 to 300
 - 300 to 600
 - 600 to 1,200
 - greater than 1,200
- Historical Facilities

 - Historic Mill Facility
 - Historic Smelter Site
 - Consolidated Slag Pile (CSP)

Levels of arsenic in soil are measured in units of milligrams per kilogram (mg/kg)
- Project Site
 - Eureka County School District Property
 - Sampled Areas (2012-2013)
 - Sample Concentration Value

Surface Creation: GIS Analysis

ESRI ArcGIS v10.1 Inverse distance weighted (IDW) interpolation determines cell values using a linearly weighted combination of a set of sample points. The weight is a function of inverse distance. The surface being interpolated should be that of a locationally dependent variable. This method assumes that the variable being mapped decreases in influence with distance from its sampled location.

For each surface/contour map created for Eureka Pb or As levels, the nearest 12 concentration values were used.

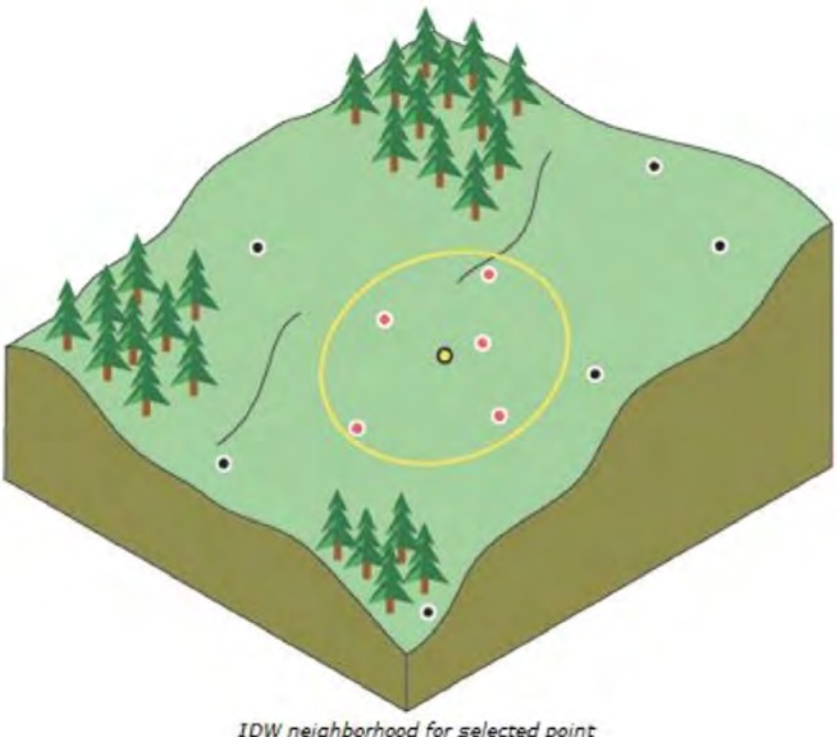
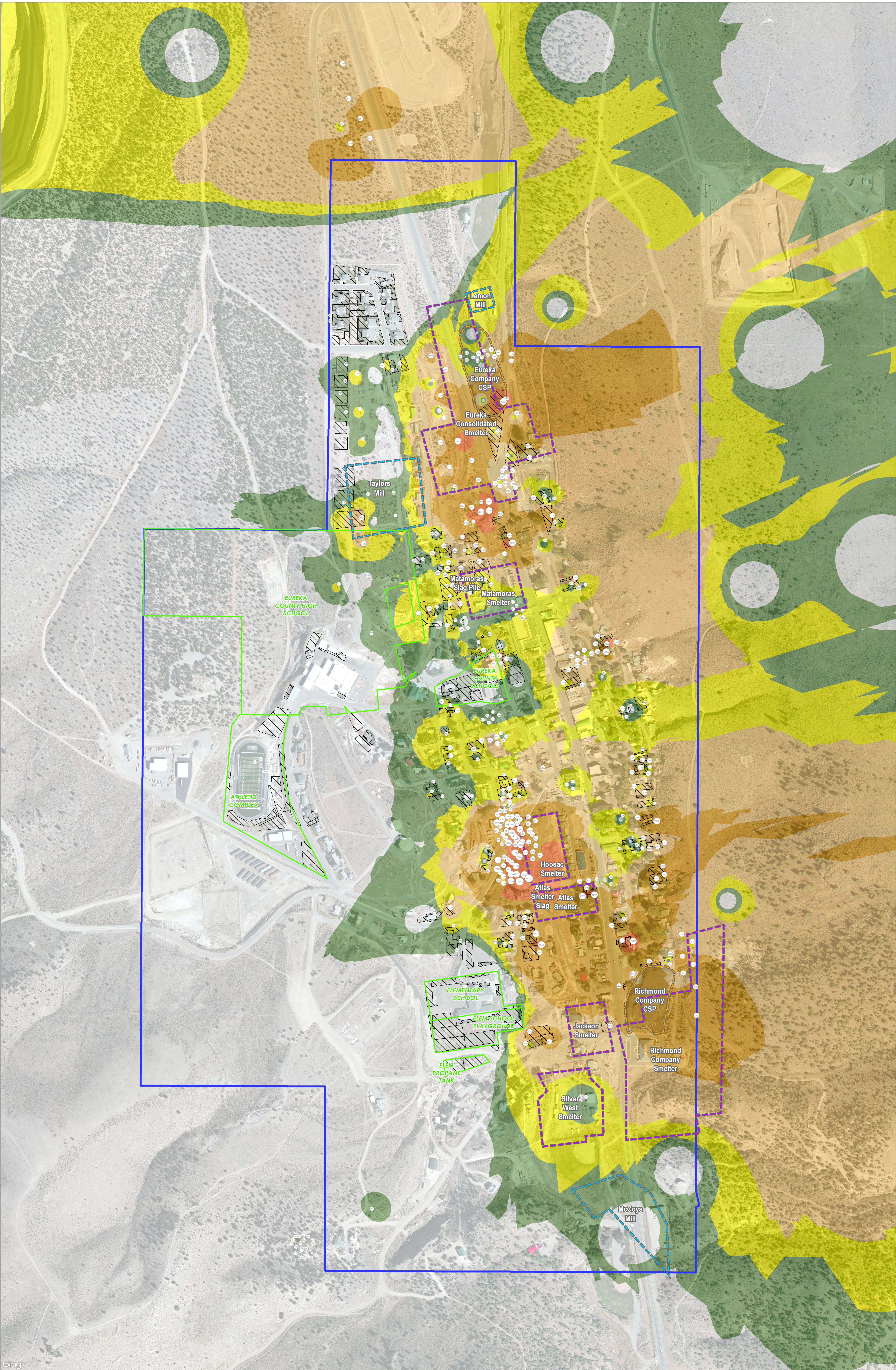


Figure 3
Town of Eureka
Iso-Concentration Map For Arsenic With Data Points
Eureka Smelter Sites
Eureka, Eureka County, Nevada



Legend

- Lead Concentration (mg/kg)

 - Non detect to 400
 - 400 to 800
 - 800 to 1,500
 - 1,500 to 3,000
 - 3,000 to 10,000
 - greater than 10,000
- Historical Facilities

 - Historic Mill Facility
 - Historic Smelter Site
 - Consolidated Slag Pile (CSP)
- Project Site

 - Eureka County School District Property
 - Sampled Areas (2012-2013)
 - Sample Concentration Value
- Levels of lead in soil are measured in units of milligrams per kilogram (mg/kg)

Surface Creation: GIS Analysis

ESRI ArcGIS v10.1 Inverse distance weighted (IDW) interpolation determines cell values using a linearly weighted combination of a set of sample points. The weight is a function of inverse distance. The surface being interpolated should be that of a locationally dependent variable. This method assumes that the variable being mapped decreases in influence with distance from its sampled location.

For each surface/contour map created for Eureka Pb or As levels, the nearest 12 concentration values were used.

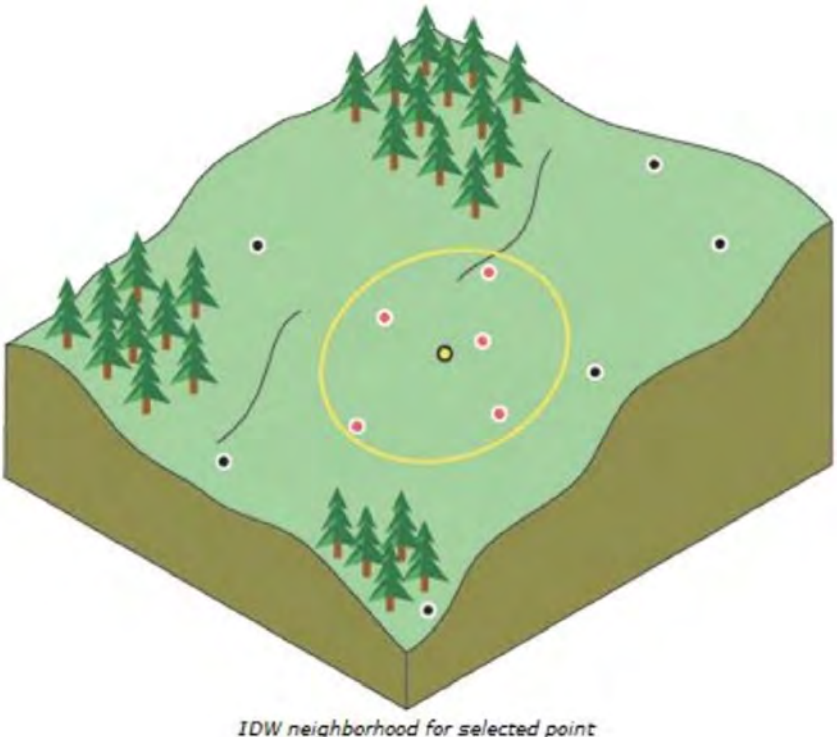
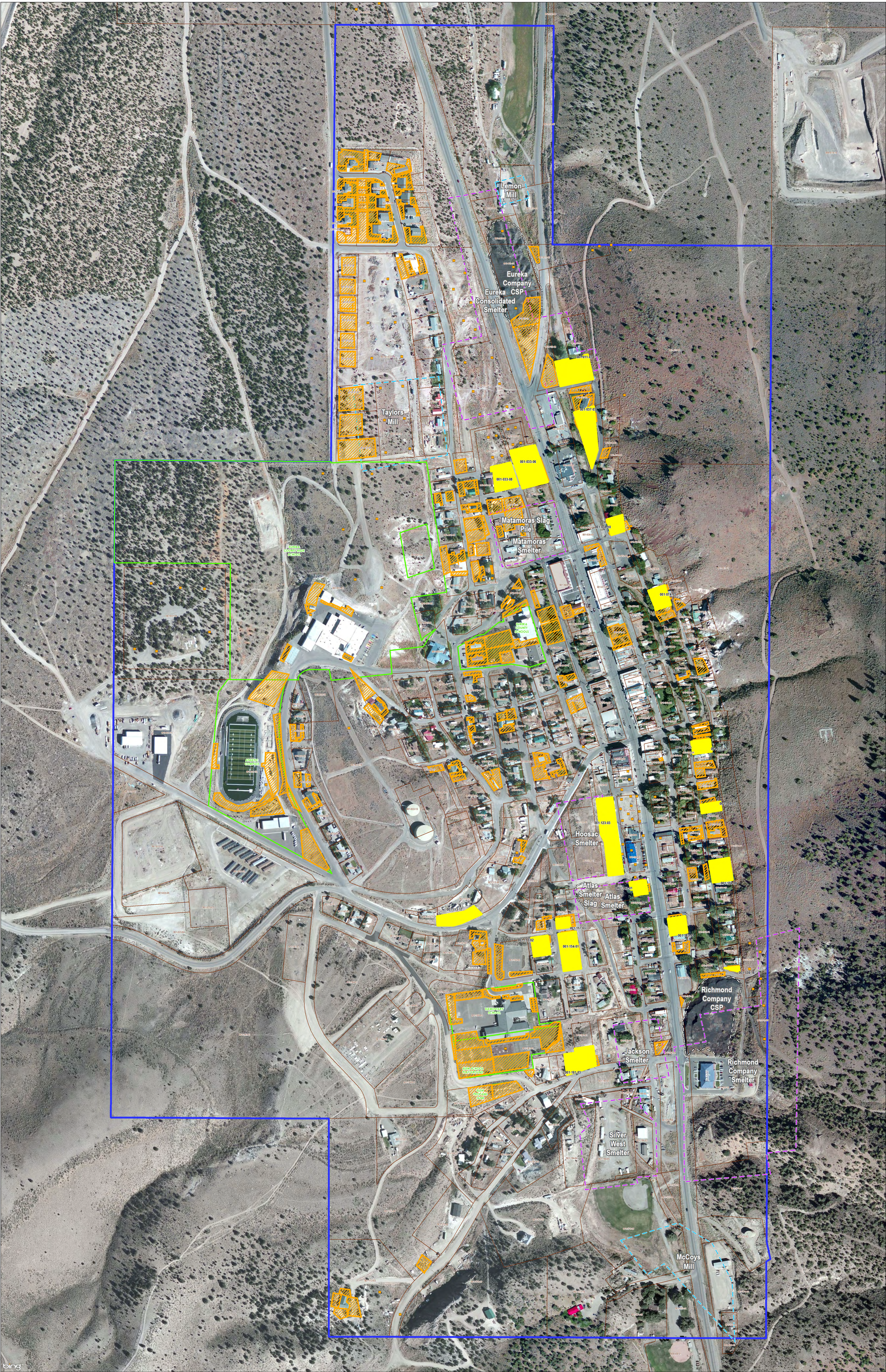


Figure 4
Town of Eureka
Iso-Concentration Map For Lead With Data Points
Eureka Smelter Sites
Eureka, Eureka County, Nevada



Legend

- Project Site

Parcel Boundary

Eureka County School District Property

Historical Facilities

Historic Mill Facility

Historic Smelter Site


Consolidated Slag Pile (CSP)

19 Residential Properties with Arsenic Above 600 mg/kg and Lead Above 3,000 mg/kg

Discrete Sampling Location

Decision Unit Area

"P" samples are point samples
"S" samples are composite samples
Pb: Lead Concentration
As: Arsenic Concentration

Levels of lead and arsenic in soil are measured in units of milligrams per kilogram (mg/kg)
- Figure 5
Town of Eureka
Elevated Contamination Location Map
Eureka Smelter Sites
Eureka, Eureka County, Nevada
-  ecology and environment, inc.
Global Specialists in the Environment
- 0 500
Feet
NORTH

