

Spring 2014 Biannual Removal Action Monitoring Report
Blue Ledge Mine Site
Rogue River-Siskiyou National Forest
Siskiyou County, California

July 2014

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Prepared by:



ERRG

Engineering/Remediation Resources Group, Inc.
616 First Ave., Suite 300
Seattle, Washington 98104
(206) 282-4749

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Submitted by
Engineering/Remediation Resources Group, Inc.:



Signature

July 2, 2014

Date

Annica Nord, LG

Name

Project Geologist

Title



Signature

July 2, 2014

Date

Brian Wetzsteon

Name

Project Manager

Title

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Abbreviations and Acronyms

AMD	acid mine drainage
ASTM	ASTM International
Biannual Report	Biannual Removal Action Monitoring Report
CaCO ₃	calcium carbonate
CCC	continuous concentration criteria
DEQ	Oregon Department of Environmental Quality
DO	dissolved oxygen
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERRG	Engineering/Remediation Resources Group, Inc.
Forest Service	U.S. Department of Agriculture Forest Service
LCS	laboratory control samples
LCSD	LCS duplicates
MCLs	maximum contaminant levels
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mS/cm	milliSiemens per centimeter
MS/MSD	matrix spike/matrix spike duplicate
NRWQC	National Recommended Water Quality Criteria
NTCRA	non-time-critical removal action
O&M	operation and maintenance
QA	quality assurance
QAP/OMP	Quality Assurance Plan/Operations and Maintenance Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
RSLs	regional screening levels
SI	Site Inspection
SLVs	screening level values

Abbreviations and Acronyms *(continued)*

SM	Standard Method
TDS	total dissolved solids
TECs	threshold effects concentrations
TSS	total suspended solids
URS	URS Corporation
WRPs	waste rock piles
µg/L	micrograms per liter

Section 1. Introduction

Engineering/Remediation Resources Group, Inc. (ERRG) has prepared this Spring 2014 Biannual Removal Action Monitoring Report (Biannual Report) to document the results of biannual monitoring at the Blue Ledge Mine Site, in the Rogue River-Siskiyou National Forest, Siskiyou County, California (Figure 1). The non-time-critical removal action (NTCRA) was completed during two work seasons beginning on June 28, 2010, and ending on November 11, 2011. ERRG is conducting post-removal action monitoring events as part of operation and maintenance (O&M) activities under U.S. Department of Agriculture Forest Service (Forest Service) Contract No. GS-10F-0294R, Delivery Order No. AG-0489-D-10-0126. The purpose of the post-removal action monitoring is to document environmental conditions at the Blue Ledge Mine Site to ensure the effectiveness of the NTCRA to achieve unrestricted reuse of the site.

The Blue Ledge Mine Quality Assurance Plan/Operations and Maintenance Plan (QAP/OMP) provides the framework and procedures for sampling and analysis and serves as the primary guide for integrating quality assurance (QA) and quality control (QC) procedures. As outlined in the QAP/OMP, post-removal action monitoring includes:

- **Biannual monitoring** (fall and spring), which includes collection and analysis of drinking water samples, surface water samples, and creek sediment samples.
- **Annual monitoring** (fall), which includes collection and analysis of fish tissue samples and aquatic macroinvertebrate samples.
- **Waste characterization monitoring**, which includes collection and analysis of sediment samples from the treatment basins and leachate samples.

Biannual monitoring was performed on May 6, and 7, 2014 (spring 2014). Table 1 presents the sample type, number of sample locations, and frequency of sample collection for the spring 2014 event and future monitoring events. Data for all monitoring events are presented in Tables 2 through 9 for evaluation and comparison with the spring 2014 data.

1.1. SITE BACKGROUND

The Blue Ledge Mine Site is an abandoned copper mine. It is located on patented and National Forest System lands in northern California, within the Rogue River-Siskiyou National Forest, approximately 3 miles south of the Oregon border (Figure 1). The approximate geographic coordinates of the mine are N 41° 57' 36" latitude, W 123° 05' 60" longitude.

The Blue Ledge Mine was discovered in 1898, and was active from 1904 until approximately 1930. At least five productive mine adits and several prospect adits were constructed as part of the mining operation. Copper, zinc, silver, and gold ores were extracted from sulfide deposits and reportedly shipped from the site to the nearby historic town of Copper (now submerged beneath the Applegate Reservoir), and then to a former smelter in Tacoma, Washington. Sulfide-rich waste rock was discarded on the hillsides below the adits, forming four waste rock piles (WRPs) (WRP-1 through WRP-4) (URS Corporation [URS], 2010b).

WRP-1 through WRP-4 covered an area of approximately 7.2 acres. The WRPs were located on steep slopes at the upper headwaters of the Joe Creek watershed (Figure 2). Joe Creek flows north to Elliott Creek, a tributary to the Middle Fork of the Applegate River. The Applegate River feeds the Applegate Reservoir. The small community of Joe Bar, California, is located downstream of the site just downstream of the confluence of Joe Creek with Elliott Creek. Over time, the waste rock eroded and leached acidity and metals to Joe Creek and Elliott Creek and locations downstream. The acidity and the dissolved metals in acid mine drainage (AMD) are harmful to aquatic and terrestrial natural resources and potentially harmful to humans (URS, 2010b).

Since 1981, a number of environmental investigations have been performed at the Blue Ledge Mine Site. Results of those investigations showed that AMD from the site had impacted surface water, stream sediments, and groundwater downgradient from the site. Results of those investigations also showed that cadmium, copper, iron, lead, and zinc were present in soil, groundwater, surface water, and sediment at concentrations that could pose a risk to humans and wildlife. During cleanup activities performed prior to the 2010–2011 NTCRA conducted by ERRG, approximately the lower 25 percent of WRP-1 was terraced and regraded to direct AMD to a drainage channel lined with limestone boulders. The goal was to stabilize the slope, reduce erosion, and passively treat the AMD. The remediation work did not significantly reduce concentrations of metals or increase the pH of AMD flowing into Joe Creek. An estimated 70,000 tons of waste rock also remained in the four WRPs at the site (URS, 2010b). During the 2010–2011 NTCRA, waste rock was moved from all four WRPs to a permanent, lined waste repository that was constructed with an impermeable cap. The objective of the NTCRA was to eliminate the exposure pathway from waste rock to humans and wildlife to achieve unrestricted reuse of the site. Annual and biannual sampling is being performed until 2015 (ERRG, 2012) to confirm the effectiveness of the response action in achieving unrestricted reuse.

1.2. REPORT ORGANIZATION

The remainder of this report is organized as follows:

- [Section 2](#) summarizes sampling activities conducted during the spring 2014 biannual monitoring event.
- [Section 3](#) summarizes the results of the spring 2014 biannual monitoring event.

- [Section 4](#) summarizes the data quality analysis.
- [Section 5](#) provides conclusions based on the results of the spring 2014 biannual monitoring event.
- [Section 6](#) lists the documents and guidance used to prepare this report.

Figures and tables are presented after [Section 6](#). This report also contains the following appendices:

- [Appendix A](#), Concentration Trend Graphs
- [Appendix B](#), Spring 2014 Laboratory Analytical Reports
- [Appendix C](#), Spring 2014 Biannual Monitoring Field Notes

Section 2. Sample Collection and Analysis

This section summarizes the methods used to collect and analyze samples during the spring 2014 biannual monitoring event conducted on May 6 and 7, 2014. Samples were collected of drinking water, surface water, and creek sediment. Fish tissue and macroinvertebrate samples are collected annually in the fall and were not collected during this event. The samples collected for this sampling event were submitted to Apex Laboratory, LLC located in Tigard, Oregon, for analysis.

As discussed in [Section 1](#), sampling and analysis was conducted in accordance with the QAP/OMP ([URS, 2010a](#)). Please refer to the QAP/OMP for additional information on standard operating procedures, including decontamination, sample documentation, sample handling, and QC for sampling and analysis.

2.1. DRINKING WATER SAMPLES

As specified in the QAP/OMP ([URS, 2010a](#)), sample locations were selected upstream and downstream of the site near locations previously sampled during the site inspection (SI) ([URS, 2009](#)). Based on the criteria established in the QAP/OMP, drinking water samples were scheduled to be collected from the following five residences in Joe Bar, California ([Figure 3](#)):

- 462 (Bridgett's residence – creek source)
- 541 (Johan's residence – creek source)
- 12620 (Ron James' residence – well source)
- 12620 (Ron James' residence – irrigation well; well is not used for drinking water)
- 17607 (Luke's residence – well source)

Sample location 461 (Bob's residence) was eliminated from the O&M plan and replaced with the 12620 irrigation well location at the request of Pete Jones, project On-Scene Coordinator of the Forest Service. The spring source piping at sample location 461 (Bob's residence) was damaged in June 2010. The cabin does not currently have a water supply, and there are no plans to replace the water supply during the O&M period. ERRG collected drinking water samples from residences 462, 541, 12620 residential and irrigation wells, and 17607 during spring 2014.

In accordance with the QAP/OMP ([URS, 2010a](#)), each drinking water source was analyzed for alkalinity, sulfate, hardness, total dissolved solids (TDS), total suspended solids (TSS), and pH. A matrix

spike/matrix spike duplicate (MS/MSD) sample (location 541) and a field duplicate sample (location 17607) were also collected.

Prior to collecting drinking water samples, the tap and water line were flushed for 3 to 5 minutes. Following flushing, sample containers were filled directly from the tap. Field parameters (pH, temperature, and specific conductivity) were measured using an electronic water quality meter that was calibrated prior to use. [Table 2](#) summarizes the field parameters.

Samples for offsite laboratory analysis were collected directly into appropriate laboratory-prepared sample containers provided by Apex Laboratory, LLC of Tigard, Oregon. Similar to the spring and fall 2012 and 2013 biannual monitoring events, unfiltered samples were collected. Samples were intended to be filtered in the field (i.e., by gravity draining the samples through a 0.45-micron filter); however, field filtering required as much as 90 minutes per sample and was an inconvenience to residents. After consultation with the laboratory, it was determined that laboratory filtration would be acceptable provided unpreserved samples containers were used.

Sample containers were labeled with the appropriate sample identification number, project number, time, and date. Sample containers were then placed in a cooler with ice for transportation to the laboratory for filtration and analysis. Samples were prepared for shipping in accordance with ASTM International (ASTM) D 4840 chain-of-custody protocols ([ASTM, 1999](#)).

The laboratory analyzed the drinking water samples using the following analytical methods in accordance with the QAP/OMP ([URS, 2010a](#)):

- Dissolved metals (arsenic, cadmium, calcium, copper, iron, lead, magnesium, and zinc) by U.S. Environmental Protection Agency (EPA) Method 6020
- Alkalinity by Standard Method (SM) 2320B
- Sulfate by EPA Method 300.0
- Hardness by EPA Method 6020
- TDS by SM 2540C
- TSS by SM 2540D

[Table 2](#) summarizes the analytical results for the drinking water samples collected during the spring 2014 biannual monitoring event. Calcium and magnesium are considered essential nutrients and as such were not included in the summary tables or data analysis. [Table 2](#) also presents results from the previous drinking water sampling events for comparison. [Appendix A](#) provides the graphs containing concentration trends over time. [Appendix B](#) provides the complete laboratory analytical reports for the spring 2014 biannual monitoring activities. [Appendix C](#) includes field notes from the spring 2014 biannual monitoring activities.

2.2. SURFACE WATER SAMPLES

As specified in the QAP/OMP (URS, 2010a), sample locations were selected in Elliott Creek, Joe Creek, and an unnamed tributary to Joe Creek. Based on the criteria established in the QAP/OMP, surface water samples were collected from the following six locations (Figure 3):

- EC-04 (Elliott Creek). Approximately 1,000 feet downstream from the Elliott Creek bridge, where Elliott Creek is adjacent to Forest Service Road 1050. Elliott Creek is most safely accessed from the private road along the south side of Elliott Creek that intersects Forest Service Road 1060 at the south end of the bridge crossing Elliott Creek. There is a ramp down to the creek for an irrigation pump. GPS location: 42.000584, -123.133272.
- EC-06 (Elliott Creek). Approximately 70 feet upstream from the confluence with Joe Creek. GPS location: 41.998232, -123.127425.
- JC-01 (Joe Creek). Approximately 100 feet upstream from the Joe Creek bridge on Forest Service Road 1060. GPS location: 41.998048, -123.128053.
- JC-08 (Joe Creek). Approximately 200 feet downstream from the confluence of Sediment Basin 1A and Joe Creek. GPS location: 41.962802, -123.106136.
- JC-09 (Joe Creek). In the riprap toe at the outlet of Sediment Basin 1A and the confluence of Joe Creek. GPS location: 41.962331, -123.105777.
- JC-10 (unnamed tributary to Joe Creek). Approximately 300 feet upstream of the mine site access road crossing Joe Creek where it intersects Forest Service Road 1060. GPS location: 41.961879, -123.103852.

Each of these locations, except JC-09, is marked in the field with paint on a nearby tree or rock surface and with flagging and a metal identification tag fastened to a nearby tree.

In accordance with the QAP/OMP (URS, 2010a), each surface water sample was analyzed for alkalinity, sulfate, hardness, TDS, TSS, and dissolved metals. An MS/MSD sample (location JC-10) and a field duplicate sample (location JC-08) were collected for QC purposes in accordance with Section 5.0 of the QAP/OMP (URS, 2010a). Samples were collected during the spring 2014 biannual monitoring event from previously identified and marked locations, except where noted above. At each location, surface water field parameters (pH, temperature, and specific conductivity) were measured using an electronic water quality field meter.

During sample collection, field personnel stood out of the water or downstream of the location to be sampled to ensure that the sample reflected undisturbed creek conditions. Unfiltered samples were collected from the side of the creek channels in the flowing water column by submerging the sampling container into the creek and allowing it to fill with creek water. The samples were collected into appropriate laboratory-prepared sample containers. The sample containers were labeled with the appropriate sample identification number, project number, time, and date. Sample containers were then

placed in a cooler with ice for transportation to the laboratory for filtering and analysis. Samples were prepared for shipping in accordance with ASTM D 4840 chain-of-custody protocols (ASTM, 1999).

The surface water samples were analyzed using the following analytical methods in accordance with the QAP/OMP:

- Dissolved metals (arsenic, cadmium, calcium, copper, iron, lead, magnesium, and zinc) by EPA Method 6020
- Alkalinity by SM 2320B
- Sulfate by EPA Method 300.0
- Hardness by EPA Method 6020
- TDS by SM 2540C
- TSS by SM 2540D

Table 3 summarizes the analytical results for surface water samples and includes data from previous sampling events for comparison. Appendix A provides the graphs containing concentration trends over time. Appendix B provides the complete laboratory analytical reports. Appendix C includes field notes.

2.3. CREEK SEDIMENT SAMPLES

As specified in the QAP/OMP (URS, 2010a), creek sediment samples were collected at the same locations as the surface water samples collected in Elliott Creek, Joe Creek, and an unnamed tributary to Joe Creek from the following six locations (Figure 3):

- EC-04 (Elliott Creek)
- EC-06 (Elliott Creek)
- JC-01 (Joe Creek)
- JC-08 (Joe Creek)
- JC-09 (Joe Creek)
- JC-10 (unnamed tributary to Joe Creek)

In accordance with the QAP/OMP (URS, 2010a), each creek sediment sample was analyzed for metals (arsenic, cadmium, copper, iron, lead, and zinc), percent moisture, and grain size. An MS/MSD sample (location JC-01) and a field duplicate sample (location JC-09) were collected for QC purposes in accordance with Section 5.0 of the QAP/OMP (URS, 2010a). Representative MS/MSD and duplicate sediment samples were collected by alternating aliquots of sediment from each scoop or shovel into the primary and MS/MSD or field duplicate sample containers.

Discrete samples were collected from each location. Samples were collected from the top 6 inches of sediment in the creek from previously identified and marked locations using dedicated, clean, disposable plastic scoops. Each sample was placed into an appropriate laboratory-prepared sample container. Sample containers were labeled with the appropriate sample identification number, project number, time, and date and placed in a cooler with ice for transportation to the laboratory. Samples were prepared for shipping in accordance with ASTM D 4840 chain-of-custody protocols (ASTM, 1999).

The laboratory analyzed the creek sediment samples by the following analytical methods in accordance with the QAP/OMP:

- Metals (arsenic, cadmium, copper, iron, lead, and zinc) by EPA Method 6020
- Percent moisture by Apex Standard Operating Procedure
- Particle size by ASTM D422

Table 4 summarizes the analytical results for metals and includes data from previous sampling events for comparison. Appendix A provides the graphs containing concentration trends over time. Appendix B provides the complete laboratory analytical reports, particle size analysis, and percent moisture results. Appendix C includes field notes.

2.4. FISH TISSUE SAMPLES

Fish tissue samples are collected annually in the fall; therefore, fish tissue samples were not collected during the spring 2014 biannual monitoring event. The fish tissue samples will be collected during the fall 2014 biannual monitoring event in accordance with the annual sampling frequency protocol. Table 5 summarizes the species, size, and approximate age of the fish captured during previous sampling events. Table 6 summarizes the analytical results for fish tissue samples collected during previous sampling events, including the most recent event on October 15, 2013.

2.5. AQUATIC MACROINVERTEBRATE SAMPLES

Aquatic macroinvertebrate samples are collected annually in the fall; therefore, aquatic macroinvertebrate samples were not collected during the spring 2014 biannual monitoring event. Aquatic macroinvertebrate samples will be collected during the fall 2014 biannual monitoring event in accordance with the annual sampling frequency protocol. Table 7 summarizes the analytical results for aquatic macroinvertebrate samples collected during previous sampling events, including the most recent event on October 16, 2013.

2.6. LEACHATE COLLECTION SUMP SAMPLES

Repository leachate treatability testing was performed on May 6 and 7, 2014. Table 8 summarizes the most recent results from the leachate sample collected. Appendix B includes the laboratory analytical report. Three individual samples of the leachate, native soil, and limestone were collected for laboratory

analysis to evaluate original concentrations prior to mixing. Leachate was added to limestone and to native soil. The leachate was allowed to pass through limestone then native soil to simulate a gravity-flow onsite infiltration system. Samples were collected for laboratory analysis of the limestone, native soil, and leachate after passing through limestone and soil. Leachate was also applied to a 10-foot by 10-foot test plot on the top deck of the repository to evaluate whether the leachate will impact the grass if used as irrigation water.

A technical evaluation of the pilot irrigation test and pilot infiltration test was submitted on June 18, 2014. Thus far, observations indicate using the leachate as irrigation water will not impact grass on the repository if the water is applied in small-quantity events of less than 0.5 inch. Limestone has the capacity to reduce metals concentrations and increase the pH in leachate. The limestone retained the metals removed from the leachate, but concentrations remained significantly less than the site cleanup goals. Native soil had no beneficial impact on the leachate pH and did not remove or retain metals from the leachate. ERRG recommended presenting these data to the California Regional Water Quality Control Board and EPA as meeting the substantive requirements for a Waste Discharge Requirements exemption to use the leachate as spray irrigation water.

A technical evaluation of the sump water source, elevation, and volume was submitted on November 21, 2013. The water had collected in the sump due to rain and snowmelt entering the repository drainage system during the winter shutdown period of 2010–2011 prior to completion of the removal action activities and capping the repository. It is anticipated that all of the residual water will eventually drain to the sump to the point where annual water removal will not be necessary. There is no indication based on surface observations or water level data that the repository liner or cover has been damaged.

2.7. TREATMENT BASINS SEDIMENT SAMPLES

Sediment samples were collected from the nine treatment basins on May 6, 2013, and submitted to Apex Laboratory, LLC for analysis of Resource Conservation and Recovery Act (RCRA) metals and pH. Laboratory analytical results indicated RCRA metal concentrations and pH were less than site cleanup goals, except for lead in treatment basin 1 and copper in treatment basin 2. Lead was reported at a concentration of 216 milligrams per kilogram (mg/kg), which slightly exceeds the soil cleanup goal (including the 15% tolerance limit) of 205.82 mg/kg. Copper was reported at a concentration of 1,100 mg/kg, which exceeds the soil cleanup goal of 1,041 mg/kg but does not exceed the soil cleanup goal (including the 15% tolerance limit) of 1,197.15 mg/kg. Sediment will be removed from the treatment basins during site maintenance activities to be performed during late summer 2014. [Table 9](#) summarizes the results of the treatment basin sediment samples. [Appendix B](#) includes the laboratory analytical report.

Section 3. Results

This section summarizes the data collected during the spring 2014 biannual monitoring event, as well as the comparison of data from previous sampling events. As part of the data evaluation, data were screened against values from the Final SI Report (URS, 2009) and the Engineering Evaluation/Cost Analysis (EE/CA) (URS, 2010b), consistent with the removal action objectives and in compliance with applicable or relevant and appropriate requirements presented in the EE/CA. The screening criteria are included in Tables 2 through 4 and 6 through 9 for comparison purposes.

3.1. DRINKING WATER

Drinking water samples were collected as part of ongoing post-removal action monitoring. ERRG collected biannual drinking water samples from drinking water sources of residents of Joe Bar, California. Appendix B contains the laboratory analytical reports for the spring 2014 biannual monitoring event. Figure 3 shows the locations where the samples were collected, and Table 2 summarizes the sample results.

Samples were analyzed in the field for pH, conductivity, dissolved oxygen (DO), and temperature. Field parameter results for the spring 2014 biannual monitoring event are discussed below.

- Water temperature measurements ranged between 8.26°C and 13.14°C.
- Electrical conductivity measurements ranged between 0.200 and 0.408 milliSiemens per centimeter (mS/cm).
- DO concentrations ranged between 4.19 and 10.16 milligrams per liter (mg/L).
- pH measurements ranged between 7.43 and 7.88.
- Turbidity concentrations ranged from 0.8 to 15.5 nephelometric turbidity units.

Drinking water samples were analyzed for general chemistry parameters (total alkalinity, hardness, TDS, TSS, and sulfate). General chemistry results for the spring 2014 biannual monitoring event are discussed below.

- Total alkalinity as calcium carbonate (CaCO₃) ranged from 161 mg/L to 277 mg/L.
- Hardness as CaCO₃ ranged from 216 mg/L to 292 mg/L.
- TDS ranged from 235 mg/L to 330 mg/L.

- TSS was only detected in one sample at a concentration of 5.0 mg/L.
- Sulfate concentrations ranged from 12.4 mg/L to 61.3 mg/L.

Samples were also analyzed for dissolved metals (arsenic, cadmium, copper, iron, lead, and zinc). Drinking water results were compared with the following human health screening criteria for metals:

- EPA regional screening levels (RSLs) for tap water
- EPA maximum contaminant levels (MCLs)

RSLs are tools for evaluating and cleaning up contaminated EPA Superfund sites. RSLs are risk-based concentrations used for initial screening-level evaluations of environmental measurements to assist human health risk assessors. MCLs are the legal requirement for water companies to meet for serving water to the public. MCLs are developed by analyzing risk and what levels can be practically achieved. MCLs for arsenic are set considerably higher than RSLs because arsenic is commonly found in water systems at relatively high concentrations.

Dissolved metal results for the spring 2014 biannual monitoring event are discussed below.

