



## ecology and environment, inc.

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December 26, 2014

Mr. Jeffry Rodin, On-Scene Coordinator  
United States Environmental Protection Agency, Region 10  
1200 Sixth Avenue, Mail Stop ECL-116  
Seattle, Washington 98101

**Re: Contract Number: EP-S7-13-07**  
**Technical Direction Document Number: 14-07-0008**  
***Final Cinnabar Mine Trip Report***

Dear Mr. Rodin:

Enclosed please find the Final Trip Report for the Cinnabar Mine site which is located near Yellow Pine, Idaho.

If you have any questions regarding this submittal, please call Renee Nordeen at (206) 624-9537 or me at (206) 920-1739.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Steven G. Hall  
START IV Removal Team Leader

cc: Renee Nordeen, START IV Project Manager, E & E, Seattle, Washington

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**TRIP REPORT**

**Cinnabar Mine  
Yellow Pine, Idaho  
TDD: 14-07-0008**



Prepared for

U.S. Environmental Protection Agency, Region 10  
1200 Sixth Avenue  
Seattle, Washington 98101

Prepared by

Ecology and Environment, Inc.  
720 Third Avenue, Suite 1700  
Seattle, Washington 98104

December 2014

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## 1. SITE INFORMATION

<b>Site Name</b>	Cinnabar Mine	
<b>Site Location</b>	Approximately 15 miles east of Yellow Pine, Idaho	
<b>Legal Description</b>	Township 18 North, Range 10 East, Sections 6 and 7	
<b>Latitude/Longitude</b>	44.92111, -115.287778	
<b>Site Contact</b>	Jim Egnew, USFS	<b>Phone Number:</b> 208-634-0700
<b>Sampling Dates:</b>	8/18/14 to 8/20/14	
<b>SSID Number</b>	101T	
<b>CERCLIS ID</b>	IDD980665160	

## 2. PURPOSE

The United States Environmental Protection Agency (EPA) tasked Ecology and Environment, Inc. (E & E), under Superfund Technical Assessment and Response Team (START) IV contract number EP-S7-13-07, Technical Direction Document (TDD) number 14-07-0008, to assist EPA with assessment activities at the Cinnabar Mine Site. The objectives of the assessment included assessing the levels of contamination and potential for leaching in the on-site tailings pile, and assessing the levels of contamination associated with sediments and surface water in Cinnabar Creek and Sugar Creek downgradient of the site.

## 3. PERSONS INVOLVED

Agency/Company	Name/Position
EPA	Jeffry Rodin, On-Scene Coordinator
	Greg Weigel, On-Scene Coordinator
	Duane Newell, Environmental Response Team Remediation Specialist
United States Geological Survey (USGS)	JoAnn Holloway, Research Physical Scientist
United States Forest Service (USFS)	Jim Egnew
Ecology and Environment, Inc. (START)	Renee Nordeen, Project Manager
	David Burford, Sampler
Environmental Quality Management, Inc. (ERRS)	Patrick Heyneman, Response Manager

## 4. BACKGROUND

The Cinnabar Mine is located approximately 15 miles east of Yellow Pine, Idaho on Forest Service Road #412 to Forest Service Road #374 in Valley County (Figure 1). The site encompasses approximately 50 acres within the 575 acres of patented claims comprising the Cinnabar Mine. The site is located within the Payette National Forest, adjacent to the Frank Church/River of No Return Wilderness Area to the north and east. The Stibnite Mine, which is listed on the EPA National Priorities List, is located approximately 3.5 miles southwest of the site.

Mercury mining operations began in 1921 and ceased in 1958. The deposit was discovered in 1902, with subsequent development commencing in 1921 under United Mercury Mines Company (also known as Hermes Mine). Production is reported to have been intermittent prior to 1930. In 1942, the mine was worked by Bonanza Mining, Inc., and then Holly Minerals took over during the 1950s. Historically, the ore processing was conducted on site. The initial ore processing method was roasting the ore (mercuric sulfide, also known as cinnabar) with oxygen to produce free mercury vapor and sulfuric dioxide gas. The

mercury vapor was collected after cooling by flue condensers. Allegedly, this process was uncontrolled; during operations, elemental mercury could be collected from the walls and rain-gutters of the process buildings. A fire in 1956 destroyed the processing mill and the mill was subsequently rebuilt. The new mill processed ore using a method which coupled wet flotation with electro-separation (E & E 1999).

Features at the site include adits, tailings piles (west, central and east tailings [red] and tan or yellow tailings), the former mill laboratory building, concrete pads, the dilapidated bunkhouse, and various former residential structures (all in varying states of decay; Figure 2). Water discharges from several mine adits and surface drainages above the site to Cinnabar Creek. Cinnabar Creek flows through the tailings piles in a diversion channel which was initially constructed in 1992 and reconstructed during the 1996 EPA Removal Action (discussed further below). Cinnabar Creek flows into Sugar Creek below the mine site. Sugar Creek flows approximately 2.6 miles to the confluence with the East Fork South Fork Salmon River (EFSFSR) which provides habitat for the Snake River Spring and Summer Chinook salmon which is a Federal-listed threatened species (E&E 1996).

#### **Previous Investigations/Actions:**

- The EPA conducted a non-sampling inspection of the site in August 1979, which concluded that the site did not pose an environmental or public health threat. No samples were collected as part of this effort (E & E 1999).
- The Idaho Department of Health and Welfare (IDHW) and the Idaho Central District Health Department jointly performed an investigation at the site in September 1984. A total of 20 samples, including water, sediment, soil, drum, and biological samples, were collected. Based on analytical results, the report concluded the mine should be given a high priority for cleanup of toxic waste present at the site (E & E 1999).
- In June 1985, the EPA Region 10 Emergency Response Team and the EPA Region 10 Technical Assistance Team jointly performed a preliminary removal site assessment. A total of 21 samples, including water, soil, sediment, diesel product, and air samples, were collected and analyzed for mercury and polychlorinated biphenyls (PCBs). Several cleanup recommendations were made as a result of this investigation (E & E 1999).
- On May 23, 1988, the United States Forest Service (USFS) Krassel Ranger District received notice of an oil spill on the EFSFSR. Pioneer Metals (who was leasing the mine at the time) reported that a tap had been removed and a valve opened on a 120,000-gallon oil tank, and the oil was releasing to the EFSFSR. Attempts to control the spill included diversion of snowmelt, construction of berms, and placement of absorbent materials around the tank. The USFS prepared a macro-invertebrate analysis report to document conditions in Cinnabar Creek in response to the spill and assess general water quality around the mine area. The report concluded that severe stress conditions were detected downstream in the ecosystem (E & E 1999).
- In September 1991, the USFS conducted a site visit and collected five samples of water, tailings, and rock. The samples were analyzed for mercury, lead, and arsenic. The report recommended that additional assessment and sampling be performed at the site (E & E 1999).
- The USFS began a time-critical removal action at the site in September 1992, based on their August 1992 Request for Removal Action Memorandum. The action involved construction of a diversion ditch around the edge of the tailings and impoundment structure to divert Cinnabar Creek to a historical diversion channel. In addition, a spillway was constructed in order for water to flow through should the existing culvert fail (E & E 1999).
- The USFS conducted a non-sampling Preliminary Assessment (PA) of the site in May 1993. The results of the PA concluded that there was sufficient evidence that the site posed an environmental risk through the surface water migration pathway to recommend further investigation. No samples were collected as part of this investigation (E & E 1999).
- In July 1994, the EPA conducted a Site Inspection as a result of the PA recommendations. A total of 15 soil and sediment samples were collected from on-site sources and downstream target

locations. Although contamination was determined to be migrating from site sources to downstream targets, the isolation of the site and low human population in the surrounding area resulted in a determination of a minimal threat (E & E 1999).

- In 1994, IDHW prepared a Water Quality Status Report as part of ongoing monitoring efforts and a study of water and habitat quality in the EFSFSR drainage and its tributaries. The focus of the report was Sugar Creek and Meadow Creek, both of which are impacted by Cinnabar Mine and the nearby Stibnite Mine. Recommendations from this investigation included routine monitoring of surface waters and continued reclamation efforts at the mine sites to reduce migration of sediments via surface waters (E & E 1999).
- In 1996, EPA conducted a time-critical removal action at the Cinnabar Mine site. Transformers containing polychlorinated biphenyls (PCBs) and surrounding soil were removed. A retort, used to roast ore, was removed from Cinnabar Creek. In addition, sediment with elemental mercury was excavated from the creek. Asbestos insulation from boilers and drying ovens were removed. The PCBs, condenser stack, and mercury-contaminated soil were all landfilled on-site in a lined cell. A leaking 120,000-gallon oil storage tank was cleaned and crushed. Two other oil storage tanks were emptied and cleaned. The report does not indicate the final disposition of these tanks. Approximately 40 cubic yards of oil-contaminated soil was removed and transported off-site for disposal. Cinnabar Creek was re-routed around the lower tailings piles which were regraded and covered with soil and woody debris, and seeded with grass for long-term stabilization (E & E 1996).
- In August 1998, EPA conducted a time-critical removal action to address the remainder of the mercury-contaminated soil, to investigate an area of oil-contaminated soil, and to stabilize the upper tailings piles that were eroding into Cinnabar Creek. Site conditions at the conclusion of this removal action are depicted on Figure 2 (E & E 1999).
- In 2004, EPA returned to the site to regrade the west red tailings pile and place seed mixture on the pile to discourage migration of tailings into Cinnabar Creek (E & E 2004).
- In 2011, the United States Geological Survey (USGS) began collecting surface water samples from the EFSFSR above Meadow Creek (station 13310800), Meadow Creek (background; station 13310850), EFSFSR at Stibnite Mine (station 13311000), EFSFSR above Sugar Creek (station 13311250), and Sugar Creek above the confluence with EFSFSR (station 13311450). Sample locations are depicted on Figure 3. The samples were analyzed for total and dissolved metals and field parameters including temperature, pH, and specific conductivity. Results of this sampling are provided in Table 1. The samples were compared to National Recommended Water Quality Criteria fresh water criterion maximum concentrations for acute exposure (i.e., CMC) and criterion continuous exposure for chronic exposure (i.e., CCC) to the protection of aquatic life. Although derived for dissolved metals, these values may also be applied to total metals as an indication that metal loadings could be a stress to the ecosystem particularly in locations other than the water column (Prothro 1993). Total lead was detected above the chronic level (2.5 micrograms per liter [ $\mu\text{g/L}$ ]) in one sample collected in September 2011 from the Sugar Creek station above the confluence with EFSFSR (3.61  $\mu\text{g/L}$ ) and in one sample collected from EFSFSR at Stibnite Mine in May 2013 (4.21  $\mu\text{g/L}$ ). Total mercury was detected above the chronic level (0.77  $\mu\text{g/L}$ ) and acute level (1.4  $\mu\text{g/L}$ ) in one sample in May 2013 at the Sugar Creek station above the confluence with EFSFSR at a concentration of 26.3  $\mu\text{g/L}$ . Arsenic was not detected above either the acute (340  $\mu\text{g/L}$ ) or chronic (150  $\mu\text{g/L}$ ) in any of the samples collected (USGS 2014a, 2014b, 2014c, 2014d, 2014e). Based in part by the elevated mercury concentration detected in the surface water sample from Sugar Creek above the confluence with the EFSFSR, concern has been expressed that contamination may be leaching from the tailings pile at Cinnabar Mine and impacting surface water and sediments in Cinnabar Creek, Sugar Creek, and the EFSFSR.

## 5. ACTIVITIES

START's activities for the 2014 removal assessment were performed in compliance with a site-specific health and safety plan (E & E 2014a), and START samples were collected in accordance with a site-specific sampling plan (SSSP; E & E 2014b), which included standard operating procedures and methods followed by START during the field activities. Site data was managed in accordance with the site-specific data management plan (E & E 2014b).

On August 18, 2014, representatives from EPA Region 10, EPA's Environmental Response Team (ERT), USGS, USFS, START, and Environmental Quality Management, Inc. (as the EPA Region 10 Emergency and Rapid Response Services [ERRS] contractor) mobilized to the site to conduct a site walk. START also collected surface soil, surface water, and sediment samples. Concurrently with the EPA assessment, a representative from the USGS was also conducting sampling activities at the site and on Cinnabar Creek.

START collected a total of 29 samples as part of the assessment activities (13 surface water samples, 11 sediment samples, and five surface soil samples, including quality assurance/quality control samples). Co-located surface water and sediment sample sets were collected from Cinnabar Creek (CC01 through CC07) and Sugar Creek (SC01). In addition, surface water samples (without co-located sediment samples) were collected from an on-site adit (AD01) and from ponded water near another adit (CP01). A total of four tailings samples were collected; two samples (RT01 and RT02) were collected from the red tailings pile, and two samples (YT01 and YT02) were collected from the yellow tailings pile. Sample locations are depicted on Figures 4. Photographic documentation is provided in Attachment A.

The surface water samples were collected by directly dipping the pre-labeled sample containers into the water body. The dissolved metals fraction was filtered as soon as practicable prior to shipment to the laboratory. The surface water samples were preserved prior to sample shipment. The surface water matrix was collected prior to the sediment matrix to avoid potential cross-contamination. The sediment and surface soil samples were collected using dedicated plastic scoops to transfer the sample material into pre-labeled sample containers. The sediment samples were decanted as much as possible prior to placing the material in the sample container. The samples were stored on ice and maintained under custody. Chain-of-custody documentation is provided in Attachment B.

The surface water samples were submitted to an off-site fixed laboratory for analysis of total and dissolved arsenic, lead, and mercury by EPA Contract Laboratory Method (CLP) Statement of Work (SOW) ISM01.3 and hardness by Method SM 2340B. The sediment samples were submitted for analysis of total arsenic, lead and mercury by CLP SOW ISM01.3. The surface water and sediment samples were submitted to a CLP Laboratory, ChemTech Consulting Group of Mountainside, New Jersey. The surface soil samples were submitted to an off-site fixed laboratory (the EPA Region 10 Laboratory of Port Orchard, Washington) for analysis of synthetic precipitation leaching procedure (SPLP) arsenic, lead, and mercury by EPA Method 1312 (SPLP extraction), 200.2 (metals digestion), and EPA Method 200.8 (metals analysis). Data validation memoranda are provided in Attachment C.

The surface water sample results and the SPLP results for the surface soil samples were compared to the National Recommended Water Quality Criteria fresh water criterion maximum concentration (CMC; acute exposure) and criterion continuous exposure (CCC; chronic) for the protection of aquatic life, and to Water Quality Criteria (WQC) for the protection of aquatic life. The WQC for lead require conversion factors based on hardness data. The sediment samples were compared to consensus-based sediment quality guidelines as developed by McDonald et. al. (2000) using both the threshold effect concentrations (TEC) and probable effect concentrations (PEC). Analytical data is provided in Tables 2 through 4.

No total or dissolved metals were detected above any of the screening criteria in any of the water samples (Table 2).

Sediment sample results (Table 3) indicate the presence of arsenic at concentrations that exceed the threshold effect concentration (TEC) screening criteria of 9.79 milligrams per kilogram (mg/kg) and the probable effects concentration (PEC) of 33.0 mg/kg in all of the samples collected including both sediment background locations. Concentrations range from 10.5 mg/kg at location BG01 to 520 mg/kg at location CC07. The results also indicate the presence of mercury in sediment at concentrations that exceed the screening criteria of 0.18 (TEC) and 1.06 (PEC) mg/kg in all samples except background sediment sample BG01. Mercury concentrations in sediment range from an estimated 3.5 JK mg/kg at location SC01 to an estimated 152 JK mg/kg at location CC04. Lead was not detected above either screening criteria of 35.8 mg/kg (TEC) or 128 mg/kg (PEC) in any of the sediment samples collected.

The SPLP results for the surface soil samples (Table 4) indicate the presence of arsenic at concentrations that exceed the surface water screening criteria of 340 µg/L for CMC and 150 µg/L for CCC in three of the four sample locations. Concentrations that exceed the screening levels range from 342 µg/L at location YT02 to 1,630 µg/L at location RT02. The SPLP results also indicate the presence of mercury at concentrations that exceed the surface water screening criteria of 1.4 µg/L for CMC and 0.77 µg/L for CCC in two of the four sample locations. Concentrations that exceed the screening levels range from 2.02 µg/L at location YT01 to 6.21 µg/L at location RT01.