Attachment 4

Confirmatory Summary of XRF to ICP Data

Laboratory Data Summary: Table 4

Correlation for Lead: Figure 6

Correlation for Arsenic: Figure 7

**Table 4 Laboratory Data Summary
With XRF Result
Eureka Smelter Sites Assessment
Eureka, Eureka County, Nevada**

Project No. EE-002693-2177

TDD No. TO2-09-12-04-0002

Sampling Location Identification Number	U.S. EPA Region 9 Laboratory Lead Results by EPA Method 6010B (mg/kg) sieved/cup	START XRF Lead Results by EPA 6200(mg/kg) sieved/cup	U.S. EPA Region 9 Laboratory Arsenic Results by EPA Method 6010B (mg/kg) sieved/cup	START XRF Arsenic Results by EPA 6200(mg/kg) sieved/cup
ESS-112303-G06-0	<u>67,000</u>	<u>63,500</u>	<u>13,000</u>	<u>18,000</u>
ESS-112202-G10-6	<u>35,000</u>	<u>30,000</u>	<u>6,400</u>	<u>6,200</u>
ESS-112202-G10-6	<u>38,000</u>	<u>32,000</u>	<u>6,400</u>	<u>6,700</u>
ESS-112601-G10-6	<u>19,000</u>	<u>17,000</u>	<u>3,600</u>	<u>3,600</u>
ESS-112601-G09-0	<u>12,000</u>	<u>11,500</u>	<u>2,200</u>	<u>2,000</u>
ESS-112303-S00-0	<u>10,000</u>	<u>10,000</u>	<u>1,800</u>	<u>1,650</u>
ESS-101101-G08-0	<u>8,800</u>	<u>9,150</u>	<u>1,900</u>	<u>1,750</u>
ESS-112201-G10-0	<u>6,900</u>	<u>6,200</u>	<u>660</u>	<u>360</u>
ESS-101101-G09-0	<u>6,700</u>	<u>6,800</u>	<u>1,500</u>	<u>1,300</u>
ESS-106512-S01-6	<u>4,800</u>	<u>4,600</u>	<u>1,500</u>	<u>1,000</u>
ESS-109401-S01-2	<u>3,500</u>	<u>3,300</u>	<u>770</u>	<u>600</u>
ESS-109401-S01-0	<u>2,500</u>	<u>2,600</u>	<u>530</u>	<u>420</u>
ESS-106512-S00-0	<u>2,400</u>	<u>2,400</u>	<u>360</u>	<u>250</u>
ESS-103702-S00-0	<u>1,600</u>	<u>1,600</u>	<u>310</u>	<u>200</u>
ESS-107504-S00-6	<u>1,100</u>	<u>1,100</u>	<u>200</u>	<u>190</u>
ESS-107504-S00-2	<u>950</u>	<u>930</u>	<u>180</u>	<u>140</u>
ESS-112601-G07-0	<u>850</u>	<u>940</u>	<u>180</u>	<u>130</u>
ESS-117204-S00-0	<u>840</u>	<u>690</u>	<u>200</u>	<u>120</u>
ESS-102217-S01-2	<u>690</u>	<u>720</u>	<u>140</u>	<u>120</u>
ESS-106405-S00-2	<u>600</u>	<u>610</u>	<u>110</u>	<u>67</u>
ESS-107101-S00-2	<u>500</u>	<u>530</u>	<u>100</u>	<u>75</u>
ESS-117203-P06-0	<u>500</u>	<u>460</u>	<u>89</u>	<u>56</u>
ESS-113501-S00-0	<u>460</u>	<u>500</u>	<u>86</u>	<u>60</u>
ESS-106405-S01-2	<u>450</u>	<u>400</u>	<u>120</u>	<u>79</u>
ESS-101230-S00-6	<u>440</u>	<u>470</u>	<u>130</u>	<u>110</u>
ESS-101230-S00-6	<u>870</u>	<u>460</u>	<u>130</u>	<u>100</u>
ESS-110704-S00-0	<u>440</u>	<u>460</u>	<u>99</u>	<u>86</u>
ESS-113501-S00-2	<u>400</u>	<u>440</u>	<u>84</u>	<u>63</u>
ESS-112202-G09-2	<u>390</u>	<u>370</u>	<u>100</u>	<u>69</u>
ESS-112202-G09-2	<u>350</u>	<u>340</u>	<u>97</u>	<u>72</u>
ESS-101101-G06-0	<u>300</u>	<u>260</u>	<u>86</u>	<u>60</u>
ESS-101101-G06-2	<u>270</u>	<u>250</u>	<u>80</u>	<u>56</u>
ESS-117203-S01-2	<u>180</u>	<u>200</u>	<u>42</u>	<u>30</u>
ESS-117203-S01-2	<u>180</u>	<u>200</u>	<u>40</u>	<u>31</u>
ESS-112202-G09-6	<u>150</u>	<u>150</u>	<u>63</u>	<u>47</u>
ESS-101101-G06-6	<u>120</u>	<u>110</u>	<u>56</u>	<u>46</u>
ESS-117203-S00-2	<u>91</u>	<u>98</u>	<u>35</u>	<u>24</u>
ESS-102206-S00-0	<u>40</u>	<u>56</u>	<u>19</u>	<u>16</u>
ESS-102206-S01-0	<u>35</u>	<u>49</u>	<u>14</u>	<u>10</u>

Notes:

mg/kg = milligrams per kilogram

U.S. EPA = United States Environmental Protection Agency

START = Superfund Technical Assessment and Response Team

XRF = X-Ray Fluorescence

SSL = Site Screening Level; the SSL for arsenic by XRF is 60 mg/kg and for lead by XRF is 400 mg/kg

Bold = Above the SSL

Bold, underlined and italics = Equal to or above 600 mg/kg for arsenic by XRF and 3,000 mg/kg for lead

Ecology and Environment Inc. 2013

Figure 6
XRF/ICP
Lead
Data Correlation

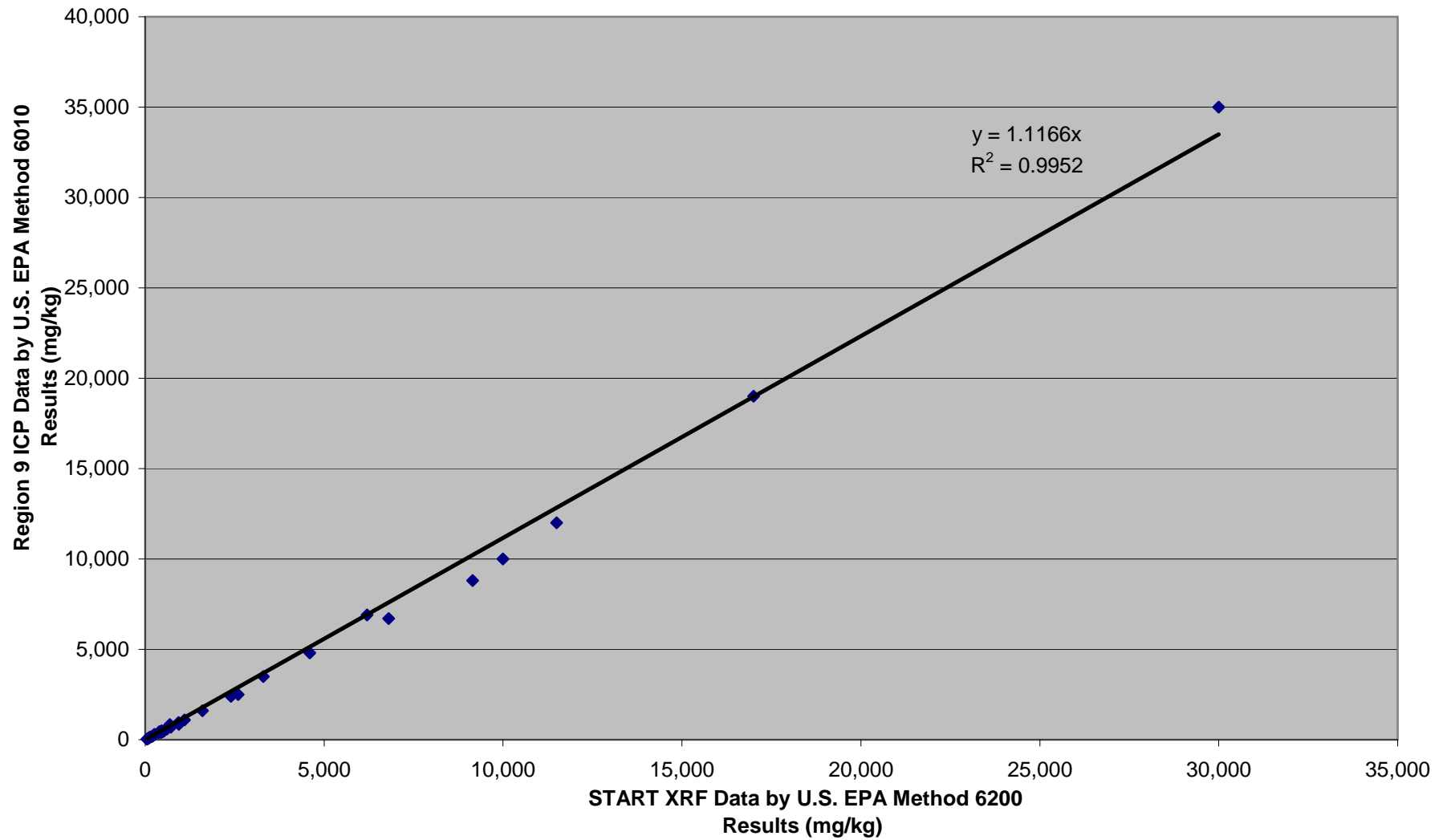
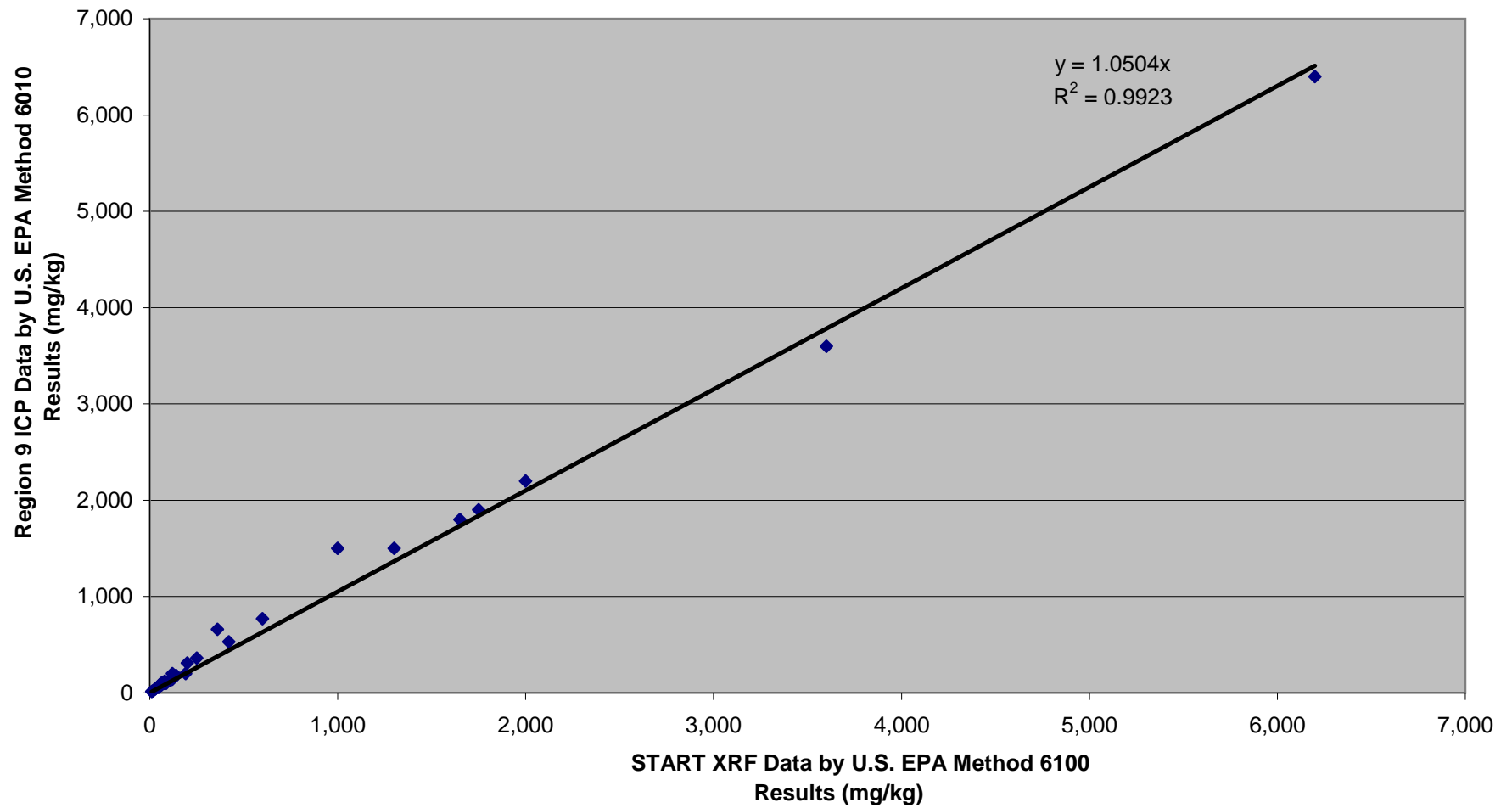


Figure 7
XRF/ICP
Arsenic
Data Correlation



Attachment 5

Laboratory Analysis and Data Validation Reports


ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: SDG 13155E, 1306008
Sampling Dates: 05/19/2013	Sample Matrix: Water
Analytical Method: CAM Metals / As & Pb	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: Howard Edwards

Date: 7/12/13
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	ESS-052913-EB	1306008-01
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☐ NR CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☒ Matrix Spike recoveries
- ☒ Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☐ NR ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample ESS-052913-EB was used for matrix spike and matrix spike duplicate analysis and the recoveries were within the control limits

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☐ Field Duplicates
☒ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: The RPDs of MS & MSD <25%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not required.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

- ☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Not applicable due to no detection of analytes.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

- ☒ Acceptable
☐ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

- ☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN, EUREKA SMELTER SITES ASSESSMENT, EUREKA COUNTY, NEVADA, SEPTEMBER 2012 (SAP).

The following data use objective was indicated in the SAP:

- Determine average concentrations of lead and arsenic in the shallow soil at locations within the Town of Eureka.
- Determine average concentrations of lead and arsenic in the roadway material in unpaved roads within the Town of Eureka.
- Document concentrations of lead and arsenic in the shallow soil in areas potentially downwind of Eureka.
- Document concentrations of lead and arsenic in the shallow creek sediments and in shallow soil in creek flood plain areas.
- Document concentrations of lead and arsenic in the creek surface water.
- Document background concentrations of lead and arsenic in the soil around Eureka.
- Document and determine the areal spatial distribution of arsenic and lead on large undeveloped properties within and around the Town of Eureka.
- Determine the vertical spatial distribution between shallow ground surface soil and the soil at depth between 2 to 12 inches below ground surface (bgs) for arsenic and lead on all properties.
- Determine whether unacceptable risks to human health or the environment are present at locations within the Town of Eureka due to elevated lead and arsenic concentrations.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE DEFINITIVE DATA AND TABLE 3-1 AND 3-2 OF THE SAP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVES. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13155E
Project Number: R13S77	75 Hawthorne Street	Reported: 07/10/13 10:07
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306008-01							Water - Sampled: 05/29/13 18:30	
Sample ID: ESS-052913-EB							Metals by EPA 200 Series Methods	
Antimony		ND	U	20	ug/L	B13F015	06/05/13	06/11/13 200.7/SOP505
Arsenic	REI	ND	U	20	"	"	"	06/30/13 200.7/SOP505
Barium		ND	U	10	"	"	"	06/11/13 200.7/SOP505
Beryllium		ND	U	0.50	"	"	"	200.7/SOP505
Cadmium		ND	U	5	"	"	"	200.7/SOP505
Chromium		ND	U	10	"	"	"	200.7/SOP505
Cobalt		ND	U	5	"	"	"	200.7/SOP505
Copper		ND	U	10	"	"	"	200.7/SOP505
Lead		ND	U	20	"	"	"	200.7/SOP505
Molybdenum		ND	U	20	"	"	"	200.7/SOP505
Nickel		ND	U	10	"	"	"	200.7/SOP505
Selenium		ND	U	20	"	"	"	200.7/SOP505
Silver	REI	ND	U	5	"	"	"	06/30/13 200.7/SOP505
Thallium		ND	U	20	"	"	"	06/11/13 200.7/SOP505
Vanadium		ND	U	4	"	"	"	200.7/SOP505
Zinc		ND	U	10	"	"	"	200.7/SOP505

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7/12/13



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13155E
Reported: 07/10/13 10:07

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	--------------------------	-----------------------	-------	----------------	------------------	------	----------------	-----	--------------

Batch B13F015 - 200 Series Digest - Metals by 200.7

Prepared: 06/05/13 Analyzed: 06/11/13
Metals by EPA 200 Series Methods - Quality Control

Blank (B13F015-BLK1)

Antimony	ND	U	20	ug/L
Arsenic	ND	U	20	"
Barium	ND	U	10	"
Beryllium	ND	U	0.5	"
Cadmium	ND	U	5	"
Chromium	ND	U	10	"
Cobalt	ND	U	5	"
Copper	ND	U	10	"
Lead	ND	U	20	"
Molybdenum	ND	U	20	"
Nickel	ND	U	10	"
Selenium	ND	U	20	"
Silver	ND	U	5	"
Thallium	ND	U	20	"
Vanadium	7.5		4	"
Zinc	ND	U	10	"

Blank (B13F015-BLK2)