- Arsenic results ranged from nondetect to 4.12 micrograms per liter ($\mu\text{g/L}$). All arsenic results exceeded the EPA RSL (0.045 $\mu\text{g/L}$); however, the concentrations were less than the EPA drinking water MCL of 10 $\mu\text{g/L}$ in all samples collected.
- Cadmium, copper, lead, and zinc concentrations in drinking water samples were less than their respective EPA RSLs and MCLs.
- Iron results ranged from 244 $\mu\text{g/L}$ to 340 $\mu\text{g/L}$. All iron results were less than EPA RSL for drinking water in all samples collected, but one sample exceeded both the EPA MCL (300 $\mu\text{g/L}$) and the California MCL (300 $\mu\text{g/L}$).

[Table 2](#) summarizes the field parameter, general chemistry, and metals results for all sampling events from 2008 through spring 2014 .

3.2. SURFACE WATER

ERRG collected surface water samples from Elliott Creek and Joe Creek during the spring 2014 biannual monitoring event. [Appendix B](#) contains the laboratory analytical report for the spring 2014 biannual monitoring event. [Figure 3](#) shows the locations where these samples were collected, and [Table 3](#) summarizes the sample results.

Samples were analyzed in the field for temperature, conductivity, and pH. Field parameter results for the spring 2014 biannual monitoring event are discussed below.

- Water temperature measurements ranged between 5.40°C and 7.57°C.
- Electrical conductivity measurements ranged between 0.039 and 0.086 mS/cm.
- pH measurements ranged between 4.80 and 8.18.

Surface water samples were analyzed for general chemistry parameters (total alkalinity, hardness, TDS, TSS, and sulfate). General chemistry results for the spring 2014 biannual monitoring event are discussed below.

- Total alkalinity as CaCO₃ ranged from non detect above 20.0 mg/L to 46.1 mg/L.
- Hardness as CaCO₃ ranged from 25.2 mg/L to 66.9 mg/L.
- TDS ranged from 36.0 to 162 mg/L.
- TSS concentrations were all non detect above 5.00 mg/L.
- Sulfate concentrations ranged from 4.08 mg/L to 114 mg/L.

Samples were also analyzed for dissolved metals (arsenic, cadmium, copper, iron, lead, and zinc). Surface water results were compared with the following screening criteria for metals:

- Ecological
 - California Water Quality Standards (continuous concentration criteria [CCC])
 - EPA National Recommended Water Quality Criteria (NRWQC) (CCC)
- Human health
 - California Water Quality Standards (humans ingesting organisms only)
 - EPA NRWQC (protective of humans ingesting organisms only)

* Note that no human health screening criteria have been established for cadmium, copper, iron, and lead.

Dissolved metals results for the spring 2014 biannual monitoring event are discussed below.

- Arsenic concentrations ranged from nondetect to 0.344 µg/L. Arsenic concentrations did not exceed ecological screening criteria in any of the samples collected. It should also be noted that if any human's drinking water system source is directly from the stream, the MCL for arsenic is 10 µg/L. Arsenic concentrations during spring 2014 were detected at concentrations lower than they were detected during spring and fall 2013.
- Cadmium concentrations ranged from nondetect to 28.5 µg/L, with four concentrations (0.378 µg/L, 0.611 µg/L [0.567 µg/L for the duplicate], and 28.85 µg/L) exceeding the ecological screening criteria (0.13 µg/L and 0.25 µg/L) in samples collected from JC-01, JC-08, and JC-09 respectively. Cadmium concentrations detected during spring 2014 were similar to the spring and fall 2013 concentrations, exception at JC-09 where concentrations increased significantly. This sample was collected at the outflow of sediment basin 1A, prior to mixing with Joe Creek.

- Copper concentrations ranged from 0.578 µg/L to 3,150 µg/L, with three concentrations (16.2 µg/L, 52.3 µg/L [54.9 µg/L for the duplicate], and 3,150 µg/L) exceeding the ecological screening criterion (9.00 µg/L) in samples collected from JC-01, JC-08, and JC-09. Copper concentrations detected during spring 2014 were similar to those detected during spring and fall 2013, except at JC-09 where concentrations increased significantly. This sample was collected at the outflow of sediment basin 1A, prior to mixing with Joe Creek.
- Lead concentrations ranged from nondetect to 1.47 µg/L, with one concentration (1.47 µg/L) exceeding the ecological screening criterion (0.92 µg/L) in the sample collected from JC-09. Lead concentrations detected during spring 2014 were similar to those detected during spring and fall 2013, except at JC-09 where concentrations increased significantly. This sample was collected at the outflow of sediment basin 1A, prior to mixing with Joe Creek.
- Zinc concentrations ranged from nondetect to 4,900 µg/L, with two concentrations (102 µg/L [105 µg/L for the duplicate] and 4,900 µg/L) exceeding the ecological screening criterion (54 µg/L) in the samples collected from JC-08 and JC-09. Zinc concentrations also exceeded the ecological screening criterion (120 µg/L) in the sample collected from JC-09. Concentrations detected during spring 2014 were similar to those detected during spring and fall 2013, except at JC-09 where concentrations increased significantly. This sample was collected at the outflow of sediment basin 1A, prior to mixing with Joe Creek.
- All iron concentrations were less than screening criteria.

Table 3 summarizes the field parameter, general chemistry, and metals results for all sampling events.

3.3. CREEK SEDIMENT

ERRG collected creek sediment samples during the spring 2014 biannual monitoring event. Appendix B contains the laboratory analytical report for the spring 2014 biannual monitoring event. Figure 3 shows the locations where these samples were collected, and Table 4 summarizes the sample results.

Samples were analyzed for total metals (arsenic, cadmium, copper, iron, lead, and zinc). Creek sediment results were compared with the ecological and human health screening criteria originally presented in Table 5 of the Final SI Report (URS, 2009). The lowest of the ecological screening levels compared (threshold effects concentrations [TECs], probable effect concentrations, Oregon Department of Environmental Quality [DEQ] screening level values [SLVs], Washington State sediment quality standards, and background concentrations) was selected as the applicable ecological screening level. Applicable screening levels are listed below.

- Ecological
 - Arsenic: DEQ SLV
 - Cadmium: TECs
 - Copper: background concentration
 - Lead: DEQ SLVs
 - Zinc: TECs

- Human health
 - EPA Region 6 Human Health Medium-Specific Screening Levels
 - * Note that no ecological or human health screening criteria has been established for iron.

Metal results for the spring 2014 biannual monitoring event are discussed below.

- Arsenic concentrations ranged from 1.14 mg/kg to 61.7 mg/kg, with five of the six concentrations (3.09 mg/kg, 3.57 mg/kg, 5.20 mg/kg, 31.9 mg/kg, and 50.8 mg/kg [61.7 mg/kg in duplicate sample]) exceeding the human health screening criterion (1.5 mg/kg) in samples collected from EC-06, JC-01, EC-04, JC-08, and JC-09, respectively. None of the concentrations exceeded the ecological screening criterion (7 mg/kg). Arsenic concentrations detected during spring 2014 were similar to those detected during spring and fall 2013, except at JC-09 where concentrations increased significantly. This sample was collected at the outflow of sediment basin 1A, prior to mixing with Joe Creek. Results for JC-08 were elevated slightly from the spring 2013 results.
- Cadmium concentrations ranged from 0.128 mg/kg to 4.84 mg/kg, with three concentrations (1.14 mg/kg [1.48 mg/kg in the duplicate], 2.16 mg/kg, and 4.84 mg/kg) exceeding the ecological screening criterion (0.99 mg/kg) in sediment samples collected from JC-09, JC-01, and JC-08, respectively, in Joe Creek. Cadmium concentrations did not exceed ecological screening criteria in sediment samples collected from Elliott Creek. Cadmium was not reported at concentrations exceeding human health screening criterion in all sediment samples collected.
- Copper concentrations ranged from 34.5 mg/kg to 1,790 mg/kg, with five concentrations (43.8 mg/kg, 62.1 mg/kg, 578 mg/kg, 973 mg/kg [1,030 mg/kg in the duplicate], and 1,790 mg/kg) exceeding the ecological screening criterion (42.9 mg/kg) in sediment samples collected from four locations (JC-10, JC-01, JC-09, and JC-08, respectively) in Joe Creek and from one location (EC-04) in Elliott Creek. Copper concentrations did not exceed ecological screening criteria in the sample collected from location EC-06 in Elliott Creek. Copper was not reported at concentrations exceeding the human health screening criteria in all sediment samples collected.
- Iron concentrations ranged from 11,900 mg/kg to 83,000 mg/kg; however, no ecological or human health screening criteria have been established for iron in sediment.
- Lead concentrations ranged from 2.06 mg/kg to 256 mg/kg, with two concentrations (121 mg/kg and 240 mg/kg [256 mg/kg in the duplicate]) exceeding the ecological screening criterion (17 mg/kg) in sediment samples collected from two locations (JC-08 and JC-09, respectively) in Joe Creek. Lead was not reported at concentrations exceeding the human health screening criterion in sediment samples collected from Joe Creek. Lead concentrations did not exceed ecological or human health screening criteria in sediment samples collected from Elliott Creek.
- Zinc concentrations ranged from 27.7 mg/kg to 891 mg/kg, with three concentrations (265 mg/kg [326 mg/kg in the duplicate], 593 mg/kg, and 891 mg/kg) exceeding the ecological screening criterion (121 mg/kg) in sediment samples collected from three locations (JC-09, JC-01, and JC-08, respectively) in Joe Creek. Zinc concentrations did not exceed the ecological screening screening criteria in the sediment samples collected from Elliott Creek. Zinc was not reported at concentrations exceeding the human health screening criteria in all sediment samples collected.

Section 4. Data Quality Analysis

Several QC samples, including three field duplicates (one each for drinking water, surface water, and creek sediment), were collected during the spring 2014 biannual monitoring event. In addition, laboratory QA/QC was performed using the criteria established by EPA (EPA, 2010).

4.1. FIELD DUPLICATES

A field duplicate sample was collected at a minimum for 10 percent of the samples collected. Field duplicate analysis primarily measures consistency of field sampling procedures; however, the results are also affected by precision of the laboratory operations. Field duplicate results were compared with the results of the parent sample, and values of the relative percent difference (RPD) were calculated using the following formula:

$$RPD=(A-B)/((A+B)/2) \times 100$$

where:

A = parent sample concentration

B = duplicate sample concentration

RPD results are presented in Table 10. If an analyte was not detected at a concentration greater than the laboratory control limit, one-half of the reporting limit was used for the RPD calculation.

The RPDs calculated for the duplicate pairs were all less than established control limits (<40 percent).

4.2. LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

Laboratory QA and QC procedures were carried out in accordance with EPA protocols, and the data were accepted based on the QA/QC criteria established by the EPA (EPA, 2010). Laboratory QA/QC included method blanks, storage blanks, laboratory duplicates, laboratory control samples (LCS), LCS duplicates (LCSD), and MS/MSD samples. Laboratory QA/QC analysis is summarized below for sediment, surface water, and drinking water samples.

There were no laboratory blank detections for creek sediment, surface water or drinking water analysis, except for the following:

- Arsenic was analyzed in the blank sample at a level between one-half the method reporting limit and the method reporting limit in drinking water samples BL-DW-462-050714, BL-DW-12620-050714, and BL-DW-541-050714.
- Conductivity was analyzed in the blank sample for repository water samples BL-RS-050614 and BL-RST-050714.

MS/MSD samples were analyzed to evaluate matrix interferences in the associated sediment, surface water, and drinking water samples. Percent recoveries and/or RPD values for blank spikes, LCS/LCSD, and MS/MSD samples were within method-specified control limits for surface water and drinking water except for the following:

- MS recovery for zinc is outside control limits because elevated concentrations of zinc were present in the QC sample 4050418-MS2. The post spike was not performed.
- MSD recovery for calcium and zinc are outside control limits because elevated concentrations of calcium and zinc were present in the QC sample 4050418-MSD2. The post spikes were not performed.

Percent recoveries and/or RPD values for blank spikes, LCS/LCSD, and MS/MSD samples were within method-specified control limits for sediment analysis, except for the following:

- MS recovery for copper and zinc are outside control limits because elevated concentrations of copper and zinc were present in the QC sample 4050340-MS1.
- MSD recovery for copper and zinc are outside control limits because elevated concentrations of copper and zinc were present in the QC sample 4050340-MS1.
- MS recovery for barium and iron is outside control limits in the QC sample 4050340-MS1.
- MSD recovery for barium and iron is outside control limits in the QC sample 4050340-MS1.

However, the percent recoveries and RPDs of the associated LCS/LCSD samples were within laboratory control limits for all analytes and the data are deemed usable. [Appendix B](#) contains the laboratory analytical reports.

Section 5. Conclusions

This Biannual Report evaluates the chemical concentrations reported in drinking water, surface water, and creek sediment during the period from the completion of the NTCRA to the spring 2014 biannual monitoring event. For reference, historical chemical data are also presented in [Tables 2 through 4](#) and [6 through 9](#).

5.1. DRINKING WATER

Concentrations of metals detected in drinking water, except for arsenic and iron, were less than the screening criteria. Dissolved arsenic concentrations exceeded the RSL of 0.045 µg/L but did not exceed the MCL of 10 µg/L in drinking water samples. As stated in [Section 3.1](#), MCLs are the legal limits for concentrations in drinking water for the public and the MCL for arsenic is higher than RSL because arsenic is commonly found in water systems at relatively high concentrations. These results are consistent with the elevated concentrations of dissolved arsenic reported in drinking water samples collected during the SI ([URS, 2009](#)) and previous biannual monitoring events. Arsenic present in drinking water samples cannot be directly attributed to contamination at the site and may be the result of naturally occurring arsenic because arsenic occurs naturally in California bedrock at concentrations ranging from 0.6 to 11 mg/kg ([Bradford et. al, 1996](#)). Background sampling upgradient of the site or of drinking water sources if possible, in an area not affected by site contamination, would be necessary to evaluate whether elevated arsenic concentrations in drinking water samples are a direct result of site contamination.

Concentrations of cadmium, copper, lead, and zinc indicate a stable trend over the monitoring period to date. While a notable increase in iron concentrations was observed from June 2011 to May 2013, concentrations have notably decreased in October 2013 and May 2014 ([Appendix A](#)). All but one result (residence 12620) were less than the MCLs in May 2014 ([Table 2](#)). Iron concentrations did not exceed the RSL of 11,000 µg/L in any of the drinking water samples collected. Iron concentrations will continue to be monitored and tracked.

[Appendix A](#) provides the concentration trends for metals over time. Data from future biannual monitoring events will be added to the concentration trends to allow a complete evaluation of metals concentrations during the QAP/OMP period.

5.2. SURFACE WATER

Joe Creek starts upstream from the mine and flows through the mine area before entering Elliott Creek several miles downstream. The spring 2014 biannual monitoring surface water sample results showed the following:

- Elevated concentrations of arsenic have been historically present in Elliott Creek. However, none of the spring 2014 samples contained arsenic at concentrations exceeding ecological screening criteria (California Water Quality Standards or the EPA NRWQC). Water samples collected from Elliott Creek (EC-04 and EC-06) contained arsenic at concentrations exceeding the human health screening criterion (EPA NRWQC [protective of humans ingesting organisms]). If elevated concentrations of arsenic are detected in samples from Joe Creek, it could be an indication that elevated concentrations are not exclusively a result of site contamination but reflect naturally occurring concentrations of arsenic because arsenic is also detected in Elliott Creek.
- Cadmium concentrations in surface water samples collected from locations JC-01 and JC-08 in Joe Creek slightly exceeded the ecological screening criteria (California Water Quality Standards and EPA NRWQC). Cadmium concentrations in surface water samples collected from JC-09 in Joe Creek significantly exceeded the ecological screening criteria (California Water Quality Standards and EPA NRWQC). Concentrations of cadmium in the remaining samples from Joe Creek and all samples collected in Elliott Creek were less than the ecological screening criteria (California Water Quality Standards and EPA NRWQC).
- Copper concentrations in surface water samples collected from locations JC-01, JC-08, and JC-09 in Joe Creek exceeded the ecological screening criterion (EPA NRWQC). Copper did not exceed the ecological screening criterion in the remaining sample collected from Joe Creek or in any samples collected from Elliott Creek.
- Lead concentrations in surface water samples collected from location JC-09 in Joe Creek exceeded the ecological screening criterion (California Water Quality Standards). None of the remaining samples collected from Joe Creek exceeded the ecological screening criterion (EPA NRWQC) for lead. Lead did not exceed the ecological screening criterion in any samples collected from Elliott Creek.
- Zinc concentrations in surface water samples collected from locations JC-08 and JC-09 in Joe Creek exceeded the ecological screening criterion (California Water Quality Standards). Zinc did not exceed the ecological screening criterion in the remaining sample collected from Joe Creek or in any samples collected from Elliott Creek.
- Iron concentrations were less than the ecological screening criterion (California Water Quality Standards) in both Joe and Elliott Creeks.

[Appendix A](#) provides the concentration trends for metals over time. Results less than the reporting limit are represented in [Appendix A](#) as one-half of the reporting limit. The sample collected from JC-09 contains significantly elevated concentrations of cadmium, copper, lead, and zinc with respect to other samples collected from Joe Creek, as well as historical concentrations collected from JC-09. The sample

is believed to be representative of the outflow of the WRP1 sediment basins prior to mixing with Joe Creek, because the pH measured in basin 1A was 4.6 and the JC-09 sample below basin 1A was pH 4.8. In past years Joe Creek was flowing much higher in early May and any JC-09 water sample collected at the toe of the WRP1 sediment basins riprap had been diluted with creek water. Due to less spring runoff than normal in Joe Creek at the time of this sample collection, it is believed there is less mixing of stream water with acid mine drainage water coming from the WRP1 gully and sediment basins. Therefore the recent sample is believed to be more representative of acid mine drainage coming down the WRP1 gully than it is of a blended sample of creek water and acid mine drainage as previously collected. JC-08, which is located 200 feet downstream of JC-09, was 1 to 2 pH units lower than previous May samples, but contained concentrations of metals similar to other samples collected from Joe Creek, as well as historical concentrations collected from JC-08. No site activities or natural site events have been observed or have occurred that would have disturbed or diverted acidic mine drainage. Concentrations for arsenic, cadmium, copper, lead, and zinc for the remainder of the samples collected from Joe Creek and Elliott Creek are generally consistent and do not show an increasing or decreasing clear trend over the time period recorded. Data from future monitoring events will be added to the concentration trends to allow for a complete evaluation of metals concentrations during the QAP/OMP period.

5.3. CREEK SEDIMENT

Except for arsenic, metals concentrations in creek sediment are generally higher in Joe Creek than in Elliott Creek, particularly in locations (JC-01, JC-08, and JC-09) downstream from the mine (Table 4). This observation is consistent with historical data (e.g., URS, 2009) and is likely because Joe Creek flows through the historically excavated portions of the mine area before entering Elliott Creek several miles downstream. Arsenic is detected at similar concentrations in both creeks, which could be an indication that these elevated concentrations are not solely the result of site contamination but reflect naturally occurring concentrations of arsenic.

Concentrations of metals in creek sediment samples were less than the human health screening criterion in all samples collected, except for arsenic. Concentrations of arsenic only slightly exceeded the human health screening criterion in locations in both Elliott Creek (EC-04 and EC-06) and Joe Creek (JC-01). The concentration of arsenic in JC-08 exceeded the human health screening criterion by a factor of 10 but was similar to concentrations in fall 2012 and spring 2013. In addition, concentrations of arsenic at JC-09 were elevated with respect to other concentrations in Joe Creek and historical concentrations at JC-09. Additionally, arsenic concentrations in sediment samples collected from JC-08 and JC-09 exceeded the ecological screening criterion. As stated in Section 5.2, the sample must have been collected at the outflow of the WRP1 sediment basins prior to mixing with Joe Creek. The sample collected at JC-08, which is located 200 feet downstream of JC-09, contained concentrations of metals similar to historical concentrations collected from JC-08. No site activities or natural site events have been observed or have occurred that would have disturbed or diverted acidic mine drainage.

Concentrations of metals at JC-08 and JC-09 have increased significantly since October 2013 but remain consistent with concentrations from samples collected in October 2012 and May 2013. The contribution of new sediments to Joe Creek from the former WRPs is limited by the nine sediment collection and treatment basins, except for periods of very high runoff such as major storm events and spring snowmelt. Metals concentrations in creek sediment will continue to be monitored. [Appendix A](#) provides the concentration trends for metals over time. The data are generally stable and do not show a clear increasing or decreasing trend over the time period recorded.

Analytical results for metals in creek sediment collected at location JC-10 during fall 2011 remain an anomaly. No other sediment samples have exhibited such high concentrations of metals, indicating it is unlikely a result of incorrectly labeling the sample name. Other sample results have been consistent at each location. Metals concentrations collected from JC-10 during spring 2014 are consistent with data collected in 2008. Another difference between the fall 2011 data and the spring 2011, spring 2012, fall 2012, spring 2013, fall 2013, and spring 2014 data for JC-10 is the greater percentage of fine grain sediment. The fall 2011 creek sediment sample collected at JC-10 contained 40 percent silt and 5 percent clay, while sediment samples collected during spring 2011, spring 2012, fall 2012, spring 2013, fall 2013, and spring 2014 contained between 1 and 10 percent silt and 0 to 1.6 percent clay. As more data are collected during future monitoring events, a trend over time may become evident. Data from future monitoring events will be added to the concentration trend plots to further evaluate metals concentrations at the site.

Section 6. References

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Bradford, G.R., A.C. Change, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright, 1996. “Background Concentrations of Trace and Major Elements in California Soils.” Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California. March. Available Online at: http://www.swrcb.ca.gov/water_issues/programs/compost/docs/kearney1996.pdf.

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URS Corporation (URS), 2009. “Final Site Inspection Report, Blue Ledge Mine, Rogue River-Siskiyou National Forest.” April. Available Online at: <http://www.fs.usda.gov/detail/rogue-siskiyou/home/?cid=stelprdb5316893>.