## **6. SUMMARY AND CONCLUSIONS**

On August 18, 2014, EPA, USGS, and START mobilized to the site to collect surface soil, surface water, and sediment samples. In addition, ERT, USFS, and ERRS conducted a site walk. START collected a total of 29 samples as part of the assessment activities. A representative from the USGS was also conducting sampling activities at the site and on Cinnabar Creek concurrently with this assessment. Sample results from the USGS investigation were not available at the time of production of this report.

The site is a historical source of contamination above screening criteria which resulted in several removal actions. Contamination associated with past site activities has been observed in Cinnabar Creek. This investigation was designed to determine the potential for site contaminants to leach from the on-site yellow and red tailings piles to the adjacent Cinnabar Creek and to determine if these contaminants were likewise in the surface water and or sediments of the downstream Sugar Creek. The results of the investigation indicate the presence of site contaminants in some media above selected screening criteria, specifically:

- SPLP metals results indicate that arsenic and mercury in the tailings pile are available to leach from the tailings at concentrations that exceed water quality criteria.
- Arsenic and mercury were not detected above the water quality criteria in any of the surface water samples collected.
- Analytical results for sediment samples from Cinnabar Creek and Sugar Creek indicate the presence of arsenic and mercury at concentrations that exceed sediment screening levels.

## 7. REFERENCES

- Ecology and Environment, Inc. (E & E), July 29, 2014a, *Cinnabar Mine Site-Specific Health and Safety Plan*, Technical Direction Document Number 14-07-0008.
- , August 14, 2014b, *Cinnabar Mine Site-Specific Sampling Plan and Site-Specific Data Management Plan*, prepared for US Environmental Protection Agency, Contract Number EP-S7-13-07, Technical Direction Document Number 14-07-0008.
- , October 2004, *Cinnabar Mine Trip Report*, prepared for US Environmental Protection Agency, Contract Number 68-S0-01-01, Technical Direction Document Number 04-03-0013.
- , February 1999, *Cinnabar Mine Site 1998 Removal Action Report*, prepared for US Environmental Protection Agency, Contract 68-W6-0008, Technical Direction Document Number 98-04-0001.
- , 1996, *Removal Report Cinnabar Mine Removal Action, Yellow Pine, Idaho September – October 1996*, prepared for US Environmental Protection Agency, Contract 68-W6-0008, Technical Direction Document Number 96-08-0002.
- McDonald, D. D., C. G. Ingersoll, T. A. Berger, January 13, 2000, *Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems*.
- Prothro, Martha G., October 1, 1993 US Environmental Protection Agency, Acting Assistant Administrator for Water, Memorandum regarding Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria.
- US Geological Survey, 2014a, *Water-resources data for the United States, Water Year: 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 13310850*, accessed at <http://wdr.water.usgs.gov/wy2013/pdfs/13310850.2013.pdf>
- 2014b, *Water-resources data for the United States, Water Year: 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 13311250*, accessed at <http://wdr.water.usgs.gov/wy2013/pdfs/13311250.2013.pdf>
- 2014c, *Water-resources data for the United States, Water Year: 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 13310800*, accessed at <http://wdr.water.usgs.gov/wy2013/pdfs/13310800.2013.pdf>
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- 2014e, *Water-resources data for the United States, Water Year: 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 13311000*, accessed at <http://wdr.water.usgs.gov/wy2013/pdfs/13311000.2013.pdf>

**Table 1 USGS Surface Water Samples Analytical Results**

Station Number	Date	pH	Specific Conductivity	Temperature (°C)	Mercury (µg/L)		Lead (µg/L)		Arsenic (µg/L)	
					Filtered 1.4 0.77	Unfiltered	Filtered 65 <sup>a</sup> 2.5 <sup>a</sup>	Unfiltered	Filtered 340 150	Unfiltered
13310800 (EFSFSR above Meadow Creek)	9/19/2011	8.1	78	8.4	< 0.005	< 0.005		<b>0.04</b>	<b>12.4</b>	<b>11.8</b>
	10/17/2011	8.3	75	4.2	< 0.005	< 0.005		< 0.40	<b>10.9</b>	<b>10.2</b>
	12/14/2011	8.7	77	0.3	--	--		< 0.04	<b>12.2</b>	<b>11.9</b>
	5/17/2012	7.5	36	3.9	--	--		<b>1.94</b>	<b>4.8</b>	<b>6.4</b>
	6/13/2012	7.4	44	5.6	--	0.008		<b>0.17</b>	<b>5.3</b>	<b>5.3</b>
	8/28/2012	7.7	76	8.6	--	--		< 0.04	<b>12.5</b>	<b>11.9</b>
	11/6/2012	7.7	73	2.6	--	--		< 0.04	<b>11.1</b>	<b>9.9</b>
	3/26/2013	8.4	76	0.1	--	--		< 0.04	<b>12.8</b>	<b>11.6</b>
	5/7/2013	7.6	50	4.6	--	--		<b>0.1</b>	<b>8.2</b>	<b>8.5</b>
	5/14/2013	7.5	35	3	0.007	0.04		<b>0.27</b>	<b>4.6</b>	<b>6.5</b>
	5/30/2013	7.8	47	4.1	--	--		< 0.04	<b>5.7</b>	<b>5.2</b>
	6/25/2013	8	56	7.5	--	--		< 0.04	<b>6.8</b>	<b>7.3</b>
13310850 (Meadow Creek - Background)	9/20/2011	7.8	74	5.8	< 0.005	< 0.005	<b>0.016</b>	< 0.90	<b>1.4</b>	< 2.2
	9/22/2011	6.9	75	5	--	--	M	M	<b>1.3</b>	<b>1</b>
	10/17/2011	8.1	63	4.1	< 0.005	< 0.005	<b>0.077</b>	<b>0.19</b>	<b>1.3</b>	<b>1.5</b>
	12/14/2011	7.8	72	0.1	--	--	<b>0.041</b>	<b>0.05</b>	<b>1.4</b>	<b>1.4</b>
	5/17/2012	7.2	34	3.2	--	--	<b>0.027</b>	<b>0.2</b>	<b>0.88</b>	<b>1.7</b>
	6/13/2012	7.4	37	6.8	--	< 0.005	<b>0.036</b>	<b>0.12</b>	<b>0.85</b>	<b>1.2</b>
	8/29/2012	7.6	77	6.7	--	--	<b>0.064</b>	<b>0.07</b>	<b>1.5</b>	<b>1.5</b>
	11/6/2012	7.7	64	4	--	--	<b>0.063</b>	< 0.04	<b>1.2</b>	<b>1.2</b>
	3/27/2013	7.6	67	0.2	--	--	< 0.025	< 0.04	<b>1.3</b>	<b>1.2</b>
	5/8/2013	7.5	39	3.9	--	--	<b>0.052</b>	<b>0.27</b>	<b>0.81</b>	<b>1.4</b>
	5/14/2013	7.3	32	2.2	< 0.005	< 0.005	<b>0.029</b>	<b>0.37</b>	<b>0.77</b>	<b>1.8</b>
	5/30/2013	7.9	42	2.5	--	--	<b>0.037</b>	< 0.04	<b>0.79</b>	<b>0.81</b>
	6/25/2013	7.9	46	7.1	--	--	< 0.025	< 0.04	<b>0.82</b>	<b>0.98</b>
13311000 (EFSFSR at Stibnite)	9/20/2011	7.9	63	10.5	< 0.005	< 0.005	<b>0.021</b>	< 0.90	<b>32.6</b>	<b>32.4</b>
	9/22/2011	7.9	81	7	--	--	M	M	<b>31.2</b>	<b>31</b>
	9/22/2011	7.9	82	7	--	--	M	M	<b>28.8</b>	<b>33</b>
	10/18/2011	7.8	89	1.4	< 0.005	< 0.005	<b>0.057</b>	< 0.40	<b>23.2</b>	<b>22.3</b>
	12/14/2011	8.2	95	0.1	--	--	<b>0.025</b>	<b>0.18</b>	<b>25.2</b>	<b>23.7</b>
	5/18/2012	7.6	45	4.4	--	<b>0.019</b>	<b>0.034</b>	<b>0.15</b>	<b>15.5</b>	<b>15.9</b>
	6/13/2012	7.6	46	8	--	<b>0.007</b>	<b>0.027</b>	<b>0.11</b>	<b>12.7</b>	<b>13</b>
	8/28/2012	7.9	94	13.3	--	--	<b>0.026</b>	<b>0.06</b>	<b>33.1</b>	<b>32.9</b>
	11/7/2012	7.7	88	3.4	< 0.005	< 0.005	< 0.025	< 0.04	<b>21.1</b>	<b>20.9</b>
	3/26/2013	7.9	96	0.8	--	--	<b>0.063</b>	< 0.04	<b>34.9</b>	<b>28.8</b>
	5/7/2013	7.9	53	5.6	< 0.005	<b>0.071</b>	<b>0.061</b>	<b>4.21</b>	<b>17.5</b>	<b>38.3</b>
	5/14/2013	--	38	5.6	< 0.005	<b>0.019</b>	<b>0.044</b>	<b>0.31</b>	<b>11.1</b>	<b>13.4</b>
	5/30/2013	7.8	52	5.7	< 0.005	< 0.005	<b>0.026</b>	< 0.04	<b>15.3</b>	<b>13.9</b>
	6/25/2013	7.9	62	8.2	< 0.005	< 0.005	<b>0.032</b>	< 0.04	<b>15.7</b>	<b>17.4</b>
	8/13/2013	8	93	--	--	--	< 0.025	<b>0.06</b>	<b>29.5</b>	<b>31</b>
13311250 (EFSFSR above Sugar Creek)	9/21/2011	8.1	113	8	< 0.005	< 0.005	< 0.015	< 0.90	<b>69.6</b>	<b>72</b>
	9/22/2011	8	109	--	--	--	M	M	<b>77.9</b>	<b>78</b>
	10/18/2011	8	100	4.4	< 0.005	<b>0.009</b>	<b>0.043</b>	< 0.40	<b>51.9</b>	<b>54</b>
	12/15/2011	7.9	118	0.1	--	--	<b>0.044</b>	< 0.04	<b>66.9</b>	<b>62.9</b>
	5/18/2012	7.7	48	4.9	--	<b>0.015</b>	<b>0.03</b>	<b>0.15</b>	<b>22.4</b>	<b>26.5</b>
	6/14/2012	7.4	52	4.5	< 0.005	<b>0.006</b>	<b>0.081</b>	<b>0.21</b>	<b>21.8</b>	<b>22.4</b>
	8/29/2012	8	113	12.4	< 0.005	< 0.005	<b>0.067</b>	< 0.04	<b>84.7</b>	<b>70.8</b>
	11/7/2012	7.9	102	4	< 0.005	< 0.005	< 0.025	<b>0.05</b>	<b>57.2</b>	<b>55.7</b>
	3/27/2013	8.1	115	1.4	< 0.005	< 0.005	< 0.025	< 0.04	<b>65.5</b>	<b>69.6</b>
	5/8/2013	8.1	61	3.1	< 0.005	<b>0.017</b>	<b>0.085</b>	<b>0.25</b>	<b>28.7</b>	<b>35.6</b>
	5/14/2013	7.3	43	6.5	< 0.005	<b>0.037</b>	<b>0.036</b>	<b>0.47</b>	<b>17.4</b>	<b>24.4</b>
	5/30/2013	7.9	58	5.3	< 0.005	< 0.005	< 0.025	< 0.04	<b>27.5</b>	<b>25.7</b>
	6/26/2013	8	69	7.8	< 0.005	< 0.005	< 0.025	<b>0.05</b>	<b>31.7</b>	<b>34.4</b>

**Table 1 USGS Surface Water Samples Analytical Results**

Station Number	Date	pH	Specific Conductivity	Temperature (°C)	Mercury (µg/L)		Lead (µg/L)		Arsenic (µg/L)	
					Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered
13311450 (Sugar Creek above confluence with EFSFSR)	9/21/2011	8.2	138	7.2	<b>0.005</b>	<b>0.017</b>	< 0.015	<u><b>3.61</b></u>	<b>19.2</b>	<b>22.5</b>
	10/18/2011	8.2	134	2.8	<b>0.008</b>	<b>0.012</b>	<b>0.026</b>	< 0.40	<b>20.5</b>	<b>20.4</b>
	12/15/2011	8.6	144	0.4	--	<b>0.016</b>	<b>0.04</b>	< 0.04	<b>31.1</b>	<b>32.7</b>
	5/18/2012	7.8	64	6	--	<b>0.76</b>	<b>0.063</b>	<b>0.34</b>	<b>7.4</b>	<b>9.2</b>
	6/14/2012	7.9	77	4.9	<b>0.012</b>	<b>0.1</b>	<b>0.06</b>	<b>0.13</b>	<b>7.7</b>	<b>8</b>
	8/29/2012	8.3	137	11.8	<b>0.007</b>	<b>0.02</b>	< 0.025	< 0.04	<b>19.1</b>	<b>20.7</b>
	11/7/2012	8.2	135	4.7	<b>0.008</b>	<b>0.041</b>	< 0.025	< 0.04	<b>17.7</b>	<b>18.6</b>
	3/27/2013	8.3	126	1.7	< 0.005	<b>0.016</b>	< 0.025	< 0.04	<b>17.9</b>	<b>22.1</b>
	5/8/2013	7.9	66	6	<b>0.012</b>	<b>0.294</b>	<b>0.087</b>	<b>0.23</b>	<b>7.8</b>	<b>9.2</b>
	5/14/2013	7.7	55	6.9	<b>0.302</b>	<u><b>26.3</b></u>	<b>0.099</b>	<b>2.6</b>	<b>8.4</b>	<b>35.1</b>
	5/31/2013	8.1	85	3.1	<b>0.008</b>	<b>0.095</b>	< 0.025	< 0.04	<b>8.2</b>	<b>7.6</b>
	6/26/2013	8.2	95	6.8	<b>0.01</b>	<b>0.036</b>	<b>0.027</b>	< 0.04	<b>7.8</b>	<b>8.3</b>

Note: Bold type indicates sample results are greater than the method detection limits.

Underline type indicates the sample result exceeds the National Recommended Water Quality Criteria criterion continuous exposure for the protection of aquatic life

<sup>a</sup> The lead criteria is hardness dependent. A hardness of 100 is assumed for all the samples displayed on this table.

Key:

-- = No data.

° C = degrees Celsius.

µg/L = micrograms per liter.

CCC = Criterion Continuous Exposure.

CMC = Criterion Maximum Concentration.

EFSFSR = East Fork South Fork Salmon River.

M = Presence of this material is verified but not quantified.

NA = Not applicable.