Antimony	ND	U	20	ug/L
Arsenic	ND	U	20	"
Barium	ND	U	10	"
Beryllium	ND	U	0.5	"
Cadmium	ND	U	5	"
Chromium	ND	U	10	"
Cobalt	ND	U	5	"
Copper	ND	U	10	"
Lead	ND	U	20	"
Molybdenum	24		20	"
Nickel	ND	U	10	"
Selenium	ND	U	20	"
Silver	ND	U	5	"
Thallium	ND	U	20	"
Vanadium	ND	U	4	"
Zinc	ND	U	10	"

LCS (B13F015-BS1)

Antimony	868		20	ug/L	800	108	85-115	200
Barium	212		10	"	200	106	85-115	200
Beryllium	208		0.5	"	200	104	85-115	200
Boron	317		100	"	300	106	85-115	200
Cadmium	208		5	"	200	104	85-115	200
Calcium	1,070		100	"	1000	107	85-115	200
Chromium	397		10	"	400	99	85-115	200

[Signature] 7/12/13

CHAIN OF CUSTODY RECORD

[illegible]

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-3745

00010

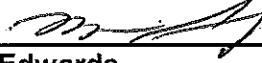
ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1306029 SDG 13162A
Sampling Dates: 06/05/2013	Sample Matrix: Soil
Analytical Method: As & Pb by EPA 6010C	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: Howard Edwards

Date: 7/26/13
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	A-19	1306029-01
2	A-21	1306029-02
3	A-20	1306029-03
4	A-22	1306029-04
5	A-28	1306029-05
6	A-31	1306029-06
7	A-50	1306029-07
8	A-03	1306029-08
9	A-103	1306029-09
10	A-66	1306029-10
11	A-67	1306029-11
12	A-55	1306029-12
13	A-63	1306029-13
14	A-61	1306029-14
15	A-52	1306029-15
16	B-76	1306029-16
17	B-84	1306029-17
18	B-87	1306029-18
19	A-87	1306029-19
20	EM-08	1306029-20
21	IS 3273	1306029-21

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- NR CRDL Standard results
- X Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- * Matrix Spike recoveries
- * Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- NR ICP Serial Dilution results
- NR Instrument Detection Limits
- NR ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- X Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	NO
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

Samples were received at the laboratory in XRF cups. The soil had already been dried and sieved when field XRF testing was performed. Results were reported "as received" at the laboratory.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits generated by the laboratory.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Samples A-28 and A-52 were used for matrix spike and matrix spike duplicate analysis. The recoveries Pb were outside of control limits. Qualification was not required for Pb since the amount of Pb present in both parent samples was greater than 4X the amount spiked

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Analyte (mg/kg)	A-03	A-103	RPD (%)
Arsenic	130	130	0
Lead	440	870	66*

*: RPD>35%

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Comments: Sample A-103 was a field duplicate of sample A-03 and the RPD of Pb was outside of control limit (>35%). The detected Pb results in A-03 and A-103 were qualified as estimated (J).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not required.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample A-22

As: (18.69 mg/L) (0.05L/1.0g) (2) = 1.869 mg/g= 1869 mg/kg.

Lab reported 1900 mg/kg.

Pb: (88.4 mg/L) (0.05L/1.0g) (2) = 8.84 mg/g= 8840 mg/kg.

Lab reported 8800 mg/kg.

Sample B-87

As: (2.06 mg/L) (0.05L/1.03g) (2) = 0.200 mg/g= 200 mg/kg.

Lab reported 200 mg/kg.

Pb: (8.605 mg/L) (0.05L/1.03g) (2) = 0.8354 mg/g= 835.4 mg/kg.

Lab reported 840 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN, EUREKA SMELTER SITES ASSESSMENT, EUREKA COUNTY, NEVADA, SEPTEMBER 2012 (SAP).

The following data use objective was indicated in the SAP:

- Determine average concentrations of lead and arsenic in the shallow soil at locations within the Town of Eureka.
- Determine average concentrations of lead and arsenic in the roadway material in unpaved roads within the Town of Eureka.
- Document concentrations of lead and arsenic in the shallow soil in areas potentially downwind of Eureka.
- Document concentrations of lead and arsenic in the shallow creek sediments and in shallow soil in creek flood plain areas.
- Document concentrations of lead and arsenic in the creek surface water.
- Document background concentrations of lead and arsenic in the soil around Eureka.
- Document and determine the areal spatial distribution of arsenic and lead on large undeveloped properties within and around the Town of Eureka.
- Determine the vertical spatial distribution between shallow ground surface soil and the soil at depth between 2 to 12 inches below ground surface (bgs) for arsenic and lead on all properties.
- Determine whether unacceptable risks to human health or the environment are present at locations within the Town of Eureka due to elevated lead and arsenic concentrations.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE DEFINITIVE DATA AND TABLE 3-1 AND 3-2 OF THE SAP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVES. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-01		Soil - Sampled: 06/05/13 00:00						
Sample ID: A-19		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	3.9		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	86		2	"	"	"	6010C/SOP503
Barium		440		5	"	"	07/03/13	6010C/SOP503
Beryllium		0.74		0.10	"	"	"	6010C/SOP503
Cadmium		1.7		0.50	"	"	"	6010C/SOP503
Chromium		12		1	"	"	"	6010C/SOP503
Cobalt		4.1		2	"	"	"	6010C/SOP503
Copper		17		4	"	"	"	6010C/SOP503
Lead		300		3	"	"	"	6010C/SOP503
Molybdenum		2.6	Cl, J	5	"	"	"	6010C/SOP503
Nickel		13		5	"	"	"	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	07/09/13	6010C/SOP503
Silver		1.1		1	"	"	07/03/13	6010C/SOP503
Thallium		ND	U	5	"	"	"	6010C/SOP503
Vanadium		26		2	"	"	"	6010C/SOP503
Zinc		140		8	"	"	"	6010C/SOP503
Lab ID: 1306029-02		Soil - Sampled: 06/05/13 00:00						
Sample ID: A-21		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	1.9	Cl, J	2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	56		2	"	"	"	6010C/SOP503
Barium		500		5	"	"	07/03/13	6010C/SOP503
Beryllium		0.75		0.10	"	"	"	6010C/SOP503
Cadmium		0.87		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		3.7		2	"	"	"	6010C/SOP503
Copper		12		4	"	"	"	6010C/SOP503
Lead		120		3	"	"	"	6010C/SOP503
Molybdenum		ND	U	5	"	"	"	6010C/SOP503
Nickel		11		5	"	"	"	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	07/09/13	6010C/SOP503
Silver		0.57	Cl, J	1	"	"	07/03/13	6010C/SOP503
Thallium		ND	U	5	"	"	"	6010C/SOP503
Vanadium		24		2	"	"	"	6010C/SOP503
Zinc		90		8	"	"	"	6010C/SOP503
Lab ID: 1306029-03		Soil - Sampled: 06/05/13 00:00						
Sample ID: A-20		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	3.2		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	80		2	"	"	"	6010C/SOP503
Barium		460		5	"	"	07/03/13	6010C/SOP503
Beryllium		0.76		0.10	"	"	"	6010C/SOP503

1306029 FINAL 07 19 13 1540

Mr. [Signature] 7/26/13



United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-03						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-20						Metals by EPA 6000/7000 Series Methods		
Cadmium		1.6		0.50	mg/kg wet	B13F062	06/13/13	07/03/13 6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		4.1		2	"	"	"	6010C/SOP503
Copper		14		4	"	"	"	6010C/SOP503
Lead		270		3	"	"	"	6010C/SOP503
Molybdenum		2.9	CI, J	5	"	"	"	6010C/SOP503
Nickel		12		5	"	"	"	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	07/09/13	6010C/SOP503
Silver		1.2		1	"	"	07/03/13	6010C/SOP503
Thallium		ND	U	5	"	"	"	6010C/SOP503
Vanadium		26		2	"	"	"	6010C/SOP503
Zinc		120		8	"	"	"	6010C/SOP503
Lab ID: 1306029-04						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-22						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	76		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	1,900		2	"	"	"	6010C/SOP503
Barium		380		5	"	"	07/03/13	6010C/SOP503
Beryllium		0.70		0.10	"	"	"	6010C/SOP503
Cadmium		54		0.50	"	"	"	6010C/SOP503
Chromium		13		1	"	"	"	6010C/SOP503
Cobalt		5.4		2	"	"	"	6010C/SOP503
Copper		110		4	"	"	"	6010C/SOP503
Lead	RE1	8,800		3	"	"	07/09/13	6010C/SOP503
Molybdenum		67		5	"	"	07/03/13	6010C/SOP503
Nickel		8.5		5	"	"	"	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	07/09/13	6010C/SOP503
Silver		25		1	"	"	07/03/13	6010C/SOP503
Thallium		ND	U	5	"	"	"	6010C/SOP503
Vanadium		40		2	"	"	"	6010C/SOP503
Zinc		1,600		8	"	"	"	6010C/SOP503
Lab ID: 1306029-05						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-28						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	59	J, Q4	2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	1,500		2	"	"	"	6010C/SOP503
Barium		330		5	"	"	07/03/13	6010C/SOP503
Beryllium		0.78		0.10	"	"	"	6010C/SOP503
Cadmium		44		0.50	"	"	"	6010C/SOP503
Chromium		15		1	"	"	"	6010C/SOP503
Cobalt		6.5		2	"	"	"	6010C/SOP503
Copper		98		4	"	"	"	6010C/SOP503



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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-05							Soil - Sampled: 06/05/13 00:00	
Sample ID: A-28							Metals by EPA 6000/7000 Series Methods	
Lead	RE1	6,700		3	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Molybdenum		45		5	"	"	07/03/13	6010C/SOP503
Nickel	RE1	9.2		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		18		1	"	"	07/03/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		40		2	"	"	07/03/13	6010C/SOP503
Zinc		1,200		8	"	"	"	6010C/SOP503

Lab ID: 1306029-06							Soil - Sampled: 06/05/13 00:00	
Sample ID: A-31							Metals by EPA 6000/7000 Series Methods	
Antimony	RE1	6.4		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	100		2	"	"	"	6010C/SOP503
Barium		340		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.48		0.10	"	"	"	6010C/SOP503
Cadmium		2.0		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		3.9		2	"	"	"	6010C/SOP503
Copper		30		4	"	"	"	6010C/SOP503
Lead	RE1	500		3	"	"	07/09/13	6010C/SOP503
Molybdenum		5.8		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	12		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		2.0		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		29		2	"	"	07/04/13	6010C/SOP503
Zinc		210		8	"	"	"	6010C/SOP503

Lab ID: 1306029-07							Soil - Sampled: 06/05/13 00:00	
Sample ID: A-50							Metals by EPA 6000/7000 Series Methods	
Antimony	RE1	56		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	1,500		2	"	"	"	6010C/SOP503
Barium		710		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.60		0.10	"	"	"	6010C/SOP503
Cadmium		7.8		0.50	"	"	"	6010C/SOP503
Chromium		17		1	"	"	"	6010C/SOP503
Cobalt		3.6		2	"	"	"	6010C/SOP503
Copper		130		4	"	"	"	6010C/SOP503
Lead	RE1	4,800		3	"	"	07/09/13	6010C/SOP503
Molybdenum		62		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	13		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162A
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:40
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-07						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-50						Metals by EPA 6000/7000 Series Methods		
Silver		15		1	mg/kg wet	B13F062	06/13/13	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		26		2	"	"	"	07/04/13 6010C/SOP503
Zinc		970		8	"	"	"	6010C/SOP503
Lab ID: 1306029-08						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-03						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	4.1		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	130		2	"	"	"	6010C/SOP503
Barium		230		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.67		0.10	"	"	"	6010C/SOP503
Cadmium		4.5		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		4.4		2	"	"	"	6010C/SOP503
Copper		16		4	"	"	"	6010C/SOP503
Lead	RE1	440	J	3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		3.3	Cl, J	5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	11		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.2		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		30		2	"	"	"	07/04/13 6010C/SOP503
Zinc		150		8	"	"	"	6010C/SOP503
Lab ID: 1306029-09						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-103						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	5.6		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	130		2	"	"	"	6010C/SOP503
Barium		240		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.56		0.10	"	"	"	6010C/SOP503
Cadmium		4.3		0.50	"	"	"	6010C/SOP503
Chromium		6.2		1	"	"	"	6010C/SOP503
Cobalt		2.2		2	"	"	"	6010C/SOP503
Copper		20		4	"	"	"	6010C/SOP503
Lead	RE1	870	J	3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		3.3	Cl, J	5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	4.4	Cl, J	5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		2.1		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		14		2	"	"	"	07/04/13 6010C/SOP503
Zinc		270		8	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

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Emergency Response Section
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SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
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Lab ID: 1306029-10

Soil - Sampled: 06/05/13 00:00

Sample ID: A-66

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	4.0		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	86		2	"	"	"	6010C/SOP503
Barium		410		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.45		0.10	"	"	"	6010C/SOP503
Cadmium		3.0		0.50	"	"	"	6010C/SOP503
Chromium		8.4		1	"	"	"	6010C/SOP503
Cobalt		3.2		2	"	"	"	6010C/SOP503
Copper		21		4	"	"	"	6010C/SOP503
Lead	RE1	460		3	"	"	07/09/13	6010C/SOP503
Molybdenum		10		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	7.3		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.6		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	2.5	Cl, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		22		2	"	"	07/04/13	6010C/SOP503
Zinc		250		8	"	"	"	6010C/SOP503

Lab ID: 1306029-11

Soil - Sampled: 06/05/13 00:00

Sample ID: A-67

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	3.9		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	84		2	"	"	"	6010C/SOP503
Barium		890		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.51		0.10	"	"	"	6010C/SOP503
Cadmium		2.7		0.50	"	"	"	6010C/SOP503
Chromium		8.5		1	"	"	"	6010C/SOP503
Cobalt		3.2		2	"	"	"	6010C/SOP503
Copper		19		4	"	"	"	6010C/SOP503
Lead	RE1	400		3	"	"	07/09/13	6010C/SOP503
Molybdenum		8.8		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	8.5		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.5		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	3.1	Cl, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		23		2	"	"	07/04/13	6010C/SOP503
Zinc		200		8	"	"	"	6010C/SOP503

Lab ID: 1306029-12

Soil - Sampled: 06/05/13 00:00

Sample ID: A-55

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	3.2		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	120		2	"	"	"	6010C/SOP503
Barium		310		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.73		0.10	"	"	"	6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
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Lab ID: 1306029-12

Soil - Sampled: 06/05/13 00:00

Sample ID: A-55

Metals by EPA 6000/7000 Series Methods								
Cadmium		4.5		0.50	mg/kg wet	B13F062	06/13/13	07/04/13 6010C/SOP503
Chromium		14		1	"	"	"	6010C/SOP503
Cobalt		5.6		2	"	"	"	6010C/SOP503
Copper		21		4	"	"	"	6010C/SOP503
Lead	RE1	450		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		3.0	C1, J	5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	14		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.7		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		25		2	"	"	"	07/04/13 6010C/SOP503
Zinc		240		8	"	"	"	6010C/SOP503

Lab ID: 1306029-13

Soil - Sampled: 06/05/13 00:00

Sample ID: A-63

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	4.4		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	99		2	"	"	"	6010C/SOP503
Barium		420		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.44		0.10	"	"	"	6010C/SOP503
Cadmium		2.9		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		3.4		2	"	"	"	6010C/SOP503
Copper		26		4	"	"	"	6010C/SOP503
Lead	RE1	440		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		7.0		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	10		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.6		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		24		2	"	"	"	07/04/13 6010C/SOP503
Zinc		250		8	"	"	"	6010C/SOP503

Lab ID: 1306029-14

Soil - Sampled: 06/05/13 00:00

Sample ID: A-61

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	39		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	770		2	"	"	"	6010C/SOP503
Barium		250		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.87		0.10	"	"	"	6010C/SOP503
Cadmium		20		0.50	"	"	"	6010C/SOP503
Chromium		9.4		1	"	"	"	6010C/SOP503
Cobalt		3.8		2	"	"	"	6010C/SOP503
Copper		60		4	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-14						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-61						Metals by EPA 6000/7000 Series Methods		
Lead	RE1	3,500		3	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Molybdenum		14		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	8.0		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		10		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		25		2	"	"	07/04/13	6010C/SOP503
Zinc		800		8	"	"	"	6010C/SOP503