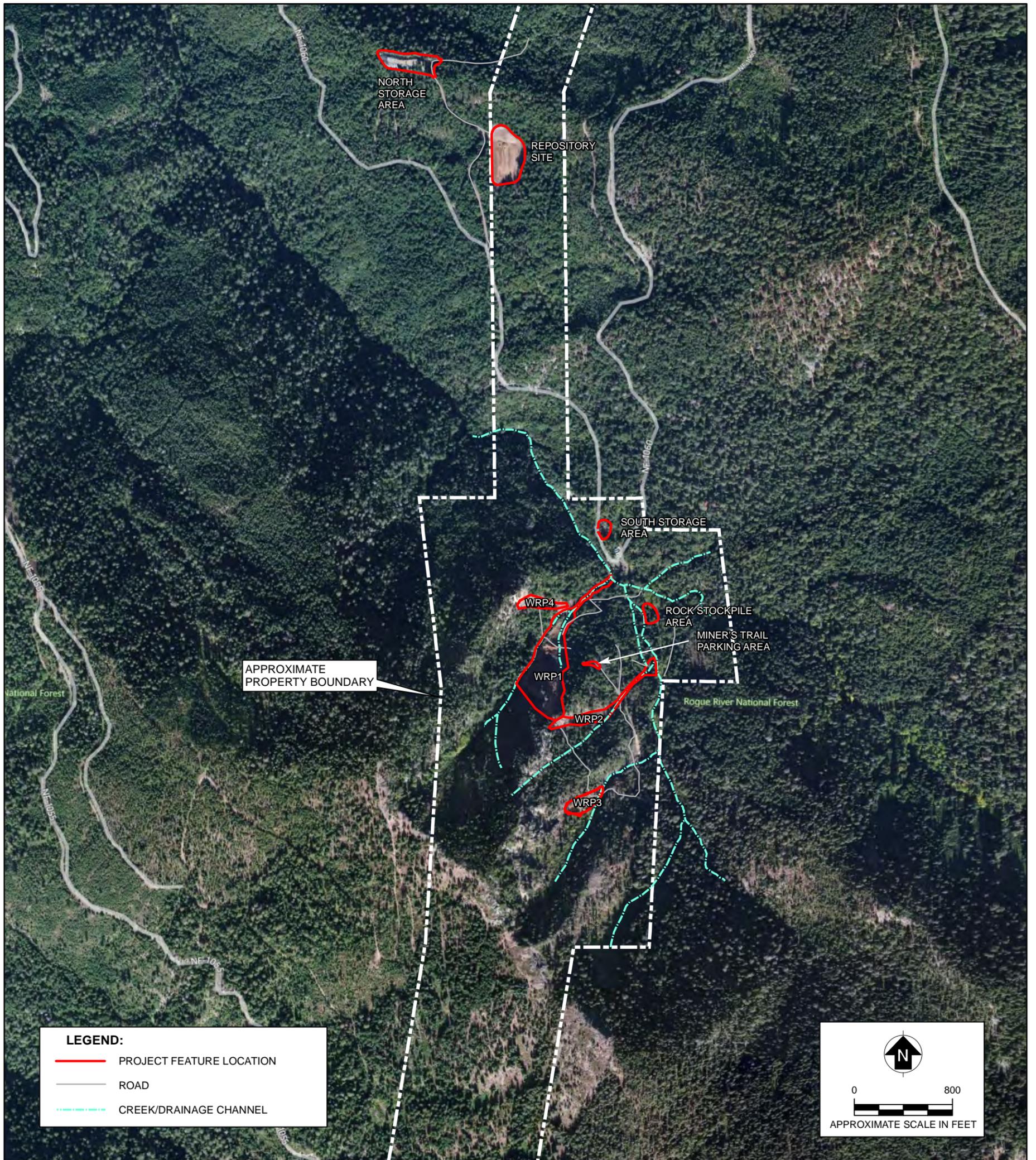
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URS, 2010b. “Final Engineering Evaluation and Cost Analysis, Former Blue Ledge Mine, Rogue River-Siskiyou National Forest, Siskiyou County, California.” April 26. Available Online at: <http://www.fs.usda.gov/detail/rogue-siskiyou/home/?cid=stelprdb5316893>.

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Figures

Figure 1. Site Location and Vicinity Map



SOURCES: BING MAPS; URS CORPORATION



REGIONAL MAP

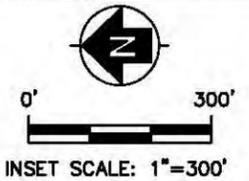
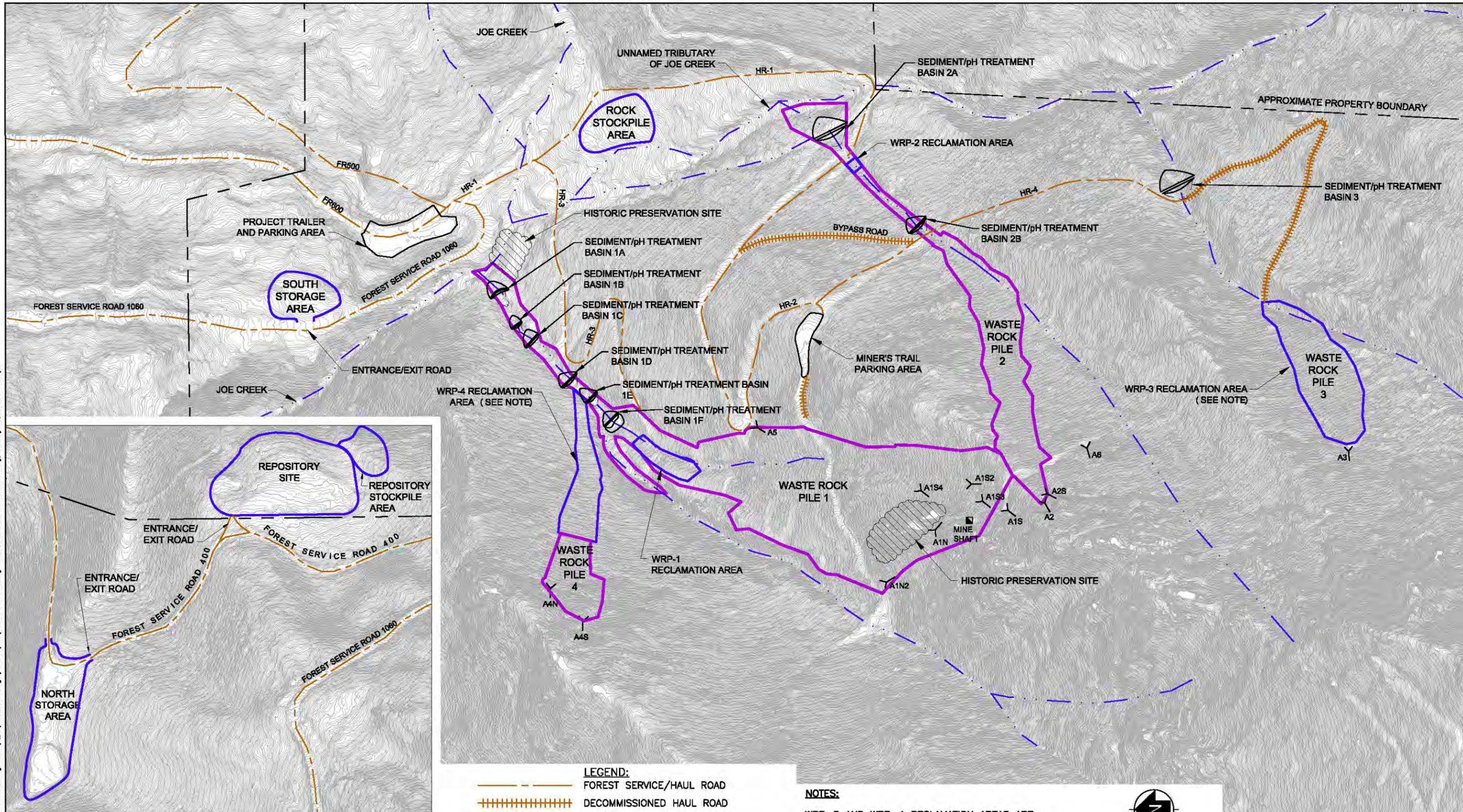


VICINITY MAP

 Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: USDA FOREST SERVICE	SITE LOCATION AND VICINITY MAP			
	LOCATION: BLUE LEDGE MINE BLUE LEDGE, CALIFORNIA	DRAWN BY: JJC 6/14/2010	CHECKED BY: MS 6/14/2010	PROJECT NO. 2010-084	FIG NO. 1

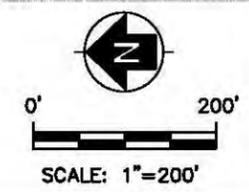
Figure 2. Overall Site Plan

FILE NAME: N:\Graphics\2010\084 USFS BlueLedge Mine\N_Maps and Drawings\Final Report\Overall Site Planning LAYOUT NAME: 1 PLOTTED: Friday, January 20, 2012 - 2:10pm



- LEGEND:**
- FOREST SERVICE/HAUL ROAD
 - DECOMMISSIONED HAUL ROAD
 - PROPERTY BOUNDARY
 - RECLAMATION AREA
 - STREAM
 - WASTE ROCK BOUNDARY REMOVAL LIMIT
 - APPROXIMATE LOCATION OF ADIT
 - APPROXIMATE LOCATION OF MINE SHAFT

NOTES:
 WRP-3 AND WRP-4 RECLAMATION AREAS ARE ALSO THE WASTE ROCK BOUNDARY REMOVAL LIMITS.
 FR = FOREST SERVICE ROAD
 HR = HAUL ROAD



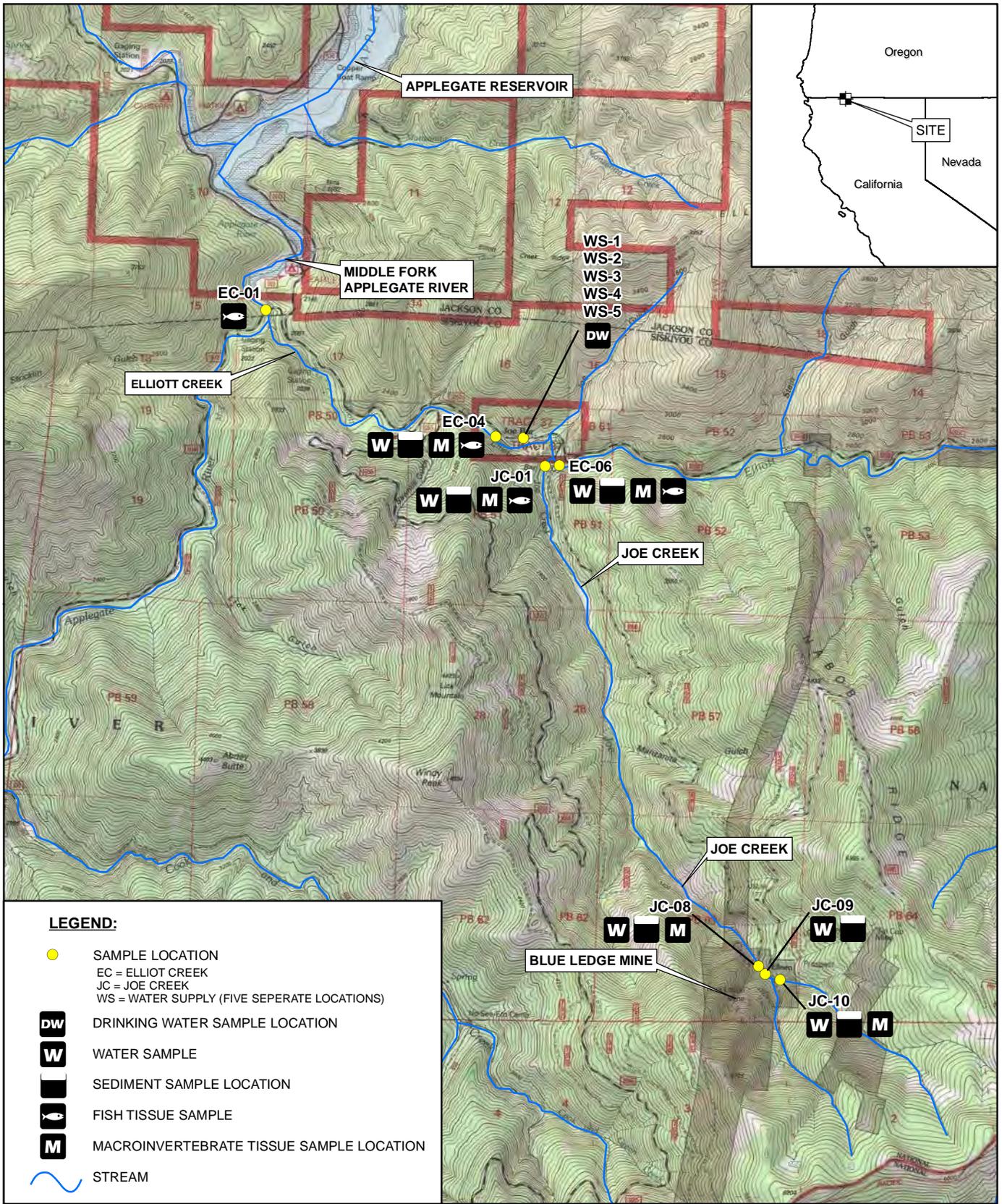
SOURCE: URS BLUE LEDGE MINE REMOVAL ACTION, DRAWING NO. 101, SHEET 7 OF 60, CAD FILE NO. 101, DATED: 2/2010.

ERRG Engineering/Remediation Resources Group, Inc.
 4585 Pacheco Blvd, Suite 200
 Martinez, California 94553
 (925) 969-0750

CLIENT:	USDA FOREST SERVICE			
	OVERALL SITE PLAN			
LOCATION:	BLUE LEDGE MINE REMOVAL ACTION	DRAWN BY:	CHECKED BY:	PROJECT NO.
		RDB 11/18/11	JGS 11/21/11	2010-084
				FIG NO.
				2

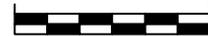
Figure 3. Sampling Locations

N:\Graphics\2010\2010-084 USFS Blueledge Mine\2011 GIS\Sampling_Locations.mxd



SOURCE: "PROPOSED SAMPLING LOCATIONS", URS CORPORATION, 2010
 DUTCH CREEK, CALIFORNIA USGS 7.5' TOPO QUAD, 1981
 KANGAROO MOUNTAIN, CALIFORNIA USGS 7.5' TOPO QUAD, 1981
 SQUAW LAKES, OREGON USGS 7.5' TPO QUAD, 1983
 CARBERRY CREEK, OREGON USGS 7.5' TOPO QUAD, 1983

0 3,660



SCALE: 1" = 3,600'



Engineering/Remediation
 Resources Group, Inc.
 4585 Pacheco Blvd, Suite 200
 Martinez, California 94553
 (925) 969-0750

CLIENT:
 USDA FOREST SERVICE

LOCATION: BLUE LEDGE MINE
 ROGUE RIVER-SISKIYOU
 NATIONAL FOREST

SAMPLING LOCATIONS

DRAWN BY:
 JJC 1/17/2012

CHECKED BY:
 JS 1/17/2012

PROJECT NO.
 2010-084

FIG NO.
 3

Tables



Table 1. Summary of Sampling Frequencies

Sample Matrix	Analyses	No. of Sample Locations	No. of Duplicates	No. of MS/MSD Samples
Biannual Samples (Spring and Fall)				
Drinking Water	Dissolved Metals	5	1	1
	Alkalinity			
	Hardness			
	Sulfate			
	Total Dissolved Solids			
	Total Suspended Solids			
Surface Water	Dissolved Metals	6	1	1
	Alkalinity			
	Hardness			
	Sulfate			
	Total Dissolved Solids			
	Total Suspended Solids			
Sediment (Creek)	Metals	6	1	1
	Particle Size			
	% moisture			
Annual Samples (Fall Only)				
Fish Tissue ¹	Metals	4	1	0
Aquatic Macroinvertebrate ¹	Species Composition and Taxa Richness	6	0	0
	Community Structure	6	0	0
	Benthic Index of Biotic Integrity	6	0	0

Notes: All drinking water, surface water, creek sediment, and fish tissue samples will be analyzed for arsenic, cadmium, copper, iron, lead, and zinc.

1 = Macroinvertebrate and fish tissue samples will be collected annually in the fall only.

MS/MSD = Matrix spike/matrix spike duplicate

Table 2. Drinking Water Analytical Data

Table 2. Drinking Water Analytical Data

Sample Location ID No.	Sample ID No.	Sample Date	Field Parameters					General Chemistry Parameters (mg/L)					Dissolved Metals					
			Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	Total Alkalinity (CaCO ₃)	Hardness (CaCO ₃)	Total Dissolved Solids	Total Suspended Solids	Sulfate	Arsenic (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Zinc (µg/L)
Ziem's Residence	WS-1	2008	NR	NR	NR	NR	NR	244	256	267.00	5 U	18.2	6.24	0.554	9.67	ND<20	2.82	540
Ruetiger's Residence	WS-2	2008	NR	NR	NR	NR	NR	258	271	276.00	5 U	21	0.22 J	0.019 J	1.16	ND<4	0.09	7
Neilson's Residence	WS-3	2008	NR	NR	NR	NR	NR	160	246	324.00	5 U	77.4	2.04	0.062	4.00	ND<20	0.17	43
461 (Bob's Cabin)	BL-DW-461-063010	30-Jun-10	13.9	0.52	9.57	7.75	18.1	136	138	116	ND<5.00	8.23	<i>ND<0.50</i>	ND<0.02	1.00	ND<20.00	0.03	4.50
	BL-DW-461-063010DUP	30-Jun-10	--	--	--	--	--	134	139	161	ND<5.00	8.15	<i>ND<0.50</i>	ND<0.02	0.90	ND<20.0	0.02	4.30
	NS	21-Sep-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	NS	12-Jan-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	NS	13-Jul-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	NS	1-Nov-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
462 (Bridgett)	NS	2-May-12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	BL-DW-462-063010	30-Jun-10	19.2	0.752	4.32	7.41	16	176	202	275	ND<5.00	35.50	1.90	0.05	4.60	ND<20.00	0.20	22.30
	BL-DW-462-092110	21-Sep-10	13.74	0.415	20.54	6.72	1.3	173	246	346	ND<5.00	58.90	<i>ND<2.00</i>	ND<1.00	6.77	NS	ND<1.00	21.90
	BL-DW-462-011211	12-Jan-11	NS	NS	NS	NS	NS	189	192	240	ND<5.00	22.20	<i>ND<2.00</i>	0.167	33.20	NS	ND<1.00	40.30
	BL-DW-462-071311	13-Jul-11	17.63	0.405	7.92	7.09	1.6	174	200	283	ND<5.00	42.60	<i>ND<2.00</i>	ND<0.100	18.90	NS	ND<1.00	26.30
	BL-DW-462-071311 DUP	13-Jul-11	--	--	--	--	--	180	200	286	ND<5.00	42.60	<i>ND<2.00</i>	ND<0.100	12.90	NS	ND<1.00	15.40
	BL-DW-462-110111	1-Nov-11	7.98	0.371	18.26	7.74	0.9	172	237	338	5.00	73.00	1.79 J	ND<0.2	11.90	748.00	ND<1.00	31.00
	BL-DW-462-050212	2-May-12	7.61	0.403	8.48	7.33	1.5	158	199	226	ND<5.00	30.30	1.86 J	0.0667	12.10	457.00	ND<1.00	31.30
	BL-DW-462-101612	16-Oct-12	14.61	0.289	11.58	7.63	1.2	157	223	348	ND<5.00	70.60	4.38	0.0667	29.1	981	ND<1.00	1,210
	BL-DW-462-050213	2-May-13	11.8	0.293	10.31	7.32	60	162	199	229	ND<5.00	35.4	1.44	0.0556	21.7	1,490	0.867	18.4
BL-DW-462-101613	16-Oct-13	1.83	0.295	9.62	7.37	1450.4 ¹	164	234	328	ND<5.00	63.5	3.31	ND<0.200	25.5	541	0.189	169	
BL-DW-462-050714	7-May-14	8.26	0.2	8.73	7.85	3.3	161	216	291	5.00	61.3	1.73²	ND<0.200	9.72	257	0.122 ^{3,4}	56.4	
541 (Johan)	BL-DW-541-063010	30-Jun-10	15.6	0.9	4.3	7.19	18.7	230	247	302	ND<5.00	31.4	7	0.26	4.9	ND<20.00	1.09	194
	BL-DW-541-092110	21-Sep-10	13.14	0.388	17.89	7.07	6.0	242	265	302	ND<5.00	21.4	5.1	ND<1.00	4.77	NS	ND<1.00	228
	BL-DW-541-011211	12-Jan-11	NS	NS	NS	NS	NS	51	62.8	81	ND<5.00	4.81	<i>ND<2.00</i>	0.0667	ND<4.00	NS	ND<1.00	7.96
	BL-DW-541-011211 DUP	12-Jan-11	--	--	--	--	--	66.2	63.3	81	ND<5.00	4.84	<i>ND<2.00</i>	0.0667	ND<4.00	NS	ND<1.00	6.31
	BL-DW-541-011211 MSMSD	12-Jan-11	--	--	--	--	--	65.4	64	79	ND<5.00	4.87	<i>ND<2.00</i>	0.0778	ND<4.00	NS	ND<1.00	10.1
	BL-DW-541-071311	13-Jul-11	13.53	0.400	6.38	7.03	1.4	244	243	283	ND<5.00	22.6	5.84	ND<0.1	8.97	NS	ND<1.00	47.6
	BL-DW-541-110111	1-Nov-11	9.76	0.356	14.98	7.41	1.9	259	262	301	ND<5.00	17.4	5.49	ND<0.20	12.1	766	ND<1.00	50.4
	BL-DW-541-110111 MSMSD	1-Nov-11	--	--	--	--	--	261	272	295	ND<5.00	17.4	5.89	ND<0.20	11.8	759	ND<1.00	39.2
	BL-DW-541-050212	2-May-12	7.92	0.415	7.62	7.39	1.5	226	284	277	ND<5.00	23.8	6.33	0.167	4.16	558	ND<1.00	201
	BL-DW-541-050212 MSMSD	2-May-12	--	--	--	--	--	236	261	263	ND<5.00	23.5	6.5	0.167	3.78	569	ND<1.00	196
	BL-DW-541-101612	16-Oct-12	13.46	0.277	23.9	7.72	1.8	234	252	272	ND<5.00	17.6	6.43	0.0556	9.7	953	ND<1.00	32.2
	BL-DW-541-101612 MSMSD	16-Oct-12	--	--	--	--	--	235	253	282	ND<5.00	17.6	5.86	ND<0.0400	8.44	938	ND<1.00	34.5
	BL-DW-541-050213	2-May-13	11.42	0.337	11.52	7.28	39.2	281	257	268	ND<5.00	21.3	5.96	0.133	6.76	1,760	0.522	210
	BL-DW-541-101513	15-Oct-13	12.26	0.385	3.34	7.03	1583.5 ¹	251	268	278	5.00	19.1	5.06	0.900	6.73	544	3.16	1,030
BL-DW-541-050714	7-May-14	13.14	0.389	4.66	7.43	1.9	220	252	284	ND<5.00	37.2	4.12²	0.633	6.23	292	3.01 ³	1,300	
12620 (Ron James)	BL-DW-12620-063010	30-Jun-10	12.0	0.941	4.54	7.43	29.6	258	259	345	ND<5.00	21.5	5.4	0.04	1	103	0.12	24.8
	NS	21-Sep-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	NS	12-Jan-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	BL-DW-12620-071311	13-Jul-11	16.45	0.446	7.16	7.23	1.6	255	260	308	ND<5.00	24.9	4.12	ND<0.10	21.7	NS	1.46	109
	BL-DW-12620-071311 MSMSD	13-Jul-11	--	--	--	--	--	256	258	311	ND<5.00	24.9	4.37	0.133	22.2	NS	1.13	191
	NS	1-Nov-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	NS	2-May-12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	BL-DW-12620-101612	16-Oct-12	12.12	0.202	12.19	7.50	1.8	244	269	300	ND<5.00	21.9	3.84	0.0667	4.83	1,110	ND<1.00	30.7
	BL-DW-12620-050213	2-May-13	10.77	0.355	9.11	7.11	54.1	255	279	299	ND<5.00	21.6	4.17	ND<0.200	1.16	2,170	ND<1.00	13.0
	NS	14-Oct-13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
BL-DW-12620-050714	7-May-14	10.56	0.408	5.92	7.65	5.3	277	292	330	ND<5.00	23.1	2.88²	ND<0.200	0.600 ⁴	340	ND<0.200	22.4	
12620 (Irrigation Well)	BL-DW-12620irrig-101612	16-Oct-12	12.12	0.202	24.13	7.77	1.8	197	210	231	ND<5.00	9.95	<i>ND<0.50^a</i>	0.0667	ND<2.00	845	ND<1.00	19.5
	BL-DW-12620irrig-050213	2-May-13	11.14	0.271	9.21	6.86	27.8	149	215	211	ND<5.00	10.2	<i>ND<0.500</i>	ND<0.200	1.37	1,520	ND<1.00	27.0
	NS	14-Oct-13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	BL-DW-12620irrig-050714	7-May-14	10.98	0.325	4.19	7.72	15.5	218	220	235	ND<5.00	12.4	<i>ND<0.500</i>	ND<0.200	2.39	246	ND<0.200	35.2
17607 (Luke)	BL-DW-17607-063010	30-Jun-10	17.4	0.782	9.35	7.73	11.8	230	135	283	ND<5.00	19.7	<i>ND<0.50</i>	0.03	1.7	ND<20.00	0.11	8.6
	BL-DW-17607-092110	21-Sep-10	13.57	0.414	16.46	7.75	2.4	274	295	345	ND<5.00	20.9	<i>ND<2.00</i>	ND<1.00	ND<4.00	NS	ND<1.00	24.9
	BL-DW-17607-092110DUP	21-Sep-10	--	--	--	--	--	271	297	336	ND<5.00	20.9	<i>ND<2.00</i>	ND<1.00	ND<4.00	NS	ND<1.00	10.5
	BL-DW-17607-011211	12-Jan-11	NS	NS	NS	NS	NS	220	232	266	ND<5.00	31	3	0.5	6.84	NS	2.02	1730
	BL-DW-17607-071311	13-Jul-11	15.95	0.405	8.62	7.53	1.2	243	238	268	ND<5.00	17.9	<i>ND<2.00</i>	ND<0.1	ND<4.00	NS	ND<1.00	7.54
	BL-DW-17607-110111	1-Nov-11	11.32	0.388	16.51	7.97	1.9	268	284	293	ND<5.00	21.3	0.522 J	ND<0.200	ND<4.00	728	ND<1.00	8.96
	BL-DW-17607-110111DUP	1-Nov-11	--	--	--	--	--	272	278	304	ND<5.00	21.2	<i>ND<0.50^a</i>	ND<0.200	16.3	704	1.22	14.2
BL-DW-17607-050212	2-May-12	8.2	0.398	8.41	7.63	1.7	180	217	221	ND<5.00	17.1	<i>ND<0.50^a</i>	<i>ND<0.0400^a</i>	ND<0.200	399	ND<1.00	11	