Table 2 Surface Water Samples Analytical Results Summary

EPA Total Metals Sampled ID			14334303	14334333	14334336	14334300	14334306	14334312	14334315	14334318	14334323	14334326	14334309	14334331	14334321		
EPA Dissolved Metals Sample			CMC <sup>c,d</sup>	CCC <sup>c,e</sup>	14334304	14334334	14334337	14334301	14334307	14334313	14334316	14334319	14334324	14334327	14334310	14334332	14334322
Total Metals CLP Sample ID					MJGXC2	MJGXE2	MJGXE4	MJGXC0	MJGXC4	MJGXC8	MJGXD0	MJGXD2	MJGXD6	MJGXD8	MJGXC6	MJGXE0	MJGXD4
Dissolved Metals CLP Sample					MJGXC3	MJGXE3	MJGXE5	MJGXC1	MJGXC5	MJGXC9	MJGXD1	MJGXD3	MJGXD7	MJGXD9	MJGXC7	MJGXE1	MJGXD5
Station Location					BG01SW	BG02SW	BG02SW <sup>(a)</sup>	CC01SW	CC02SW	CC03SW	CC04SW	CC05SW	CC06SW	CC07SW	SC01SW	AD01SW	CP01SW
Description					Background			Cinnabar Creek						Sugar Creek		Adit	Adit Pond
Hardness (milligrams per liter)																	
Hardness				34.9	50	51	66.4	71.3	35.5	57.4	57.6	61.7	70.5	39.5	82	91.7	
Total Metals (micrograms per liter)																	
Arsenic				10.0 U	7.9 JQ	7.9 JQ	11.4	11.6	4.3 JQ	12.9	9.8 JQ	15.2	18.0	3.5 JQ	38.1	18.1	
Calcium				12200	12400	12600	20900	22500	10300	17200	17800	17100	19300	13200	19500	25800	
Lead				1.0 U	1.0 U	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.9	
Magnesium				1080 JQ	4640 JQ	4750 JQ	3420 JQ	3650 JQ	2350 JQ	3520 JQ	3180 JQ	4650 JQ	5400	1600 JQ	8060	6610	
Mercury				0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.061 JQ	0.20 U	0.10 JQ	0.11 JQ	0.20 U	0.15 JQ	0.36	
Dissolved Metals (micrograms per liter)																	
Arsenic		340	150	2.8 JQ	6.7 JQ	6.8 JQ	9.6 JQ	10.5	3.3 JQ	13.6	14.8	18.7	17.9	4.7 JQ	42.4	16.4	
Lead		20.2 - 58.8 <sup>d</sup>	0.79 - 2.29 <sup>e</sup>	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Mercury		1.4	0.77	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	

Note: Bold type indicates the sample result is above the Contract Required Quantitation Limit.  
(a) Duplicate Sample

- Key:
- CCC = Criterion continuous exposure (chronic criteria), National Recommended Water Quality Criteria, Fresh Water, Aquatic Life Criteria (EPA 2009) and State of Idaho Water Quality Standards, Aquatic Life Criteria (IDAPA 58.01.02).
  - CLP = Contract Laboratory Program.
  - CMC = Criterion maximum concentration (acute criteria), National Recommended Water Quality Criteria, Fresh Water, Aquatic Life Criteria (EPA 2009) and State of Idaho Water Quality Standards, Aquatic Life Criteria (IDAPA 58.01.02).
  - EPA = United States Environmental Protection Agency
  - ID = Identification
  - J = The associated numerical value is an estimated quantity.
  - Q = Detected concentration is below the contract required quantitation limit but is above the method detection limit.
  - U = The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- b Criterion is for dissolved concentration.
- c National Recommended Water Quality Criteria, Fresh Water, Aquatic Life Criteria (EPA 2009) and State of Idaho Water Quality Standards, Aquatic Life Criteria (IDAPA 58.01.02)
- d The freshwater criterion for lead is expressed as a function of the hardness for the respective sample. The criterion was calculated using the following equation: CMC (dissolved) = exp{mA [ln(hardness)]+ bA} (CF). The parameters used are specified in Appendix B-Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent (EPA 2009) and Idaho Water Quality Standards Subsection 210.c.ii (IDAPA 58.01.02).
- e The freshwater criterion for lead is expressed as a function of the hardness for the respective sample. The criterion was calculated using the following equation: CCC (dissolved) = exp{mC [ln (hardness)]+ bC} (CF) . The parameters used are specified in Appendix B-Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent (EPA 2009) and Idaho Water Quality Standards Subsection 210.c.ii (IDAPA 58.01.02).

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**Table 3 Sediment Samples Analytical Results Summary**

EPA Sample ID	14334305	14334335	14334338	14334302	14334308	14334314	14334317	14334320	14334325	14334328	14334311		
CLP Sample ID	MJGXB0	MJGXB8	MJGXB9	MJGXE6	MJGXB1	MJGXB3	MJGXB4	MJGXB5	MJGXB6	MJGXB7	MJGXB2		
Station Location	BG01SD	BG02SD	BG02SD <sup>(a)</sup>	CC01SD	CC02SD	CC03SD	CC04SD	CC05SD	CC06SD	CC07SD	SC01SD		
Description	TEC	PEC	Background				Cinnabar Creek				Sugar Creek		
Total Metals (milligrams per kilogram)													
Arsenic	9.79	33.0	10.5	102	113	113	188	90.2	217	262	207	520	49.7
Lead	35.8	128	7.2 JH	5.4 JH	4.9 JH	1.7 JH	2.1 JH	6.7 JH	4.6 JH	6.5 JH	7.0 JH	6.7 JH	7.8 JH
Mercury	0.18	1.06	0.015 JQ	18.3 JK	10.6 JK	20.4 JK	12.4 JK	4.3 JK	152 JK	80.1 JK	12.1 JK	54.4 JK	3.5 JK

Note: Bold type indicates the sample result is above the Contract Required Quantitation Limit.  
Highlight type indicates the sample result is above the screening criteria.  
(a) Duplicate Sample

Key:  
CLP = Contract Laboratory Program.  
EPA = United States Environmental Protection Agency.  
H = High bias.  
ID = Identification.  
J = The associated value is an estimated quantity.  
K = Unknown bias.  
PEC = Probable effect threshold.  
Q = Detected concentration is below the Contract Required Quantitation Limit but is above the Method Detection Limit.  
TEC = Threshold effect concentration.

**Table 4 Tailings Pile Samples Analytical Results Summary**

EPA Sample ID			14334329	14334330	14334339	14334340	14334341
Station Location	Freshwater		YT01SS	YT02	RT01	RT01 <sup>(a)</sup>	RT02
Description	CMC	CCC	Yellow Tailings		Red Tailings		
Synthetic Precipitation Leaching Procedure (µg/L)							
Arsenic	340	150	7.20	342	691	696	1630
Lead	65	2.5	0.28 JH	0.050 U	0.20 JH	0.42 JH	0.23 JH
Mercury	1.4	0.77	2.02	0.050 U	3.96	6.21	1.16

Note:

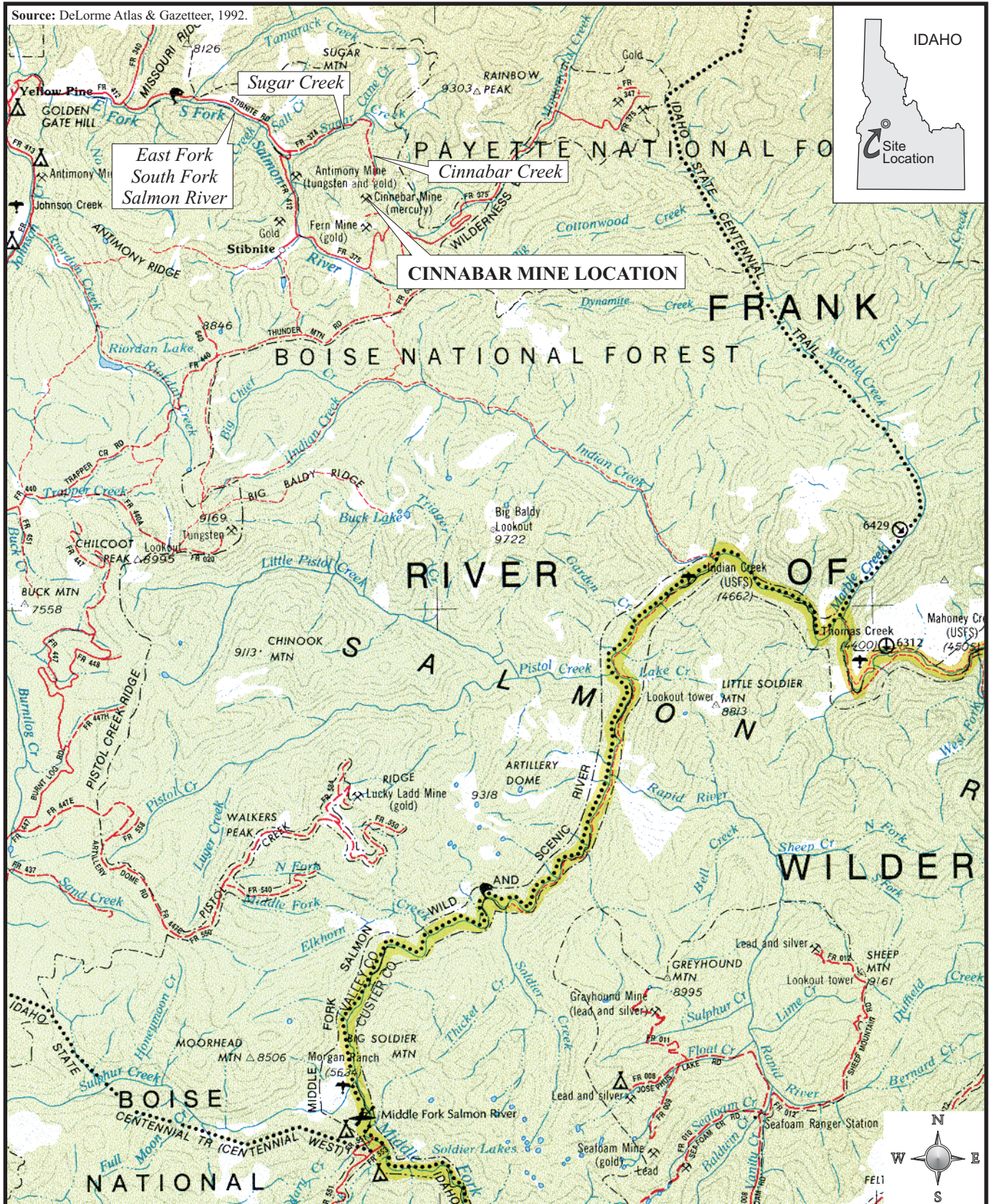
- Bold type indicates the sample result is above the method detection limit.
- Highlight type indicates the sample result exceeds one or more of the screening criteria.
- (a) Duplicate Sample
- Lead criteria is hardness dependent. A hardness value of 100 is assumed for these samples.

Key:

- CCC = Criterion continuous exposure.
- CLP = Contract Laboratory Program.
- CMC = Criterion maximum concentration.
- EPA = United States Environmental Protection Agency
- ID = Identification
- J = The identification of the analyte is acceptable; however, the reported value is an estimate.
- H = High bias.
- U = The analyte was not detected at or above the reported value.
- The associated value is either the sample quantitation limit or the sample detection limit.



Source: DeLorme Atlas & Gazetteer, 1992.



**ecology and environment, inc.**  
Global Environmental Specialists  
Seattle, Washington

**CINNABAR MINE SITE**  
Yellow Pine, Idaho

0 1.5 3  
Approximate Scale in Miles

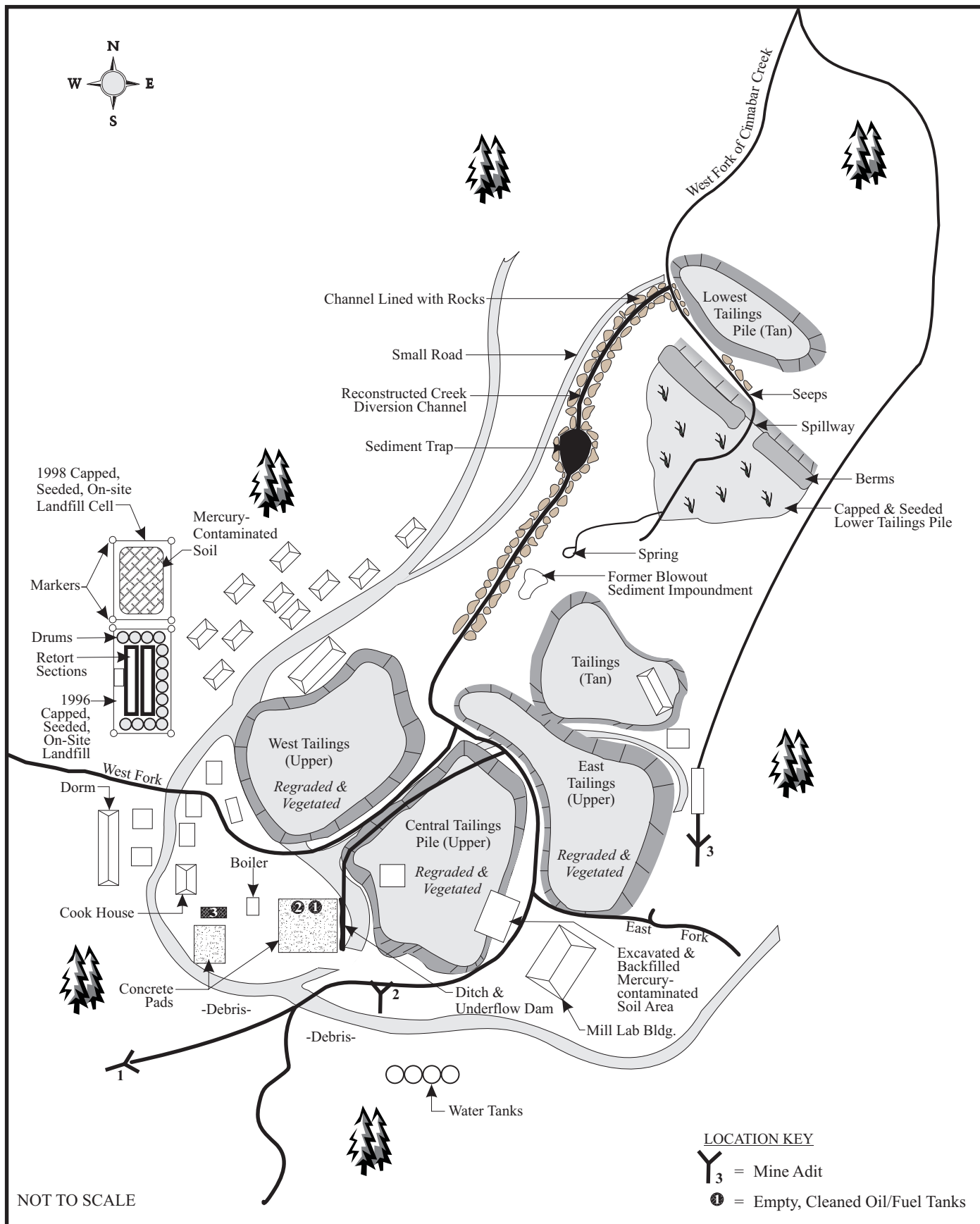
Figure 1  
**SITE VICINITY MAP**

Date:  
7-29-14

Drawn by:  
AES

10:START IV\14070008\fig 1





**ecology and environment, inc.**  
Global Environmental Specialists  
Seattle, Washington

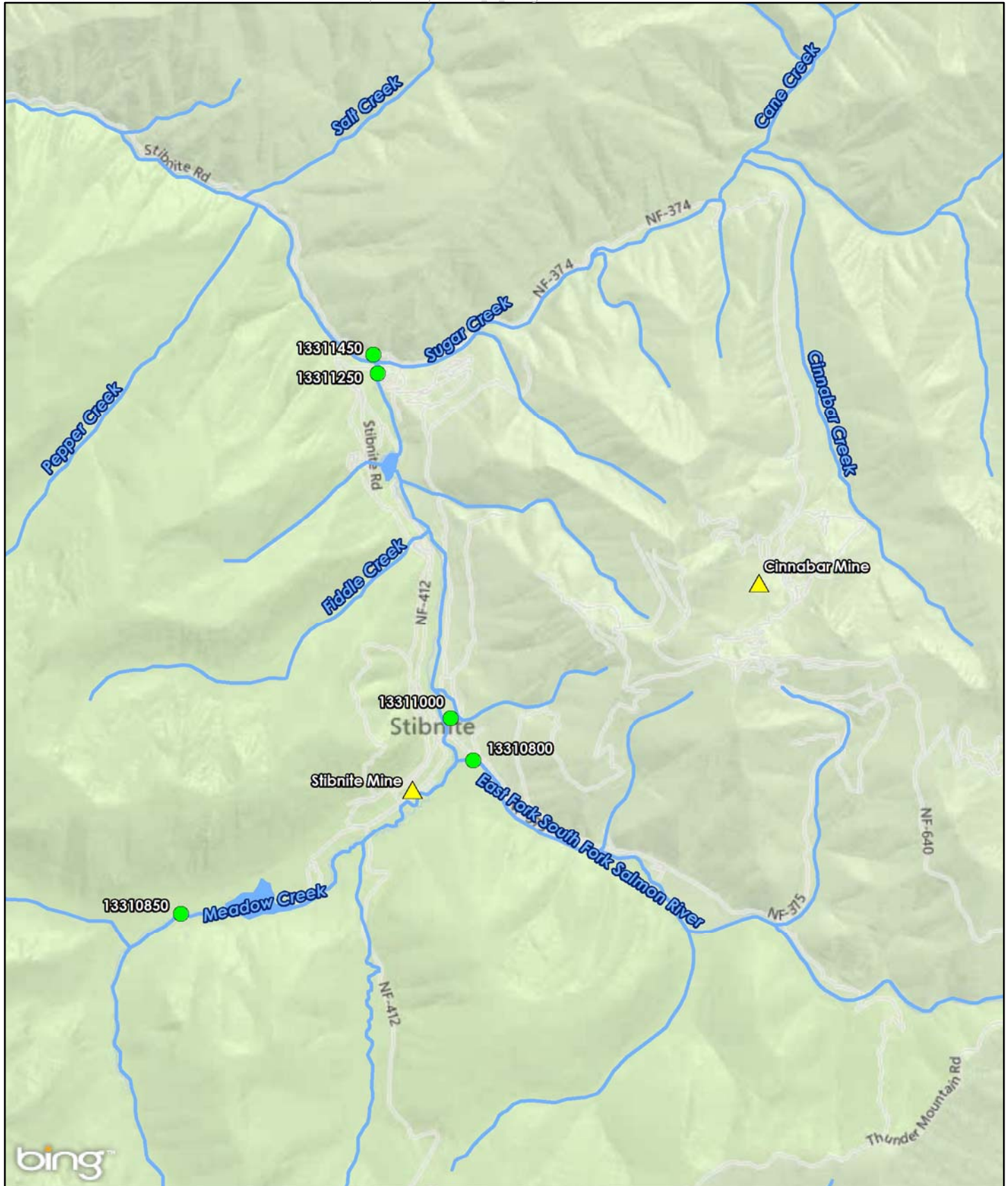
**CINNABAR MINE SITE**  
Yellow Pine, Idaho