Lab ID: 1306029-15						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-52						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	6.9	I, Q4	2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	110		2	"	"	"	6010C/SOP503
Barium		280		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.76		0.10	"	"	"	6010C/SOP503
Cadmium		3.4		0.50	"	"	"	6010C/SOP503
Chromium		10		1	"	"	"	6010C/SOP503
Cobalt		3.7		2	"	"	"	6010C/SOP503
Copper		24		4	"	"	"	6010C/SOP503
Lead	RE1	600		3	"	"	07/09/13	6010C/SOP503
Molybdenum		5.2		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	9.3		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.9		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		24		2	"	"	07/04/13	6010C/SOP503
Zinc		240		8	"	"	"	6010C/SOP503

Lab ID: 1306029-16						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-76						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	6.4		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	140		2	"	"	"	6010C/SOP503
Barium		270		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.79		0.10	"	"	"	6010C/SOP503
Cadmium		4.4		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		3.9		2	"	"	"	6010C/SOP503
Copper		25		4	"	"	"	6010C/SOP503
Lead	RE1	690		3	"	"	07/09/13	6010C/SOP503
Molybdenum		7.0		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	9.4		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelmann
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
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Lab ID: 1306029-16

Soil - Sampled: 06/05/13 00:00

Sample ID: B-76

Metals by EPA 6000/7000 Series Methods

Silver		2.1		1	mg/kg wet	B13F062	06/13/13	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		27		2	"	"	"	07/04/13 6010C/SOP503
Zinc		260		8	"	"	"	6010C/SOP503

Lab ID: 1306029-17

Soil - Sampled: 06/05/13 00:00

Sample ID: B-84

Metals by EPA 6000/7000 Series Methods

Antimony	RE1	ND	U	2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	14		2	"	"	"	6010C/SOP503
Barium		220		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.86		0.10	"	"	"	6010C/SOP503
Cadmium		0.43	Cl, J	0.50	"	"	"	6010C/SOP503
Chromium		8.3		1	"	"	"	6010C/SOP503
Cobalt		3.7		2	"	"	"	6010C/SOP503
Copper		11		4	"	"	"	6010C/SOP503
Lead	RE1	35		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		ND	U	5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	6.8		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		ND	U	1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		28		2	"	"	"	07/04/13 6010C/SOP503
Zinc		90		8	"	"	"	6010C/SOP503

Lab ID: 1306029-18

Soil - Sampled: 06/05/13 00:00

Sample ID: B-87

Metals by EPA 6000/7000 Series Methods

Antimony	RE1	8.8		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	200		2	"	"	"	6010C/SOP503
Barium		350		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.69		0.10	"	"	"	6010C/SOP503
Cadmium		3.4		0.50	"	"	"	6010C/SOP503
Chromium		14		1	"	"	"	6010C/SOP503
Cobalt		4.2		2	"	"	"	6010C/SOP503
Copper		32		4	"	"	"	6010C/SOP503
Lead	RE1	840		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		28		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	12		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		3.0		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		28		2	"	"	"	07/04/13 6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-18 Soil - Sampled: 06/05/13 00:00								
Sample ID: B-87 Metals by EPA 6000/7000 Series Methods								
Zinc		370		8	mg/kg wet	B13F062	06/13/13 07/04/13	6010C/SOP503
Lab ID: 1306029-19 Soil - Sampled: 06/05/13 00:00								
Sample ID: A-87 Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	6.0		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	89		2	"	"	"	6010C/SOP503
Barium		170		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.56		0.10	"	"	"	6010C/SOP503
Cadmium		2.1		0.50	"	"	"	6010C/SOP503
Chromium		9.0		1	"	"	"	6010C/SOP503
Cobalt		3.1		2	"	"	"	6010C/SOP503
Copper		45		4	"	"	"	6010C/SOP503
Lead	RE1	500		3	"	"	07/09/13	6010C/SOP503
Molybdenum		3.4	Cl, J	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	6.4		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.4		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		17		2	"	"	07/04/13	6010C/SOP503
Zinc		210		8	"	"	"	6010C/SOP503
Lab ID: 1306029-20 Soil - Sampled: 06/05/13 00:00								
Sample ID: EM-08 Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	3.7		2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	83		2	"	"	"	6010C/SOP503
Barium		250		5	"	"	07/04/13	6010C/SOP503
Beryllium		1.1		0.10	"	"	"	6010C/SOP503
Cadmium		2.7		0.50	"	"	"	6010C/SOP503
Chromium		13		1	"	"	"	6010C/SOP503
Cobalt		5.8		2	"	"	"	6010C/SOP503
Copper		20		4	"	"	"	6010C/SOP503
Lead	RE1	510		3	"	"	07/09/13	6010C/SOP503
Molybdenum		3.9	Cl, J	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	10		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.3		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		32		2	"	"	07/04/13	6010C/SOP503
Zinc		150		8	"	"	"	6010C/SOP503
Lab ID: 1306029-21 Soil - Sampled: 06/05/13 00:00								
Sample ID: IS 3273 Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	1.7	Cl, J	2	mg/kg wet	B13F062	06/13/13 07/09/13	6010C/SOP503

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United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162A
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:40
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306029-21								Soil - Sampled: 06/05/13 00:00
Sample ID: IS 3273								Metals by EPA 6000/7000 Series Methods
Arsenic	RE1	71		2	mg/kg wet	B13F062	06/13/13	07/09/13 6010C/SOP503
Barium		170		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.07	C1, J	0.10	"	"	"	6010C/SOP503
Cadmium		1.1		0.50	"	"	"	6010C/SOP503
Chromium		3.9		1	"	"	"	6010C/SOP503
Cobalt		5.1		2	"	"	"	6010C/SOP503
Copper		580		4	"	"	"	6010C/SOP503
Lead	RE1	820		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		6.3		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	4.8	C1, J	5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		ND	U	1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		170		2	"	"	"	07/04/13 6010C/SOP503
Zinc		930		8	"	"	"	6010C/SOP503

md 7/26/13



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Region 9 Laboratory

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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162A
Reported: 07/19/13 15:40

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC.	%REC Limits	RPD	RPD Limit
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Batch B13F062 - 3050B Std Acid Dig - Metals by 6010

Prepared: 06/13/13 Analyzed: 07/03/13
Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13F062-BLK1)

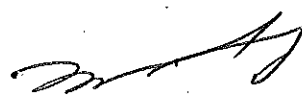
Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						
Cobalt	ND	U		2 "						
Copper	ND	U		4 "						
Lead	ND	U		3 "						
Molybdenum	ND	U		5 "						
Nickel	ND	U		5 "						
Selenium	ND	U		2 "						
Silver	ND	U		1 "						
Thallium	ND	U		5 "						
Vanadium	ND	U		2 "						
Zinc	ND	U		8 "						

Blank (B13F062-BLK2)

Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						
Cobalt	ND	U		2 "						
Copper	ND	U		4 "						
Lead	ND	U		3 "						
Molybdenum	ND	U		5 "						
Nickel	ND	U		5 "						
Selenium	ND	U		2 "						
Silver	ND	U		1 "						
Thallium	ND	U		5 "						
Vanadium	ND	U		2 "						
Zinc	ND	U		8 "						

Blank (B13F062-BLK3)

Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						


7/26/13



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Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162A
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:40
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13F062 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 06/13/13 Analyzed: 07/09/13
Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13F062-BLK3)

Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

Blank (B13F062-BLK4)

Antimony	ND	U		2 mg/kg wet
Arsenic	ND	U		2 "
Barium	ND	U		5 "
Beryllium	ND	U		0.1 "
Cadmium	ND	U		0.5 "
Chromium	ND	U		1 "
Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

mf 7/26/13

Matrix Spike (B13F062-MS1)

Source: 1306029-05

Barium	727			5 mg/kg wet	396	332	100	75-125	20
Beryllium	10.3			0.1 "	9.90	0.776	96	75-125	20
Cadmium	54	Q10		0.5 "	9.90	44.1	100	75-125	20
Chromium	54.9			1 "	39.6	14.6	102	75-125	20
Cobalt	95.7			2 "	99.0	6.54	90	75-125	20
Copper	144			4 "	49.5	97.6	94	75-125	20
Molybdenum	122			5 "	99.0	45	78	75-125	20
Silver	28.3			1 "	9.90	18.2	102	75-125	20
Vanadium	136			2 "	99.0	39.6	98	75-125	20
Zinc	1,350	Q10		8 "	99.0	1,230	118	75-125	20

Matrix Spike (B13F062-MS2)

Source: 1306029-15

CHAIN OF CUSTODY RECORD

PROJECT NO. R13577		PROJECT NAME Eureka		NO. OF CONTAINERS XRF CUPS		REMARKS
SAMPLERS: (Signature) Nardine S. Galdames		SAMPLE IDENTIFICATION				
DATE	TIME	MATRIX	Q7A8	Q7A9		
6/5/2013		SO			1	Pb mg/kg As mg/kg 260 60
					1	110 46
					2	250 60
					1	9150 1750
					1	6800 1300
					1	530 72
					1	4600 1000
					1	470 110
					2	460 100
					1	610 67
					1	440 63
					1	400 79
					2	470 80
					1	3300 600
					1	610 67
Relinquished by: (Signature) [Signature]		Date / Time 6/7/13 1536		Received by: (Signature) [Signature]		Date / Time
Relinquished by: (Signature) [Signature]		Date / Time		Received by: (Signature) [Signature]		Date / Time
Received for Laboratory By: (Signature) [Signature]		Date / Time 6/7/13 1536		Seeds Intact (Y/N) Hand delivered		Conditions / Remarks

Distribution: Original Accompanies Shipment; Copy to Regional Field Files

9-3021 Box 1

6/7/13

CHAIN OF CUSTODY RECORD

REQ. NO.	PROJECT NAME	SAMPLERS: (Signature)				SAMPLE IDENTIFICATION		NO. OF CONTAINERS	REMARKS
DATE	TIME	MATRIX	COMP	GRAB					
13577	Eureka								
6-5-D		SO	X			B-76	1		
						B-84	1		
						B-87	1		
						B-88 A-87	1		
						EM-08	1		
						IS 3273	1		
						A-85	1		
						B-26	1		
						A-44	1		
						A-04	1		
						A-43	1		
						B-36	2		
<div> <div> <div>Received by: (Signature)</div> <div>Date / Time</div> </div> <div> <div>Relinquished by: (Signature)</div> <div>Date / Time</div> </div> </div>									Received by: (Signature)
<div> <div>Received by: (Signature)</div> <div>Date / Time</div> </div>									Received by: (Signature)
<div> <div>Received for testimony by: (Signature)</div> <div>Date / Time</div> </div>									Received by: (Signature)

Distribution: Original Accompanies Shipment: Copy to Coordinator Field Files

9-3016 Box 2

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1306030 SDG 13162B
Sampling Dates: 06/05/2013	Sample Matrix: Soil
Analytical Method: Aa & Pb by EPA 6010C	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: Howard Edwards

Date: 7/26/13
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	A-85	1306030-01
2	B-26	1306030-02
3	A-44	1306030-03
4	A-04	1306030-04
5	A-43	1306030-05
6	B-36	1306030-06
7	A-45	1306030-07
8	A-60	1306030-08
9	A-56	1306030-09
10	A-76	1306030-10
11	A-176	1306030-11
12	B-13	1306030-12
13	B-25	1306030-13
14	B-125	1306030-14
15	B-32	1306030-15
16	B-45	1306030-16
17	B-29	1306030-17
18	B-129	1306030-18
19	B-39	1306030-19
20	B-60	1306030-20
21	B-81	1306030-21

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☐ NR CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ * Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☐ NR ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

Samples were received at the laboratory in XRF cups. The soil had already been dried and sieved when field XRF testing was performed. Results were reported "as received" at the laboratory.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits generated by the laboratory.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Samples A-76 and B-60 were used for matrix spike and matrix spike duplicate analysis. The recoveries of Pb were outside of control limits. Qualification was not required for Pb since the amount of Pb present in both parent samples was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Analyte (mg/kg)	A-76	A-176	RPD (%)
Arsenic	42	40	5
Lead	180	180	0

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Comments: Sample A-176 was a field duplicate of sample A-76 and the RPDs were within the control limit (<35%).

Analyte (mg/kg)	B-25	B-125	RPD (%)
Arsenic	100	97	3
Lead	390	350	11

Comments: Sample B-125 was a field duplicate of sample B-25 and the RPDs were within the control limit (<35%).

Analyte (mg/kg)	B-29	B-129	RPD (%)
Arsenic	6400	6400	0
Lead	35000	38000	8

Comments: Sample B-129 was a field duplicate of sample B-29 and the RPDs were within the control limit (<35%).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not required.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample B-36

As: (36.09 mg/L) (0.05L/1.0g) (2) = 3.609 mg/g= 3609 mg/kg.

Lab reported 3600 mg/kg.

Pb: (38.63 mg/L) (0.05L/1.0g) (10) = 19.315 mg/g= 19315 mg/kg.

Lab reported 19000 mg/kg.

Sample A-56

As: (36.41 mg/L) (0.05L/1.02g) (2) = 3.5696 mg/g= 3569.6 mg/kg.

Lab reported 3600 mg/kg.

Pb: (37.41 mg/L) (0.05L/1.02g) (10) = 18.338 mg/g= 18338 mg/kg.

Lab reported 18000 mg/kg.

Sample B-29

As: (63.55 mg/L) (0.05L/1.0g) (2) = 6.355 mg/g= 6355 mg/kg.

Lab reported 6400 mg/kg.

Pb: (70.81 mg/L) (0.05L/1.0g) (10) = 35.405 mg/g= 35405 mg/kg.

Lab reported 35000 mg/kg.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☒ Acceptable
☐ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Conformation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN, EUREKA SMELTER SITES ASSESSMENT, EUREKA COUNTY, NEVADA, SEPTEMBER 2012 (SAP).

The following data use objective was indicated in the SAP:

- Determine average concentrations of lead and arsenic in the shallow soil at locations within the Town of Eureka.
- Determine average concentrations of lead and arsenic in the roadway material in unpaved roads within the Town of Eureka.
- Document concentrations of lead and arsenic in the shallow soil in areas potentially downwind of Eureka.
- Document concentrations of lead and arsenic in the shallow creek sediments and in shallow soil in creek flood plain areas.
- Document concentrations of lead and arsenic in the creek surface water.
- Document background concentrations of lead and arsenic in the soil around Eureka.
- Document and determine the areal spatial distribution of arsenic and lead on large undeveloped properties within and around the Town of Eureka.
- Determine the vertical spatial distribution between shallow ground surface soil and the soil at depth between 2 to 12 inches below ground surface (bgs) for arsenic and lead on all properties.
- Determine whether unacceptable risks to human health or the environment are present at locations within the Town of Eureka due to elevated lead and arsenic concentrations.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE DEFINITIVE DATA AND TABLE 3-1 AND 3-2 OF THE SAP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVES. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: The laboratory was requested to re-analyze sample A-56 due to a big difference between XRF screening data and definitive data.