Table 2. Drinking Water Analytical Data (continued)

Sample Location ID No.	Sample ID No.	Sample Date	Field Parameters					General Chemistry Parameters (mg/L)					Dissolved Metals					
			Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	Total Alkalinity (CaCO ₃)	Hardness (CaCO ₃)	Total Dissolved Solids	Total Suspended Solids	Sulfate	Arsenic (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Zinc (µg/L)
17607 (Luke) (continued)	BL-DW-17607-050212DUP	2-May-12	--	--	--	--	--	191	216	219	ND<5.00	17.1	<i>ND<0.50^a</i>	<i>ND<0.0400^a</i>	2.78	391	ND<1.00	12.2
	BL-DW-17607-101612	16-Oct-12	15.28	0.164	10.05	8.02	1.7	254	275	354	ND<5.00	22.6	<i>ND<0.50^a</i>	<i>ND<0.0400^a</i>	4.50	890	ND<1.00	8.72
	BL-DW-17607-101612DUP	16-Oct-12	--	--	--	--	--	251	271	306	ND<5.00	22.7	<i>ND<0.50^a</i>	<i>ND<0.0400^a</i>	5.89	909	ND<1.00	12.8
	BL-DW-17607-050213	2-May-13	10.04	0.289	11.79	7.59	27.7	215	233	244	ND<5.00	17.0	<i>ND<0.500</i>	ND<0.200	ND<2.00	1,360	ND<1.00	ND<4.00
	BL-DW-17607-050213DUP	2-May-13	--	--	--	--	--	214	240	231	ND<5.00	17.2	<i>ND<0.500</i>	ND<0.200	ND<2.00	1,380	ND<1.00	ND<4.00
	BL-DW-17607-101613	16-Oct-13	2.84	0.309	10.61	7.8	1463.9 ¹	262	277	297	ND<5.00	20.2	1.38	ND<0.200	3.77	481	0.411	10.9
	BL-DW-17607-101613DUP	16-Oct-13	--	--	--	--	--	264	287	295	ND<5.00	20.1	1.34	ND<0.200	3.18	506	0.400	20.1
	BL-DW-17607-050614	6-May-14	12.78	0.392	10.16	7.88	0.8	242	264	263	ND<5.00	22.7	0.256⁴	ND<0.200	0.744 ⁴	244	ND<0.200	3.00 ⁴
BL-DW-17607-050614DUP	6-May-14	--	--	--	--	--	242	263	279	ND<5.00	22.8	0.278⁴	ND<0.200	0.711 ⁴	249	ND<0.200	3.03 ⁴	
Human Health Screening Criteria⁵			EPA MCLs	--	--	--	--	--	--	--	--	--	10	5	1,300	300	15	--
			EPA RSLs for Tap Water	--	--	--	--	--	--	--	--	--	0.045	6.9	620	11,000	--	4,700
			California MCLs	--	--	--	--	--	--	--	--	--	10	5	1,000 ^b	300	15	5,000 ^b
			North Coast Basin Plan	--	--	--	--	--	--	--	--	--	50	10	--	--	50	--

Notes:

* Arsenic analyzed by ICPMS fall 2012 only

1 = Samples were visually clear; this is likely a result of a calibration error.

2=Analyte detected in an associated blank at a level between one half the method reporting limit and the method reporting limit.

3=Analyte detected in an associated blank at a level above the method reporting limit.

4=Estimated result because the result was detected below the lowest point of the calibration curve but above the specified method detection limit.

5 = Human health screening criteria are from Table 3-1a in the Engineering Evaluation and Cost Analysis for Blue Ledge Mine (URS Corporation, 2010b).

a= MDL, rather than RL

b = Secondary Maximum Contaminant Level (California Department of Public Health)

Bold = result exceeds screening criteria

Italic = RL or MDL is above selected screening criteria

461 = Bob's residence

462 = Bridgett's residence

541 = Johan's residence

12620 = Ron James residence

17607 = Luke's residence

BL= Blue Ledge

DW = Drinking water

EPA = U.S. Environmental Protection Agency

ICPMS = Inductively coupled plasma mass spectrometry

J = estimated value

MCL = maximum contaminant levels

MDL = method detection limit

mg CaCO₃/L = milligrams of calcium carbonate per liter

mg/L = milligrams per liter

mS/cm = milliSiemens per centimeter

ND < = not detected at concentrations greater than the reporting limit

ND < 0.50 = Non detected above the laboratory method reporting limit

NR = not reported

NS = not sampled

NTU = Nephelometric Turbidity Unit

RL = reporting limit

RSLs = regional screening levels

µg/L = micrograms per liter

- = not applicable

Table 3. Surface (Creek) Water Analytical Data

Table 3. Surface (Creek) Water Analytical Data (continued)

Sample Location ID No.	Sample ID No.	Sample Date	Field Parameters			General Chemistry Parameters (mg/L)					Dissolved Metals (µg/L)						
			pH (SU)	Conductivity (mS/cm)	Temperature (°C)	Total Alkalinity (CaCO ₃)	Hardness (CaCO ₃)	TDS	TSS	Sulfate	Arsenic	* Dissolved Arsenic by ICPMS with Hydride Preparation	Cadmium	Copper	Iron	Lead	Zinc
EC-04	EC-04-SW-080625-URS	25-Jun-08	7.51	0.101	13.5	42.00	44.00	64.00	ND<5.00	3.00	0.37 B	--	0.04	3.22	ND<4.0	0.012 B	3.82
	EC-04-SW-DUP-080625-URS	25-Jun-08	NA	NA	NA	44.00	43.10	82.00	ND<5.00	2.90	0.4 B	--	0.049	3.25	ND<4.0	0.013 B	4.73
	BL-SW-EC04-110111	1-Nov-11	8.03	0.178	6.5	71.20	68.70	103.00	ND<5.00	6.43	ND<0.50 ^a	--	ND<0.200	ND<4.00	199.00	ND<1.00	5.80
	BL-SW-EC04-050212	2-May-12	7.66	0.088	5.28	32.70	36.70	29.00	15.00	2.67	0.567²	--	ND<0.0400 ^a	2.17	ND<100	ND<1.00	ND<4.00
	BL-SW-EC04-101612	16-Oct-12	8.34	0.128	11.86	66.2	72.80	101	ND<5.00	6.75	0.556	0.399	ND<0.0400 ^a	5.87	257	ND<1.00	ND<4.00
	BL-SW-EC04-050213	1-May-13	8	0.083	6.42	39.3	42.5	33.0	ND<5.00	3.11	0.367	--	ND<0.0400 ^a	2.43	249	ND<0.500 ^a	4.88
	BL-SW-EC04-101513	15-Oct-13	7.92	0.123	6.25	67.0	69.0	93.0	ND<5.00	6.48	0.467	--	ND<0.200	0.989	138	ND<0.200	3.02
BL-SW-EC04-050714	7-May-14	8.07	0.073	7.57	45.4	47.6	64.0	ND<5.00	4.48	0.311²	--	ND<0.200	1.72	80.0	ND<0.200	4.70	
EC-06	EC-06-SW-080625-URS	25-Jun-08	6.92	0.082	10.9	38	40.4	73	ND<5.00	3.1	0.22 B	--	0.18	13.9	ND<4.0	0.016 B	22.3
	BL-SW-EC06-110111	1-Nov-11	7.99	0.180	7.26	61	70.8	88	ND<5.00	5.88	0.589²	--	ND<0.200	ND<4.00	176	ND<1.00	ND<4.00
	BL-SW-EC06-050212	2-May-12	7.58	0.092	5.46	32.4	37	21	11	2.48	0.664²	--	ND<0.0400 ^a	ND<2.00	ND<100	ND<1.00	ND<4.00
	BL-SW-EC06-101612	16-Oct-12	7.89	0.143	11.76	67.8	72.8	98	ND<5.00	6.15	0.656	0.45	ND<0.0400 ^a	ND<2.00	250	ND<1.00	ND<4.00
	BL-SW-EC06-050213	1-May-13	7.26	0.082	5.72	40.0	42.4	40.0	7.00	2.87	0.378	--	ND<0.0400 ^a	ND<2.00	244	ND<0.500 ^a	ND<4.00
	BL-SW-EC06-101513	15-Oct-13	7.63	0.119	5.52	71.6	68.9	97.0	ND<5.00	5.87	0.589	--	ND<0.200	ND<1.00	152	ND<0.200	2.60
	BL-SW-EC06-050714	7-May-14	8.16	0.072	7.38	44.6	45.5	59.0	ND<5.00	4.11	0.344²	--	ND<0.200	0.578 ²	79.2	ND<0.200	ND<4.00
JC-01	JC-01-SW-080625-URS	25-Jun-08	7.4	0.075	10.5	35	37	48	ND<5.00	5.1	ND<0.07	--	0.564	31.3	ND<4.0	0.014 B	79.4
	BL-SW-JC01-110111	1-Nov-11	7.67	0.161	7.88	66	72.4	102	ND<5.00	12.6	ND<0.50 ^a	--	0.589	15.2	218	ND<1.00	79.1
	BL-SW-JC01-050212	2-May-12	8.01	0.089	6.13	31.8	36.2	52	ND<5.00	4.42	ND<0.50 ^a	--	1.48	16.3	ND<100	ND<1.00	36.1
	BL-SW-JC01-101612	16-Oct-12	7.87	0.122	12.57	55.2	68.5	91	ND<5.00	12.8	ND<0.50 ^a	0.0689	0.344	22.8	263	ND<1.00	30.3
	BL-SW-JC01-050213	1-May-13	7.66	0.081	5.37	35.0	42.0	39.0	ND<5.00	5.16	ND<0.500	--	0.322	18.9	295	ND<0.500 ^a	44.8
	BL-SW-JC01-101513	15-Oct-13	7.57	0.057	5.84	61.0	74.6	86.0	ND<5.00	12.9	ND<0.500	--	0.489	8.26	186	0.100	36.9
	BL-SW-JC01-050714	7-May-14	8.18	0.076	7.34	46.1	50.7	63.0	ND<5.00	8.93	ND<0.500	--	0.378	16.2	81.8	ND<0.200	50.7
JC-08	JC-08-SW-080626-URS	26-Jun-08	6.94	0.047	10.5	21	20.6	21	ND<5.00	2.8	ND<0.07	--	0.228	29	ND<4.0	0.043	42.9
	BL-SW-JC08-110111	1-Nov-11	7.5	0.078	4.59	32.4	35.8	35	ND<5.00	4.64	ND<0.50 ^a	--	ND<0.200	ND<4.00	93.3	ND<1.00	ND<4.00
	BL-SW-JC08-110111DUP	1-Nov-11	--	--	--	45.4	35.5	35	ND<5.00	4.63	ND<0.50 ^a	--	ND<0.200	ND<4.00	93.1	ND<1.00	ND<4.00
	BL-SW-JC08-050212	2-May-12	7.91	0.040	2.91	ND<20.00	19.6	16	ND<5.00	3.19	ND<0.50 ^a	--	0.189	18	ND<100	ND<1.00	31.9
	BL-SW-JC08-050212DUP	2-May-12	--	--	--	ND<20.00	19.7	21	15	3.2	ND<0.50 ^a	--	0.2	17.4	ND<100	ND<1.00	31.3
	BL-SW-JC08-101612	16-Oct-12	7.99	0.052	9.34	28.4	34.6	50	6	6.01	ND<0.50 ^a	0.0521	0.211	10.6	129	ND<1.00	34.8
	BL-SW-JC08-101612DUP	16-Oct-12	--	--	--	28.6	34.7	46	9	6	ND<0.50 ^a	0.0475	0.233	10.2	118	ND<1.00	33.8
	BL-SW-JC-08-050113	1-May-13	7.71	0.042	6.17	20.0	20.9	18.0	ND<5.00	3.33	ND<0.500	--	0.189	17.4	201	ND<0.500 ^a	30.2
	BL-SW-JC-08-050113-DUP	1-May-13	--	--	--	ND<20.0	21.0	21.0	ND<5.00	3.4	ND<0.500	--	0.189	18.1	200	ND<0.500 ^a	31.5
	BL-SW-JC08-101413	14-Oct-13	7.48	0.064	6.41	26.0	36.2	58.0	5.00	9.10	ND<0.500	--	0.622	20.3	85.7	ND<0.200 ^a	115
	BL-SW-JC08-101413DUP	14-Oct-13	--	--	--	30.4	36.6	41.0	ND<5.00	8.63	ND<0.500	--	0.578	16.8	80.2	ND<0.200 ^a	104
	BL-SW-JC08-050614	6-May-14	5.94	0.039	5.83	22.6	25.3	43.0	ND<5.00	7.03	ND<0.500	--	0.611	52.3	29.2 ²	ND<0.200	102
	BL-SW-JC08-050614DUP	6-May-14	--	--	--	23.3	25.2	46.0	ND<5.00	7.03	ND<0.500	--	0.567	54.9	30.8 ²	ND<0.200	105
JC-09	JC-09-SW-080627-URS	27-Jun-08	7.29	0.048	9.1	22	21.3	15	ND<5.00	2.3	ND<0.07	--	0.031	3.45	ND<4.0	0.014 B	6.01
	BL-SW-JC09-110111	1-Nov-11	7.53	0.081	5.72	31	33.2	41	ND<5.00	5.97	ND<0.50 ^a	--	0.3	9.57	81.7	ND<1.00	66.4
	BL-SW-JC09-050212	2-May-12	7.73	0.038	2.69	ND<20.00	18.4	16	ND<5.00	2.66	ND<0.50 ^a	--	0.0556	3.66	ND<100	ND<1.00	8.87
	BL-SW-JC09-101612	16-Oct-12	7.76	0.053	9.23	28.8	35.1	44	ND<5.00	5.26	ND<0.50 ^a	0.0484	0.122	6.61	128	ND<1.00	25.5
	BL-SW-JC-09-050113	1-May-13	7.38	0.041	6.07	ND<20.0	20.8	ND<10.00	ND<5.00	2.73	ND<0.500	--	0.0444	3.13	198	ND<0.500 ^a	6.80
	BL-SW-JC09-101413	14-Oct-13	7.44	0.057	6.43	30.0	33.8	40.0	ND<5.00	5.32	ND<0.500	--	ND<0.200	6.37	79.9	ND<0.200	24.8
	BL-SW-JC09-050614	6-May-14	4.8	0.086	7.02	ND<20.0	66.9	162	ND<5.00	114	ND<0.500	--	28.5	3150	237	1.47¹	4900
JC-10	JC-10-SW-080627-URS	27-Jun-08	8.13	0.055	9.7	25	24.5	26	ND<5.00	2.5	ND<0.07	--	ND<0.008	0.77	ND<4.0	0.007 B	0.65
	BL-SW-JC10-110111	1-Nov-11	7.36	0.083	4.47	32	33.1	51	ND<5.00	4.73	ND<0.50 ^a	--	ND<0.200	ND<4.00	87.5	ND<1.00	16.5
	BL-SW-JC10-110111MSMSD	1-Nov-11	--	--	--	31.8	33	48	ND<5.00	4.72	ND<0.50 ^a	--	ND<0.200	ND<4.00	85.6	ND<1.00	16.8
	BL-SW-JC10-050212	2-May-12	7.85	0.043	2.57	21.5	21.8	ND<10.00	ND<5.00	2.13	ND<0.50 ^a	--	ND<0.0400 ^a	ND<2.00	ND<100	ND<1.00	ND<4.00
JC-10 (continued)	BL-SW-JC10-050212MSMSD	2-May-12	--	--	--	ND<20.00	21.6	37	ND<5.00	2.14	ND<0.50 ^a	--	ND<0.0400 ^a	ND<2.00	ND<100	ND<1.00	ND<4.00
	BL-SW-JC10-101612	16-Oct-12	8.63	0.057	9.09	33.6	38.5	50	ND<5.00	4.85	ND<0.50 ^a	0.0538	ND<0.0400 ^a	ND<2.00	138	ND<1.00	ND<4.00
	BL-SW-JC10-101612MSMSD	16-Oct-12	--	--	--	33.2	38.6	51	ND<5.00	4.89	ND<0.50 ^a	0.0488	ND<0.0400 ^a	ND<2.00	139	ND<1.00	ND<4.00
	BL-SW-JC-10-050113	1-May-13	7.24	0.046	5.93	20.8	23.4	20.0	ND<5.00	2.64	ND<0.500 ^a	--	ND<0.0400 ^a	ND<2.00	225	ND<0.500 ^a	ND<4.00

Table 3. Surface (Creek) Water Analytical Data (continued)

Sample Location ID No.	Sample ID No.	Sample Date	Field Parameters			General Chemistry Parameters (mg/L)					Dissolved Metals (µg/L)							
			pH (SU)	Conductivity (mS/cm)	Temperature (°C)	Total Alkalinity (CaCO ₃)	Hardness (CaCO ₃)	TDS	TSS	Sulfate	Arsenic	* Dissolved Arsenic by ICPMS with Hydride Preparation	Cadmium	Copper	Iron	Lead	Zinc	
	BL-SW-JC10-101413	14-Oct-13	7.34	0.060	6.08	35.0	36.3	44.0	ND<5.00	5.18	<i>ND<0.500</i>	--	<i>ND<0.200</i>	0.556	90.3	ND<0.200	ND<4.00	
	BL-SW-JC10-050614	6-May-14	6.45	0.040	5.40	26.0	27.0	36.0	13.0	4.08	<i>ND<0.500</i>	--	<i>ND<0.200</i>	0.789 ²	29.6 ²	ND<0.200	ND<4.00	
Ecological Screening Criteria³																		
	California Water Quality Standards (CCC)		--	--	--	--	--	--	--	--	150	150	0.13	--	1,000	0.92	54	
	DEQ Table 33A, 33B, and 33C AWQC CCC		--	--	--	--	--	--	--	--	48	48	b	b	1,000.00	b	b	
	EPA NRWQC (CCC)		--	--	--	--	--	--	--	--	150	150	0.25	9	1,000	2.5	120	
Human Health Screening Criteria³																		
	California Water Quality Standards (humans ingesting organisms only)		--	--	--	--	--	250.00	--	250.00	--	--	--	--	--	--	--	--
	EPA NRWQC (protective of humans ingesting organisms only)		--	--	--	--	--	--	--	--	0.14	--	--	--	--	--	26,000	

Notes:

* Arsenic analyzed by ICPMS fall 2012 only

1=Analyte detected in an associated blank at a level above the method reporting limit.

2 = Estimated result. Result was detected below the lowest point of the calibration curve, but above the specified method detection limit.

3 = Ecological and human health screening criteria are from Table 3-1a in the Engineering Evaluation and Cost Analysis for Blue Ledge Mine (URS Corporation, 2010b).

a= MDL, rather than RL

b= Guidance recommends calculation of site specific criteria using hardness data collected from the site.

Bold = concentration exceeds the screening criteria

Italic = Reporting limit is greater than one or more of the selected screening criteria

B = Flagged by the laboratory stating "compound was found in the blank and sample".