**Figure 2**  
**SITE MAP**

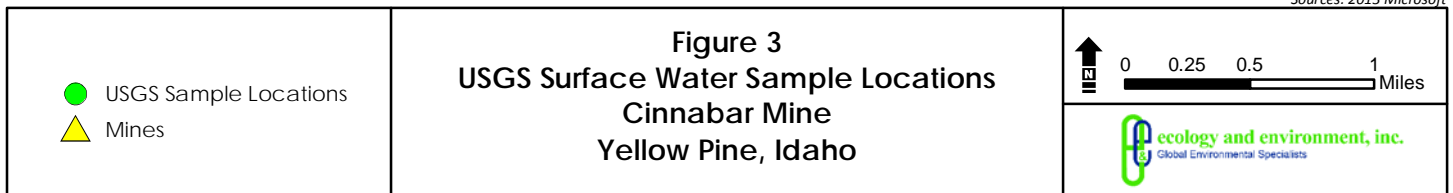
Date:  
7-29-14

Drawn by:  
MRE

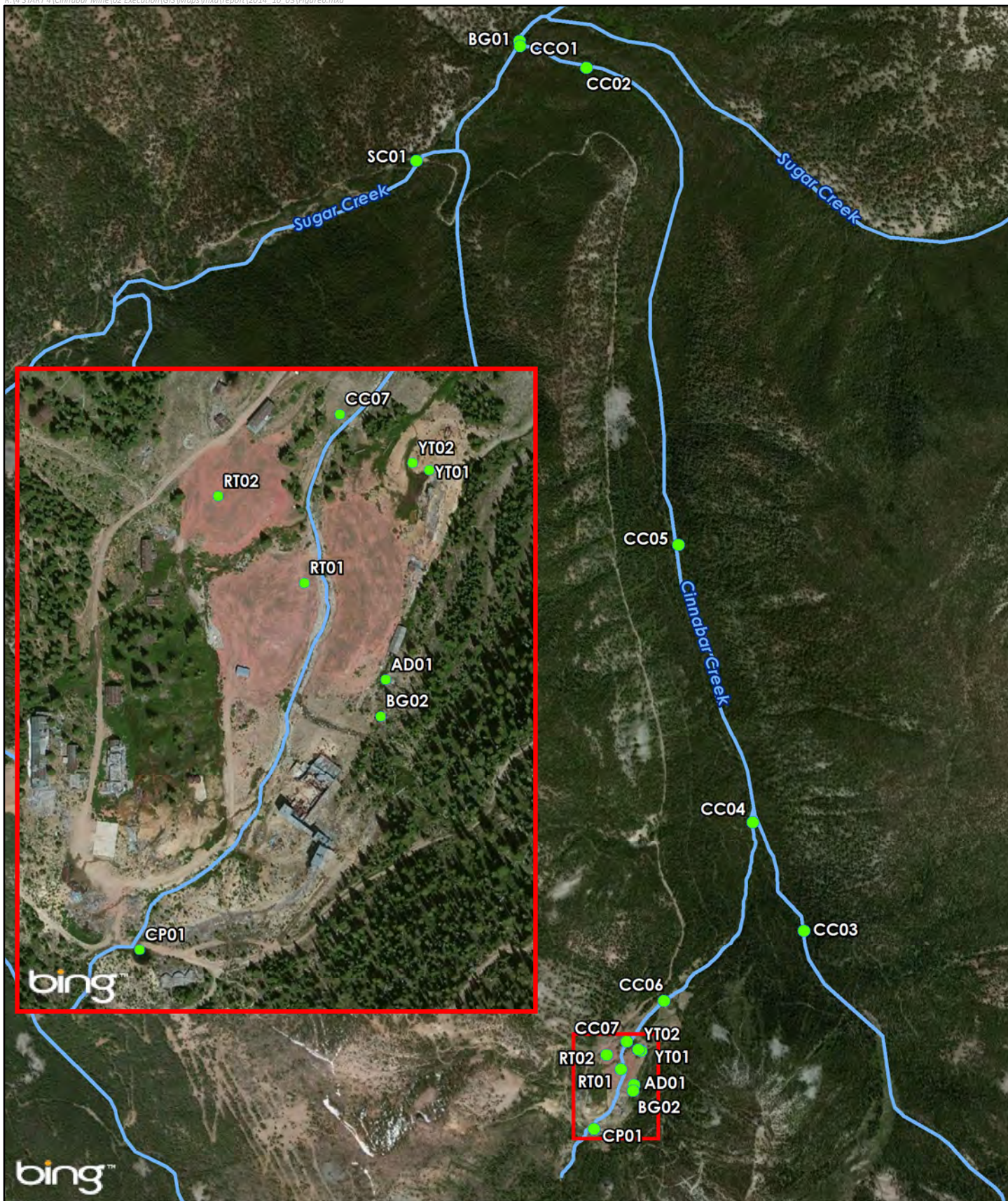
10:START IV\14070008\fig 2



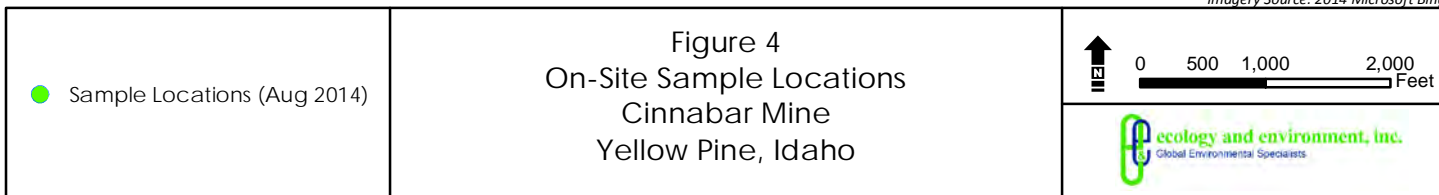
Sources: 2013 Microsoft







Imagery Source: 2014 Microsoft Bing





**Attachment A**  
**Photographic Documentation**

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CINNABAR MINE  
Yellow Pine, Idaho

TDD Number: 14-07-0008  
Photographed by: David Burford



Photo 1 Surface water/sediment CCO4 location.

Date: 8/18/14 Time: 15:34



Photo 2 Surface water/sediment CC05 location.

Date: 8/18/14 Time: 16:20



Photo 3 Map of the site at the mine access entrance.

Date: 8/18/14 Time: 17:20

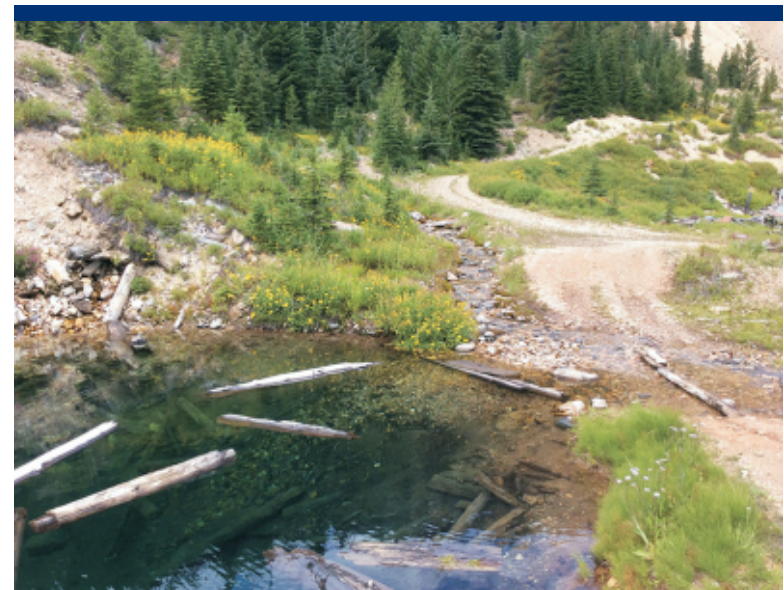


Photo 4 Surface water CP01 location.

Date: 8/19/14 Time: 11:27



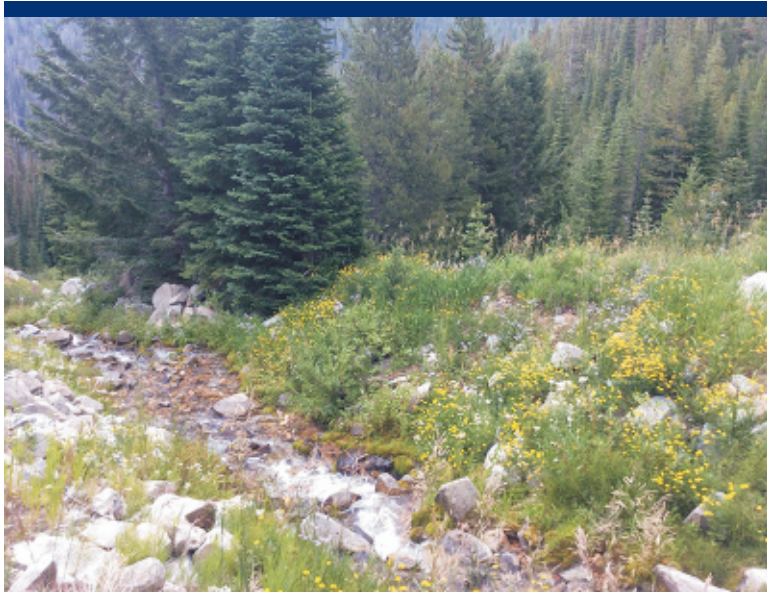


Photo 5 Surface water/sediment CC06 location.

---

*Date: 8/19/14*

*Time: 11:56*

---



Photo 6 Surface water/sediment CC07 location.

---

*Date: 8/19/14*

*Time: 12:04*

---





Photo 7 Yellow tailings pile sample YT01 location.

*Date: 8/19/14*

*Time: 12:39*



Photo 8 Surface water AD01 location.

*Date: 8/19/14*

*Time: 12:53*



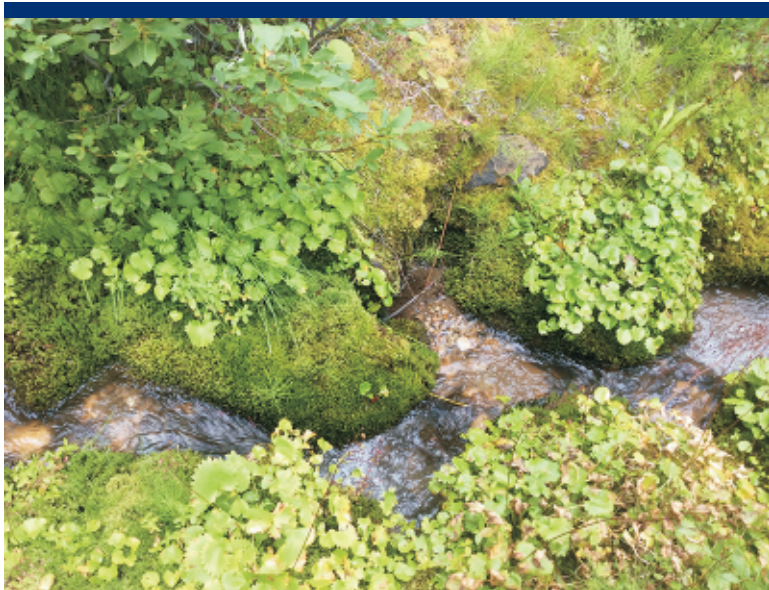


Photo 9 Surface water/sediment background BG02 location.

---

*Date: 8/19/14*

*Time: 13:09*

---



Photo 10 Red tailings pile sample RT01 location.

---

*Date: 8/19/14*

*Time: 13:32*

---

CINNABAR MINE  
Yellow Pine, Idaho

TDD Number: 14-07-0008  
Photographed by: David Burford



Photo 11 Red tailings pile RT02 location.

---

*Date: 8/19/14*

*Time: 13:38*

---

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**Attachment B**  
**Chain-of-Custody Documentation**

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## USEPA CLP COC (LAB COPY)

DateShipped: 8/20/2014

CarrierName: FedEx

AirbillNo: 8667 8204 3935

## CHAIN OF CUSTODY RECORD

Case #: 44609

Cooler #:

No: 10-081914-205616-0004


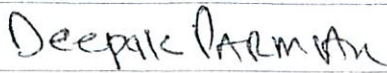
Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334305	MJGXB0	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	N1 (1)	BG01	08/18/2014 13:49	
14334308	MJGXB1	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1002 (1)	CC02	08/18/2014 14:24	
14334311	MJGXB2	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1003 (1)	SC01	08/18/2014 15:05	
14334314	MJGXB3	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1004 (1)	CC03	08/18/2014 14:49	
14334317	MJGXB4	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1005 (1)	CC04	08/18/2014 15:31	
14334320	MJGXB5	Sediment/ Burford	Grab	SOIL AsPbHg(21)	1006 (1)	CC05	08/18/2014 16:20	
14334325	MJGXB6	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1007 (1)	CC06	08/19/2014 11:53	
14334328	MJGXB7	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1008 (1)	CC07	08/19/2014 12:18	
14334335	MJGXB8	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1011 (1)	BG02	08/19/2014 13:16	
14334338	MJGXB9	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1012 (1)	BG02	08/19/2014 13:18	

Sample(s) to be used for Lab QC: 14334335 Tag 1011	Shipment for Case Complete? Y
	Samples Transferred From Chain of Custody #
Analysis Key: SOIL AsPbHg=ICPAES As Pb, Hg - Soil, TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
		8/20/14 1400		8/21/14 930	on ice
<div style="text-align: center;"> <p>Copy</p> <p>Original Documents are included in CSF <u>MJGXC0</u></p> <p><u>Zh. Rohi</u></p> <p>Signature</p> <p><u>08/22/2014</u></p> </div>					

Temp 5°C

No: 10-081914-205616-0004

Lab: ChemTech Consulting Group

Case #: 44609

Lab Contact: Divya Mehta

Cooler #:

Lab Phone: 908-789-8900

[illegible]

Special Instructions:

Shipment for Case Complete? Y

### Samples Transferred From Chain of Custody #

Analysis Key: SOIL AsPbHg=ICPAES As Pb, Hg - Soil, TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	R. Vora	8/26/14 1400	Deepak Narman	8/21/14 9:30	on file
<p>Copy Original Documents are included in CSF <u>MJG+CO</u></p>					

Copy  
Original Documents are included in CSF M J G + C

Zh. Rowe  
Signature

08/22/2014  
Date

Temp 5<sup>th</sup>

10



MJGXC0

## USEPA CLP COC (LAB COPY)

## CHAIN OF CUSTODY RECORD

No: 10-081914-205021-0003

DateShipped: 8/20/2014

Lab: ChemTech Consulting Group

CarrierName: FedEx

Case #: 44609

Lab Contact: Divya Mehta

AirbillNo: 8667 8204 3924

Cooler #:

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334300	MJGXC0	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1016 (1)	CC01	08/18/2014 13:26	
14334301	MJGXC1	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1017 (1)	CC01	08/18/2014 13:26	
14334306	MJGXC4	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1020 (1)	CC02	08/18/2014 14:20	
14334307	MJGXC5	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1021 (1)	CC02	08/18/2014 14:20	
14334323	MJGXD6	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1032 (1)	CC06	08/19/2014 11:47	
14334324	MJGXD7	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1033 (1)	CC06	08/19/2014 11:53	
14334333	MJGXE2	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1038 (2)	BG02	08/19/2014 13:08	
14334334	MJGXE3	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1039 (2)	BG02	08/19/2014 13:16	
14334336	MJGXE4	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1040 (1)	BG02	08/19/2014 13:17	
14334337	MJGXE5	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1041 (1)	BG02	08/19/2014 13:18	

Sample(s) to be used for Lab QC: 14334333 Tag 1038, 14334334 Tag 1039	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RNOZ	8/20/14 1400	Deepak Parmar	8/21/14 9:30	on ice

Tep s.c

USEPA CLP COC (LAB COPY)

DateShipped: 8/20/2014

CarrierName: FedEx

AirbillNo: 8040-9796-4326 *BM*  
8667 8204 3913

CHAIN OF CUSTODY RECORD

Case #: 44609

Cooler #: 1

No: 10-081914-204414-0002

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334303	MJGXC2	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1018 (1)	BG01	08/18/2014 13:46	
14334304	MJGXC3	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1019 (1)	BG01	08/18/2014 13:46	
14334309	MJGXC6	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1022 (1)	SC01	08/18/2014 15:00	
14334310	MJGXC7	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1023 (1)	SC01	08/18/2014 15:00	
14334315	MJGXD0	Surface Water/ Burford, D.	Grab	TM AbPbHgCaMgHard(21)	1026 (1)	CC04	08/18/2014 15:26	
14334316	MJGXD1	Filtered Water/ Burford, D.	Grab	DM AbPbHg(21)	1027 (1)	CC04	08/18/2014 15:26	
14334318	MJGXD2	Surface Water/ Burford, D.	Grab	TM AbPbHgCaMgHard(21)	1028 (1)	CC05	08/18/2014 16:13	
14334319	MJGXD3	Filtered Water/ Burford, D.	Grab	DM AbPbHg(21)	1029 (1)	CC05	08/18/2014 16:13	
14334326	MJGXD8	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1034 (1)	CC07	08/19/2014 12:01	
14334327	MJGXD9	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1035 (1)	CC07	08/19/2014 12:04	

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	<i>[Signature]</i>	8/20/14 1400	Deepak Parmar	8/21/14 9:30	on ice
<i>[Wavy line across the row]</i>					

*Temp's*

10



## USEPA CLP COC (LAB COPY)

DateShipped: 8/20/2014

CarrierName: FedEx

Airbill No: ~~8040-9796-4326~~ (W)  
8667 8204 3913

## CHAIN OF CUSTODY RECORD

Case #: 44609

Cooler #: 1

No: 10-081914-204414-0002

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

[illegible]

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	R Word	8/20/14 1400	Deepak Sharma	8/21/14 9-30	on ice

Temp 5"

## USEPA CLP COC (LAB COPY)

DateShipped: 8/20/2014

CarrierName: FedEx

AirbillNo: 8667 8204 3935

## CHAIN OF CUSTODY RECORD

Case #: 44609

Cooler #:

No: 10-081914-205616-0004

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334305	MJGXB0	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	N1 (1)	BG01	08/18/2014 13:49	
14334308	MJGXB1	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1002 (1)	CC02	08/18/2014 14:24	
14334311	MJGXB2	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1003 (1)	SC01	08/18/2014 15:05	
14334314	MJGXB3	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1004 (1)	CC03	08/18/2014 14:49	
14334317	MJGXB4	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1005 (1)	CC04	08/18/2014 15:31	
14334320	MJGXB5	Sediment/ Burford	Grab	SOIL AsPbHg(21)	1006 (1)	CC05	08/18/2014 16:20	
14334325	MJGXB6	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1007 (1)	CC06	08/19/2014 11:53	
14334328	MJGXB7	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1008 (1)	CC07	08/19/2014 12:18	
14334335	MJGXB8	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1011 (1)	BG02	08/19/2014 13:16	
14334338	MJGXB9	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1012 (1)	BG02	08/19/2014 13:18	

Sample(s) to be used for Lab QC: 14334335 Tag 1011	Shipment for Case Complete? Y
	Samples Transferred From Chain of Custody #
Analysis Key: SOIL AsPbHg=ICPAES As Pb, Hg - Soil, TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	BVou	8/20/14 1400	Deepak Parmar	8/21/14 9:30	on ice

Tep snc



## USEPA CLP COC (LAB COPY)

DateShipped: 8/20/2014

CarrierName: FedEx

AirbillNo: 8667 8204 3935

## CHAIN OF CUSTODY RECORD

Case #: 44609

Cooler #:

No: 10-081914-205616-0004

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334312	MJGXC8	Surface Water/ Burford, D.	Grab	TM AbPbHgCaMgHard(21)	1024 (1)	CC03	08/18/2014 14:47	
14334313	MJGXC9	Filtered Water/ Burford, D.	Grab	DM AbPbHg(21)	1025 (1)	CC03	08/18/2014 14:47	
14334321	MJGXD4	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1030 (1)	CP01	08/19/2014 11:22	
14334322	MJGXD5	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1031 (1)	CP01	08/19/2014 11:27	
14334302	MJGXE6	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1042 (1)	CC01	08/18/2014 13:30	

Special Instructions:	Shipment for Case Complete? Y
	Samples Transferred From Chain of Custody #
Analysis Key: SOIL AsPbHg=ICPAES As Pb, Hg - Soil, TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Ryover	8/26/14 1400	Deepak Ramn	8/21/14 9:30	on ice

Temp 5°C

MJGXC1

## USEPA CLP COC (LAB COPY)

## CHAIN OF CUSTODY RECORD

No: 10-081914-205021-0003

DateShipped: 8/20/2014

Lab: ChemTech Consulting Group

CarrierName: FedEx

Lab Contact: Divya Mehta

AirbillNo: 8667 8204 3924

Case #: 44609

Cooler #:

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334300	MJGXC0	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1016 (1)	CCO1	08/18/2014 13:26	
14334301	MJGXC1	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1017 (1)	CCO1	08/18/2014 13:26	
14334306	MJGXC4	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1020 (1)	CC02	08/18/2014 14:20	
14334307	MJGXC5	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1021 (1)	CC02	08/18/2014 14:20	
14334323	MJGXD6	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1032 (1)	CC06	08/19/2014 11:47	
14334324	MJGXD7	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1033 (1)	CC06	08/19/2014 11:53	
14334333	MJGXE2	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1038 (2)	BG02	08/19/2014 13:08	
14334334	MJGXE3	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1039 (2)	BG02	08/19/2014 13:16	
14334336	MJGXE4	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1040 (1)	BG02	08/19/2014 13:17	
14334337	MJGXE5	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1041 (1)	BG02	08/19/2014 13:18	

Sample(s) to be used for Lab QC: 14334333 Tag 1038, 14334334 Tag 1039

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	<i>R. V. ...</i>	8/20/14 1400	<i>Deepak Parmar</i>	8/21/14 9:30	online
Copy Original Documents are included in CSF MJGXC0 <i>Th. Rohu</i> Signature 08/22/2014 Date <i>Tej S.</i>					



MJGXC1

## USEPA CLP COC (LAB COPY)

## CHAIN OF CUSTODY RECORD

No: 10-081914-204414-0002

DateShipped: 8/20/2014

CarrierName: FedEx

AirbillNo: 8040 9796 4326

Case #: 44609

Cooler #: 1

Lab: ChemTech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

8667 8204 3913

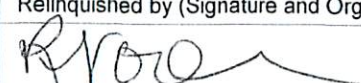
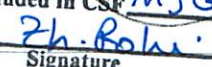
Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334303	MJGXC2	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1018 (1)	BG01	08/18/2014 13:46	
14334304	MJGXC3	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1019 (1)	BG01	08/18/2014 13:46	
14334309	MJGXC6	Surface Water/ Newell, D.	Grab	TM AbPbHgCaMgHard(21)	1022 (1)	SC01	08/18/2014 15:00	
14334310	MJGXC7	Filtered Water/ Newell, D.	Grab	DM AbPbHg(21)	1023 (1)	SC01	08/18/2014 15:00	
14334315	MJGXD0	Surface Water/ Burford, D.	Grab	TM AbPbHgCaMgHard(21)	1026 (1)	CC04	08/18/2014 15:26	
14334316	MJGXD1	Filtered Water/ Burford, D.	Grab	DM AbPbHg(21)	1027 (1)	CC04	08/18/2014 15:26	
14334318	MJGXD2	Surface Water/ Burford, D.	Grab	TM AbPbHgCaMgHard(21)	1028 (1)	CC05	08/18/2014 16:13	
14334319	MJGXD3	Filtered Water/ Burford, D.	Grab	DM AbPbHg(21)	1029 (1)	CC05	08/18/2014 16:13	
14334326	MJGXD8	Surface Water/ Nordeen	Grab	TM AbPbHgCaMgHard(21)	1034 (1)	CC07	08/19/2014 12:01	
14334327	MJGXD9	Filtered Water/ Nordeen	Grab	DM AbPbHg(21)	1035 (1)	CC07	08/19/2014 12:04	

Special Instructions:

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
		8/20/14 1400	Deepak Parmar	8/21/14 9:30	on ice
<div>Copy Original Documents are included in CSF MJGXC0</div> <div>Signature: </div> <div>Date: 08/22/2014</div>					

Tep's

No: 10-081914-204414-0002

Lab: ChemTech Consulting Group

Case #: 44609

Lab Contact: Divya Mehta

Cooler #: 1

Lab Phone: 908-789-8900

86607 8204 3913



[illegible]

**Special Instructions:**

Shipment for Case Complete? N

**Samples Transferred From Chain of Custody #**

Analysis Key: TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water, DM AbPbHg=DM ICPMS Pb, ICPAES As, Hg - Water

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
		8/20/14 1400	Deepak Sharma	8/21/14 9:30	on ice
			Copy Original Documents are included in CSF <u>MJGxco</u> <u>Z. Rohani</u> Signature 08/21/14		

Copy  
Original Documents are included in CSE MJGXCC  
Zh. Rohini  
Signature  
08/22/2014  
Date

100512



MJGXC1

## USEPA CLP COC (LAB COPY)

## CHAIN OF CUSTODY RECORD

No: 10-081914-205616-0004

DateShipped: 8/20/2014

Lab: ChemTech Consulting Group

CarrierName: FedEx

Lab Contact: Divya Mehta

AirbillNo: 8667 8204 3935

Case #: 44609

Cooler #:

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
14334305	MJGXB0	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	N1 (1)	BG01	08/18/2014 13:49	
14334308	MJGXB1	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1002 (1)	CC02	08/18/2014 14:24	
14334311	MJGXB2	Sediment/ Newell, D.	Grab	SOIL AsPbHg(21)	1003 (1)	SC01	08/18/2014 15:05	
14334314	MJGXB3	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1004 (1)	CC03	08/18/2014 14:49	
14334317	MJGXB4	Sediment/ Burford, D.	Grab	SOIL AsPbHg(21)	1005 (1)	CC04	08/18/2014 15:31	
14334320	MJGXB5	Sediment/ Burford	Grab	SOIL AsPbHg(21)	1006 (1)	CC05	08/18/2014 16:20	
14334325	MJGXB6	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1007 (1)	CC06	08/19/2014 11:53	
14334328	MJGXB7	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1008 (1)	CC07	08/19/2014 12:18	
14334335	MJGXB8	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1011 (1)	BG02	08/19/2014 13:16	
14334338	MJGXB9	Sediment/ Nordeen	Grab	SOIL AsPbHg(21)	1012 (1)	BG02	08/19/2014 13:18	

Sample(s) to be used for Lab QC: 14334335 Tag 1011	Shipment for Case Complete? Y
	Samples Transferred From Chain of Custody #
Analysis Key: SOIL AsPbHg=ICPAES As Pb, Hg - Soil, TM AbPbHgCaMgHard=TM ICPMS Pb, ICPAES As Ca Mg Hardness, Hg - Water	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
12	BKove	8/20/14 1400	Deepak Parmar	8/21/14 930	on ice

Copy  
Original Documents are included in CSF MJGXC0Signature  
Zk. Rohu.Date  
08/22/2014Tep 5<sup>th</sup>





**USEPA CLP COC (REGION COPY)**

DateShipped: 8/21/2014

CarrierName: Hand Delivery

AirbillNo:

**CHAIN OF CUSTODY RECORD**

Cinnabar Mine/ID

Case #: 44609

Cooler #:

**No: 10-081914-210113-0005**

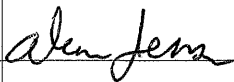
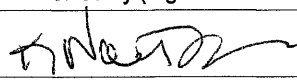
Lab: EPA Region 10 Laboratory (MEL)

Lab Contact: Karen Norton

Lab Phone: 360-871-8760

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
14334329		Soil Surface/ Nordeen	Grab	SPLP AsPbHg(8 weeks)	N1 (1)	YT01	08/19/2014 12:36	Sample
14334330		Soil Surface/ Nordeen	Grab	SPLP AsPbHg(8 weeks)	N1 (1)	YT02	08/19/2014 12:40	Sample
14334339		Soil Surface/ Nordeen	Grab	SPLP AsPbHg(8 weeks)	N1 (1)	RT01	08/19/2014 13:27	Sample
14334340		Soil Surface/ Nordeen	Grab	SPLP AsPbHg(8 weeks)	N1 (1)	RT01	08/19/2014 13:29	Duplicate
14334341		Soil Surface/ Nordeen	Grab	SPLP AsPbHg(8 weeks)	N1 (1)	RT02	08/19/2014 13:37	Sample

Sample(s) to be used for Lab QC: 14334329 Tag N1	Shipment for Case Complete? Y
	Samples Transferred From Chain of Custody #
Analysis Key: SPLP AsPbHg=SPLP Metals As, Pb, Hg	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
		8/21/14 15:22		8/21/14 15:22	

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**Attachment C**  
**Data Validation Memoranda**



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## ecology and environment, inc.

Global Environmental Specialists

720 Third Avenue, Suite 1700, Seattle, WA 98104  
Tel: (206) 624-9537, Fax: (206) 621-9832

### MEMORANDUM

DATE: September 22, 2014

TO: Renee Nordeen, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Summary Check, Cinnabar Mine Site, Yellow Pine, Idaho**

REF: TDD: 14-07-0008 PAN: 1004530.0004.067.02

The data summary check of five soil samples from the Cinnabar Mine Site, Yellow Pine, Idaho, has been completed. Analyses for synthetic precipitation leaching procedure (SPLP) arsenic and lead (EPA Methods 1312 and 200.8) were performed at the EPA's Manchester Environmental Laboratory in Port Orchard, Washington by the Environmental Services Assistance Team contractor. All sample analyses were evaluated following quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP).

The samples were numbered:

14334329      14334330      14334339      14334340      14334341

No discrepancies were noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 LABORATORY  
7411 Beach Dr. East  
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Inorganics Results from the USEPA  
Region 10 Laboratory

PROJECT NAME: Cinnabar Mine Removal Assessment

PROJECT CODE: SFP-076A

FROM: Gerald Dodo, Chemistry Supervisor  
Office of Environmental Assessment  
USEPA Region 10 Laboratory

TO: Jeffry Rodin, RPM  
Office of Environmental Cleanup,  
Emergency Response Unit,  
USEPA Region 10

CC: Renee Nordeen, E & E

I have authorized release of this data package. Attached you will find the SPLP Metals results for the Cinnabar Mine Removal Assessment project for the samples received on 08/21/2014. For further information regarding the attached data, contact Stephanie Le at (360) 871-8715.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 LABORATORY  
7411 Beach Dr. East  
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM  
FOR INORGANIC CHEMICAL ANALYSES

DATE: September 17, 2014

TO: Jeffry Rodin, Project Manager  
Office of Environmental Cleanup, Emergency Response Unit, USEPA Region 10

FROM: Stephanie Le, Chemist  
Office of Environmental Assessment, US EPA Region 10 Laboratory

SUBJECT: Quality Assurance Review of the Cinnabar Mine Removal Assessment  
For SPLP Metals

Project Code: SFP-076A  
Account Code: 2014TR2B10P303DC6101TRS00

CC: Renee Nordeen, E & E

The following is a quality assurance review of the results of the analyses of 5 soil samples for Synthetic Precipitation Leaching Procedure (SPLP) metals. The samples were submitted for the Cinnabar Mine Removal Assessment Project. The analyses were performed by ESAT at the US EPA Region 10 Laboratory in Port Orchard, WA, following US EPA and Laboratory guidelines.