Resolution: The metals data of sample A-56 from this SDG was void and re-analysis to follow.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-01						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-85						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	2.7		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	35		2	"	"	"	6010C/SOP503
Barium		180		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.87		0.10	"	"	"	6010C/SOP503
Cadmium		0.59		0.50	"	"	"	6010C/SOP503
Chromium		2.8		1	"	"	"	6010C/SOP503
Cobalt		2.9		2	"	"	"	6010C/SOP503
Copper		7.6		4	"	"	"	6010C/SOP503
Lead	RE1	91		3	"	"	07/09/13	6010C/SOP503
Molybdenum		2.9	C1, J	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	3.6	C1, J	5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		ND	U	1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		18		2	"	"	07/04/13	6010C/SOP503
Zinc		61		8	"	"	"	6010C/SOP503
Lab ID: 1306030-02						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-26						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	9.3		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	63		2	"	"	"	6010C/SOP503
Barium		160		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.83		0.10	"	"	"	6010C/SOP503
Cadmium		1.2		0.50	"	"	"	6010C/SOP503
Chromium		13		1	"	"	"	6010C/SOP503
Cobalt		3.5		2	"	"	"	6010C/SOP503
Copper		14		4	"	"	"	6010C/SOP503
Lead	RE1	150		3	"	"	07/09/13	6010C/SOP503
Molybdenum		ND	U	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	12		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		1.9		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	4.9	C1, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		22		2	"	"	07/04/13	6010C/SOP503
Zinc		200		8	"	"	"	6010C/SOP503
Lab ID: 1306030-03						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-44						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	12		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	200		2	"	"	"	6010C/SOP503
Barium		170		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.63		0.10	"	"	"	6010C/SOP503

m 7/26/13



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelmann	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
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Lab ID: 1306030-03 Soil - Sampled: 06/05/13 00:00

Sample ID: A-44								Metals by EPA 6000/7000 Series Methods
Cadmium		6.4		0.50	mg/kg wet	B13F063	06/13/13	07/04/13 6010C/SOP503
Chromium		7.5		1	"	"	"	6010C/SOP503
Cobalt		2.3		2	"	"	"	6010C/SOP503
Copper		22		4	"	"	"	6010C/SOP503
Lead	RE1	1,100		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		4.8	Cl, J	5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	3.8	Cl, J	5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		2.4		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		14		2	"	"	"	07/04/13 6010C/SOP503
Zinc		270		8	"	"	"	6010C/SOP503

Lab ID: 1306030-04 Soil - Sampled: 06/05/13 00:00

Sample ID: A-04								Metals by EPA 6000/7000 Series Methods
Antimony	RE1	19		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	310		2	"	"	"	6010C/SOP503
Barium		310		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.65		0.10	"	"	"	6010C/SOP503
Cadmium		8.6		0.50	"	"	"	6010C/SOP503
Chromium		12		1	"	"	"	6010C/SOP503
Cobalt		4.0		2	"	"	"	6010C/SOP503
Copper		35		4	"	"	"	6010C/SOP503
Lead	RE1	1,600		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		17		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	9.1		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		4.5		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		28		2	"	"	"	07/04/13 6010C/SOP503
Zinc		440		8	"	"	"	6010C/SOP503

Lab ID: 1306030-05 Soil - Sampled: 06/05/13 00:00

Sample ID: A-43								Metals by EPA 6000/7000 Series Methods
Antimony	RE1	10		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	180		2	"	"	"	6010C/SOP503
Barium		250		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.58		0.10	"	"	"	6010C/SOP503
Cadmium		6.2		0.50	"	"	"	6010C/SOP503
Chromium		7.2		1	"	"	"	6010C/SOP503
Cobalt		2.6		2	"	"	"	6010C/SOP503
Copper		22		4	"	"	"	6010C/SOP503

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United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-05						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-43						Metals by EPA 6000/7000 Series Methods		
Lead	RE1	950		3	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Molybdenum		5.8		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	5.3		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		2.5		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		19		2	"	"	07/04/13	6010C/SOP503
Zinc		240		8	"	"	"	6010C/SOP503
Lab ID: 1306030-06						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-36						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	310		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	3,600		2	"	"	"	6010C/SOP503
Barium		330		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.87		0.10	"	"	"	6010C/SOP503
Cadmium		72		0.50	"	"	"	6010C/SOP503
Chromium		9.0		1	"	"	"	6010C/SOP503
Cobalt		3.8		2	"	"	"	6010C/SOP503
Copper		210		4	"	"	"	6010C/SOP503
Lead	RE2	19,000		15	"	"	07/09/13	6010C/SOP503
Molybdenum		130		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	6.7		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		48		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	3.5	Cl, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		29		2	"	"	07/04/13	6010C/SOP503
Zinc		2,600		8	"	"	"	6010C/SOP503
Lab ID: 1306030-07						Soil - Sampled: 06/05/13 00:00		
Sample ID: A 45						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	46		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	360		2	"	"	"	6010C/SOP503
Barium		280		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.68		0.10	"	"	"	6010C/SOP503
Cadmium		8.8		0.50	"	"	"	6010C/SOP503
Chromium		12		1	"	"	"	6010C/SOP503
Cobalt		3.1		2	"	"	"	6010C/SOP503
Copper		42		4	"	"	"	6010C/SOP503
Lead	RE1	2,400		3	"	"	07/09/13	6010C/SOP503
Molybdenum		11		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	7.0		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503

[Signature] 7/26/13



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelmann	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-07						Soil - Sampled: 06/05/13 00:00		
Sample ID: A 45						Metals by EPA 6000/7000 Series Methods		
Silver		7.1		1	mg/kg wet	B13F063	06/13/13	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		20		2	"	"	"	07/04/13 6010C/SOP503
Zinc		490		8	"	"	"	6010C/SOP503
Lab ID: 1306030-08						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-60						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	38		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	530		2	"	"	"	6010C/SOP503
Barium		260		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.77		0.10	"	"	"	6010C/SOP503
Cadmium		14		0.50	"	"	"	6010C/SOP503
Chromium		9.8		1	"	"	"	6010C/SOP503
Cobalt		3.5		2	"	"	"	6010C/SOP503
Copper		53		4	"	"	"	6010C/SOP503
Lead	RE1	2,500		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		17		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	7.1		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		7.5		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		23		2	"	"	"	07/04/13 6010C/SOP503
Zinc		800		8	"	"	"	6010C/SOP503
Lab ID: 1306030-09						Soil - Sampled: 06/05/13 00:00		
Sample ID: A-56						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	310		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	3,600		2	"	"	"	6010C/SOP503
Barium		330		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.88		0.10	"	"	"	6010C/SOP503
Cadmium		72		0.50	"	"	"	6010C/SOP503
Chromium		9.5		1	"	"	"	6010C/SOP503
Cobalt		3.7		2	"	"	"	6010C/SOP503
Copper		210		4	"	"	"	6010C/SOP503
Lead	RE2	18,000		15	"	"	"	07/09/13 6010C/SOP503
Molybdenum		140		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	6.6		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		47		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	3.8	CI, J	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		29		2	"	"	"	07/04/13 6010C/SOP503
Zinc		2,600		8	"	"	"	6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-10		Soil - Sampled: 06/05/13 00:00						
Sample ID: A-76		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	3.9	J, Q4	2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	42		2	"	"	"	6010C/SOP503
Barium		130		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.73		0.10	"	"	"	6010C/SOP503
Cadmium		1.1		0.50	"	"	"	6010C/SOP503
Chromium		3.9		1	"	"	"	6010C/SOP503
Cobalt		3.0		2	"	"	"	6010C/SOP503
Copper		7.9		4	"	"	"	6010C/SOP503
Lead	RE1	180		3	"	"	07/09/13	6010C/SOP503
Molybdenum		ND	U	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	3.5	Cl, J	5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		0.60	Cl, J	1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		18		2	"	"	07/04/13	6010C/SOP503
Zinc		78		8	"	"	"	6010C/SOP503
Lab ID: 1306030-11		Soil - Sampled: 06/05/13 00:00						
Sample ID: A-176		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	3.6		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	40		2	"	"	"	6010C/SOP503
Barium		120		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.69		0.10	"	"	"	6010C/SOP503
Cadmium		1.0		0.50	"	"	"	6010C/SOP503
Chromium		3.8		1	"	"	"	6010C/SOP503
Cobalt		2.8		2	"	"	"	6010C/SOP503
Copper		7.6		4	"	"	"	6010C/SOP503
Lead	RE1	180		3	"	"	07/09/13	6010C/SOP503
Molybdenum		ND	U	5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	3.4	Cl, J	5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		ND	U	1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	07/09/13	6010C/SOP503
Vanadium		17		2	"	"	07/04/13	6010C/SOP503
Zinc		73		8	"	"	"	6010C/SOP503
Lab ID: 1306030-12		Soil - Sampled: 06/05/13 00:00						
Sample ID: B-13		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	53		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	660		2	"	"	"	6010C/SOP503
Barium		260		5	"	"	07/04/13	6010C/SOP503
Beryllium		1.0		0.10	"	"	"	6010C/SOP503

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United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
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Lab ID: 1306030-12

Soil - Sampled: 06/05/13 00:00

Sample ID: B-13

Metals by EPA 6000/7000 Series Methods								
Cadmium		18		0.50	mg/kg wet	B13F063	06/13/13	07/04/13 6010C/SOP503
Chromium		12		1	"	"	"	6010C/SOP503
Cobalt		5.0		2	"	"	"	6010C/SOP503
Copper		75		4	"	"	"	6010C/SOP503
Lead	RE1	6,900		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		30		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	10		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		17		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND	U	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		28		2	"	"	"	07/04/13 6010C/SOP503
Zinc		780		8	"	"	"	6010C/SOP503

Lab ID: 1306030-13

Soil - Sampled: 06/05/13 00:00

Sample ID: B-25

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	7.9		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	100		2	"	"	"	6010C/SOP503
Barium		200		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.95		0.10	"	"	"	6010C/SOP503
Cadmium		2.2		0.50	"	"	"	6010C/SOP503
Chromium		9.9		1	"	"	"	6010C/SOP503
Cobalt		4.0		2	"	"	"	6010C/SOP503
Copper		19		4	"	"	"	6010C/SOP503
Lead	RE1	390		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		5.3		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	9.4		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		2.0		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	3.5	C1, J	5	"	"	"	07/09/13 6010C/SOP503
Vanadium		26		2	"	"	"	07/04/13 6010C/SOP503
Zinc		260		8	"	"	"	6010C/SOP503

Lab ID: 1306030-14

Soil - Sampled: 06/05/13 00:00

Sample ID: B-125

Metals by EPA 6000/7000 Series Methods								
Antimony	RE1	7.9		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	97		2	"	"	"	6010C/SOP503
Barium		190		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.96		0.10	"	"	"	6010C/SOP503
Cadmium		2.2		0.50	"	"	"	6010C/SOP503
Chromium		10		1	"	"	"	6010C/SOP503
Cobalt		3.8		2	"	"	"	6010C/SOP503
Copper		17		4	"	"	"	6010C/SOP503

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United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-14								Soil - Sampled: 06/05/13 00:00
Sample ID: B-125								Metals by EPA 6000/7000 Series Methods
Lead	RE1	350		3	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Molybdenum		2.8	C1, J	5	"	"	" 07/04/13	6010C/SOP503
Nickel	RE1	9.7		5	"	"	" 07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	" "	6010C/SOP503
Silver		1.7		1	"	"	" 07/04/13	6010C/SOP503
Thallium	RE1	3.1	C1, J	5	"	"	" 07/09/13	6010C/SOP503
Vanadium		27		2	"	"	" 07/04/13	6010C/SOP503
Zinc		240		8	"	"	" "	6010C/SOP503
Lab ID: 1306030-15								Soil - Sampled: 06/05/13 00:00
Sample ID: B-32								Metals by EPA 6000/7000 Series Methods
Antimony	RE1	14		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE1	180		2	"	"	" "	6010C/SOP503
Barium		240		5	"	"	" 07/04/13	6010C/SOP503
Beryllium		1.0		0.10	"	"	" "	6010C/SOP503
Cadmium		4.2		0.50	"	"	" "	6010C/SOP503
Chromium		11		1	"	"	" "	6010C/SOP503
Cobalt		4.4		2	"	"	" "	6010C/SOP503
Copper		22		4	"	"	" "	6010C/SOP503
Lead	RE1	850		3	"	"	" 07/09/13	6010C/SOP503
Molybdenum		14		5	"	"	" 07/04/13	6010C/SOP503
Nickel	RE1	10		5	"	"	" 07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	" "	6010C/SOP503
Silver		2.4		1	"	"	" 07/04/13	6010C/SOP503
Thallium	RE1	ND	U	5	"	"	" 07/09/13	6010C/SOP503
Vanadium		24		2	"	"	" 07/04/13	6010C/SOP503
Zinc		220		8	"	"	" "	6010C/SOP503
Lab ID: 1306030-16								Soil - Sampled: 06/05/13 00:00
Sample ID: B-45								Metals by EPA 6000/7000 Series Methods
Antimony	RE1	1,700		2	mg/kg wet	B13F063	06/13/13 07/09/13	6010C/SOP503
Arsenic	RE2	13,000		10	"	"	" 07/09/13	6010C/SOP503
Barium		370		5	"	"	" 07/04/13	6010C/SOP503
Beryllium		0.84		0.10	"	"	" "	6010C/SOP503
Cadmium		210		0.50	"	"	" "	6010C/SOP503
Chromium		8.0		1	"	"	" "	6010C/SOP503
Cobalt		3.0		2	"	"	" "	6010C/SOP503
Copper		620		4	"	"	" "	6010C/SOP503
Lead	RE3	67,000		30	"	"	" 07/10/13	6010C/SOP503
Molybdenum		210		5	"	"	" 07/04/13	6010C/SOP503
Nickel	RE1	8.4		5	"	"	" 07/09/13	6010C/SOP503
Selenium	RE1	4.5		2	"	"	" "	6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

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Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-16						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-45						Metals by EPA 6000/7000 Series Methods		
Silver		160		1	mg/kg wet	B13F063	06/13/13	07/04/13 6010C/SOP503
Thallium	RE1	21		5	"	"	"	07/09/13 6010C/SOP503
Vanadium		34		2	"	"	"	07/04/13 6010C/SOP503
Zinc	RE3	7,700		80	"	"	"	07/10/13 6010C/SOP503
Lab ID: 1306030-17						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-29						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	520		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	6,400		2	"	"	"	6010C/SOP503
Barium		660		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.81		0.10	"	"	"	6010C/SOP503
Cadmium		150		0.50	"	"	"	6010C/SOP503
Chromium		7.8		1	"	"	"	6010C/SOP503
Cobalt		3.2		2	"	"	"	6010C/SOP503
Copper		680		4	"	"	"	6010C/SOP503
Lead	RE2	35,000		15	"	"	"	07/09/13 6010C/SOP503
Molybdenum		210		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	6.8		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	2.1		2	"	"	"	6010C/SOP503
Silver		120		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	8.7		5	"	"	"	07/09/13 6010C/SOP503
Vanadium		30		2	"	"	"	07/04/13 6010C/SOP503
Zinc	RE3	9,800		40	"	"	"	07/10/13 6010C/SOP503
Lab ID: 1306030-18						Soil - Sampled: 06/05/13 00:00		
Sample ID: B-129						Metals by EPA 6000/7000 Series Methods		
Antimony	RE1	510		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	6,400		2	"	"	"	6010C/SOP503
Barium		630		5	"	"	"	07/04/13 6010C/SOP503
Beryllium		0.79		0.10	"	"	"	6010C/SOP503
Cadmium		150		0.50	"	"	"	6010C/SOP503
Chromium		7.7		1	"	"	"	6010C/SOP503
Cobalt		3.1		2	"	"	"	6010C/SOP503
Copper		680		4	"	"	"	6010C/SOP503
Lead	RE2	38,000		15	"	"	"	07/09/13 6010C/SOP503
Molybdenum		230		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	6.6		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	2.2		2	"	"	"	6010C/SOP503
Silver		120		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	8.7		5	"	"	"	07/09/13 6010C/SOP503
Vanadium		31		2	"	"	"	07/04/13 6010C/SOP503
Zinc	RE3	9,600		40	"	"	"	07/10/13 6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-19		Soil - Sampled: 06/05/13 00:00						
Sample ID: B-39		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	190		2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	2,200		2	"	"	"	6010C/SOP503
Barium		320		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.94		0.10	"	"	"	6010C/SOP503
Cadmium		46		0.50	"	"	"	6010C/SOP503
Chromium		9.5		1	"	"	"	6010C/SOP503
Cobalt		4.1		2	"	"	"	6010C/SOP503
Copper		120		4	"	"	"	6010C/SOP503
Lead	RE2	12,000		15	"	"	07/09/13	6010C/SOP503
Molybdenum		180		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	7.9		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		28		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	2.9	Cl, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		29		2	"	"	07/04/13	6010C/SOP503
Zinc		1,600		8	"	"	"	6010C/SOP503