CaCO₃ = calcium carbonate

CCC = criterion continuous concentration

DEQ = Oregon Department of Environmental Quality

EPA = U.S. Environmental Protection Agency

ICPMS = Inductively coupled plasma mass spectrometry

J = the result is an estimated quantity; the associated numeric value is the approximate concentration of the analyte in the sample

MDL = method detection limit

mg/L = milligrams per liter

ND< = nondetected above the laboratory method reporting limit

NRWQC = national recommended water quality criteria

U = the analyte was analyzed for but was not detected above the reported sample method detection limit

RL = reporting limit

SU = standard unit

TDS = total dissolved solid

TSS = total suspended solids

µg/L = micrograms per liter

-- = not applicable



Table 4. Creek Sediment Analytical Data

Table 4. Creek Sediment Analytical Data

Sample Location ID No.	Sample ID No.	Sample Date	Arsenic (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	
EC-04	EC-04-SD-080625-URS	25-Jun-08	6.20	0.211	39.90	27,700	5.52	77.10	
	EC-04-SD-DUP-080625-URS	25-Jun-08	5.20	0.270	51.30	32,200	4.72	75.10	
	BL-CS-EC04-110111	1-Nov-11	1.82¹	0.339	33.30	9,420	3.40	57.10	
	BL-CS-EC04-050212	2-May-12	5.97	0.335	73.70	23,200	5.80	72.50	
	BL-CS-EC04-101612	16-Oct-12	3.53	ND<0.669	39.2	15,500	5.03	47.0	
	BL-CS-EC-04-050213	2-May-13	6.70	0.309	113	19,700	5.34	76.9	
	BL-CS-EC04-101513	15-Oct-13	5.90	0.310	95.8	11,400	4.76	40.4	
BL-CS-EC04-051614	6-May-14	5.20	0.394	62.1	17,000	4.49	64.2		
EC-06	EC-06-SD-080625-URS	25-Jun-08	4.92	0.581	119	33,200	10.4	114	
	BL-CS-EC06-110111	1-Nov-11	6.11	0.236	37.2	21,500	5.6	53.3	
	BL-CS-EC06-05022012	2-May-12	4.02	0.174	30.9	15,900	3.58	39.1	
	BL-CS-EC06-101612	16-Oct-12	5.41	ND<0.753	38.5	18,900	7.58	42.2	
	BL-CS-EC-06-050213	2-May-13	5.65	0.212	39.2	20,300	4.88	49.5	
	BL-CS-EC06-101513	15-Oct-13	3.91	0.182	30.8	11,700	4.39	27.9	
	BL-CS-EC06-050614	6-May-14	3.09	0.175 ¹	34.5	12,600	3.90	34.7	
JC-01	JC-01-SD-080626-URS	26-Jun-08	3.01	2.14	430	26,200	5.85	440	
	BL-CS-JC01-110111	1-Nov-11	5.91	4.44	975	25,000	12.5	1,010	
	BL-CS-JC01-110111-MSMSD	1-Nov-11	6.34	3.29	903	19,300	35.3	870	
	BL-CS-JC01-05022012	2-May-12	2.48	1.46	423	13,500	6.97	375	
	BL-CS-JC01-050212-MSMSD	2-May-12	5.93	4.17	518	16,300	10.6	797	
	BL-CS-JC01-101612	16-Oct-12	1.12	1.6	271	10,300	2.57	314	
	BL-CS-JC01-101612-MSMSD	16-Oct-12	4.13	2.02	377	14,900	6.01	460	
	BL-CS-JC-01-050213	2-May-13	5.38	2.32	621	23,300	15.7	433	
	BL-CS-JC-01-050213DUP	2-May-13	4.37	2.40	585	17,000	16.3	602	
	BL-CS-JC01-101513	15-Oct-13	0.839	2.12	343	10,400	9.08	433	
BL-CS-JC01-050614	6-May-14	3.57	2.16	578	16,100 ²	10.3	593		
JC-08	JC-08-SD-080627	27-Jun-08	2.54	0.941	978	24,700	13.8	208	
	BL-CS-JC08-110111	1-Nov-11	1.07 ¹	0.178	62.2	13,400	1.33	25.3	
	BL-CS-JC08-050212	2-May-12	17.6	7.95	2,250	30,900	45.9	1,210	
	BL-CS-JC08-101612	16-Oct-12	37.2	6.61	1,750	38,100	84.4	1,160	
	BL-CS-JC08-050113	1-May-13	25.2	2.85	769	29,000	75.9	420	
	BL-CS-JC08-101413	14-Oct-13	5.56	1.94	593	11,300	48.6	333	
	BL-CS-JC08-050614	6-May-14	31.9	4.84	1790	48,200	121	891	
JC-09	Not sampled in 2008								
	BL-CS-JC09-110111	1-Nov-11	30.00	1.79	736.00	41,100	147	403	
	BL-CS-JC09-110111 DUP	1-Nov-11	25.80	4.16	1,010	31,300	90.60	688	
	BL-CS-JC09-050212	2-May-12	5.32	0.496	154	16,000	9.64	84.50	
	BL-CS-JC09-050212DUP	2-May-12	5.07	0.668	174	15,200	12.60	96.20	
	BL-CS-JC09-101612	16-Oct-12	22.7	4.14	1,480	38,700	403	707	
	BL-CS-JC09-101612DUP	16-Oct-12	14.4	2.77	1,170	29,200	43.4	463	
	BL-CS-JC-09-050113	1-May-13	13.2	1.54	555	21,500	34.2	254	
	BL-CS-JC-09-050113DUP	1-May-13	9.69	0.686	222	15,300	29.7	145	
	BL-CS-JC09-101413	14-Oct-13	4.61	1.60	500	9,440	40.9	274	
	BL-CS-JC09-101413DUP	14-Oct-13	3.01	0.793	284	8,480	13.8	139	
	BL-CS-JC09-050614	6-May-14	50.8	1.14	973	73,900	240	265	
	BL-CS-JC09-050614DUP	6-May-14	61.7	1.48	1030	83,000	256	326	
JC-10	JC-10-SD-080627-URS	27-Jun-08	2.68	0.214	51.7	24,000	2.67	55.6	
	BL-CS-JC10-110111	1-Nov-11	85.1	19.8	5030	76,500	797	2,900	
	BL-CS-JC10-050212	2-May-12	2	0.258	36.7	12,500	1.84	27.4	
	BL-CS-JC10-101612	16-Oct-12	2.23	ND<0.655	45.1	14,500	1.9	29.3	
	BL-CS-JC-10-050113	1-May-13	2.56	0.235	50.5	15,600	2.66	36.3	
	BL-CS-JC10-101413	14-Oct-13	1.14	0.0830	30.4	10,000	0.794	13.3	
	BL-CS-JC10-050614	6-May-14	1.14 ¹	0.128 ¹	43.8	11900	2.06	27.7	
Ecological Screening Criteria ³			7	0.99	42.9	--	17	121	
Human Health Screening Criteria ³			1.5	39	2,900	--	400	23,000	

Table 4. Creek Sediment Analytical Data

Notes:

1=Estimated result. Result was detected below the lowest point of the calibration curve, but above the specified method detection limit.

2=Matrix spike and/or duplicate analysis was performed on this sample. Percent recovery or relative percent difference for this analyte is outside the laboratory control limits

3 = Ecological and human health screening criteria are from Table 5 in the Final Site Inspection Report for Blue Ledge Mine (URS Corporation, 2009).

Bold = Value is equal to or greater than the screening criteria

mg/kg = micrograms per kilogram

ND< = nondetect at concentration greater than the laboratory method reporting limit

-- = not applicable

Table 5. Fish Species Sample Data

Table 5. Fish Species Sample Data

Sampling Location ID No.	Species	Quantity Collected	Age	Length (inches)	Sample Date
EC-01	Rainbow Trout	1	not reported	7.5	10-Nov-11
	Torrent Sculpin	2	not reported	3.25, 3.75	
	Pacific Giant Salamander	2	1	4.25, 5	16-Oct-12
	Torrent Sculpin	8	1+	2.75, 1.75, 1.75, 2.25, 2, 1.5, 1.25, 1.5	
	Torrent Sculpin	4	2+	3.25, 4, 3.5, 3.25	15-Oct-13
	Smallmouth Bass	1	juvenile	2.5	
	Rainbow Trout	1	juvenile	2.5	
EC-04	Rainbow Trout	4	unreported, juvenile, juvenile, adult	8.5, 5.5, 3, unreported	10-Nov-11
	Torrent Sculpin	14	not reported	3.5, 3, 3.25, 3, 2.75, 3.5, 3, 3, 2.75, 3, 3.5, 2.25, 3.5, 3.25	
	Rainbow Trout	4	1+, 2+	4.25, 5, 2.75, 2.5	16-Oct-12
	Torrent Sulpin	3	1+	2.75, 2.5, 2.5	
	Torrent Sculpin	10	not reported	4, 3.25, 2.25, 4.25, 3, 2, 2, 1.25, 2.25, 1.5	15-Oct-13
	Rainbow Trout	6	not reported, not reported, not reported, not reported, 2+, 2+	3, 2.25, 2.5, 4, 5, 6.25	
EC-06	Rainbow Trout	5	1 adult, 4 juveniles	9.25, 3.25, 3.5, 3.5, 3.25	10-Nov-11
	Rainbow Trout	1	2+	9.5	16-Oct-12
	Torrent Sculpin	1	1	3.25	
	Rainbow Trout	11	juvenile	2.5, 2.25, 2.25, 2.75, 2.75, 2.75, 2.5, 2.5, 2.25, 3, 2.75	15-Oct-13
	Torrent Sculpin	4	not reported	2.5, 1.75, 3.25, 3	
JC-01	Rainbow Trout	1	not reported	6.75	10-Nov-11
	Rainbow Trout	1	2+	6	16-Oct-12
	Rainbow Trout	14	1 over one year, 13 juvenile	3.25, 3, 2.5, 2.75, 2.5, 2.75, 3, 3, 3, 2.75, 2.5, 3.25, 2.75, 4.75	15-Oct-13

Notes:

rainbow trout = *Oncorhynchus mykiss*

torrent sculpin = *Cottus rhotheus*

Pacific Giant Salamander = *Dicamptodontidae*

Table 6. Fish Tissue Analytical Data

Table 6. Fish Tissue Analytical Data

Sampling Location ID No.	Sample ID No.	Sample Date	Arsenic (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Percent Moisture
EC-01	EC-01-TS-111011	10-Nov-11	ND<0.51	ND<0.17	6 J	269 J	ND<0.21	57.1	70.8
	EC-01-TS-101612	16-Oct-12	ND<0.89	0.32 J	5.1	190	0.32 J	100 B	77 H
	EC-01-TS-101513	15-Oct-13	ND<0.72	ND<0.36	2.3	84	ND<0.36	58.0	72
EC-04	EC-04-FT-080626-URS	26-Jun-08	0.15	0.134	4.79	1,140	0.194	29.2	--
	EC-04-TS-111011	10-Nov-11	ND<0.58	ND<0.19	4.4 J	75.4 J	ND<0.23	113	74.1
<i>Duplicate</i>	EC-04-TSD-111011	10-Nov-11	ND<0.69	0.17 B	7.3 J	95.6 J	ND<0.35	61.7	71.0
	EC-04-TS-101612	16-Oct-12	ND<0.69	0.19 J	4.5	120	ND<0.34	150 B	72 H
<i>Duplicate</i>	EC-04-TSD-101612	16-Oct-12	ND<0.85	0.21 J	8.6	190	ND<0.42	100 B	75 H
	EC-04-TS-101513	15-Oct-13	ND<0.71	0.18J	6.8	660	ND<0.36	110	73
<i>Duplicate</i>	EC-04-TSD-101513	15-Oct-13	ND<0.77	ND<0.38	3.6	570	0.30JB	99	75
EC-06	Not sampled in 2008								
	EC-06-TS-111011	10-Nov-11	ND<0.55	ND<0.18	6.7 J	1,940 J	0.26	76.3	72.9
	EC-06-TS-101612	16-Oct-12	ND<0.79	ND<0.39	8.2	3,100	0.33 J	140 B	76 H
	EC-06-TS-101513	15-Oct-13	ND<0.85	ND<0.43	3.6	440	ND<0.43	97	77
JC-01	Not sampled in 2008								
	JC-01-TS-111011	10-Nov-11	ND<0.48	ND<0.16	5.5 J	97.1 J	ND<0.19	124	68.8
	JC-01-TS-101612	16-Oct-12	ND<0.74	0.39	12	120	ND<0.37	94 B	74 H
	JC-01-TS-101513	15-Oct-13	ND<0.80	0.32J	9.0	ND<20	ND<0.40	110	75
Ecological Screening Criteria ¹			6.60	0.15	--	--	0.12	--	NA
Human Health Screening Criteria ¹			0.0062	0.49	--	--	0.50	--	NA

Notes:

1 = Ecological and human health screening criteria are from Table 6 in the Final Site Inspection Report for Blue Ledge Mine (URS Corporation, 2009).

Bold = result exceeds screening criteria

Italic = reporting limit is greater than screening criterion

B = Flagged by the laboratory stating "compound was found in the blank and sample".

H = Flagged by the laboratory stating "sample was prepped or analyzed beyond the specified holding time".

J = Flagged by the laboratory stating "result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value".

mg/kg = milligrams per kilogram

ND< = nondetect at concentration greater than the laboratory reporting limit

NR = not reported

-- = not applicable

Table 7. Aquatic Macroinvertebrate Analytical Data

Table 7. Aquatic Macroinvertebrate Analytical Data

Sample Date	Sample Location	EPT Richness		Coleoptera Richness		Diptera Richness		% Intolerant Individuals		% Non-Gastropoda Scraper Individuals		% Predator Individuals		% Shredder Taxa		% Non-Insect Taxa		NorCal B-IBI	Condition Category
		Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score		
9-Nov-11	JC-01	3	1	0	0	3	3	29.03	7	0.00	0	32.26	10	16.67	10	0.00	10	51.25	Fair
16-Oct-12		13	5	2	3	4	4	32.89	8	5.26	3	13.16	6	17.39	10	7.89	10	61.25	Good
16-Oct-13		8	3	0	0	2	2	30.77	7	7.69	4	15.38	7	27.27	10	0.00	10	53.75	Fair
9-Nov-11	JC-08	5	1	1	1	2	2	76.47	10	5.88	3	52.94	10	25.00	10	0.00	10	58.75	Fair
16-Oct-12		10	3	0	0	1	1	61.70	10	0.00	0	25.53	10	16.67	10	2.13	10	55.00	Fair
16-Oct-13		4	1	0	0	0	0	100.00	10	25.00	10	0.00	0	25.00	10	0.00	10	51.25	Fair
9-Nov-11	JC-10	11	4	0	0	1	1	61.90	10	19.05	10	14.29	6	21.43	10	14.29	8	61.25	Good
16-Oct-12		25	10	0	0	6	6	74.31	10	24.11	10	15.18	7	21.21	10	3.57	10	78.75	Good
16-Oct-13		17	6	3	5	4	4	52.17	10	12.86	6	18.57	8	14.81	9	25.00	6	67.50	Good
9-Nov-11	EC-04	12	4	0	0	3	3	39.18	9	18.56	10	16.49	7	0.00	0	0.00	10	53.75	Fair
16-Oct-12		20	7	2	3	5	5	49.59	10	19.01	10	33.06	10	6.25	4	7.44	10	73.75	Good
16-Oct-13		14	5	2	3	4	4	24.62	6	8.46	4	15.38	7	8.70	5	19.23	7	51.25	Fair
9-Nov-11	EC-06	14	5	1	1	4	4	22.34	6	9.04	5	7.45	3	0.00	0	6.91	10	42.50	Fair
16-Oct-12		19	7	2	3	6	6	27.32	7	16.62	8	10.42	5	6.67	4	23.38	7	58.75	Fair
16-Oct-13		15	5	3	5	5	5	41.18	10	12.75	6	26.47	10	12.50	8	0.98	10	73.75	Good

Notes:

B - IBI = Benthic Index of Biotoc Integrity

B-IBI Key	
Score	Rating
0 - 19	Very Poor
20 - 39	Poor
40 - 59	Fair
60 - 79	Good
80 - 100	Very Good

Table 8. Leachate Analytical Data



Table 8. Leachate Analytical Data

Sample ID No.	Sample Date	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Metals																			
					Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
BL-RS-091211 ¹	12-Sep-11	--	--	--	--	--	ND<2.00	--	--	127	--	--	17.0	--	ND<1.00	--	--	--	--	--	--	--	--	64,700
BL-RS-050212 ¹	2-May-12	--	--	5.57	--	--	ND<2.00	27.6	--	42.8	ND<2.00	--	--	--	ND<1.00	--	0.123	--	--	ND<4.00	ND<1.00	--	--	--
BL-RS-091412 ²	14-Sep-12	--	--	4.02	--	ND<5.00	ND<10.0	23.7	ND<5.00	35.0	ND<10.0	2,090	64.6	--	ND<5.00	ND<10.0	ND<0.400	ND<10.0	1,770	ND<10.0	ND<5.00	ND<5.00	ND<10.0	148,000
BL-RS-050113 ²	1-May-13	--	--	3.26	--	ND<10.0	ND<20.0	15.2	ND<10.0	35.1	ND<20.0	2,600	142	--	ND<10.0	ND<20.0	ND<0.800	ND<20.0	2,150	ND<20.0	ND<10.0	ND<10.0	ND<20.0	153,000
BL-RS-050614 ¹	6-May-14	8.843	3.09	5.47	ND<5,000 ³	<100 ³	<50.0 ³	<100 ³	27.8	18.9 ^{3,4}	<100 ³	--	110	4,710,000	11.1 ^{3,4,5}	250,000	<16.0		2,050	<100	<20.0	<20.0		134,000
BL-RS-050614 ²	6-May-14	--	--	--	<5,000 ³	<100 ³	<100 ³	<100 ³	27.8	413	<100 ³	--	307	4,590,000	<100 ³	<100 ³	<100 ³	27.8	413	<100 ³	--	307	--	131,000

Notes:

1 = Analyzed by EPA Method 6020 for dissolved metals.

2 = Analyzed by EPA Method 6020 for total metals.

3 = Reporting levels elevated due to dilution necessary for analysis.

4 = Estimated result. Result detected below the lowest point of the calibration curve, but above the specified Method Detection Limit.

5 = Analyte was detected in an associated blank at a level above the method detection limit.

EPA = U.S. Environmental Protection Agency

ND< = nondetect at concentration greater than the laboratory method reporting limit

µg/L = micrograms per liter

-- = not reported

Table 9. Sediment Basin Analytical Data



Table 9. Sediment Basin Analytical Data

Sample ID No.	Sample Date	Arsenic (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	pH
BL-TB-1A-050212	5/2/2012	41.1	1.77	803	51,100	142	366	--
BL-TB-1B-050212	5/2/2012	45.3	3.04	1,170	58,800	149	543	--
BL-TB-1C-050212	5/2/2012	39.3	1.54	880	49,900	126	320	--
BL-TB-1D-050212	5/2/2012	61.9	1.02	704	58,800	98.2	242	--
BL-TB-1E-050212	5/2/2012	31.0	1.44	521	39,400	57.7	279	--
BL-TB-1F-050212	5/2/2012	50.0	0.467	413	61,000	104	172	--
BL-TB-1FL-050212	5/2/2012	17.4	0.582	247	38,300	55.6	164	--
BL-TB-1F,E,D,C,B,A-050113 ¹	5/1/2013	56.2	1.57	957	73,600	188	313	4.18
BL-TB-1F,E,D,C,B,A-050614 ¹	5/6/2014	56.6	0.965	654	141,000	216	276	3.56
BL-TB-2A-050212	5/2/2012	15.5	0.849	512	29,700	76.9	302	--
BL-TB-2B-050212	5/2/2012	11.1	0.667	379	29,800	38.1	429	--
BL-TB-2A,B-050113 ²	5/1/2013	21.9	1.53	731	35,300	83.1	383	5.99
BL-TB-2A,B-050614 ²	5/6/2014	32.1	2.06	1,100	47,200	143	579	5.45
BL-TB-3-050212	5/2/2012	11.4	2.35	2,450	26,800	52.6	365	--
BL-TB-3S-050212	5/2/2012	11.5	1.08	486	26,600	30.8	264	--
BL-TB-3-050113	5/1/2013	15.0	2.83	1,640	24,000	86.9	446	6.52
BL-TB-3-050614	5/6/2014	6.20	1.92	490	14,000	19.8	313	8.09
Soil Removal Goals³		87.00	23.00	1,041.00	NA	179.00	660.00	--
Tolerance Limit (Soil Removal Goals +15%³)		100.05	26.45	1,197.15	NA	205.85	759.00	--

Notes:

Removal goal and tolerance: Metals concentrations are to be no more than 15 percent above the numeric standards, and no more than 15 percent of the sample results will be allowed to have concentrations above the 15 percent tolerance.

Analyzed by U.S. Environmental Protection Agency Method 6020 for metals.

1 = Composite sample from TB 1A, 1B, 1C, 1D, 1E, and 1F.

2 = Composite sample from TB 2A and 2B.

3 = Soil removal goals as presented in Removal Action Completion Report prepared by Engineering/Remediation Resources Group, Inc. in February 2012.

Bold = Value is equal to or greater than the removal goal

Shaded = result exceeds the tolerance limit (removal goal plus 15 percent).

mg/kg = milligrams per kilogram

NA = not applicable

ND< = nondetect at concentration greater than the laboratory reporting limit

-- = not reported

Table 10. Relative Percent Difference Results

Table 10. Relative Percent Difference Results

Sample ID No.	Matrix	Total Solids	Date	Alkalinity (mg CaCO ₃ /L)	Hardness (mg CaCO ₃ /L)	TDS (mg/L)	TSS (mg/L)	Sulfate (mg/L)	Arsenic (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Zinc (µg/L)
BL-DW-17607-050614	Drinking Water	NA	6-May-14	242	264	263	ND<5.00	22.7	0.256	ND<0.200	0.744	244	ND<0.200	3.00
BL-DW-17607-050614DUP	Drinking Water	NA	6-May-14	242	263	279	ND<5.00	22.8	0.278	ND<0.200	0.711	249	ND<0.200	3.03
RPD (%)				0.00	0.38	5.90	0	0.44	8.24	0	4.54	2.03	0.00	1.00
BL-SW-JC08-050614	Surface Water	NA	6-May-14	22.6	25.3	43.0	ND<5.00	7.03	ND<0.5	0.611	52.3	29.2	ND<0.200	102
BL-SW-JC08-050614DUP	Surface Water	NA	6-May-14	23.3	25.2	46.0	ND<5.00	7.03	ND<0.5	0.567	54.9	39.8	ND<0.200	105
RPD (%)				3.05	0.40	6.74	0.00	0.00	0	7.47	4.85	30.72	0	2.90
BL-CS-JC09-050614	Sediment	51.6	6-May-14	NA	NA	NA	NA	NA	50.8	1.14	973	73900	240	265
BL-CS-JC09-050614DUP	Sediment	60.4	6-May-14	NA	NA	NA	NA	NA	61.7	1.48	1030	83000	256	326
RPD (%)				NA	NA	NA	NA	NA	19.38	25.95	5.69	11.60	6.45	20.64

Notes: If analyte is not detected above the reporting limit, half the reporting limit is used to calculate the RPD

Bold = RPD exceeds target range (<40%)