This review was conducted for the following samples:

14334329      14334330      14334339      14334340      14334341

**Data Qualifications**

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

The quality control measures which did not meet Laboratory/QAPP criteria are annotated in the title of each affected subsection with "**Laboratory/QAPP Criteria Not Met.**"

For those tests for which the USEPA Region 10 Laboratory has been accredited by The NELAC Institute (TNI), all requirements of the current TNI Standard have been met. The Region 10 Laboratory's Quality System has also been accredited to the Standards of The NELAC Institute (TNI).

**1. Sample Transport and Receipt**

Upon sample receipt, all conditions met Laboratory/QAPP requirements for this project.



## **2. Sample Holding Times**

The concentration of an analyte in a sample or sample extract may increase or decrease over time depending on the nature of the analyte. For this reason, holding time limits are recommended for samples. All analyses covered by this review met method holding time recommendations, where applicable.

## **3. Sample Preparation**

Samples were prepared according to the method outlined in the SOP for these analytes for these types of matrixes. No qualification of the data was required based on sample preparation.

## **4. Initial Calibration and Calibration Verification**

The linear regressions generated for the initial calibrations met method criteria. The low point of the calibration curve is usually the Minimum Reporting Level (MRL) of the method. All calibration verification checks met the frequency and recovery criteria on the day of analysis. No qualification was required based on calibration or calibration verification.

## **5. Laboratory Control Samples**

All laboratory control sample results met the recovery acceptance criterion (85 – 115% of the standard's true value) for the method. No qualification was required based on laboratory control samples.

## **6. Blank Analysis – Laboratory/QAPP Criteria Not Met**

The method blanks did not contain detectable levels of the analytes of interest, with the exception of lead in the SPLP extraction blank (IS082614ABL) at 0.11 µg/L. Lead results for samples 14334329, 14334329DU, 14334339, 14334340, and 14334341 were qualified "J", estimated. No other qualification was required based on blank analysis.

## **7. Duplicate Analysis**

Duplicate analyses were performed on sample 14334329. Sample results which were greater than the LRS level were within the  $\pm 20\%$  RPD requirement. No qualification was required based on duplicate analysis.

## **8. Matrix Spike/Matrix Spike Duplicate Analysis**

Matrix spike analyses were performed on sample 14334329. Sample results were within the 75-125% recovery requirements. No qualification was required based on matrix spike analyses.

## **9. Interferences**

Serial dilution checks were analyzed to demonstrate that interferences were under control. All results of these checks met laboratory acceptance criteria. No qualification was required.

## **10. Internal Standards**

All internal standards met instrument response criteria.

## **11. Reporting Limits**

All sample results that fall below the MRL are assigned the value of the MRL and the 'U' qualifier is attached. Sample results above the MRL but below the LRS are reported to two significant figures; results above the LRS level are reported to three significant figures.

## 12. Data Qualifiers

The (U) qualifier was attached to those results which were below the Method Reporting Limit (MRL).

Lead results for samples 14334329, 14334329DU, 14334339, 14334340, and 14334341 were qualified (J), estimated, because of extraction blank contamination.

No other qualification was required.

The definition for the data qualifier is as follows:

- U - The analyte was not detected at or above the reported value.
- J - The identification of the analyte is acceptable; however the reported value is an estimate.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Stephanie Le at the Region 10 Laboratory, phone number (360) 871- 8715.

## 13. Definitions

Accuracy - the degree of conformity of a measured or calculated quantity to its actual value.

Duplicate Analysis – when a duplicate of a sample (DU), a matrix spike (MSD), or a laboratory control sample (LCSD) is analyzed, it is possible to use the comparison of the results in terms of relative percent difference (RPD) to calculate precision.

Laboratory Control Sample (LCS) - a clean matrix spiked with known quantities of analytes. The LCS is processed with samples through every step of preparation and analysis. Measuring percent recovery of each analyte in the LCS provides a measurement of accuracy for the analyte in the project samples. A laboratory control sample is prepared and analyzed at a frequency no less than one for every 20 project samples.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Sample analyses performed to provide information about the effect of the sample matrix on analyte recovery and measurement within the project samples. To create the MS/MSD, a project sample is spiked with known quantities of analytes and the percent recoveries of the analytes are determined.

Method Blank- An analytical control that is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background and reagent contamination. A method blank is prepared and analyzed for every batch of samples at a minimum frequency of one per every 20 samples. To produce unqualified data, the result of the method blank analysis is required to be less than the MRL and less than 10 times the amount of analyte found in any project sample.

Minimum Reporting Level (MRL) - the smallest measured concentration of a substance that can be reliably measured using a given analytical method.

Peak Integrations - The output of many analytical instruments is a peak which represents the quantity of analyte in the sample. The instrument automatically integrates the peak area to provide the concentration of the analyte; however, sometimes these peaks need to be manually integrated by the analyst.

Precision – the degree of mutual agreement or repeatability among a series of individual results.

Reference materials – Samples with analyte values that are homogeneous and well established. This allows the

reference material to be used to assess the accuracy of the measurement method.

**Relative Percent Difference** – The difference between two sample results divided by their mean and expressed as a percentage.





# US EPA Region 10 Laboratory



## Multi-Analyte Final Report

**Project Code :** SFP-076A

**Site :** CINNABAR MINE RA

**Contact :** Jeffry Rodin

**Account :** 2014TR2B10P303DC6101TRS00

### Sample : 14334329

**Information :** YT01

**Matrix :** Soil

**Collected :** 8/19/2014 12:36:00PM

**Weight Basis :** N/A

**Parameter :** ICP/MS

**Lab Matrix :** Liquid

**Fraction :** Total

**Prep Method:** 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

**Analysis Method:** 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	7.20	ug/L		9/ 9/14	2
7439921	Lead	0.28	ug/L	J	9/ 9/14	2

### Sample : 14334330

**Information :** YT02

**Matrix :** Soil

**Collected :** 8/19/2014 12:40:00PM

**Weight Basis :** N/A

**Parameter :** ICP/MS

**Lab Matrix :** Liquid

**Fraction :** Total

**Prep Method:** 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

**Analysis Method:** 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	342	ug/L		9/ 9/14	10
7439921	Lead	0.050	ug/L	U	9/ 9/14	2

**Sample : 14334339**

Information : RT01

Matrix : Soil

Collected : 8/19/2014 1:27:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	691	ug/L		9/ 9/14	10
7439921	Lead	0.20	ug/L	J	9/ 9/14	2

**Sample : 14334340**

Information : RT01

Matrix : Soil

Collected : 8/19/2014 1:29:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	696	ug/L		9/ 9/14	10
7439921	Lead	0.42	ug/L	J	9/ 9/14	2

**Sample : 14334341**

Information : RT02

Matrix : Soil

Collected : 8/19/2014 1:37:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	1630	ug/L		9/ 9/14	40
7439921	Lead	0.23	ug/L	J	9/ 9/14	2

**Sample : 14334329 Sample Duplicate**

Information : YT01

Matrix : Soil

Collected : 8/19/2014 12:36:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	6.72	ug/L		9/ 9/14	2
7439921	Lead	0.070	ug/L	J	9/ 9/14	2

**Sample : 14334329 Matrix Spike**

Information : YT01

Matrix : Soil

Collected : 8/19/2014 12:36:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Spiked Compounds:						
7440382	Arsenic	97	%Rec		9/ 9/14	2
7439921	Lead	102	%Rec		9/ 9/14	2

**Sample : 14334329 Matrix Spike#2**

Information : YT01

Matrix : Soil

Collected : 8/19/2014 12:36:00PM

Weight Basis : N/A

Parameter : ICP/MS

Lab Matrix : Liquid

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Spiked Compounds:						
7440382	Arsenic	97	%Rec		9/ 9/14	2
7439921	Lead	101	%Rec		9/ 9/14	2



**Sample : IS082614ABL Blank**

Information : Blank

Matrix : Liquid

Weight Basis : N/A

Parameter : ICP/MS

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	0.020	ug/L	U	9/ 9/14	2
7439921	Lead	0.11	ug/L		9/ 9/14	2

**Sample : IW082814ABL Blank**

Information : Blank

Matrix : Liquid

Weight Basis : N/A

Parameter : ICP/MS

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Target Analyte Results:						
7440382	Arsenic	0.020	ug/L	U	9/ 9/14	2
7439921	Lead	0.050	ug/L	U	9/ 9/14	2

**Sample : IW082814AL1 Lab Control Std**

Information : Lab Control Standard

Matrix : Liquid

Weight Basis : N/A

Parameter : ICP/MS

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
Spiked Compounds:						
7440382	Arsenic	103	%Rec		9/ 9/14	2
7439921	Lead	100	%Rec		9/ 9/14	2

**Sample : IW082814AL2 Lab Control Std#2**

Information : Lab Control Standard Dup.

Matrix : Liquid

Weight Basis : N/A

Parameter : ICP/MS

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
<b>Spiked Compounds:</b>						
7440382	Arsenic	105	%Rec		9/ 9/14	2
7439921	Lead	97	%Rec		9/ 9/14	2

**Sample : IW082814BSB Lab Control Std#5**

Information : Lab Control Standard #5

Matrix : Liquid

Weight Basis : N/A

Parameter : ICP/MS

Fraction : Total

Prep Method: 1312/200.2 - SPLP Extraction for Metals followed by Digestion of Leachate for metals

Analysis Method: 200.8 - ICPMS 18 Elements

Analyte Code	Analyte Name	Result	Unit	Qual.	Analysis Date	Dilution
<b>Spiked Compounds:</b>						
7440382	Arsenic	97	%Rec		9/ 9/14	2
7439921	Lead	101	%Rec		9/ 9/14	2



## ecology and environment, inc.

Global Environmental Specialists

720 Third Avenue, Suite 1700, Seattle, WA 98104  
Tel: (206) 624-9537, Fax: (206) 621-9832

### MEMORANDUM

DATE: September 23, 2014

TO: Renee Nordeen, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Summary Check, Cinnabar Mine Site, Yellow Pine, Idaho**

REF: TDD: 14-07-0008 PAN: 1004530.0004.067.02

The data summary check of five soil samples from the Cinnabar Mine Site, Yellow Pine, Idaho, has been completed. Analyses for synthetic precipitation leaching procedure (SPLP) mercury (EPA Methods 1312 and 245.1) were performed at the EPA's Manchester Environmental Laboratory in Port Orchard, Washington by the Environmental Services Assistance Team contractor. All sample analyses were evaluated following quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP).

The samples were numbered:

14334329      14334330      14334339      14334340      14334341

No discrepancies were noted.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 LABORATORY  
7411 Beach Dr. East  
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Inorganics Results from the USEPA  
Region 10 Laboratory

PROJECT NAME: Cinnabar Mine Removal Assessment

PROJECT CODE: SFP-076A

FROM: Gerald Dodo, Chemistry Supervisor  
Office of Environmental Assessment  
USEPA Region 10 Laboratory

TO: Jeffry Rodin, RPM  
Office of Environmental Cleanup,  
Emergency Response Unit,  
USEPA Region 10

CC: Renee Nordeen, E & E

I have authorized release of this data package. Attached you will find the SPLP Mercury results for the Cinnabar Mine Removal Assessment project for the samples received on 08/21/2014. For further information regarding the attached data, contact Stephanie Le at (360) 871-8715.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 LABORATORY  
7411 Beach Dr. East  
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM  
FOR INORGANIC CHEMICAL ANALYSES

DATE: September 17, 2014

TO: Jeffry Rodin, Project Manager  
Office of Environmental Cleanup, Emergency Response Unit, US EPA Region 10

FROM: Stephanie Le, Chemist  
Office of Environmental Assessment, US EPA Region 10 Laboratory

SUBJECT: Quality Assurance Review of the Cinnabar Mine Removal Assessment Results for SPLP Mercury

Project Code: SFP-076A  
Account Code: 2014TR2B10P303DC6101TRS00

CC: Renee Nordeen – E & E

The following is a quality assurance review of the results of the analyses of 5 soil samples for Synthetic Precipitation Leaching Procedure (SPLP) mercury. The samples were submitted for the Cinnabar Mine Removal Assessment Project. The analyses were performed by ESAT chemists at the US EPA Region 10 Laboratory in Port Orchard, WA, following US EPA and Laboratory guidelines.

This review was conducted for the following samples:

14334329      14334330      14334339      14334340      14334341

#### Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

All measures of quality control met Laboratory/QAPP criteria.

For those tests for which the USEPA Region 10 Laboratory has been accredited by The NELAC Institute (TNI), all requirements of the current TNI Standard have been met. The Region 10 Laboratory's Quality System has also been accredited to the Standards of The NELAC Institute (TNI).

#### 1. Sample Transport and Receipt

Upon sample receipt, all conditions met Laboratory/QAPP requirements for this project.

## **2. Sample Holding Times**

The concentration of an analyte in a sample or sample extract may increase or decrease over time depending on the nature of the analyte. For this reason, holding time limits are recommended for samples. The samples covered by this review met method holding time recommendations, where applicable.

## **3. Sample Preparation**

Samples were prepared according to the method outlined in the SOP for these analytes for these types of matrixes. No qualification of the data was required based on sample preparation.

## **4. Initial Calibration and Calibration Verification**

The calibration factors generated for the initial calibration met method criteria. The low point of the calibration curve is usually the Minimum Reporting Level (MRL) of the method. All calibration verification checks met the frequency and recovery criteria on the day of analysis. No qualification was required based on calibration or calibration verification.

## **5. Laboratory Control Samples**

All laboratory control sample results met the recovery acceptance criteria for the method. No qualification was required based on laboratory control sample analysis.

## **6. Blank Analysis**

The method and SPLP extraction blanks did not contain detectable levels of analyte which would require data qualification.

## **7. Duplicate Analysis**

Duplicate analysis was performed on sample 14334329. Sample results which were than five times the MRL level were within the  $\pm 20\%$  RPD requirement. No qualification was required based on duplicate analysis.

## **8. Matrix Spike/Matrix Spike Duplicate Analysis**

Matrix spike analyses were performed on sample 14334329. Spike results were within the 75-125% recovery limits. No qualification was required based on matrix spike analyses.

## **9. Instrument Peak Integrations**

No manual integrations were performed for this method.

## **10. Reporting Limits**

All sample results that fall below the MRL are assigned the value of the MRL and the 'U' qualifier is attached. Sample results above the MRL but below the LRS are reported to two significant figures; results above the LRS level are reported to three significant figures.

## **11. Data Qualifiers**

The (U) qualifier was attached to those results which were below the Method Reporting Limit (MRL). No other qualification was required. The definition for the data qualifier is as follows

U - The analyte was not detected at or above the reported value.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data

# US EPA Region 10 Laboratory

## Multi-Sample Final Report



**Project Code :** SFP-076A

**Site :** CINNABAR MINE RA

**Contact :** Jeffry Rodin

**Account :** 2014TR2B10P303DC6101TRS00

**Parameter(s):** Hg

**Analyte:** 7439976 - Mercury

**Weight Basis :** N/A

**Prep Method(s):** 1312/245.1 - SPLP Extraction for Metals followed by Digestion of Leachate for mercury

**Analytical Method:** 245.1 - Cold vapor mercury in water (CVAAS)

### Target Analyte Results:

Sample	Information	Lab Matrix	Result	Unit	Qual.	Analysis Date	Dilution
14334329 sam	YT01	SPLP Extract	2.02	ug/L		9/3/14	2
14334330 sam	YT02	SPLP Extract	0.050	ug/L	U	9/3/14	1
14334339 sam	RT01	SPLP Extract	3.96	ug/L		9/3/14	2
14334340 sam	RT01	SPLP Extract	6.21	ug/L		9/3/14	4
14334341 sam	RT02	SPLP Extract	1.16	ug/L		9/3/14	1
14334329 du	YT01	SPLP Extract	2.14	ug/L		9/3/14	2
IS082614ABL blk	Blank	SPLP Extract	0.050	ug/L	U	9/3/14	1
IW090214ABL blk	Blank	SPLP Extract	0.050	ug/L	U	9/3/14	1

### Spiked Compounds:

Sample	Information	Lab Matrix	Result	Unit	Qual.	Analysis Date	Dilution
14334329 ms	YT01	SPLP Extract	109	%Rec		9/3/14	2
14334329 msd	YT01	SPLP Extract	110	%Rec		9/3/14	2
IW090214ASB sb	Spike Blank	SPLP Extract	101	%Rec		9/3/14	1
IW090214AL1 lcs	Lab Control Standard	SPLP Extract	102	%Rec		9/3/14	1
IW090214AL2 lc2	Lab Control Standard Dup.	SPLP Extract	102	%Rec		9/3/14	1





## ecology and environment, inc.

Global Environmental Specialists

720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

### MEMORANDUM

DATE: September 23, 2014

TO: Renee Nordeen, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington *MW*

SUBJ: Inorganic Data Summary Check, Cinnabar Mine Site, Yellow Pine, Idaho

REF: TDD: 14-07-0008 PAN: 1004530.0004.067.02

The data summary check of eleven sediment samples from the Cinnabar Mine Site, Yellow Pine, Idaho, has been completed. Analyses for selected metals (EPA CLP ISM01.3) were performed by Chemtech Consulting, Inc., Mountainside, New Jersey. All sample analyses were evaluated following EPA's Stage 4 Validation Electronic/Manual process (S4VEM).