Lab ID: 1306030-20		Soil - Sampled: 06/05/13 00:00						
Sample ID: B-60		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	190	I, Q4	2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	1,800		2	"	"	"	6010C/SOP503
Barium		330		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.77		0.10	"	"	"	6010C/SOP503
Cadmium		45		0.50	"	"	"	6010C/SOP503
Chromium		11		1	"	"	"	6010C/SOP503
Cobalt		3.6		2	"	"	"	6010C/SOP503
Copper		170		4	"	"	"	6010C/SOP503
Lead	RE2	10,000		15	"	"	07/09/13	6010C/SOP503
Molybdenum		45		5	"	"	07/04/13	6010C/SOP503
Nickel	RE1	8.5		5	"	"	07/09/13	6010C/SOP503
Selenium	RE1	ND	U	2	"	"	"	6010C/SOP503
Silver		34		1	"	"	07/04/13	6010C/SOP503
Thallium	RE1	4.0	Cl, J	5	"	"	07/09/13	6010C/SOP503
Vanadium		34		2	"	"	07/04/13	6010C/SOP503
Zinc		2,200		8	"	"	"	6010C/SOP503

Lab ID: 1306030-21		Soil - Sampled: 06/05/13 00:00						
Sample ID: B-81		Metals by EPA 6000/7000 Series Methods						
Antimony	RE1	1.4	Cl, J	2	mg/kg wet	B13F063	06/13/13	07/09/13 6010C/SOP503
Arsenic	RE1	19		2	"	"	"	6010C/SOP503
Barium		220		5	"	"	07/04/13	6010C/SOP503
Beryllium		0.88		0.10	"	"	"	6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1306030-21								Soil - Sampled: 06/05/13 00:00
Sample ID: B-81								Metals by EPA 6000/7000 Series Methods
Cadmium		0.50		0.50	mg/kg wet	B13F063	06/13/13	07/04/13 6010C/SOP503
Chromium		9.9		1	"	"	"	6010C/SOP503
Cobalt		3.7		2	"	"	"	6010C/SOP503
Copper		11		4	"	"	"	6010C/SOP503
Lead	RE1	40		3	"	"	"	07/09/13 6010C/SOP503
Molybdenum		ND U		5	"	"	"	07/04/13 6010C/SOP503
Nickel	RE1	6.1		5	"	"	"	07/09/13 6010C/SOP503
Selenium	RE1	ND U		2	"	"	"	6010C/SOP503
Silver		ND U		1	"	"	"	07/04/13 6010C/SOP503
Thallium	RE1	ND U		5	"	"	"	07/09/13 6010C/SOP503
Vanadium		35		2	"	"	"	07/04/13 6010C/SOP503
Zinc		73		8	"	"	"	6010C/SOP503

m-j
7/26/13



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13162B
Reported: 07/19/13 15:44

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13F063 - 3050B Std Acid Dig - Metals by 6010

Prepared: 06/13/13 Analyzed: 07/04/13
Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13F063-BLK1)

Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						
Cobalt	ND	U		2 "						
Copper	ND	U		4 "						
Lead	ND	U		3 "						
Molybdenum	ND	U		5 "						
Nickel	ND	U		5 "						
Selenium	ND	U		2 "						
Silver	ND	U		1 "						
Thallium	ND	U		5 "						
Vanadium	ND	U		2 "						
Zinc	ND	U		8 "						

Blank (B13F063-BLK2)

Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						
Cobalt	ND	U		2 "						
Copper	ND	U		4 "						
Lead	ND	U		3 "						
Molybdenum	ND	U		5 "						
Nickel	ND	U		5 "						
Selenium	ND	U		2 "						
Silver	ND	U		1 "						
Thallium	ND	U		5 "						
Vanadium	ND	U		2 "						
Zinc	ND	U		8 "						

Blank (B13F063-BLK3)

Antimony	ND	U		2 mg/kg wet						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Chromium	ND	U		1 "						

m-j 7/26/13



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Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 13162B
Project Number: R13S77	75 Hawthorne Street	Reported: 07/19/13 15:44
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13F063 - 3050B Std Acid Dig - Metals by 6010

Prepared: 06/13/13 Analyzed: 07/09/13
Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13F063-BLK3)

Cobalt	ND	U	2	"
Copper	ND	U	4	"
Lead	ND	U	3	"
Molybdenum	ND	U	5	"
Nickel	ND	U	5	"
Selenium	ND	U	2	"
Silver	ND	U	1	"
Thallium	ND	U	5	"
Vanadium	ND	U	2	"
Zinc	ND	U	8	"

Blank (B13F063-BLK4)

Antimony	ND	U	2	mg/kg wet
Arsenic	ND	U	2	"
Barium	ND	U	5	"
Beryllium	ND	U	0.1	"
Cadmium	ND	U	0.5	"
Chromium	ND	U	1	"
Cobalt	ND	U	2	"
Copper	ND	U	4	"
Lead	ND	U	3	"
Molybdenum	ND	U	5	"
Nickel	ND	U	5	"
Selenium	ND	U	2	"
Silver	ND	U	1	"
Thallium	ND	U	5	"
Vanadium	ND	U	2	"
Zinc	ND	U	8	"

Matrix Spike (B13F063-MS1)

Source: 1306030-10

Barium	498	5	mg/kg wet	400	127	93	75-125	20
Beryllium	10.2	0.1	"	10.0	0.728	95	75-125	20
Cadmium	10.8	0.5	"	10.0	1.08	97	75-125	20
Chromium	44.3	1	"	40.0	3.88	101	75-125	20
Cobalt	89	2	"	100	2.98	86	75-125	20
Copper	51.1	4	"	50.0	7.91	86	75-125	20
Molybdenum	89.7	5	"	100	ND	90	75-125	20
Silver	10.1	1	"	10.0	0.599	95	75-125	20
Vanadium	116	2	"	100	18.1	98	75-125	20
Zinc	164	8	"	100	78.3	85	75-125	20

Matrix Spike (B13F063-MS2)

Source: 1306030-20

[illegible]

PROJ. NO.	PROJECT NAME	SAMPLERS: (Signature)				REMARKS	
DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NO. OF CON-TAINERS	
6-5-13		SO	X		B-76	1	
					B-84	1	
					B-87	1	
					B-88 A-87	1	
					EM-08	1	
					IS 3273	1	
					A-85	1	
					B-26	1	
					A-44	1	
					A-04	1	
					A-43	1	
					B-36	2	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Seals Intact (Y/N)	Conditions / Remarks
<i>[Signature]</i>	6/7/13 1536	<i>[Signature]</i>		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	
Relinquished for Laboratory by: (Signature)	Date / Time	Temp.	Seals Intact (Y/N)	
<i>[Signature]</i>	6/7/13 1536	23°C	Hand Delivered	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-3016 Box 2

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS XRF		REMARKS
13577		Eureka		6010		
SAMPLERS: (Signature)						
DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	
6/5/13		SO	X		A-45	
					A-60	
					A-56	
					A-76	
					A-176	
					B-13	
					B-25	
					B-125	
					B-32	
					B-45	
					B-29	
					B-129	
					B-39	
					B-60	
					B-81	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Date / Time
		6/7/13 1536				
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Date / Time
Received for Laboratory by: (Signature)		Date / Time		Temp.		Seals intact (Y/N)
		6/7/13 1536		1536		Hand Delivered

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-3015 Box 3

6/7/13

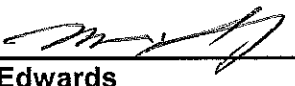
ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1307011 SDG 13190A
Sampling Dates: 07/08/2013	Sample Matrix: Soil
Analytical Method: Total RCRA Metals, TCLP Metals, and SPLP Metals (EPA 6010C/7471A/7473/1311/1312)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: Howard Edwards

Date: 8/22/13
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	ESS-C1-SSL	1307011-01
2	ESS-C3-SSL	1307011-02
3	ESS-C2-ESSL	1307001-03
4		
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17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ Included: problems noted in review
- ☐ Not Included and/or Not Available
- ☐ Not Required
- ☐ Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☐ CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ Matrix Spike recoveries
- ☐ Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ Method of Standard Additions results
- ☐ ICP Serial Dilution results
- ☐ Instrument Detection Limits
- ☐ ICP Interelement Correction Factors
- ☐ ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	NO
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met. Samples were received at 23 degrees C which is above the recommended temperature of 0 to 6 degrees C. Since the thermal preservation was required for Hg, the detected total Hg results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits generated by the laboratory.

4. MATRIX SPIKE

- ☒ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample ESS-C1-SSL was used for MS/MSD analysis for total RCRA metals. Recovery of As, Pb, and Ag was outside control limits. Qualification was not required for Pb since the amount of Pb present in parent samples was greater than 4X the amount spiked. The detected total As and total Ag results were qualified as estimated (J). Also, sample ESS-C3-SSL was used for total Hg MS/MSD analysis and the recovery of Hg was outside control limits. The detected total Hg results were qualified as estimated (J). Sample ESS-C1-SSL was used for MS/MSD analysis of TCLP and SPLP Metals and the recoveries were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☐ Field Duplicates
☒ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: The RPDs of Ag and Hg in MS&MSD of total metals were greater than 35%. The detected total Ag and total Hg results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not required.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample ESS-C1-SSL

Total As: (2.527 mg/L) (0.05L/1.01g) (2) (100/95) = 0.263 mg/g = 263 mg/kg.

Lab reported 260 mg/kg.

Total Pb: (12.56 mg/L) (0.05L/1.01g) (2) (100/95) = 1.309 mg/g = 1309 mg/kg.

Lab reported 1300 mg/kg.

TCLP As: (0.1079 mg/L) (20 mL/2 mL) = 1.079 mg/L.

Lab reported 1.1 mg/L.

TCLP Pb: (0.03532 mg/L) (20 mL/2 mL) = 0.3532 mg/L.

Lab reported 0.35 mg/L.

SPLP As: (0.2618 mg/L) (20 mL/20 mL) = 0.2618 mg/L.

Lab reported 0.26 mg/L.

SPLP Pb: (0.3775 mg/L) (20 mL/20 mL) = 0.3775 mg/L.

Lab reported 0.38 mg/L.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Eureka Lead Removal Assessment	Location: Eureka County, Nevada
TDD Number: 09-12-04-0002	Project Number: 002693.2177.01RA

The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN, EUREKA SMELTER SITES ASSESSMENT, EUREKA COUNTY, NEVADA, SEPTEMBER 2012 (SAP).

The following data use objective was indicated in the SAP:

- Determine average concentrations of lead and arsenic in the shallow soil at locations within the Town of Eureka.
- Determine average concentrations of lead and arsenic in the roadway material in unpaved roads within the Town of Eureka.
- Document concentrations of lead and arsenic in the shallow soil in areas potentially downwind of Eureka.
- Document concentrations of lead and arsenic in the shallow creek sediments and in shallow soil in creek flood plain areas.
- Document concentrations of lead and arsenic in the creek surface water.
- Document background concentrations of lead and arsenic in the soil around Eureka.
- Document and determine the areal spatial distribution of arsenic and lead on large undeveloped properties within and around the Town of Eureka.
- Determine the vertical spatial distribution between shallow ground surface soil and the soil at depth between 2 to 12 inches below ground surface (bgs) for arsenic and lead on all properties.
- Determine whether unacceptable risks to human health or the environment are present at locations within the Town of Eureka due to elevated lead and arsenic concentrations.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE DEFINITIVE DATA AND TABLE 3-1 AND 3-2 OF THE SAP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVES. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: None.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13190A
Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID: 1307011-01									
Sample ID: ESS-C1-SSL									
Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts									
Arsenic		1.1	J, Q5	0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.3		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.036	Cl, J	0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		0.35	J, Q5	0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503
Mercury		ND	U	0.00030	"	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250
Sample ID: ESS-C1-SSL									
Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts									
Arsenic		0.26	J, Q5	0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.16		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.002	Cl, J	0.005	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.010	"	"	"	"	6010C/SOP503
Lead		0.38		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		ND	U	0.010	"	"	"	"	6010C/SOP503
Mercury		0.00031		0.00003	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	EPA 1312
Sample ID: ESS-C1-SSL									
Metals by EPA 6000/7000 Series Methods									
Mercury		0.69	A2, J	0.026	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		260	J, Q4	2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		350		5.3	"	"	"	"	6010C/SOP503
Cadmium		6.0		0.53	"	"	"	"	6010C/SOP503
Chromium		9.0		1.1	"	"	"	"	6010C/SOP503
Lead		1,300		3.2	"	"	"	"	6010C/SOP503
Selenium		ND	U	2.1	"	"	"	"	6010C/SOP503
Silver		3.5	J, Q4, Q6	1.1	"	"	"	"	6010C/SOP503
Sample ID: ESS-C1-SSL									
Conventional Chemistry Parameters by APHA/EPA Methods									
% Solids		95		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460
Lab ID: 1307011-02									
Sample ID: ESS-C3-3SSL									
Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts									
Arsenic		0.78		0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.7		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.084		0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		1.0		0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503



United States Environmental Protection Agency

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Project Manager: Thomas Dunkelman

Project Number: R13S77

Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID:	1307011-02								Soil - Sampled: 07/08/13 08:30
Sample ID:	ESS-C3-3SSL								Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts
Mercury		ND	U	0.00030	mg/L	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250
Sample ID:	ESS-C3-3SSL								Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts
Arsenic		0.44		0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.15		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.007		0.005	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.010	"	"	"	"	6010C/SOP503
Lead		0.79		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		ND	U	0.010	"	"	"	"	6010C/SOP503
Mercury	RE2	0.00064		0.00015	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	BPA 1312
Sample ID:	ESS-C3-3SSL								Metals by EPA 6000/7000 Series Methods
Mercury		1.3	A2-J-Q4; J Q8	0.026	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		590	J	2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		240		5.3	"	"	"	"	6010C/SOP503
Cadmium		15		0.53	"	"	"	"	6010C/SOP503
Chromium		8.5		1.1	"	"	"	"	6010C/SOP503
Lead		3,100		3.2	"	"	"	"	6010C/SOP503
Selenium		2.0	C1, J	2.1	"	"	"	"	6010C/SOP503
Silver		11	J	1.1	"	"	"	"	6010C/SOP503
Sample ID:	ESS-C3-3SSL								Conventional Chemistry Parameters by APHA/EPA Methods
% Solids		95		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460
Lab ID:	1307011-03								Soil - Sampled: 07/08/13 08:20
Sample ID:	ESS-C2-ESSL								Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts
Arsenic		0.48		0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.4		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.11		0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		1.4		0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503
Mercury		ND	U	0.00030	"	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250
Sample ID:	ESS-C2-ESSL								Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts
Arsenic		0.44		0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.13		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.008		0.005	"	"	"	"	6010C/SOP503



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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13190A
Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID: 1307011-03						Soil - Sampled: 07/08/13 08:20			
Sample ID: ESS-C2-ESSL						Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts			
Chromium		ND	U	0.010	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Lead		1.5		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		0.007	CI, J	0.010	"	"	"	"	6010C/SOP503
Mercury	RE1	0.00079		0.00015	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	EPA 1312
Sample ID: ESS-C2-ESSL						Metals by EPA 6000/7000 Series Methods			
Mercury		2.9	A2, J	0.027	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		1,400	J	2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		290		5.3	"	"	"	"	6010C/SOP503
Cadmium		39		0.53	"	"	"	"	6010C/SOP503
Chromium		7.8		1.1	"	"	"	"	6010C/SOP503
Lead	RE1	12,000		8	"	"	"	08/12/13	6010C/SOP503
Selenium		ND	U	2.1	"	"	"	08/04/13	6010C/SOP503
Silver		28	J	1.1	"	"	"	"	6010C/SOP503
Sample ID: ESS-C2-ESSL						Conventional Chemistry Parameters by APHA/EPA Methods			
% Solids		94		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460

Handwritten signature 8/22/13



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Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G012 - 3050B Std Acid Dig - Metals by 6010

Prepared: 07/17/13 Analyzed: 08/04/13

Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13G012-BLK1)

Antimony	ND	U		2 mg/kg wet
Arsenic	ND	U		2 "
Barium	ND	U		5 "
Beryllium	ND	U		0.1 "
Cadmium	ND	U		0.5 "
Chromium	ND	U		1 "
Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

Blank (B13G012-BLK2)

Antimony	ND	U		2 mg/kg wet
Arsenic	ND	U		2 "
Barium	ND	U		5 "
Beryllium	ND	U		0.1 "
Cadmium	ND	U		0.5 "
Chromium	ND	U		1 "
Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

Matrix Spike (B13G012-MS3)