BL= Blue Ledge

DW = Drinking water

mg CaCO₃/L = milligrams of calcium carbonate per liter

mg/L = milligrams per liter

ND < = not detected at concentrations greater than the reporting limit

ND < 0.50 = Non detected above the laboratory method reporting limit

NA = not analyzed

RPD = relative percent difference

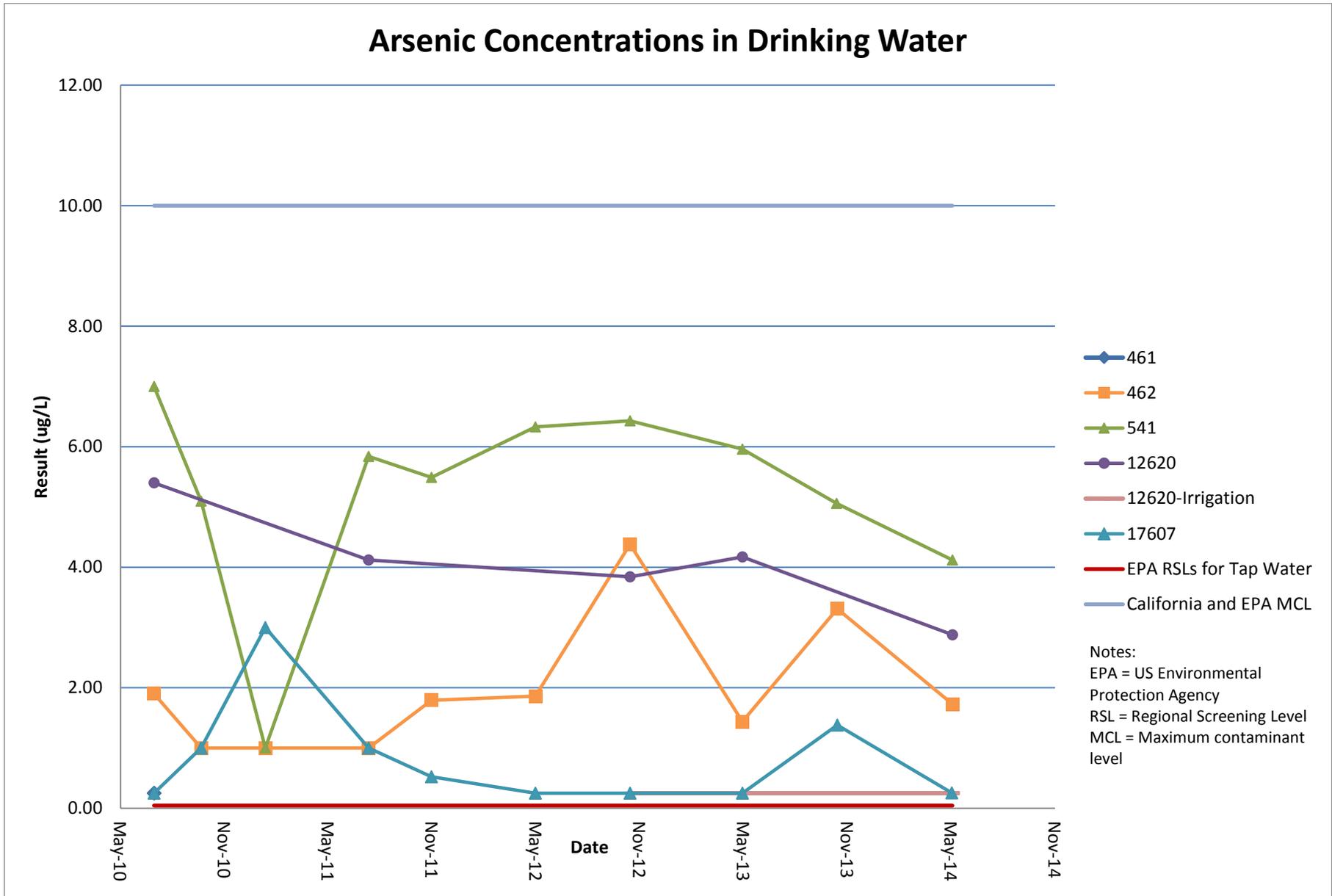
TDS = total dissolved solids

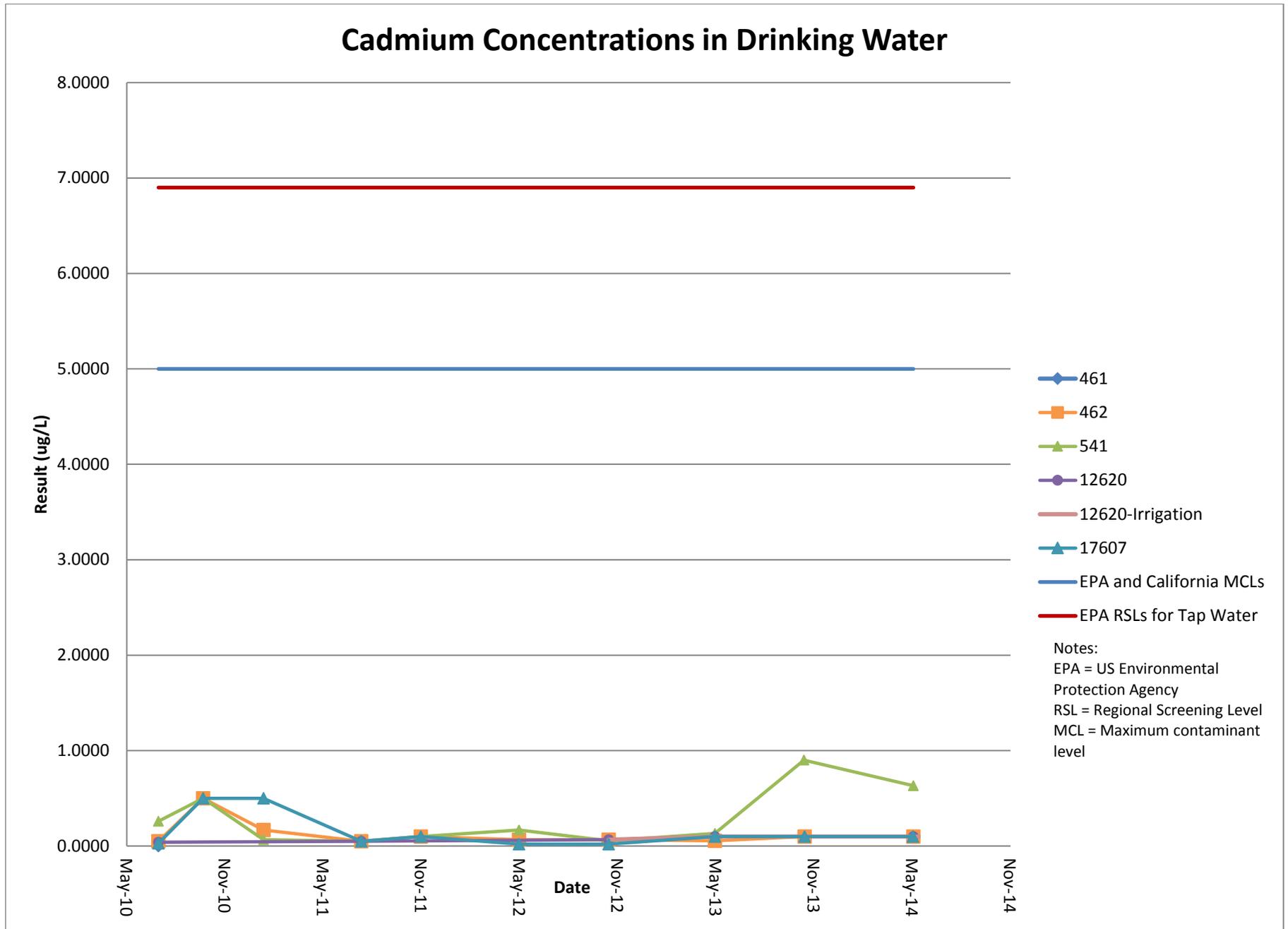
TSS = total suspended solids

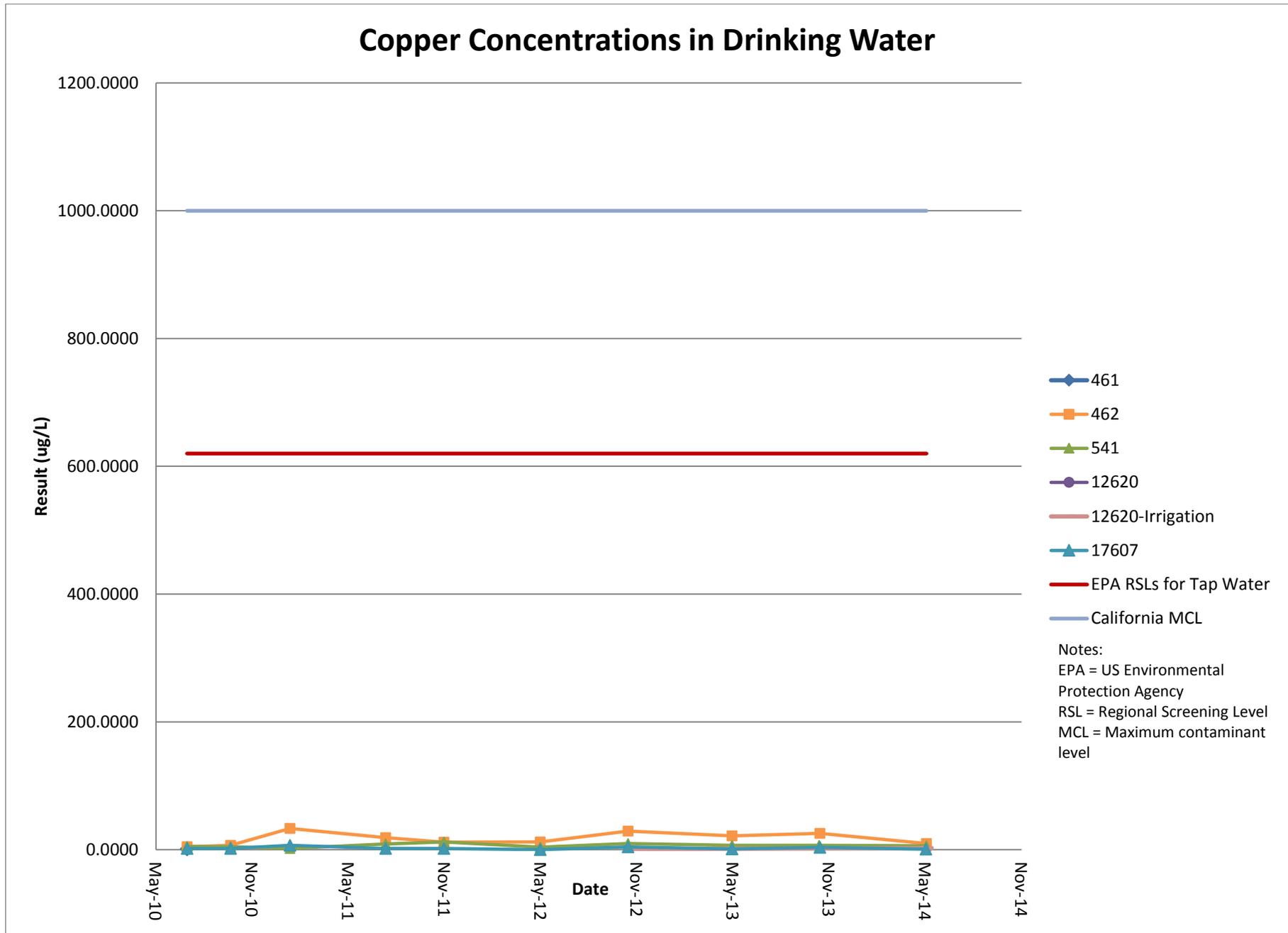
µg/L = micrograms per liter

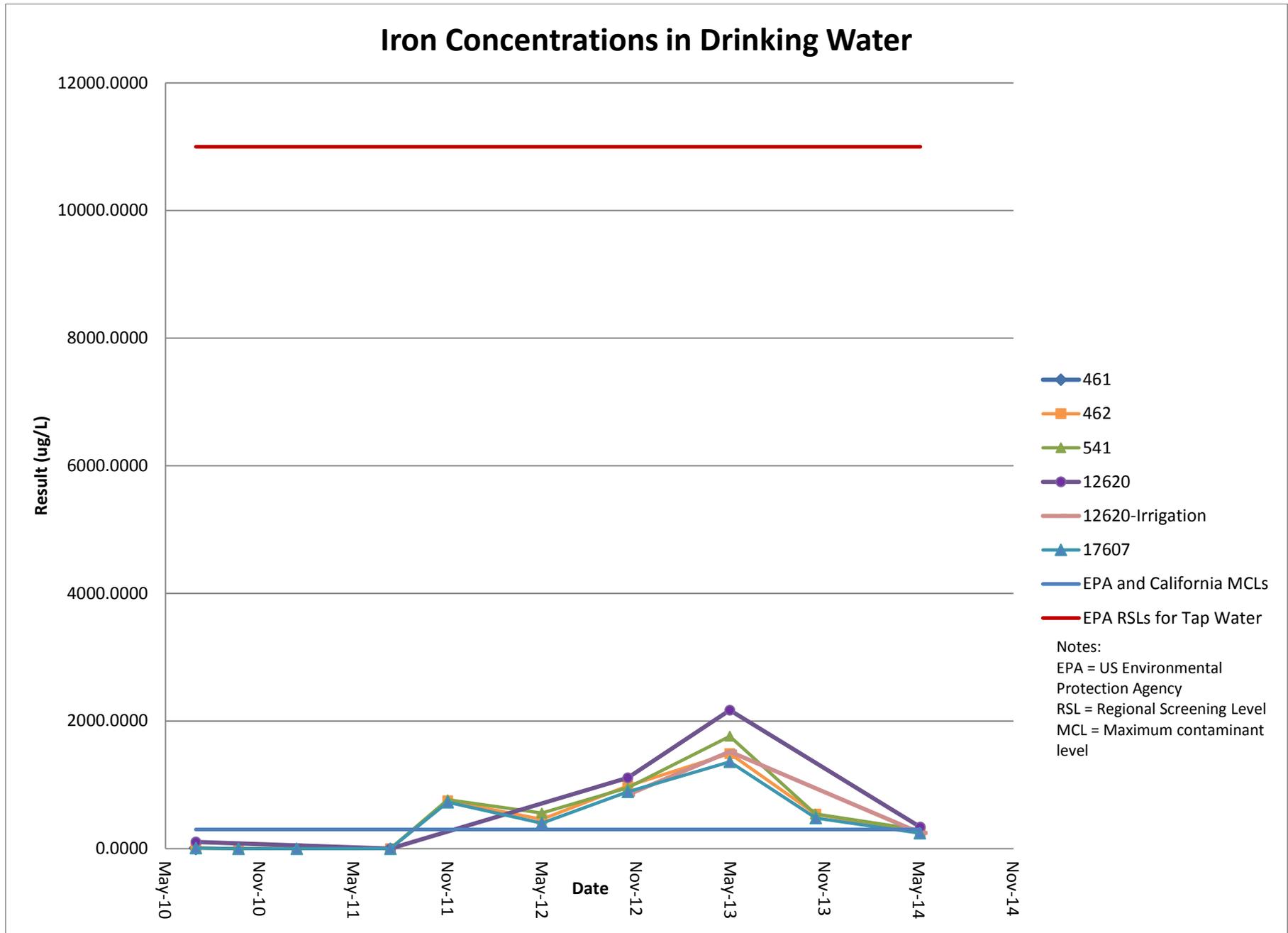
Appendix A. Concentration Trend Graphs

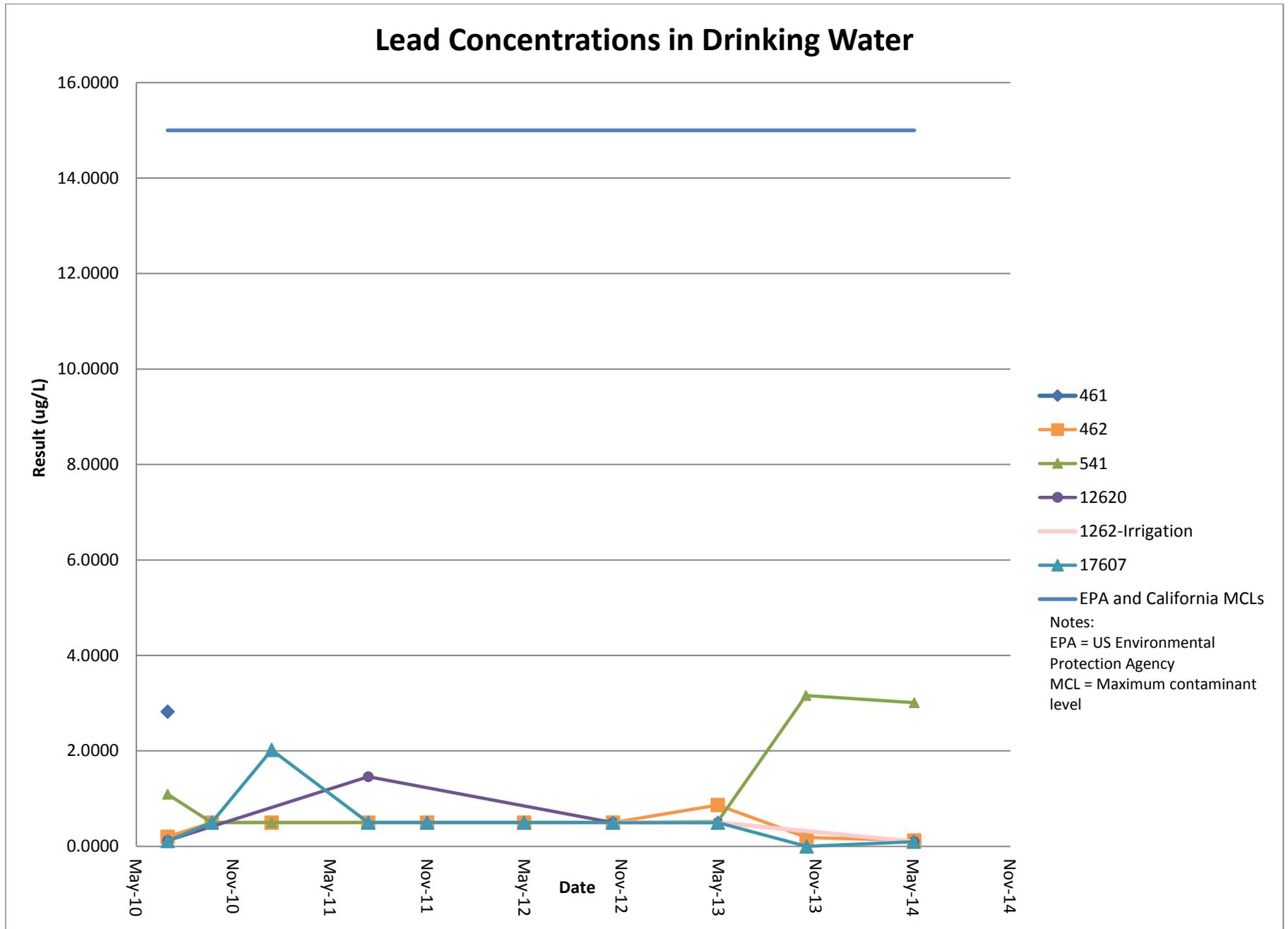


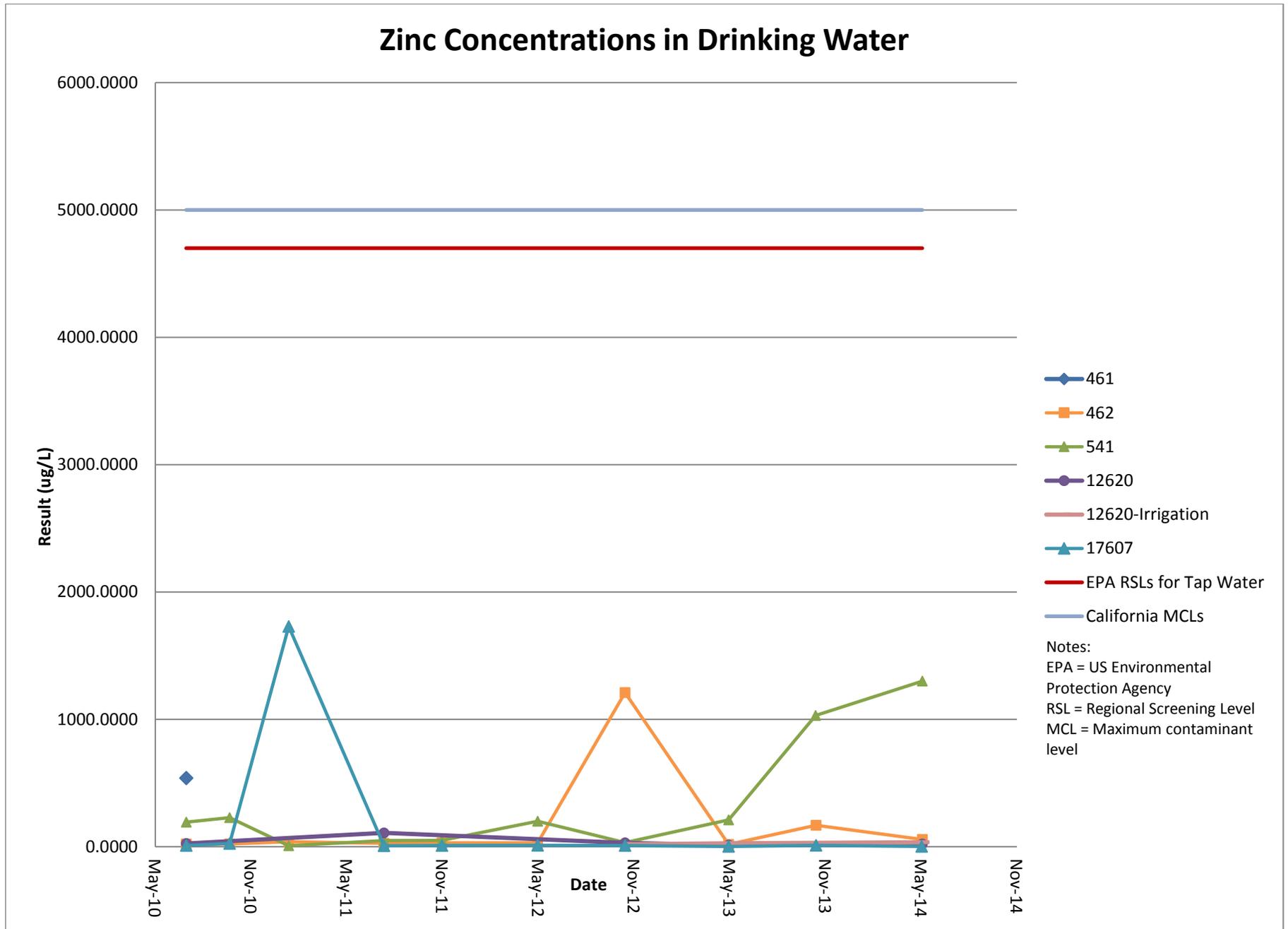


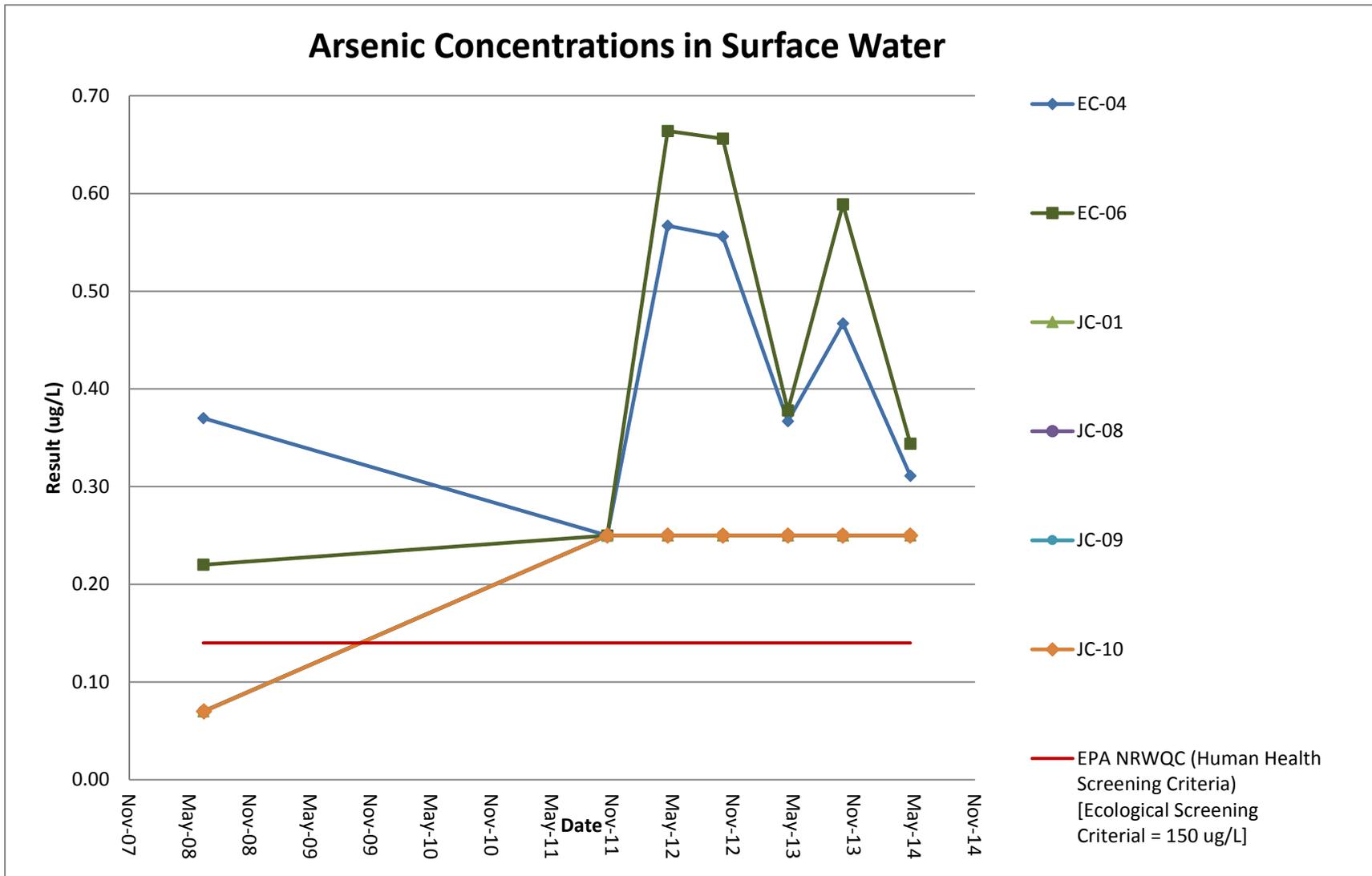


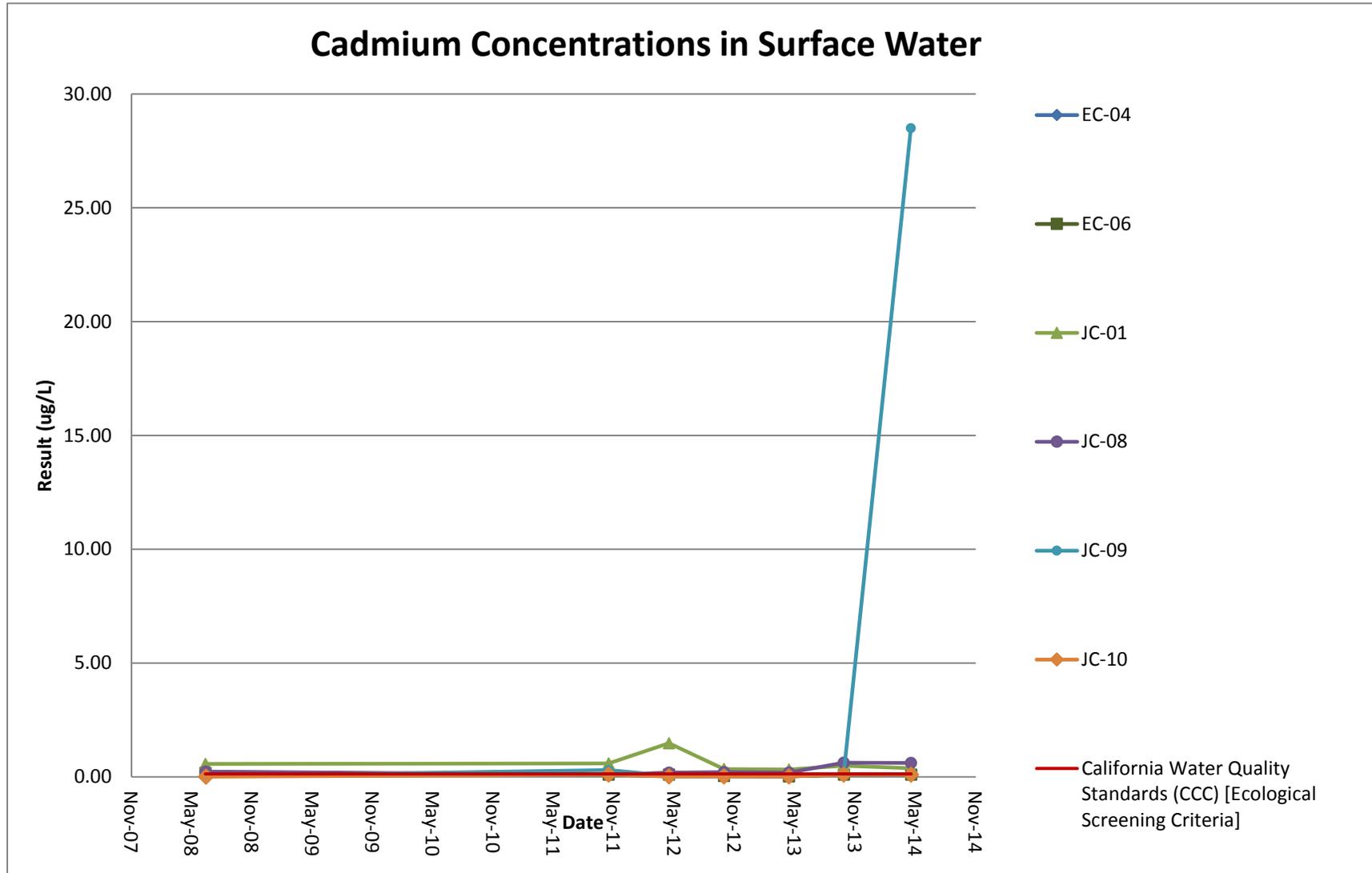


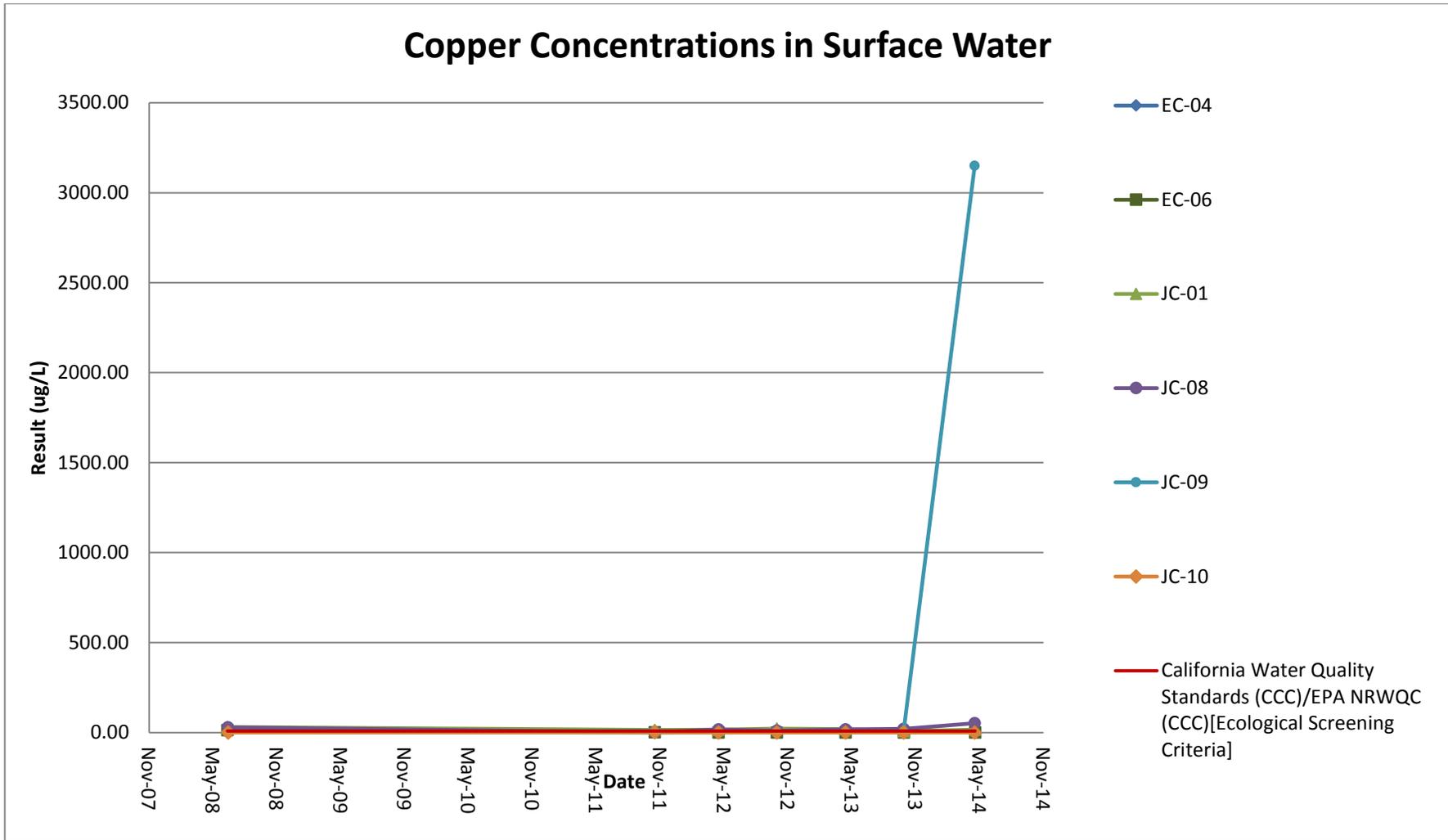


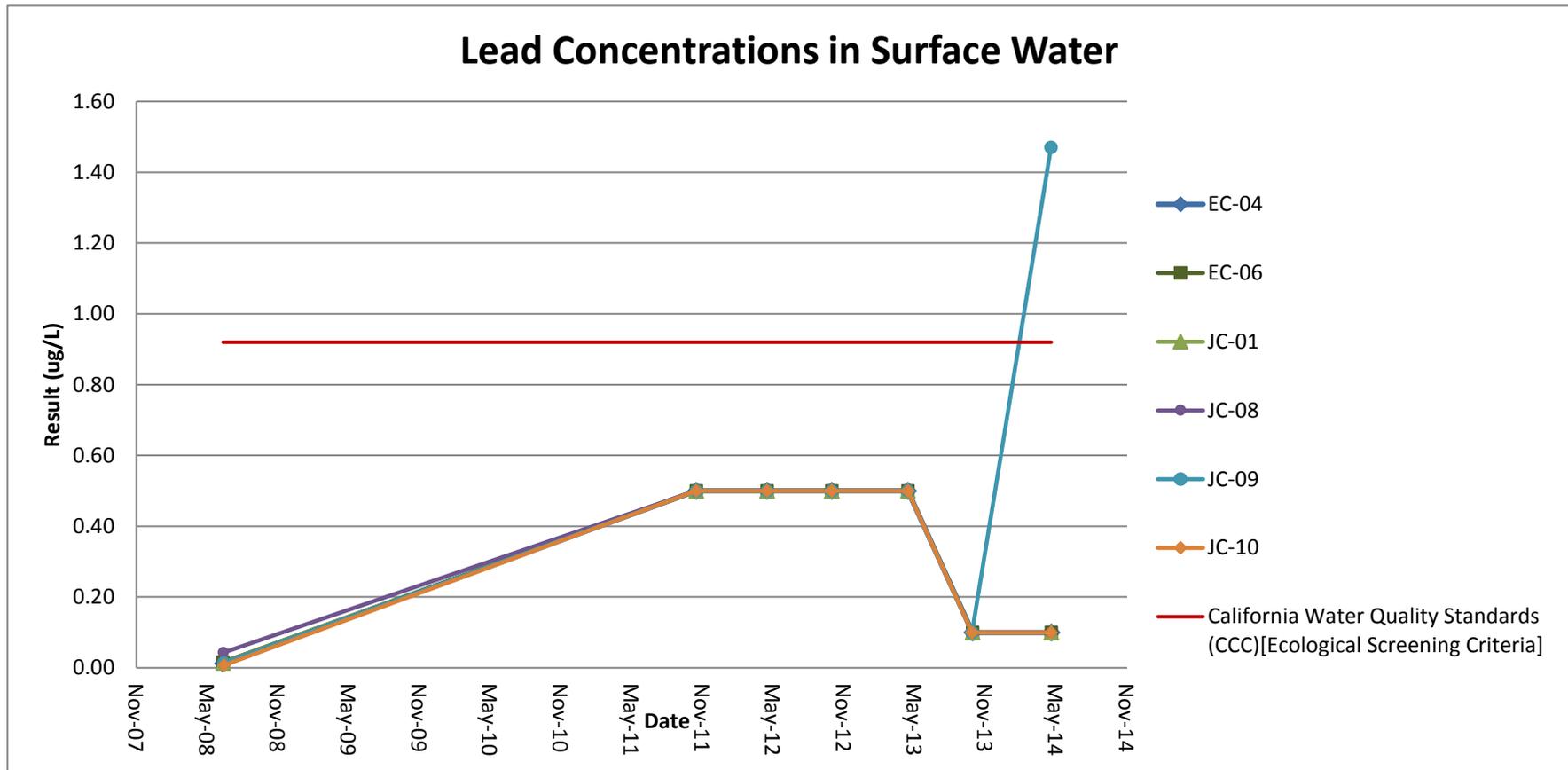


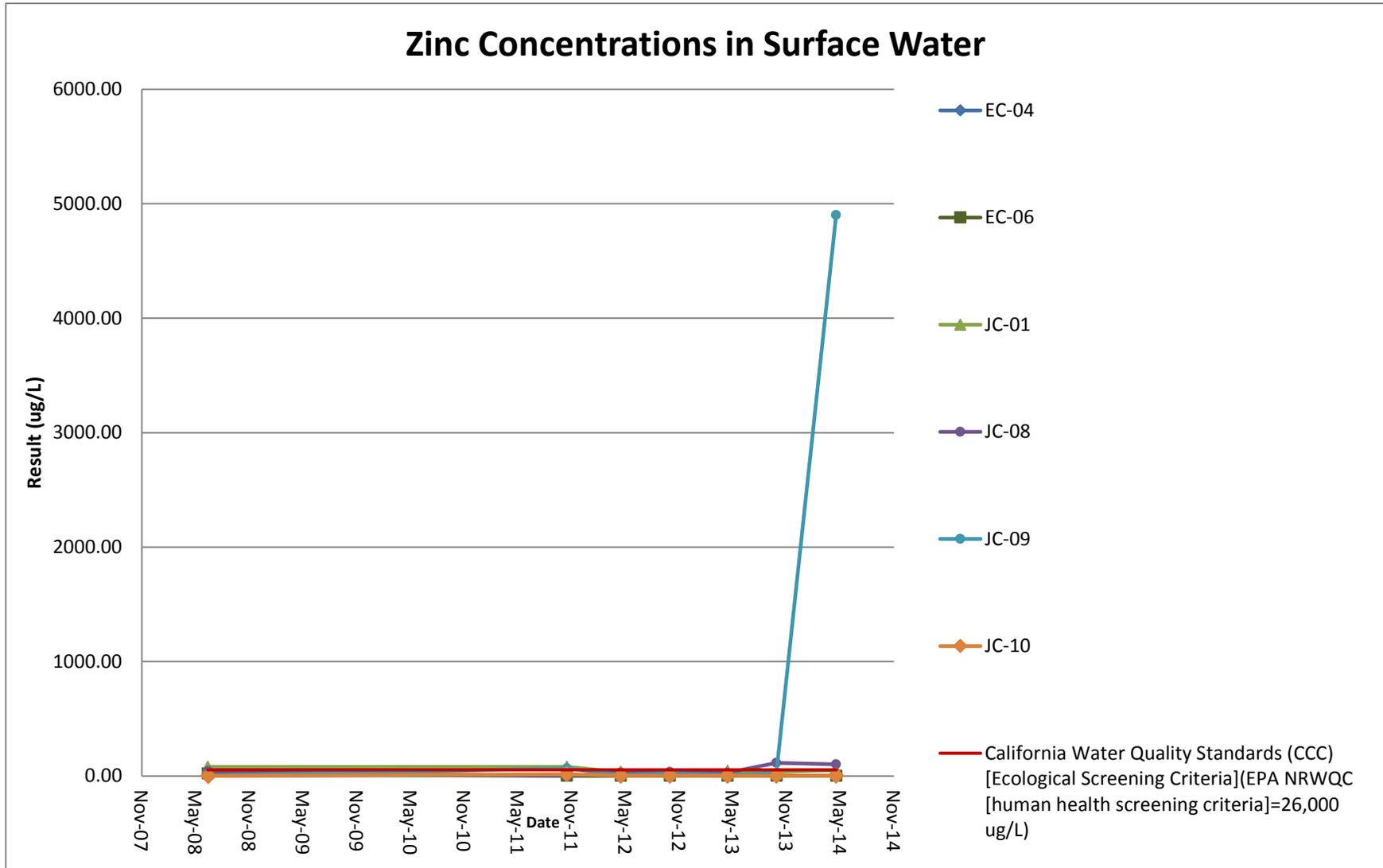


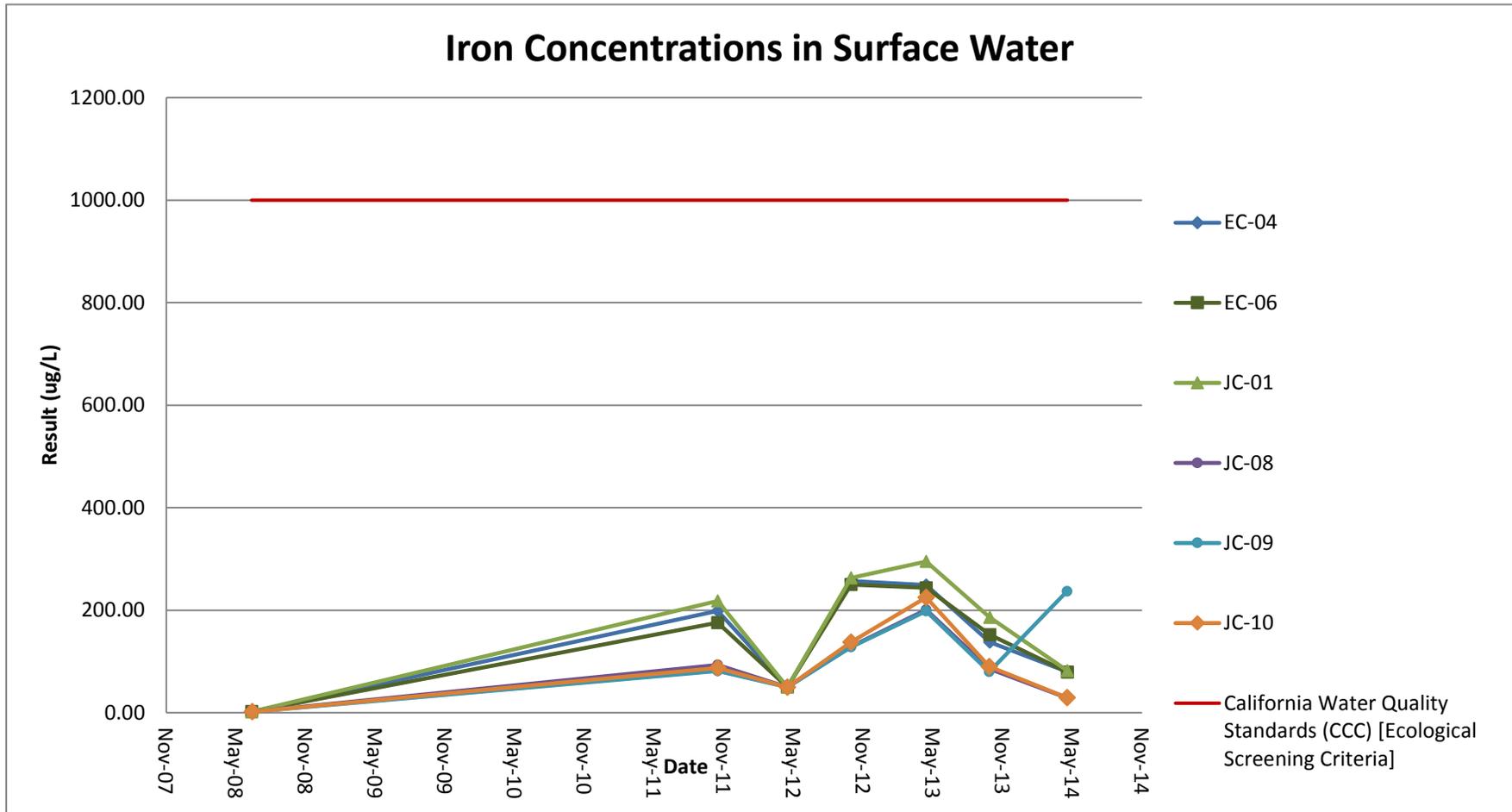


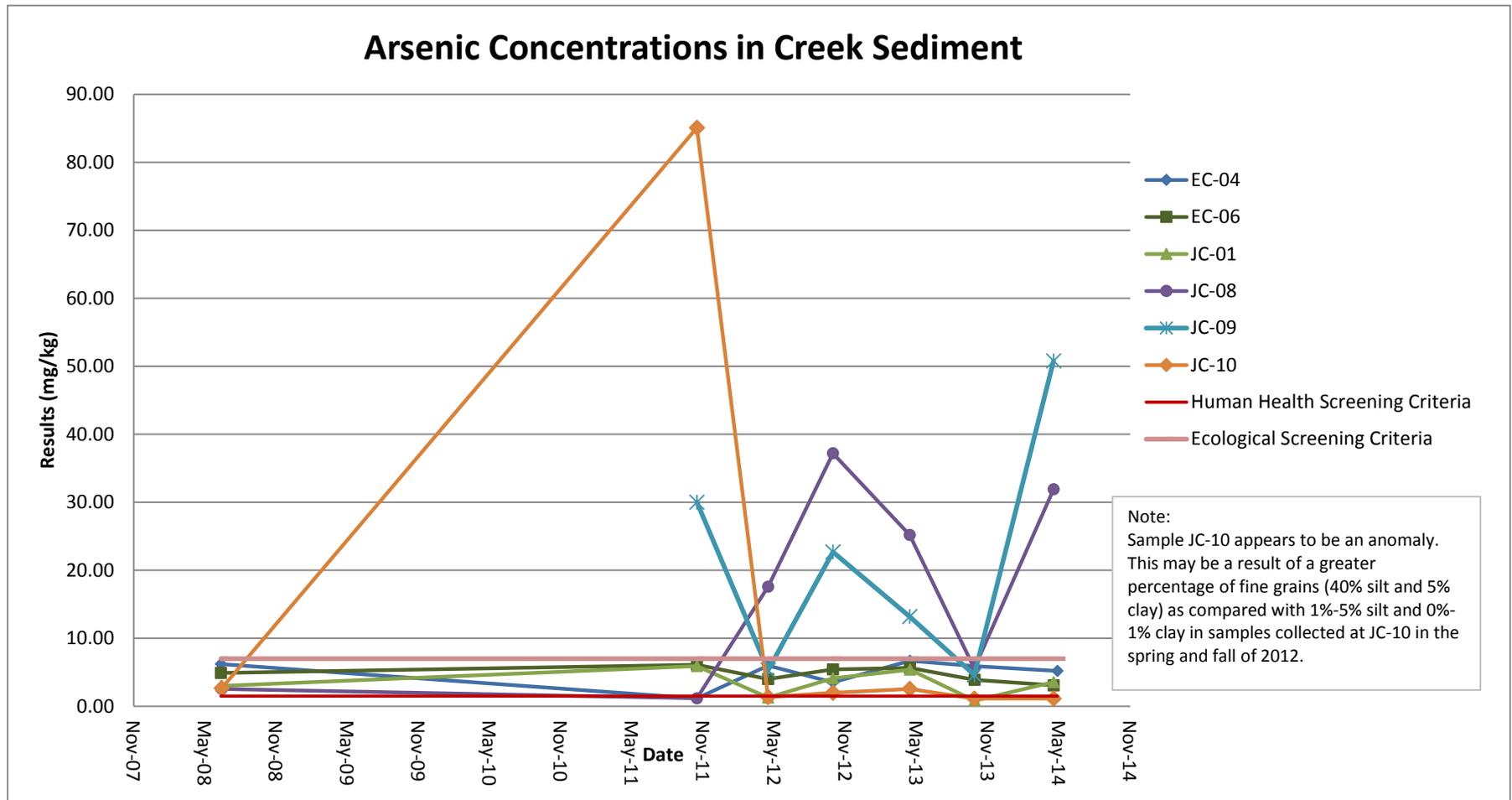


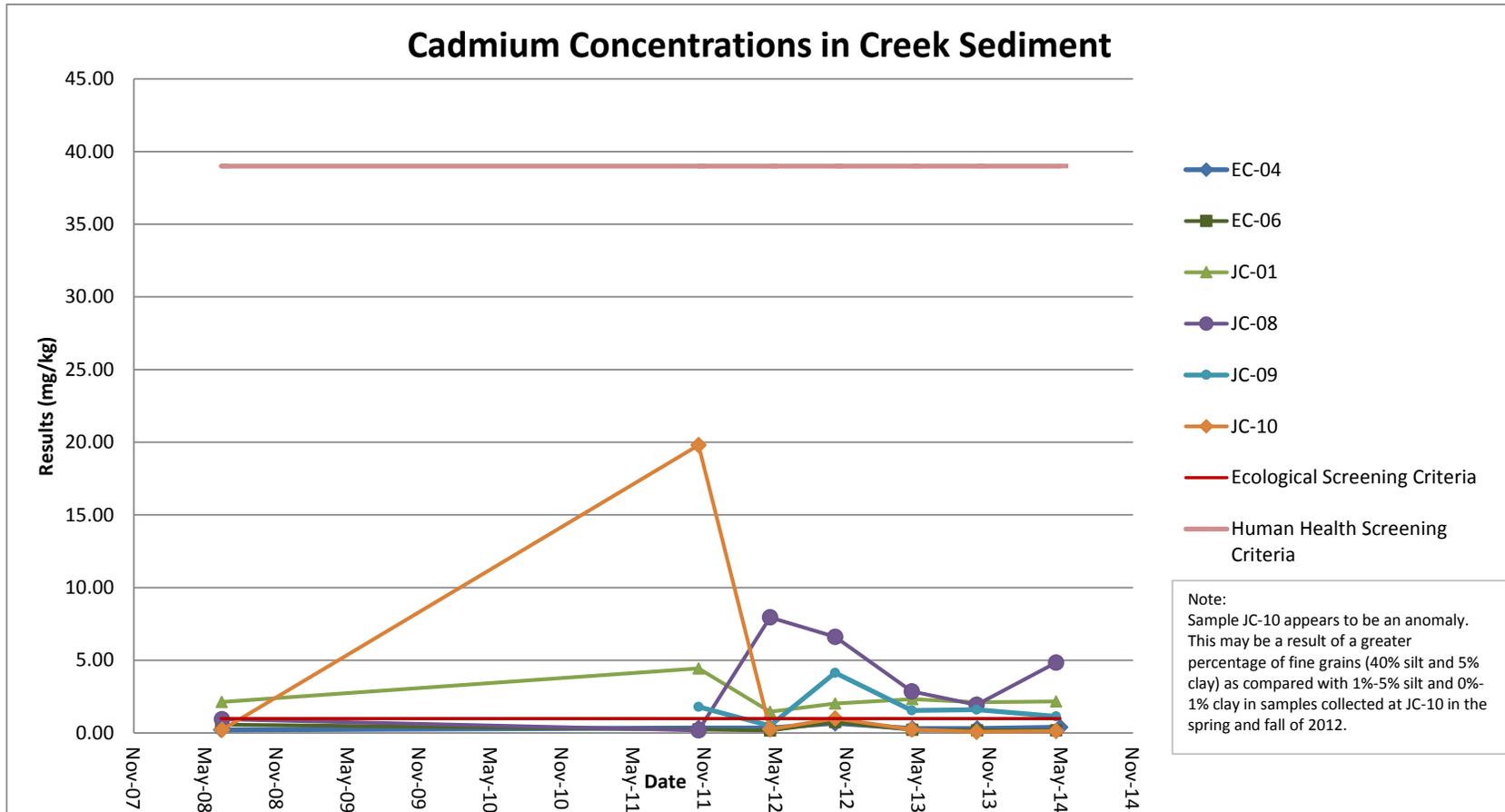


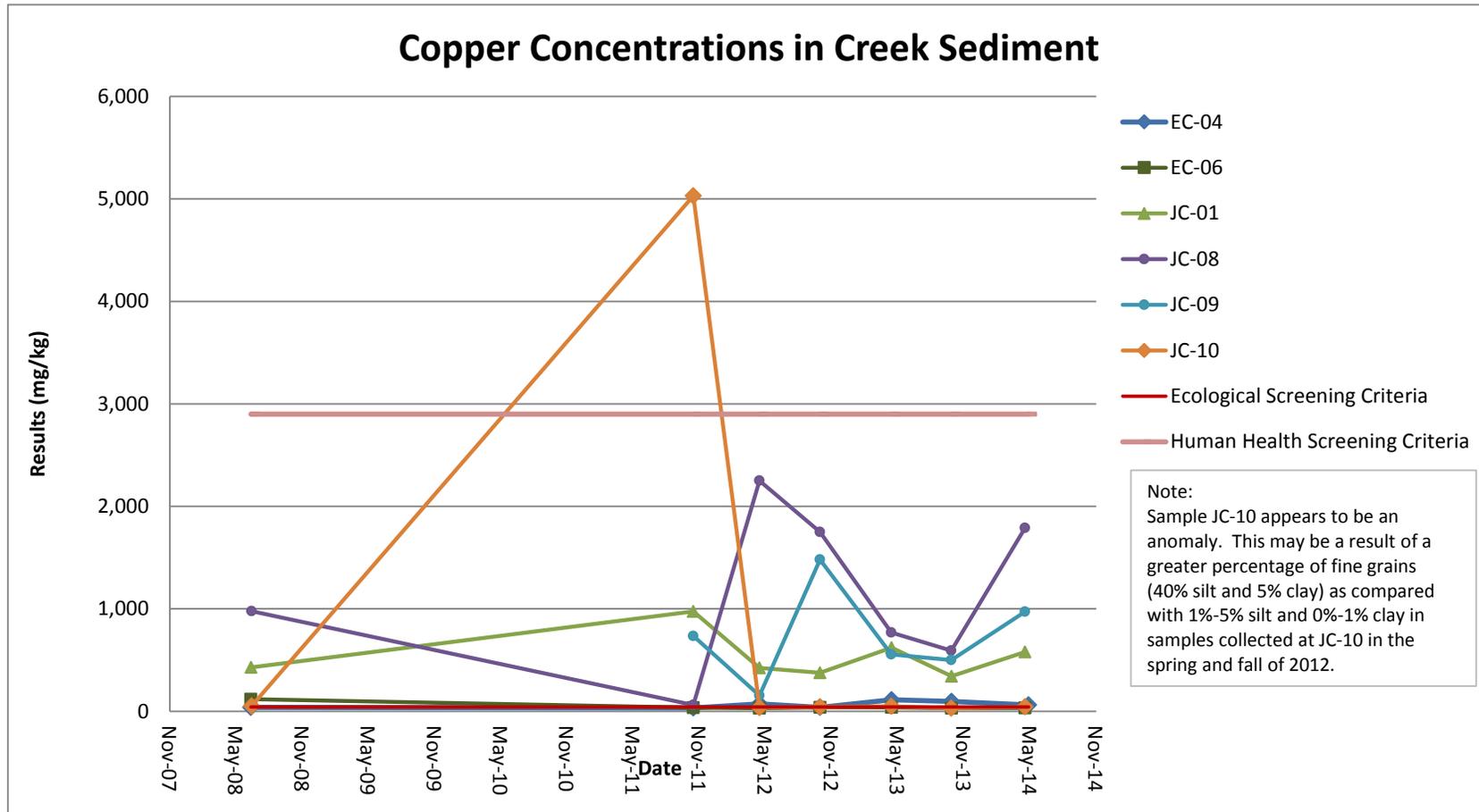


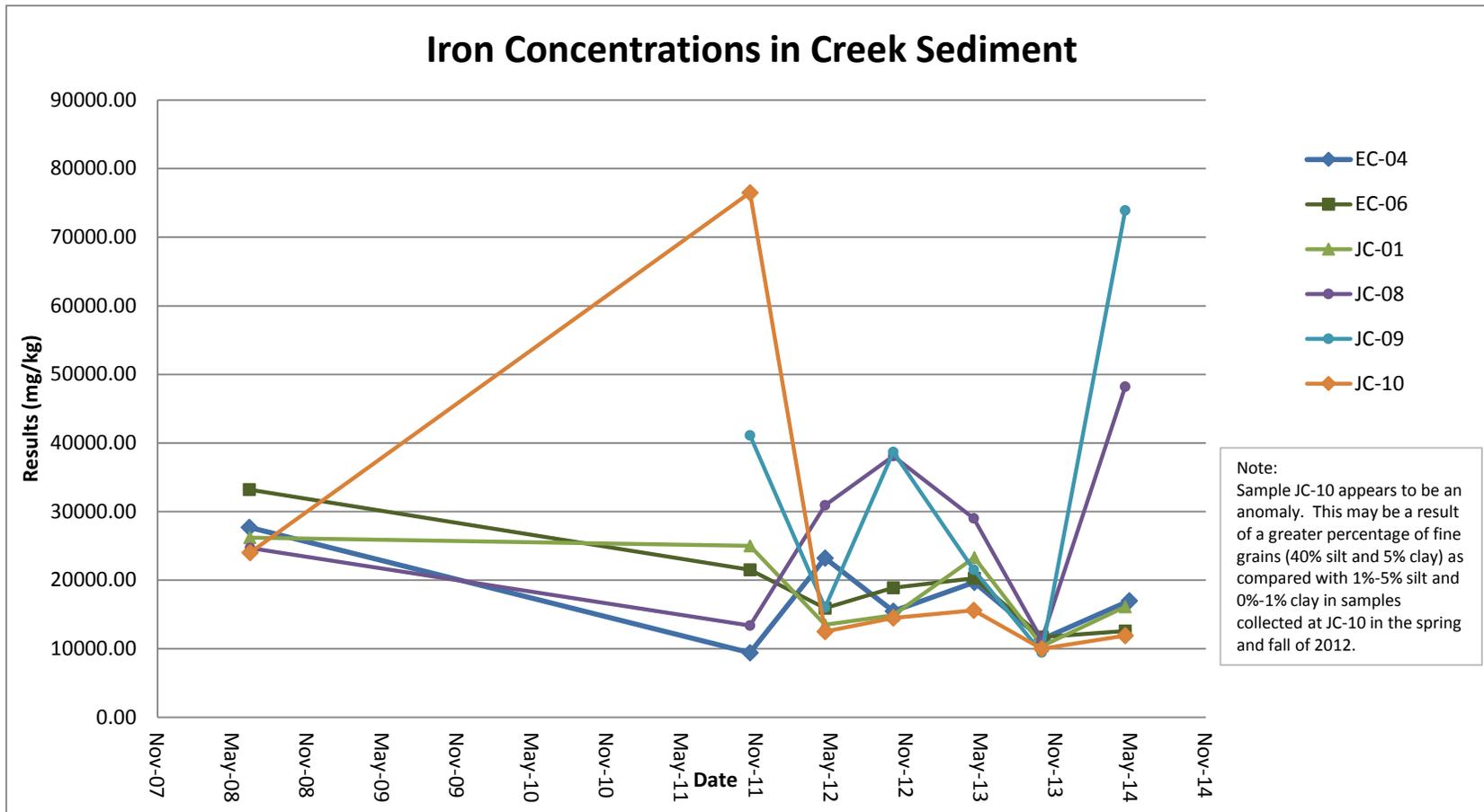


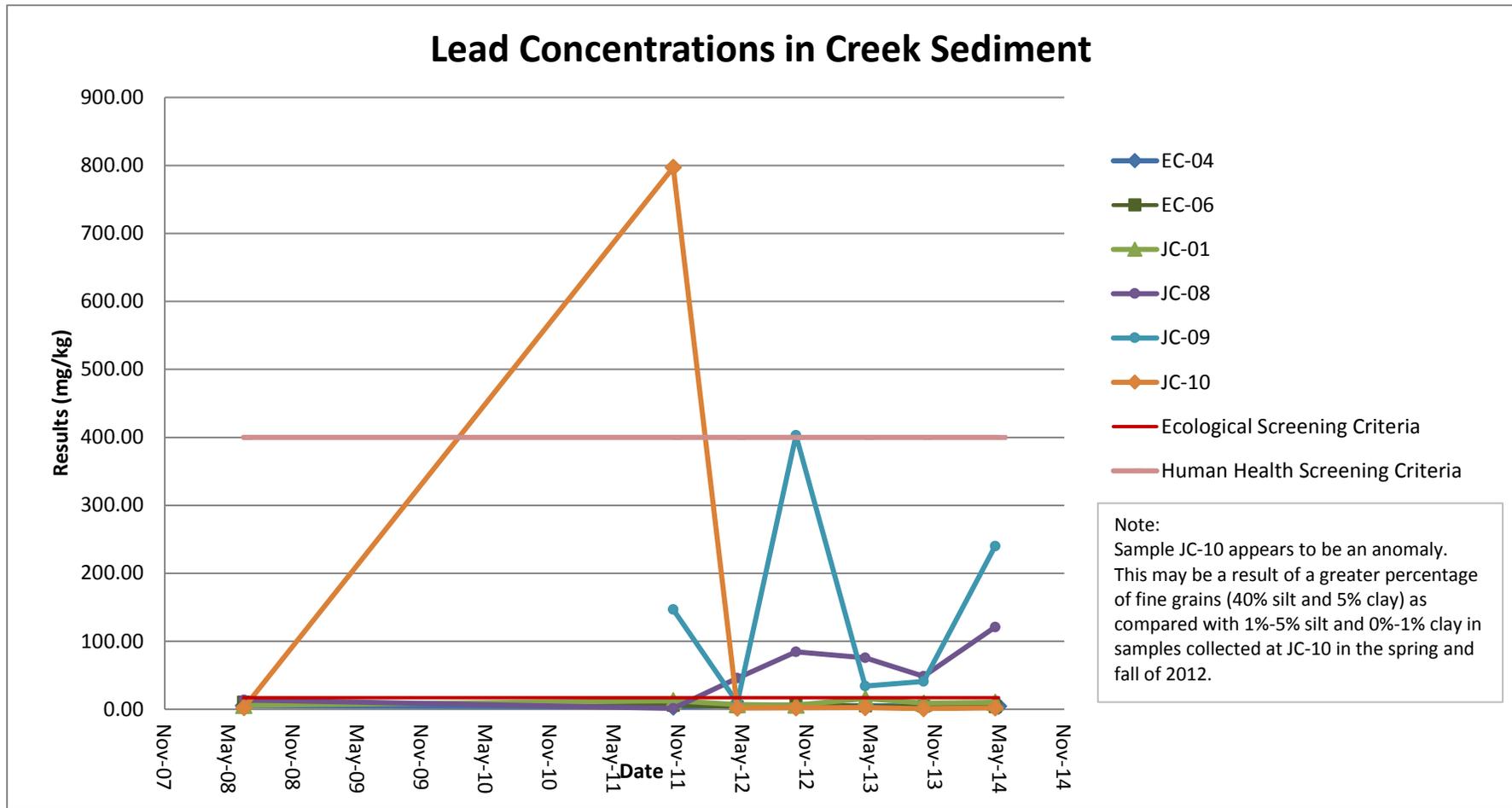


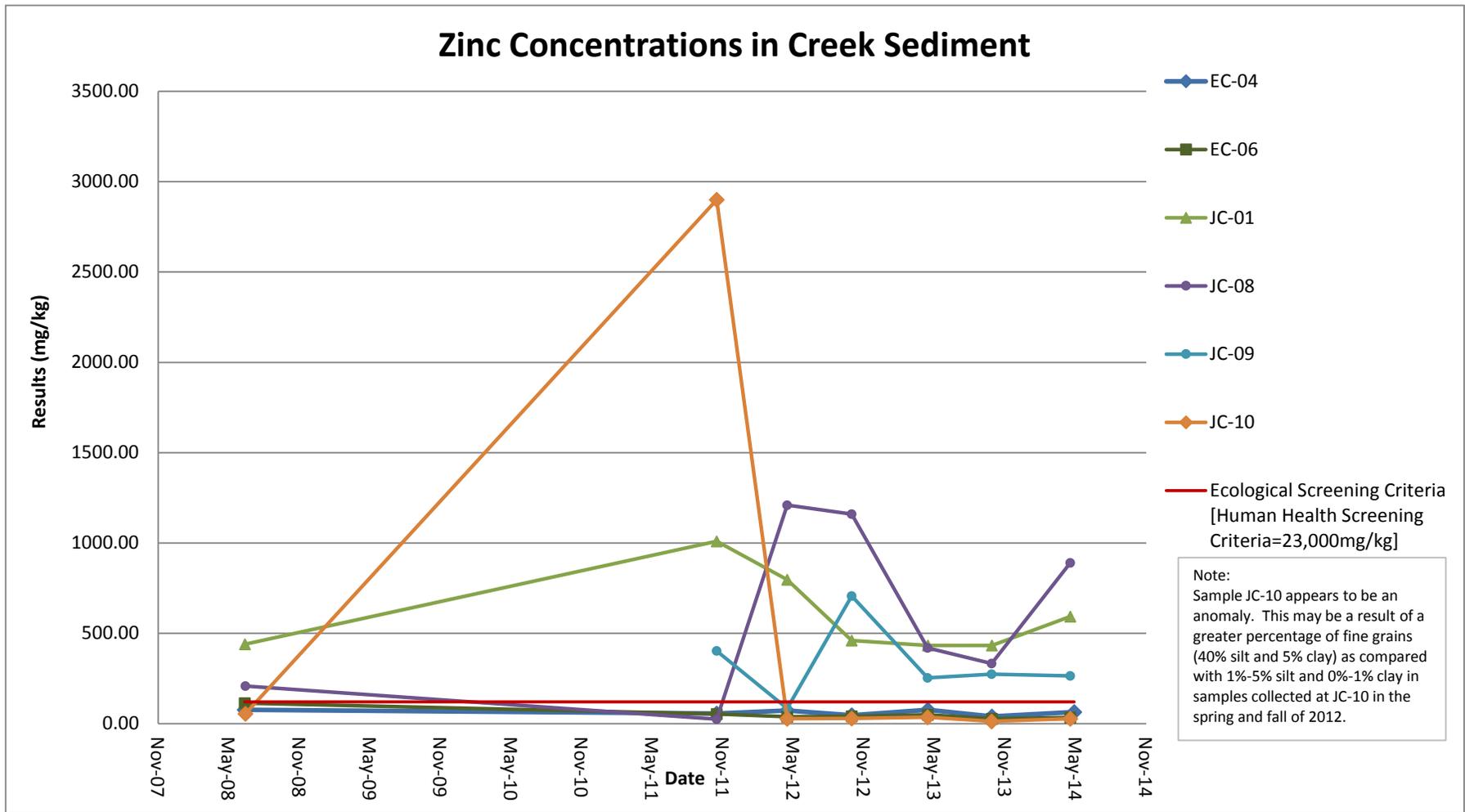












Appendix B. Spring 2014 Laboratory Analytical Report



Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Wednesday, June 18, 2014

Annica Nord
Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