The samples were numbered:

MJGXB0	MJGXB1	MJGXB2	MJGXB3	MJGXB4	MJGXB5
MJGXB6	MJGXB7	MJGXB8	MJGXB9	MJGXE6	

No discrepancies were noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

OFFICE OF  
ENVIRONMENTAL ASSESSMENT

September 22, 2014

**MEMORANDUM**

SUBJECT: Data Validation Report for Metals Analysis of Samples Collected for Cinnabar Mine Removal Assessment, Yellow Pine, ID, Case 44609, SDG: MJGXB0

FROM: Don Matheny, Chemist *DM*  
OEA, Environmental Services Unit

TO: Jeffrey Rodin, On Scene Coordinator  
Office of Environmental Clean-up, USEPA R10

CC: Rene Nordeen, E&E Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of eleven (11) sediments collected from the above referenced site has been completed. These samples were analyzed for Metals by Chemtech Consulting located in Mountainside, NJ.

Sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validation was conducted according to the Quality Control Specifications outlined in:

- *SSSP for Cinnabar Mine Removal Project, Yellow Pine, ID*, (April, 2014)
- USEPA CLP Statement of Work for Inorganic Superfund Methods (ISM01.3)
- National Functional Guidelines for Inorganic Superfund Data Review (EPA-540-R-10-011)
- Guidance for Labeling Externally Validated Laboratory Analytical Data (EPA-540-R08-005)

Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information provided for the review. A summary of samples evaluated in this validation report and the pertinent dates for sample collection, laboratory sample receipt and analyses is attached along with the validated data.

## I. QUALITY CONTROL RESULTS SUMMARY

Quality Control Test	Result Ranges	Outliers?	Evaluation Criteria
Blanks	Non-detect or < 10xSa	N	Non-Detect or < 10xSample
Matrix Spike (MJGXB8)	144% (Lead only)	Y*	75 – 125%
Sample Duplicate (MJGXB8)	≤ 4%	N	≤ 35% RPD or ± 2xCRQL
Field Duplicate (MJGXB9)	≤ 53%	Y*	≤ 35% RPD or ± 2xCRQL
LCS (blank spike)	95 - 105%	N	70 – 130%
Serial Dilution (MJGXB8)	≤ 4%	N	≤ 10%

\*See the “Data Qualifications” section below for excursions and qualification of affected data.

## II. DATA QUALIFICATIONS

### Summary of Validation Qualifiers Applied

After the manual and electronic data review, the following data qualifications were applied:

Detection Limits
The following samples have results $\geq$ MDLs but $\leq$ CRQLs. Detected analytes are qualified JQ.
<b>Mercury – MJGXB0</b>
Matrix Spike
Arsenic and Mercury sample values were greater than four times the spike concentrations. Matrix spike recoveries for these analytes could not be evaluated.
The following Matrix Spike samples had both percent recoveries and post-digestion spike samples with percent recoveries > 125%. Detected analytes > CRQL are qualified JH.
<b>Lead – All samples</b>
Duplicate
The following <u>Field Duplicate</u> and original field sample results are > 5xCRQL and the RPD is > 35%. The original field sample results is $\geq$ MDL. Detected analytes > CRQL are qualified JK.
<b>Mercury – All samples</b>

### Data Validation Qualifiers

The following is a list of data validation qualifiers applied to the sample result(s) and their definitions.

Data Qualifiers	
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The associated value is an estimated quantity.
UJ	The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The analyte may or may not be present in the sample.
Project Specific Data Qualifiers	
L	Low bias.
H	High bias.
K	Unknown Bias.
Q	Detected concentration is below the MRL / CRQL but is above the MDL.

### III. SAMPLE INDEX

Sample Number	Matrix	Sampling Date	Date Received	ICP-AES Analysis	Mercury Analysis
MJGXB0	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB1	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB2	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB3	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB4	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB5	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB6	Sediment	8/19/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB7	Sediment	8/19/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB8	Sediment	8/19/2014	8/21/2014	8/23/2014	8/29/2014
MJGXB9	Sediment	8/19/2014	8/21/2014	8/23/2014	8/29/2014
MJGXE6	Sediment	8/18/2014	8/21/2014	8/23/2014	8/29/2014

*MJGXB9 is the field duplicate for sample MJGXB8.*



## Sample Summary Report

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :		% Solids :	100				

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	1.9		mg/kg	1.9		1	Yes	S4VEM
Lead	Spike	2.1		mg/kg	2.1		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB0	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:49:00
% Moisture :				% Solids :	77.6		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	10.5		mg/kg	10.5		1	Yes	S4VEM
Lead	Target	7.2	JH	mg/kg	7.2	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB0	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:49:00
% Moisture :				% Solids :	77.6		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.015	JQ	mg/kg	0.015	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB1	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:24:00
% Moisture :				% Solids :	81		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	12.4	JK	mg/kg	12.4	D	10	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB1	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:24:00
% Moisture :				% Solids :	81		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	188		mg/kg	188		1	Yes	S4VEM
Lead	Target	2.1	JH	mg/kg	2.1	N	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB2	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:05:00
% Moisture :		% Solids :	80.4				

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	49.7		mg/kg	49.7		1	Yes	S4VEM
Lead	Target	7.8	JH	mg/kg	7.8	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB2	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:05:00
% Moisture :				% Solids :	80.4		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	3.5	JK	mg/kg	3.5	D	5	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB3	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:49:00
% Moisture :				% Solids :	67.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	4.3	JK	mg/kg	4.3	D	2	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB3	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:49:00
% Moisture :		% Solids :	67.2				

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	90.2		mg/kg	90.2		1	Yes	S4VEM
Lead	Target	6.7	JH	mg/kg	6.7	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB4	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:31:00
% Moisture :				% Solids :	71		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	217		mg/kg	217		1	Yes	S4VEM
Lead	Target	4.6	JH	mg/kg	4.6	N	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB4	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:31:00
% Moisture :				% Solids :	71		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	152	JK	mg/kg	152	D	100	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB5	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:20:00
% Moisture :				% Solids :	48.8		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	80.1	JK	mg/kg	80.1	D	50	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB5	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:20:00
% Moisture :				% Solids :	48.8		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	262		mg/kg	262		1	Yes	S4VEM
Lead	Target	6.5	JH	mg/kg	6.5	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB6	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:53:00
% Moisture :				% Solids :	71		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	207		mg/kg	207		1	Yes	S4VEM
Lead	Target	7.0	JH	mg/kg	7.0	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB6	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:53:00
% Moisture :				% Solids :	71		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	12.1	JK	mg/kg	12.1	D	10	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB7	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:18:00
% Moisture :				% Solids :	45.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	520		mg/kg	520		1	Yes	S4VEM
Lead	Target	6.7	JH	mg/kg	6.7	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB7	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:18:00
% Moisture :				% Solids :	45.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	54.4	JK	mg/kg	54.4	D	20	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	102		mg/kg	102		1	Yes	S4VEM
Lead	Target	5.4	JH	mg/kg	5.4	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	18.3	JK	mg/kg	18.3	D	10	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8A	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	20.3		mg/kg	20.28		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8D	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	17.8	JK	mg/kg	17.7529		10	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8D	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	97.7		mg/kg	97.7340		1	Yes	S4VEM
Lead	Target	5.4	JH	mg/kg	5.3985		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8S	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Spike	21.5		mg/kg	21.4584		10	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB8S	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :	74.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	140		mg/kg	139.8015		1	Yes	S4VEM
Lead	Spike	12.6		mg/kg	12.6101	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB9	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:18:00
% Moisture :				% Solids :	67.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	10.6	JK	mg/kg	10.6	D	10	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXB9	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:18:00
% Moisture :				% Solids :	67.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	113		mg/kg	113		1	Yes	S4VEM
Lead	Target	4.9	JH	mg/kg	4.9	N	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXE6	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:30:00
% Moisture :		% Solids :	80				

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	113		mg/kg	113		1	Yes	S4VEM
Lead	Target	1.7	JH	mg/kg	1.7	N	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	MJGXE6	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:	CC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:30:00
% Moisture :				% Solids :	80		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	20.4	JK	mg/kg	20.4	D	10	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	PBS01	Method:	ICP_AES	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	1.0	U	mg/kg	1.000	U	1	Yes	S4VEM
Lead	Target	1.0	U	mg/kg	1.000	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXB0	Lab Code:	CHEM
Sample Number:	PBS02	Method:	Hg	Matrix:	Soil	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	-0.0076	J	mg/kg	-0.0076	J	1	Yes	S4VEM

Edit History Report

Case No: 44609
Contract: EPW09038
SDG No: MJGXB0
Lab Code: CHEM

Method: ICP\_AES

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
LCS	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB0	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB0	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:47 PM	
MJGXB1	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB1	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:49 PM	
MJGXB2	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB2	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:48 PM	
MJGXB3	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB3	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:48 PM	
MJGXB4	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB4	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:47 PM	
MJGXB5	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB5	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:47 PM	
MJGXB6	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB6	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:48 PM	
MJGXB7	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB7	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:47 PM	
MJGXB8	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB8	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:47 PM	
MJGXB8A	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB8D	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB8D	Soil	Lead	Validation Flag		JH	Don Matheny	9/22/14 12:48 PM	
MJGXB8S	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB9	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB9	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:48 PM	
MJGXE6	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXE6	Soil	Lead	Validation Flag	J+	JH	Don Matheny	9/22/14 12:48 PM	
PBS01	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y

Method: Hg

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
MJGXB0	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB0	Soil	Mercury	Validation Flag	J	JQ	Don Matheny	9/22/14 12:46 PM	
MJGXB1	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB1	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:46 PM	
MJGXB2	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB2	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:46 PM	
MJGXB3	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB3	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:44 PM	
MJGXB4	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB4	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:47 PM	
MJGXB5	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB5	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:44 PM	
MJGXB6	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB6	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:44 PM	
MJGXB7	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB7	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:46 PM	
MJGXB8	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB8	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:44 PM	
MJGXB8D	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB8D	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:46 PM	
MJGXB8S	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB9	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXB9	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:44 PM	
MJGXE6	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y
MJGXE6	Soil	Mercury	Validation Flag		JK	Don Matheny	9/22/14 12:47 PM	
PBS02	Soil		Validation Level		S4VEM	Don Matheny	9/22/14 12:49 PM	Y



## ecology and environment, inc.

Global Environmental Specialists

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Tel: (206) 624-9537, Fax: (206) 621-9832

### MEMORANDUM

DATE: September 23, 2014

TO: Renee Nordeen, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Summary Check, Cinnabar Mine Site, Yellow Pine, Idaho**

REF: TDD: 14-07-0008 PAN: 1004530.0004.067.02

The data summary check of 13 water samples from the Cinnabar Mine Site, Yellow Pine, Idaho, has been completed. Analyses for selected metals (EPA CLP ISM01.3) were performed by Chemtech Consulting, Inc., Mountainside, New Jersey. All sample analyses were evaluated following EPA's Stage 4 Validation Electronic/Manual process (S4VEM).

The samples were numbered:

MJGXC0	MJGXC2	MJGXC4	MJGXC6	MJGXC8	MJGXD0
MJGXD2	MJGXD4	MJGXD6	MJGXD8	MJGXE0	MJGXE2
MJGXE4					

No discrepancies were noted.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

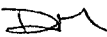
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

OFFICE OF  
ENVIRONMENTAL ASSESSMENT

September 9, 2014

**MEMORANDUM**

SUBJECT: Data Validation Report for Metals Analysis of Samples Collected for Cinnabar Mine Removal Assessment, Yellow Pine, ID, Case 44609, SDG: MJGXC0

FROM: Don Matheny, Chemist   
OEA, Environmental Services Unit

TO: Jeffrey Rodin, On Scene Coordinator  
Office of Environmental Clean-up, USEPA R10

CC: Rene Nordeen, E&E Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of thirteen (13) waters collected from the above referenced site has been completed. These samples were analyzed for Total Metals by Chemtech Consulting located in Mountainside, NJ.

Sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validation was conducted according to the Quality Control Specifications outlined in:

- *SSSP for Cinnabar Mine Removal Project, Yellow Pine, ID*, (April, 2014)
- USEPA CLP Statement of Work for Inorganic Superfund Methods (ISM01.3)
- National Functional Guidelines for Inorganic Superfund Data Review (EPA-540-R-10-011)
- Guidance for Labeling Externally Validated Laboratory Analytical Data (EPA-540-R08-005)

Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information provided for the review. A summary of samples evaluated in this validation report and the pertinent dates for sample collection, laboratory sample receipt and analyses is attached along with the validated data.

## I. QUALITY CONTROL RESULTS SUMMARY

Quality Control Test	Result Ranges	Outliers?	Evaluation Criteria
Blanks	Detects Reported	Y*	Non-Detect or < 10xSample
Matrix Spike (MJGXE2)	90 – 99%	N	75 – 125%
Sample Duplicate (MJGXE2)	± CRQL	N	≤ 20% RPD or ± CRQL
Field Duplicate (MJGXE4)	± CRQL	N	≤ 20% RPD or ± CRQL
LCS (blank spike)	97 - 109%	N	70 – 130%
Serial Dilution (MJGXE2)	N/A (< 50xMDL)	N	≤ 10%

\*See the “Data Qualifications” section below for excursions and qualification of affected data.

## II. DATA QUALIFICATIONS

### Summary of Validation Qualifiers Applied

After the manual and electronic data review, the following data qualifications were applied:

Blanks
The following samples have analyte results $\geq$ MDLs but $<$ CRQLs. The associated instrument and/or preparation blank analyte results are $\geq$ MDLs but $\leq$ CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.
<b>Lead</b> - MJGXC4, MJGXD6, MJGXE2, MJGXE4, MJGXC2, MJGXC6, MJGXD0, MJGXD2, MJGXD8, MJGXE0, MJGXC8, MJGXE2D
Detection Limits
The following samples have results $\geq$ MDLs but $\leq$ CRQLs. Detected analytes are qualified JQ.
<b>Arsenic</b> – MJGXE2, MJGXE2D, MJGXE4, MJGXC6, MJGXD2, MJGXC8 <b>Magnesium</b> – MJGXC0, MJGXC4, MJGXD6, MJGXE2, MJGXE2D, MJGXE4, MJGXC2, MJGXC6, MJGXD0, MJGXD2, MJGXC8 <b>Mercury</b> - MJGXD6, MJGXD0, MJGXD8, MJGXE0

### Data Validation Qualifiers

The following is a list of data validation qualifiers applied to the sample result(s) and their definitions.

Data Qualifiers	
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The associated value is an estimated quantity.
UJ	The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The analyte may or may not be present in the sample.
Project Specific Data Qualifiers	
L	Low bias.
H	High bias.
K	Unknown Bias.
Q	Detected concentration is below the MRL / CRQL but is above the MDL.