Source: 1307011-01

Arsenic	767		2.1 mg/kg dry	413	263	122	75-125	20
Barium	735		5.3 "	413	346	94	75-125	20
Cadmium	16.6		0.53 "	10.3	5.96	103	75-125	20
Chromium	49.9		1.1 "	41.3	9.04	99	75-125	20
Lead	1,630	Q10	3.2 "	103	1,310	389	75-125	20
Selenium	438		2.1 "	413	ND	106	75-125	20

1307011 FINAL 08 15 13 1300



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Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G083 - 7473 Hg Prep - Mercury by 7473

Prepared & Analyzed: 07/22/13

Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13G083-BLK1)

Mercury	ND	U	0.025	mg/kg wet						
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Blank (B13G083-BLK2)

Mercury	ND	U	0.025	mg/kg wet						
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Matrix Spike (B13G083-MS3)

Source: 1307011-02

Mercury	1.73		0.026	mg/kg dry	0.520	1.29	84	80-120		20
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Matrix Spike Dup (B13G083-MSD3)

Source: 1307011-02

Mercury	2.04		0.026	mg/kg dry	0.502	1.29	151	80-120	57	20
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Reference (B13G083-SRM1)

Mercury	1.23		0.025	mg/kg wet	1.10		112	80-120		
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Reference (B13G083-SRM2)

Mercury	1.2		0.025	mg/kg wet	1.10		109	80-120		
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Batch B13G087 - 1312 SPLP - SPLP Extraction

Prepared: 07/23/13 Analyzed: 08/14/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Blank (B13G087-BLK1)

SPLP Extraction	Performed			1	N/A					
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Duplicate (B13G087-DUP1)

Source: 1307011-01

SPLP Extraction	Performed			1	N/A	Performed				200
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Batch B13G098 - Leachate Digest - Metals, TCLP, ICP

Prepared: 07/25/13 Analyzed: 08/12/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Blank (B13G098-BLK1)

Arsenic	ND	U	0.2	mg/L						
Barium	ND	U	0.5	"						
Cadmium	ND	U	0.05	"						
Chromium	ND	U	0.1	"						
Lead	ND	U	0.3	"						
Selenium	ND	U	0.2	"						
Silver	ND	U	0.1	"						

LCS (B13G098-BS1)

Arsenic	21.5		0.2	mg/L	20.0		107	80-120		200
Barium	21.4		0.5	"	20.0		107	80-120		200
Cadmium	0.492		0.05	"	0.500		98	80-120		200
Chromium	1.99		0.1	"	2.00		100	80-120		200
Lead	4.96		0.3	"	5.00		99	80-120		200
Selenium	20.6		0.2	"	20.0		103	80-120		200
Silver	0.481		0.1	"	0.500		96	80-120		200

Duplicate (B13G098-DUP1)

Source: 1307011-01

Arsenic	0.85			0.2	mg/L	1.08			24	20
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SDG: 13190A
Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC Limits	RPD RPD Limit
---------	--------	--------------------------	-----------------------	-------	----------------	------------------	----------------	------------------

Batch B13G098 - Leachate Digest - Metals, TCLP, ICP

Prepared: 07/25/13 Analyzed: 08/12/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Duplicate (B13G098-DUP1)

Source: 1307011-01

Barium	1.38		0.5	"		1.3		6	20
Cadmium	0.039	Cl, J	0.05	"		0.036		5	20
Chromium	ND	U	0.1	"		ND			20
Lead	0.748		0.3	"		0.353		72	20
Selenium	ND	U	0.2	"		ND			20
Silver	ND	U	0.1	"		ND			20

Matrix Spike (B13G098-MS1)

Source: 1307011-01

Arsenic	23.1		0.2	mg/L	20.0	1.08	110	75-125	20
Barium	21.1		0.5	"	20.0	1.3	99	75-125	20
Cadmium	0.524		0.05	"	0.500	0.036	98	75-125	20
Chromium	2.01		0.1	"	2.00	ND	101	75-125	20
Lead	5.28		0.3	"	5.00	0.353	98	75-125	20
Selenium	21.1		0.2	"	20.0	ND	106	75-125	20
Silver	0.485		0.1	"	0.500	ND	97	75-125	20

Matrix Spike Dup (B13G098-MSD1)

Source: 1307011-01

Arsenic	23.2		0.2	mg/L	20.0	1.08	111	75-125	0.5	20
Barium	22.6		0.5	"	20.0	1.3	106	75-125	7	20
Cadmium	0.527		0.05	"	0.500	0.036	98	75-125	0.6	20
Chromium	2.02		0.1	"	2.00	ND	101	75-125	0.2	20
Lead	5.3		0.3	"	5.00	0.353	99	75-125	0.4	20
Selenium	21.2		0.2	"	20.0	ND	106	75-125	0.6	20
Silver	0.492		0.1	"	0.500	ND	98	75-125	1	20

Batch B13G099 - Leachate Digest - Metals, SPLP, ICP

Prepared: 07/25/13 Analyzed: 08/13/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Blank (B13G099-BLK1)

Arsenic	ND	U	0.02	mg/L					
Barium	ND	U	0.05	"					
Cadmium	ND	U	0.005	"					
Chromium	ND	U	0.01	"					
Lead	ND	U	0.03	"					
Selenium	ND	U	0.02	"					
Silver	ND	U	0.01	"					

LCS (B13G099-BS1)

Arsenic	2.14		0.02	mg/L	2.00		107	80-120		200
Barium	2.14		0.05	"	2.00		107	80-120		200
Cadmium	0.05		0.005	"	0.0500		100	80-120		200
Chromium	0.208		0.01	"	0.200		104	80-120		200
Lead	0.505		0.03	"	0.500		101	80-120		200
Selenium	2.04		0.02	"	2.00		102	80-120		200
Silver	0.049		0.01	"	0.0500		98	80-120		200

Duplicate (B13G099-DUP1)

Source: 1307011-01



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R13S77
Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 13190A
Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G099 - Leachate Digest - Metals, SPLP, ICP

Prepared: 07/25/13 Analyzed: 08/13/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Duplicate (B13G099-DUP1)

Source: 1307011-01

Arsenic	0.393		0.02	mg/L		0.262			40	20
Barium	0.162		0.05	"		0.164			1	20
Cadmium	0.002	Cl, J	0.005	"		ND				20
Chromium	ND	U	0.01	"		ND				20
Lead	0.393		0.03	"		0.377			4	20
Selenium	ND	U	0.02	"		ND				20
Silver	ND	U	0.01	"		ND				20

Matrix Spike (B13G099-MS1)

Source: 1307011-01

Arsenic	2.4		0.02	mg/L	2.00	0.262	107	75-125		20
Barium	2.3		0.05	"	2.00	0.164	107	75-125		20
Cadmium	0.052		0.005	"	0.0500	ND	104	75-125		20
Chromium	0.212		0.01	"	0.200	ND	106	75-125		20
Lead	0.874		0.03	"	0.500	0.377	99	75-125		20
Selenium	2.08		0.02	"	2.00	ND	104	75-125		20
Silver	0.05		0.01	"	0.0500	ND	100	70-125		20

Matrix Spike Dup (B13G099-MSD1)

Source: 1307011-01

Arsenic	2.43		0.02	mg/L	2.00	0.262	108	75-125	1	20
Barium	2.18		0.05	"	2.00	0.164	101	75-125	5	20
Cadmium	0.052		0.005	"	0.0500	ND	105	75-125	1	20
Chromium	0.213		0.01	"	0.200	ND	106	75-125	0.4	20
Lead	0.881		0.03	"	0.500	0.377	101	75-125	0.8	20
Selenium	2.11		0.02	"	2.00	ND	105	75-125	1	20
Silver	0.05		0.01	"	0.0500	ND	100	70-125	0.3	20

Batch B13G126 - Solids, Dry Weight (Prep) - Solids, Dry Weight

Prepared: 07/30/13 Analyzed: 07/31/13

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Blank (B13G126-BLK1)

% Solids	ND	U	1	%						
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Duplicate (B13G126-DUP1)

Source: 1307011-02

% Solids	95		1	%		95			0.2	20
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Batch B13H009 - Leachate Digest - Metals, TCLP, Mercury

Prepared & Analyzed: 08/02/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Blank (B13H009-BLK1)

Mercury	ND	U	0.0003	mg/L						
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Blank (B13H009-BLK2)

Mercury	ND	U	0.0003	mg/L						
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LCS (B13H009-BS1)

Mercury	0.00202		0.0003	mg/L	0.00200		101	85-115		200
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Duplicate (B13H009-DUP1)

Source: 1307011-01

Mercury	ND	U	0.0003	mg/L		ND				20
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Matrix Spike (B13H009-MS1)

Source: 1307011-02

Mercury	0.00205		0.0003	mg/L	0.00200	ND	103	70-130		20
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United States Environmental Protection Agency

Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804

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Project Manager: Thomas Dunkelman

Project Number: R13S77

Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B13H009 - Leachate Digest - Metals, TCLP, Mercury									Prepared & Analyzed: 08/02/13	
Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control										
Matrix Spike (B13H009-MS1)			Source: 1307011-02							
Matrix Spike Dup (B13H009-MSD1)			Source: 1307011-02							
Mercury	0.00208		0.0003	mg/L	0.00208	ND	104	70-130	1	20
Batch B13H010 - Leachate Digest - Metals, SPLP, Mercury									Prepared & Analyzed: 08/02/13	
Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control										
Blank (B13H010-BLK1)										
Mercury	ND	U	0.00003	mg/L						
Blank (B13H010-BLK2)										
Mercury	ND	U	0.00003	mg/L						
LCS (B13H010-LS1)										
Mercury	0.000206		0.00003	mg/L	0.000206		103	85-115		200
Duplicate (B13H010-DUP1)			Source: 1307011-01							
Mercury	0.000311		0.00003	mg/L		0.000311			0.1	20
Matrix Spike (B13H010-MS3)			Source: 1307011-02RE2							
Mercury	0.000783		0.00015	mg/L	0.000783	0.000644	70	70-130		20
Matrix Spike Dup (B13H010-MSD3)			Source: 1307011-02RE2							
Mercury	0.000814		0.00015	mg/L	0.000814	0.000644	85	70-130	4	20

17.

[illegible]



**United States Environmental Protection Agency
Region 9 Laboratory**

1337 S. 46th Street Building 201
Richmond, CA 94804

Date: 8/15/2013

Subject: Analytical Testing Results - Project R13S77
SDG: 13190A

From: Brenda Bettencourt, Director
EPA Region 9 Laboratory
MTS-2

To: Thomas Dunkelman
Emergency Response Section
SFD-9-2

Attached are the results from the analysis of samples from the **Eureka Smelter Sites May 2013 Sampling** project. These data have been reviewed in accordance with EPA Region 9 Laboratory policy.

A full documentation package for these data, including raw data and sample custody documentation, is on file at the EPA Region 9 Laboratory. If you would like to request additional review and/or validation of the data, please contact Eugenia McNaughton at the Region 9 Quality Assurance Office.

If you have any questions, please ask for Richard Bauer, the Lab Project Manager at (510)412-2300.

Electronic CC: Howard Edwards, Ecology and Environment
Mindy Song, Ecology and Environment

Analyses included in this report:

Mercury by EPA method 7473	Metals by ICP
SPLP Metals by ICP	SPLP Mercury
TCLP Metals by ICP	TCLP Mercury
Percent Solids	SPLP Extraction by Method 1312
TCLP Extraction by 1311	



United States Environmental Protection Agency

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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
ESS-C1-SSL	1307011-01	Soil	07/08/13 08:10	07/09/13 08:45
ESS-C3-3SSL	1307011-02	Soil	07/08/13 08:30	07/09/13 08:45
ESS-C2-ESSL	1307011-03	Soil	07/08/13 08:20	07/09/13 08:45

SDG ID 13190A

Mercury: Samples were received at 23 degrees C which is above the recommended temperature range of >0 to 6 degrees C. Mercury results are flagged as estimated.

Work Order(s)

1307011



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman

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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
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Lab ID: 1307011-01

Soil - Sampled: 07/08/13 08:10

Sample ID: ESS-C1-SSL

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts									
Arsenic		1.1	J, Q5	0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.3		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.036	C1, J	0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		0.35	J, Q5	0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503
Mercury		ND	U	0.00030	"	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250

Sample ID: ESS-C1-SSL

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts									
Arsenic		0.26	J, Q5	0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.16		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.002	C1, J	0.005	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.010	"	"	"	"	6010C/SOP503
Lead		0.38		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		ND	U	0.010	"	"	"	"	6010C/SOP503
Mercury		0.00031		0.00003	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	EPA 1312

Sample ID: ESS-C1-SSL

Metals by EPA 6000/7000 Series Methods									
Mercury		0.69	A2, J	0.026	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		260	J, Q4	2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		350		5.3	"	"	"	"	6010C/SOP503
Cadmium		6.0		0.53	"	"	"	"	6010C/SOP503
Chromium		9.0		1.1	"	"	"	"	6010C/SOP503
Lead		1,300		3.2	"	"	"	"	6010C/SOP503
Selenium		ND	U	2.1	"	"	"	"	6010C/SOP503
Silver		3.5	J, Q4, Q6	1.1	"	"	"	"	6010C/SOP503

Sample ID: ESS-C1-SSL

Conventional Chemistry Parameters by APHA/EPA Methods									
% Solids		95		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460

Lab ID: 1307011-02

Soil - Sampled: 07/08/13 08:30

Sample ID: ESS-C3-3SSL

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts									
Arsenic		0.78		0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.7		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.084		0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		1.0		0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelman

Project Number: R13S77

Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID: 1307011-02		Soil - Sampled: 07/08/13 08:30							
Sample ID: ESS-C3-3SSL		Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts							
Mercury		ND	U	0.00030	mg/L	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250
Sample ID: ESS-C3-3SSL		Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts							
Arsenic		0.44		0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.15		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.007		0.005	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.010	"	"	"	"	6010C/SOP503
Lead		0.79		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		ND	U	0.010	"	"	"	"	6010C/SOP503
Mercury	RE2	0.00064		0.00015	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	EPA 1312
Sample ID: ESS-C3-3SSL		Metals by EPA 6000/7000 Series Methods							
Mercury		1.3	A2, J, Q4, Q6	0.026	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		590		2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		240		5.3	"	"	"	"	6010C/SOP503
Cadmium		15		0.53	"	"	"	"	6010C/SOP503
Chromium		8.5		1.1	"	"	"	"	6010C/SOP503
Lead		3,100		3.2	"	"	"	"	6010C/SOP503
Selenium		2.0	C1, J	2.1	"	"	"	"	6010C/SOP503
Silver		11		1.1	"	"	"	"	6010C/SOP503
Sample ID: ESS-C3-3SSL		Conventional Chemistry Parameters by APHA/EPA Methods							
% Solids		95		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460
Lab ID: 1307011-03		Soil - Sampled: 07/08/13 08:20							
Sample ID: ESS-C2-ESSL		Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts							
Arsenic		0.48		0.20	mg/L	B13G098	07/25/13	08/12/13	6010C/SOP503
Barium		1.4		0.50	"	"	"	"	6010C/SOP503
Cadmium		0.11		0.050	"	"	"	"	6010C/SOP503
Chromium		ND	U	0.10	"	"	"	"	6010C/SOP503
Lead		1.4		0.30	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.20	"	"	"	"	6010C/SOP503
Silver		ND	U	0.10	"	"	"	"	6010C/SOP503
Mercury		ND	U	0.00030	"	B13H009	08/02/13	08/02/13	245.1/SOP515
TCLP Extraction		Performed			N/A	B13G082	07/23/13	07/24/13	1311/SOP250
Sample ID: ESS-C2-ESSL		Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts							
Arsenic		0.44		0.020	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Barium		0.13		0.050	"	"	"	"	6010C/SOP503
Cadmium		0.008		0.005	"	"	"	"	6010C/SOP503