RE: Blue Ledge Mine 2013 / Blue Ledge Mine 2013

Enclosed are the results of analyses for work order A4E0201, which was received by the laboratory on 5/8/2014 at 10:15:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

Page 1 of 69

Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BL-Basin2COMP-050614	A4E0201-03	Soil	05/06/14 00:00	05/08/14 10:15
BL-Basin3-050614	A4E0201-04	Soil	05/06/14 11:09	05/08/14 10:15
BL-SW-JC10-050614	A4E0201-05	Water	05/06/14 12:22	05/08/14 10:15
BL-CS-JC10-050614	A4E0201-06	Soil	05/06/14 12:25	05/08/14 10:15
BL-SW-JC09-050614	A4E0201-07	Water	05/06/14 14:15	05/08/14 10:15
BL-CS-JC09-050614	A4E0201-08	Soil	05/06/14 14:18	05/08/14 10:15
BL-CS-JC09-050614DUP	A4E0201-09	Soil	05/06/14 14:18	05/08/14 10:15
BL-SW-JC08-050614	A4E0201-10	Water	05/06/14 14:30	05/08/14 10:15
BL-SW-JC08-050614DUP	A4E0201-11	Water	05/06/14 14:30	05/08/14 10:15
BL-CS-JC08-050614	A4E0201-12	Soil	05/06/14 14:35	05/08/14 10:15
BL-Basin1COMP-050614	A4E0201-19	Soil	05/06/14 00:00	05/08/14 10:15
BL-NS-050614	A4E0201-20	Soil	05/06/14 15:40	05/08/14 10:15
BL-RS-050614	A4E0201-21	Water	05/06/14 15:52	05/08/14 10:15
BL-LS-050614	A4E0201-22	Soil	05/06/14 16:02	05/08/14 10:15
BL-DW-462-050714	A4E0201-23	Water	05/07/14 08:30	05/08/14 10:15
BL-DW-12620-050714	A4E0201-24	Water	05/07/14 08:34	05/08/14 10:15
BL-DW-12620irrig-050714	A4E0201-25	Water	05/07/14 08:36	05/08/14 10:15
BL-NSL-050714	A4E0201-26	Soil	05/07/14 09:21	05/08/14 10:15