### III. SAMPLE INDEX

Sample Number	Matrix	Sampling Date	Date Received	ICP-AES Analysis	ICP-MS Analysis	Mercury Analysis
MJGXC0	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC2	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC4	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC6	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC8	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD0	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD2	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD4	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD6	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD8	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXE0	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXE2	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXE4	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014

*MJGXE4 is the field duplicate for sample MJGXE2.*

## Sample Summary Report

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	20.1		ug/L	20.11		1	Yes	S4VEM
Calcium	Spike	10900		ug/L	10917.52		1	Yes	S4VEM
Magnesium	Spike	10200		ug/L	10175.24		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	1.9		ug/L	1.94		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC0	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC0	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.1		ug/L	1.1		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC0	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	11.4		ug/L	11.4		1	Yes	S4VEM
Calcium	Target	20900		ug/L	20900		1	Yes	S4VEM
Magnesium	Target	3420	JQ	ug/L	3420	J	1	Yes	S4VEM
Hardness	Target	66.4		mg/L	66.40		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC2	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.23	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC2	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC2	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	10.0	U	ug/L	10.0	U	1	Yes	S4VEM
Calcium	Target	12200		ug/L	12200		1	Yes	S4VEM
Magnesium	Target	1080	JQ	ug/L	1080	J	1	Yes	S4VEM
Hardness	Target	34.9		mg/L	34.86		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC4	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	11.6		ug/L	11.6		1	Yes	S4VEM
Calcium	Target	22500		ug/L	22500		1	Yes	S4VEM
Magnesium	Target	3650	JQ	ug/L	3650	J	1	Yes	S4VEM
Hardness	Target	71.3		mg/L	71.29		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC4	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.63	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC4	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC6	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.26	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC6	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC6	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	3.5	JQ	ug/L	3.5	J	1	Yes	S4VEM
Calcium	Target	13200		ug/L	13200		1	Yes	S4VEM
Magnesium	Target	1600	JQ	ug/L	1600	J	1	Yes	S4VEM
Hardness	Target	39.5		mg/L	39.54		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC8	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.27	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC8	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	4.3	JQ	ug/L	4.3	J	1	Yes	S4VEM
Calcium	Target	10300		ug/L	10300		1	Yes	S4VEM
Magnesium	Target	2350	JQ	ug/L	2350	J	1	Yes	S4VEM
Hardness	Target	35.5		mg/L	35.50		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXC8	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :		% Solids :					

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD0	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	12.9		ug/L	12.9		1	Yes	S4VEM
Calcium	Target	17200		ug/L	17200		1	Yes	S4VEM
Magnesium	Target	3520	JQ	ug/L	3520	J	1	Yes	S4VEM
Hardness	Target	57.4		mg/L	57.44		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD0	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.92	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD0	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.061	JQ	ug/L	0.061	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD2	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	9.8	JQ	ug/L	9.8	J	1	Yes	S4VEM
Calcium	Target	17800		ug/L	17800		1	Yes	S4VEM
Magnesium	Target	3180	JQ	ug/L	3180	J	1	Yes	S4VEM
Hardness	Target	57.6		mg/L	57.63		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD2	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD2	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.30	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD4	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:22:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.36		ug/L	0.36		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD4	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:22:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	18.1		ug/L	18.1		1	Yes	S4VEM
Calcium	Target	25800		ug/L	25800		1	Yes	S4VEM
Magnesium	Target	6610		ug/L	6610		1	Yes	S4VEM
Hardness	Target	91.7		mg/L	91.65		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD4	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:22:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	3.9		ug/L	3.9		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD6	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.10	JQ	ug/L	0.10	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD6	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.61	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD6	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	15.2		ug/L	15.2		1	Yes	S4VEM
Calcium	Target	17100		ug/L	17100		1	Yes	S4VEM
Magnesium	Target	4650	JQ	ug/L	4650	J	1	Yes	S4VEM
Hardness	Target	61.7		mg/L	61.74		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD8	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:01:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.30	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD8	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:01:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.11	JQ	ug/L	0.11	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXD8	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:01:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	18.0		ug/L	18.0		1	Yes	S4VEM
Calcium	Target	19300		ug/L	19300		1	Yes	S4VEM
Magnesium	Target	5400		ug/L	5400		1	Yes	S4VEM
Hardness	Target	70.5		mg/L	70.47		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE0	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:49:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.15	JQ	ug/L	0.15	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE0	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:49:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.19	J	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE0	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:49:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	38.1		ug/L	38.1		1	Yes	S4VEM
Calcium	Target	19500		ug/L	19500		1	Yes	S4VEM
Magnesium	Target	8060		ug/L	8060		1	Yes	S4VEM
Hardness	Target	82.0		mg/L	81.98		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.32	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	7.2	JQ	ug/L	7.2	J	1	Yes	S4VEM
Calcium	Target	12400		ug/L	12400		1	Yes	S4VEM
Magnesium	Target	4640	JQ	ug/L	4640	J	1	Yes	S4VEM
Hardness	Target	50.0		mg/L	50.00		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2D	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.2000	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2D	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.2520	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2D	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	8.5	JQ	ug/L	8.5099	J	1	Yes	S4VEM
Calcium	Target	13100		ug/L	13107.1800		1	Yes	S4VEM
Magnesium	Target	4970	JQ	ug/L	4965.2250	J	1	Yes	S4VEM
Hardness	Target	33.0		ug/L	33.0		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2S	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	44.4		ug/L	44.4099		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2S	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Spike	0.90		ug/L	0.8996		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE2S	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:08:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	20.1		ug/L	20.1300		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE4	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:17:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE4	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:17:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.33	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	MJGXE4	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:17:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	7.9	JQ	ug/L	7.9	J	1	Yes	S4VEM
Calcium	Target	12600		ug/L	12600		1	Yes	S4VEM
Magnesium	Target	4750	JQ	ug/L	4750	J	1	Yes	S4VEM
Hardness	Target	51.0		mg/L	50.97		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	PBW01	Method:	ICP_AES	Matrix:	Water	MA Number:	1999.3
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	10.0	U	ug/L	10.000	U	1	Yes	S4VEM
Calcium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM
Magnesium	Target	5000	U	ug/L	5000.000	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	PBW02	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	-0.025	J	ug/L	-0.0248	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC0	Lab Code:	CHEM
Sample Number:	PBW04	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	1.000	U	1	Yes	S4VEM



Edit History Report

Case No: 44609 Contract: EPW09038 SDG No: MJGXC0 Lab Code: CHEM

Method: ICP\_AES

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
LCS	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC0	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:21 PM	
MJGXC2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC2	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXC4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC4	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXC6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC6	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXC6	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXC8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC8	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:23 PM	
MJGXC8	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:23 PM	
MJGXD0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD0	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXD2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD2	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:21 PM	
MJGXD2	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:21 PM	
MJGXD4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD6	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXD8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:23 PM	
MJGXE2	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:23 PM	
MJGXE2D	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2D	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXE2D	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXE2S	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE4	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
MJGXE4	Water	Magnesium	Validation Flag	J	JQ	Don Matheny	9/9/14 6:22 PM	
PBW01	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y

Method:    ICP\_MS

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
LCS	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2D	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2S	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
PBW04	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y

Method:    Hg

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
MJGXC0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXC8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD0	Water	Mercury	Validation Flag	J	JQ	Don Matheny	9/9/14 6:20 PM	
MJGXD2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD6	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD6	Water	Mercury	Validation Flag	J	JQ	Don Matheny	9/9/14 6:20 PM	
MJGXD8	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXD8	Water	Mercury	Validation Flag	J	JQ	Don Matheny	9/9/14 6:20 PM	
MJGXE0	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE0	Water	Mercury	Validation Flag	J	JQ	Don Matheny	9/9/14 6:20 PM	
MJGXE2	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
MJGXE2D	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE2S	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
MJGXE4	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y
PBW02	Water		Validation Level		S4VEM	Don Matheny	9/9/14 6:24 PM	Y



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### MEMORANDUM

DATE: September 23, 2014

TO: Renee Nordeen, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington 

SUBJ: **Inorganic Data Summary Check, Cinnabar Mine Site, Yellow Pine, Idaho**

REF: TDD: 14-07-0008 PAN: 1004530.0004.067.02

The data summary check of 13 water samples from the Cinnabar Mine Site, Yellow Pine, Idaho, has been completed. Analyses for selected metals (EPA CLP ISM01.3) were performed by Chemtech Consulting, Inc., Mountainside, New Jersey. All sample analyses were evaluated following EPA's Stage 4 Validation Electronic/Manual process (S4VEM).

The samples were numbered:

MJGXC1	MJGXC3	MJGXC5	MJGXC7	MJGXC9	MJGXD1
MJGXD3	MJGXD5	MJGXD7	MJGXD9	MJGXE1	MJGXE3
MJGXE5					

No discrepancies were noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

OFFICE OF  
ENVIRONMENTAL ASSESSMENT

September 10, 2014

**MEMORANDUM**

SUBJECT: Data Validation Report for Metals Analysis of Samples Collected for Cinnabar Mine Removal Assessment, Yellow Pine, ID, Case 44609, SDG: MJGXC1

FROM: Don Matheny, Chemist *DM*  
OEA, Environmental Services Unit

TO: Jeffrey Rodin, On Scene Coordinator  
Office of Environmental Clean-up, USEPA R10

CC: Rene Nordeen, E&E Inc.

The quality assurance (QA) review of the analytical data generated from the analysis of thirteen (13) waters collected from the above referenced site has been completed. These samples were analyzed for Dissolved Metals by Chemtech Consulting located in Mountainside, NJ.

Sample analyses were evaluated following EPA's Stage 4 Data Validation Electronic/Manual Process (S4VEM). The validation was conducted according to the Quality Control Specifications outlined in:

- *SSSP for Cinnabar Mine Removal Project, Yellow Pine, ID*, (April, 2014)
- USEPA CLP Statement of Work for Inorganic Superfund Methods (ISM01.3)
- National Functional Guidelines for Inorganic Superfund Data Review (EPA-540-R-10-011)
- Guidance for Labeling Externally Validated Laboratory Analytical Data (EPA-540-R08-005)

Some data may be qualified using the reviewer's professional judgment. The conclusions presented herein are based on the information provided for the review. A summary of samples evaluated in this validation report and the pertinent dates for sample collection, laboratory sample receipt and analyses is attached along with the validated data.

## I. QUALITY CONTROL RESULTS SUMMARY

Quality Control Test	Result Ranges	Outliers?	Evaluation Criteria
Blanks	Detects Reported	Y*	Non-Detect or < 10xSample
Matrix Spike (MJGXE3)	86 – 123%	N	75 – 125%
Sample Duplicate (MJGXE3)	± CRQL	N	≤ 20% RPD or ± CRQL
Field Duplicate (MJGXE5)	± CRQL	N	≤ 20% RPD or ± CRQL
LCS (blank spike)	96 - 98%	N	70 – 130%
Serial Dilution (MJGXE3)	N/A (< 50xMDL)	N	≤ 10%

\*See the “Data Qualifications” section below for excursions and qualification of affected data.

## II. DATA QUALIFICATIONS

### Summary of Validation Qualifiers Applied

After the manual and electronic data review, the following data qualifications were applied:

Blanks
The following samples have analyte results $\geq$ MDLs but < CRQLs. The associated instrument and/or preparation blank analyte results are $\geq$ MDLs but $\leq$ CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.
<b>Lead</b> – All samples
Detection Limits
The following samples have results $\geq$ MDLs but $\leq$ CRQLs. Detected analytes are qualified JQ.
<b>Arsenic</b> - MJGXC1, MJGXC3, MJGXC7, MJGXC9, MJGXE3, MJGXE3D, MJGXE5

### Data Validation Qualifiers

The following is a list of data validation qualifiers applied to the sample result(s) and their definitions.

Data Qualifiers	
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The associated value is an estimated quantity.
UJ	The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The analyte may or may not be present in the sample.
Project Specific Data Qualifiers	
L	Low bias.
H	High bias.
K	Unknown Bias.
Q	Detected concentration is below the MRL / CRQL but is above the MDL.

### III. SAMPLE INDEX

Sample Number	Matrix	Sampling Date	Date Received	ICP-AES Analysis	ICP-MS Analysis	Mercury Analysis
MJGXC1	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC3	Water	8/18/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXC5	Water	8/18/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXC7	Water	8/18/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXC9	Water	8/18/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXD1	Water	8/18/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXD3	Water	8/18/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXD5	Water	8/19/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXD7	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXD9	Water	8/19/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXE1	Water	8/19/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014
MJGXE3	Water	8/19/2014	8/21/2014	8/22/2014	8/22/2014	8/22/2014
MJGXE5	Water	8/19/2014	8/21/2014	8/23/2014	8/22/2014	8/22/2014

*MJGXE5 is the field duplicate for sample MJGXE3.*

## Sample Summary Report

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	2.0		ug/L	1.95		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	LCS	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	19.2		ug/L	19.23		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC1	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :		% Solids :					

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC1	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.50	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC1	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CCO1	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:26:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	9.6	JQ	ug/L	9.6	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	2.8	JQ	ug/L	2.8	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC3	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :		% Solids :					

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.52	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC3	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG01	pH:	2	Sample Date:	08/18/2014	Sample Time:	13:46:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC5	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	10.5		ug/L	10.5		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC5	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.32	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC5	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC02	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:20:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC7	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC7	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.51	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC7	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SC01	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:00:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	4.7	JQ	ug/L	4.7	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC9	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	3.3	JQ	ug/L	3.3	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC9	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.52	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXC9	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC03	pH:	2	Sample Date:	08/18/2014	Sample Time:	14:47:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD1	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	13.6		ug/L	13.6		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD1	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD1	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC04	pH:	2	Sample Date:	08/18/2014	Sample Time:	15:26:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.34	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD3	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	14.8		ug/L	14.8		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD3	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC05	pH:	2	Sample Date:	08/18/2014	Sample Time:	16:13:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.29	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD5	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:27:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	16.4		ug/L	16.4		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD5	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:27:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD5	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CP01	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:27:00
% Moisture :		% Solids :					

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.20	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD7	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:53:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.32	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD7	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:53:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD7	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC06	pH:	2	Sample Date:	08/19/2014	Sample Time:	11:53:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	18.7		ug/L	18.7		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD9	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:04:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.51	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD9	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:04:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	17.9		ug/L	17.9		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXD9	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	CC07	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:04:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE1	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:55:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	42.4		ug/L	42.4		1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE1	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:55:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE1	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	AD01	pH:	2	Sample Date:	08/19/2014	Sample Time:	12:55:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.21	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.70	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	6.7	JQ	ug/L	6.7	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3D	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.4470	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3D	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.2000	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3D	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	8.0	JQ	ug/L	7.9843	J	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3S	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Spike	41.1		ug/L	41.1188		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3S	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Spike	0.88		ug/L	0.8832		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE3S	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:	2	Sample Date:	08/19/2014	Sample Time:	13:16:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Spike	25.3		ug/L	25.3400		1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE5	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:18:00
% Moisture :		% Solids :					

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	0.27	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE5	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:18:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	6.8	JQ	ug/L	6.8	J	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	MJGXE5	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	BG02	pH:	2	Sample Date:	08/19/2014	Sample Time:	13:18:00
% Moisture :	% Solids :						

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	0.20	U	ug/L	0.20	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	PBW01	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Arsenic	Target	10.0	U	ug/L	10.000	U	1	Yes	S4VEM

Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	PBW02	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Mercury	Target	-0.017	J	ug/L	-0.0171	J	1	Yes	S4VEM



Case No:	44609	Contract:	EPW09038	SDG No:	MJGXC1	Lab Code:	CHEM
Sample Number:	PBW04	Method:	ICP_MS	Matrix:	Water	MA Number:	DEFAULT
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Lead	Target	1.0	U	ug/L	1.000	U	1	Yes	S4VEM

Edit History Report

Case No: 44609 Contract: EPW09038 SDG No: MJGXC1 Lab Code: CHEM

Method: ICP\_AES

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
LCS	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC1	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 11:00 AM	
MJGXC3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC3	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 10:59 AM	
MJGXC5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC7	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 10:59 AM	
MJGXC9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC9	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 11:01 AM	
MJGXD1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 10:59 AM	
MJGXE3D	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3D	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 10:59 AM	
MJGXE3S	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE5	Water	Arsenic	Validation Flag	J	JQ	Don Matheny	9/10/14 10:59 AM	
PBW01	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y

Method:    Hg

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
MJGXC1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3D	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3S	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
PBW02	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y

Method:    ICP\_MS

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
LCS	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXC9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD7	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXD9	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE1	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3D	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE3S	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
MJGXE5	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y
PBW04	Water		Validation Level		S4VEM	Don Matheny	9/10/14 11:01 AM	Y

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