United States Environmental Protection Agency Region 9 Laboratory

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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID: 1307011-03		Soil - Sampled: 07/08/13 08:20							
Sample ID: ESS-C2-ESSL		Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts							
Chromium		ND	U	0.010	mg/L	B13G099	07/25/13	08/13/13	6010C/SOP503
Lead		1.5		0.030	"	"	"	"	6010C/SOP503
Selenium		ND	U	0.020	"	"	"	"	6010C/SOP503
Silver		0.007	C1, J	0.010	"	"	"	"	6010C/SOP503
Mercury	RE1	0.00079		0.00015	"	B13H010	08/02/13	08/02/13	245.1/SOP515
SPLP Extraction		Performed		1	N/A	B13G087	07/23/13	08/14/13	EPA 1312
Sample ID: ESS-C2-ESSL		Metals by EPA 6000/7000 Series Methods							
Mercury		2.9	A2, J	0.027	mg/kg dry	B13G083	07/22/13	07/22/13	7473/SOP535
Arsenic		1,400		2.1	"	B13G012	07/17/13	08/04/13	6010C/SOP503
Barium		290		5.3	"	"	"	"	6010C/SOP503
Cadmium		39		0.53	"	"	"	"	6010C/SOP503
Chromium		7.8		1.1	"	"	"	"	6010C/SOP503
Lead	RE1	12,000		8	"	"	"	08/12/13	6010C/SOP503
Selenium		ND	U	2.1	"	"	"	08/04/13	6010C/SOP503
Silver		28		1.1	"	"	"	"	6010C/SOP503
Sample ID: ESS-C2-ESSL		Conventional Chemistry Parameters by APHA/EPA Methods							
% Solids		94		1	%	B13G126	07/30/13	07/31/13	3550C/SOP460



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75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G012 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 07/17/13 Analyzed: 08/04/13

Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13G012-BLK1)

Antimony	ND	U		2 mg/kg wet
Arsenic	ND	U		2 "
Barium	ND	U		5 "
Beryllium	ND	U		0.1 "
Cadmium	ND	U		0.5 "
Chromium	ND	U		1 "
Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

Blank (B13G012-BLK2)

Antimony	ND	U		2 mg/kg wet
Arsenic	ND	U		2 "
Barium	ND	U		5 "
Beryllium	ND	U		0.1 "
Cadmium	ND	U		0.5 "
Chromium	ND	U		1 "
Cobalt	ND	U		2 "
Copper	ND	U		4 "
Lead	ND	U		3 "
Molybdenum	ND	U		5 "
Nickel	ND	U		5 "
Selenium	ND	U		2 "
Silver	ND	U		1 "
Thallium	ND	U		5 "
Vanadium	ND	U		2 "
Zinc	ND	U		8 "

Matrix Spike (B13G012-MS3)

Source: 1307011-01

Arsenic	767		2.1 mg/kg dry	413	263	122	75-125	20
Barium	735		5.3 "	413	346	94	75-125	20
Cadmium	16.6		0.53 "	10.3	5.96	103	75-125	20
Chromium	49.9		1.1 "	41.3	9.04	99	75-125	20
Lead	1,630	Q10	3.2 "	103	1,310	309	75-125	20
Selenium	438		2.1 "	413	ND	106	75-125	20



United States Environmental Protection Agency Region 9 Laboratory

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Project Manager: Thomas Dunkelman

Project Number: R13S77

Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G012 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 07/17/13 Analyzed: 08/04/13

Metals by EPA 6000/7000 Series Methods - Quality Control

Matrix Spike (B13G012-MS3)

Source: 1307011-01

Silver	14.9			1.1 "	10.3	3.52	110	75-125		20
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Matrix Spike Dup (B13G012-MSD3)

Source: 1307011-01

Arsenic	910			2.1 mg/kg dry	409	263	158	75-125	17	20
Barium	702			5.3 "	409	346	87	75-125	5	20
Cadmium	16.6			0.53 "	10.2	5.96	104	75-125	0.2	20
Chromium	49.8			1.1 "	40.9	9.04	100	75-125	0.1	20
Lead	5,240	Q10		3.2 "	102	1,310	NR	75-125	105	20
Selenium	441			2.1 "	409	ND	108	75-125	0.7	20
Silver	38.6			1.1 "	10.2	3.52	344	75-125	89	20

Reference (B13G012-SRM1)

Arsenic	289			2 mg/kg wet	252		114	60.9-139		
Barium	ND	U		5 "	1.60			62.5-138		
Cadmium	11.2			0.5 "	10.9		103	70.6-128		
Chromium	28.6			1 "	27.0		106	68.3-132		
Copper	1,670			4 "	1760		94	74.6-126		
Lead	65.5			3 "	56.7		115	72.8-127		
Nickel	17.2			5 "	16.3		106	55.2-145		
Selenium	11.4			2 "	9.97		114	41-159		
Silver	5.83			1 "	5.88		99	45.8-154		
Zinc	52.6			8 "	47.4		111	43.2-157		

Reference (B13G012-SRM2)

Arsenic	288			2 mg/kg wet	254		114	60.9-139		
Barium	ND	U		5 "	1.60			62.5-138		
Cadmium	11.1			0.5 "	10.9		101	70.6-128		
Chromium	28.2			1 "	27.2		104	68.3-132		
Copper	1,700			4 "	1770		96	74.6-126		
Lead	60			3 "	57.0		105	72.8-127		
Nickel	16.8			5 "	16.3		103	55.2-145		
Selenium	11.5			2 "	10.0		115	41-159		
Silver	7.1			1 "	5.91		120	45.8-154		
Zinc	53.6			8 "	47.6		113	43.2-157		

Batch B13G082 - 1311 TCLP - TCLP extraction

Prepared: 07/23/13 Analyzed: 07/24/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Blank (B13G082-BLK1)

TCLP Extraction	Performed			N/A						
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Duplicate (B13G082-DUP1)

Source: 1307011-01

TCLP Extraction	Performed			N/A		Performed				200
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Batch B13G083 - 7473 Hg Prep - Mercury by 7473

Prepared & Analyzed: 07/22/13

Metals by EPA 6000/7000 Series Methods - Quality Control



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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G083 - 7473 Hg Prep - Mercury by 7473

Prepared & Analyzed: 07/22/13

Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B13G083-BLK1)

Mercury	ND	U	0.025	mg/kg wet						
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Blank (B13G083-BLK2)

Mercury	ND	U	0.025	mg/kg wet						
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Matrix Spike (B13G083-MS3)

Source: 1307011-02

Mercury	1.73		0.026	mg/kg dry	0.520	1.29	84	80-120		20
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Matrix Spike Dup (B13G083-MSD3)

Source: 1307011-02

Mercury	2.04		0.026	mg/kg dry	0.502	1.29	151	80-120	57	20
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Reference (B13G083-SRM1)

Mercury	1.23		0.025	mg/kg wet	1.10		112	80-120		
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Reference (B13G083-SRM2)

Mercury	1.2		0.025	mg/kg wet	1.10		109	80-120		
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Batch B13G087 - 1312 SPLP - SPLP Extraction

Prepared: 07/23/13 Analyzed: 08/14/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Blank (B13G087-BLK1)

SPLP Extraction	Performed		1	N/A						
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Duplicate (B13G087-DUP1)

Source: 1307011-01

SPLP Extraction	Performed		1	N/A		Performed			200	
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Batch B13G098 - Leachate Digest - Metals, TCLP, ICP

Prepared: 07/25/13 Analyzed: 08/12/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Blank (B13G098-BLK1)

Arsenic	ND	U	0.2	mg/L						
Barium	ND	U	0.5	"						
Cadmium	ND	U	0.05	"						
Chromium	ND	U	0.1	"						
Lead	ND	U	0.3	"						
Selenium	ND	U	0.2	"						
Silver	ND	U	0.1	"						

LCS (B13G098-BS1)

Arsenic	21.5		0.2	mg/L	20.0		107	80-120		200
Barium	21.4		0.5	"	20.0		107	80-120		200
Cadmium	0.492		0.05	"	0.500		98	80-120		200
Chromium	1.99		0.1	"	2.00		100	80-120		200
Lead	4.96		0.3	"	5.00		99	80-120		200
Selenium	20.6		0.2	"	20.0		103	80-120		200
Silver	0.481		0.1	"	0.500		96	80-120		200

Duplicate (B13G098-DUP1)

Source: 1307011-01

Arsenic	0.85		0.2	mg/L		1.08			24	20
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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G098 - Leachate Digest - Metals, TCLP, ICP

Prepared: 07/25/13 **Analyzed:** 08/12/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Duplicate (B13G098-DUP1)

Source: 1307011-01

Barium	1.38		0.5	"		1.3			6	20
Cadmium	0.039	C1, J	0.05	"		0.036			5	20
Chromium	ND	U	0.1	"		ND				20
Lead	0.748		0.3	"		0.353			72	20
Selenium	ND	U	0.2	"		ND				20
Silver	ND	U	0.1	"		ND				20

Matrix Spike (B13G098-MS1)

Source: 1307011-01

Arsenic	23.1		0.2	mg/L	20.0	1.08	110	75-125		20
Barium	21.1		0.5	"	20.0	1.3	99	75-125		20
Cadmium	0.524		0.05	"	0.500	0.036	98	75-125		20
Chromium	2.01		0.1	"	2.00	ND	101	75-125		20
Lead	5.28		0.3	"	5.00	0.353	98	75-125		20
Selenium	21.1		0.2	"	20.0	ND	106	75-125		20
Silver	0.485		0.1	"	0.500	ND	97	75-125		20

Matrix Spike Dup (B13G098-MSD1)

Source: 1307011-01

Arsenic	23.2		0.2	mg/L	20.0	1.08	111	75-125	0.5	20
Barium	22.6		0.5	"	20.0	1.3	106	75-125	7	20
Cadmium	0.527		0.05	"	0.500	0.036	98	75-125	0.6	20
Chromium	2.02		0.1	"	2.00	ND	101	75-125	0.2	20
Lead	5.3		0.3	"	5.00	0.353	99	75-125	0.4	20
Selenium	21.2		0.2	"	20.0	ND	106	75-125	0.6	20
Silver	0.492		0.1	"	0.500	ND	98	75-125	1	20

Batch B13G099 - Leachate Digest - Metals, SPLP, ICP

Prepared: 07/25/13 **Analyzed:** 08/13/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Blank (B13G099-BLK1)

Arsenic	ND	U	0.02	mg/L						
Barium	ND	U	0.05	"						
Cadmium	ND	U	0.005	"						
Chromium	ND	U	0.01	"						
Lead	ND	U	0.03	"						
Selenium	ND	U	0.02	"						
Silver	ND	U	0.01	"						

LCS (B13G099-BS1)

Arsenic	2.14		0.02	mg/L	2.00		107	80-120		200
Barium	2.14		0.05	"	2.00		107	80-120		200
Cadmium	0.05		0.005	"	0.0500		100	80-120		200
Chromium	0.208		0.01	"	0.200		104	80-120		200
Lead	0.505		0.03	"	0.500		101	80-120		200
Selenium	2.04		0.02	"	2.00		102	80-120		200
Silver	0.049		0.01	"	0.0500		98	80-120		200

Duplicate (B13G099-DUP1)

Source: 1307011-01



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Project: Eureka Smelter Sites May 2013 Sampling

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 13190A

Reported: 08/15/13 13:00

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B13G099 - Leachate Digest - Metals, SPLP, ICP

Prepared: 07/25/13 Analyzed: 08/13/13

Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control

Duplicate (B13G099-DUP1)

Source: 1307011-01

Arsenic	0.393		0.02	mg/L		0.262			40	20
Barium	0.162		0.05	"		0.164			1	20
Cadmium	0.002	C1, J	0.005	"		ND				20
Chromium	ND	U	0.01	"		ND				20
Lead	0.393		0.03	"		0.377			4	20
Selenium	ND	U	0.02	"		ND				20
Silver	ND	U	0.01	"		ND				20

Matrix Spike (B13G099-MS1)

Source: 1307011-01

Arsenic	2.4		0.02	mg/L	2.00	0.262	107	75-125		20
Barium	2.3		0.05	"	2.00	0.164	107	75-125		20
Cadmium	0.052		0.005	"	0.0500	ND	104	75-125		20
Chromium	0.212		0.01	"	0.200	ND	106	75-125		20
Lead	0.874		0.03	"	0.500	0.377	99	75-125		20
Selenium	2.08		0.02	"	2.00	ND	104	75-125		20
Silver	0.05		0.01	"	0.0500	ND	100	70-125		20

Matrix Spike Dup (B13G099-MSD1)

Source: 1307011-01

Arsenic	2.43		0.02	mg/L	2.00	0.262	108	75-125	1	20
Barium	2.18		0.05	"	2.00	0.164	101	75-125	5	20
Cadmium	0.052		0.005	"	0.0500	ND	105	75-125	1	20
Chromium	0.213		0.01	"	0.200	ND	106	75-125	0.4	20
Lead	0.881		0.03	"	0.500	0.377	101	75-125	0.8	20
Selenium	2.11		0.02	"	2.00	ND	105	75-125	1	20
Silver	0.05		0.01	"	0.0500	ND	100	70-125	0.3	20

Batch B13G126 - Solids, Dry Weight (Prep) - Solids, Dry Weight

Prepared: 07/30/13 Analyzed: 07/31/13

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Blank (B13G126-BLK1)

% Solids	ND	U	1	%						
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Duplicate (B13G126-DUP1)

Source: 1307011-02

% Solids	95		1	%		95			0.2	20
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Batch B13H009 - Leachate Digest - Metals, TCLP, Mercury

Prepared & Analyzed: 08/02/13

Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control

Blank (B13H009-BLK1)

Mercury	ND	U	0.0003	mg/L						
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Blank (B13H009-BLK2)

Mercury	ND	U	0.0003	mg/L						
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LCS (B13H009-BS1)

Mercury	0.00202		0.0003	mg/L	0.00200		101	85-115		200
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Duplicate (B13H009-DUP1)

Source: 1307011-01

Mercury	ND	U	0.0003	mg/L		ND				20
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Matrix Spike (B13H009-MS1)

Source: 1307011-02

Mercury	0.00205		0.0003	mg/L	0.00200	ND	103	70-130		20
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Project Number: R13S77	75 Hawthorne Street	Reported: 08/15/13 13:00
Project: Eureka Smelter Sites May 2013 Sampling	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B13H009 - Leachate Digest - Metals, TCLP, Mercury										
Prepared & Analyzed: 08/02/13										
Analysis of Toxicity Characteristic Leaching Procedure (TCLP) Extracts - Quality Control										
Matrix Spike (B13H009-MS1)										
Source: 1307011-02										
Matrix Spike Dup (B13H009-MSD1)										
Source: 1307011-02										
Mercury	0.00208		0.0003	mg/L	0.0020	ND	104	70-130	1	20
Batch B13H010 - Leachate Digest - Metals, SPLP, Mercury										
Prepared & Analyzed: 08/02/13										
Analysis of Synthetic Precipitation Leaching Procedure (SPLP) Extracts - Quality Control										
Blank (B13H010-BLK1)										
Mercury	ND	U	0.00003	mg/L						
Blank (B13H010-BLK2)										
Mercury	ND	U	0.00003	mg/L						
LCS (B13H010-BS1)										
Mercury	0.000206		0.00003	mg/L	0.0002		103	85-115		200
Duplicate (B13H010-DUP1)										
Source: 1307011-01										
Mercury	0.000311		0.00003	mg/L		0.000311			0.1	20
Matrix Spike (B13H010-MS3)										
Source: 1307011-02RE2										
Mercury	0.000783		0.00015	mg/L	0.0002	0.000644	70	70-130		20
Matrix Spike Dup (B13H010-MSD3)										
Source: 1307011-02RE2										
Mercury	0.000814		0.00015	mg/L	0.0002	0.000644	85	70-130	4	20



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Reported: 08/15/13 13:00

Qualifiers and Comments

- Q6 Matrix spike/matrix spike duplicate precision criteria were not met for this analyte (see MS/MSD results for this batch in QC summary).
- Q5 Sample duplicate precision criteria were not met for this analyte (see duplicate results for this batch in QC summary).
- Q4 The matrix spike and/or matrix spike duplicate associated with this sample did not meet recovery criteria for this analyte (see MS/MSD results for this batch in QC summary)
- Q10 The analyte concentration in the unfortified sample is significantly greater than the concentration spiked into the matrix spike and matrix spike duplicate. The reported spike recovery is not a meaningful measure of the dataset's analytical accuracy.
- J The reported result for this analyte should be considered an estimated value.
- C1 The reported concentration for this analyte is below the quantitation limit.
- A2 The sample was received above the recommended temperature range.

U Not Detected

NR Not Reported

RE1, RE2, etc: Result is from a sample re-analysis.

Attachment 6

**Photo Documentation
DVD Disk (attached)**