BL-LSL-050714	A4E0201-27	Soil	05/07/14 09:23	05/08/14 10:15
BL-RST-050714	A4E0201-28	Water	05/07/14 09:37	05/08/14 10:15
BL-CS-JC01-050714	A4E0201-29	Soil	05/07/14 11:10	05/08/14 10:15
BL-SW-JC01-050714	A4E0201-30	Water	05/07/14 11:15	05/08/14 10:15
BL-CS-EC04-050714	A4E0201-31	Soil	05/07/14 11:52	05/08/14 10:15
BL-SW-EC04-050714	A4E0201-32	Water	05/07/14 11:50	05/08/14 10:15
BL-CS-EC06-050714	A4E0201-33	Soil	05/07/14 11:35	05/08/14 10:15
BL-SW-EC06-050714	A4E0201-34	Water	05/07/14 11:32	05/08/14 10:15
BL-DW-541-050714	A4E0201-35	Water	05/07/14 12:09	05/08/14 10:15
BL-DW-17607-050614	A4E0201-36	Water	05/06/14 16:45	05/08/14 10:15
BL-DW-17607-050614DUP	A4E0201-37	Water	05/06/14 16:45	05/08/14 10:15

Apex Laboratories



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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Anions by EPA 300.0/9056A (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-JC10-050614 (A4E0201-05)			Matrix: Water					
Batch: 4050333								
Sulfate	4.08	1.00	1.00	mg/L	1	05/12/14 18:28	EPA 300.0	
BL-SW-JC09-050614 (A4E0201-07)			Matrix: Water					
Batch: 4050333								
Sulfate	114	5.00	5.00	mg/L	5	05/13/14 14:12	EPA 300.0	
BL-SW-JC08-050614 (A4E0201-10)			Matrix: Water					
Batch: 4050333								
Sulfate	7.03	1.00	1.00	mg/L	1	05/12/14 20:59	EPA 300.0	
BL-SW-JC08-050614DUP (A4E0201-11)			Matrix: Water					
Batch: 4050333								
Sulfate	7.03	1.00	1.00	mg/L	1	05/12/14 21:20	EPA 300.0	
BL-RS-050614 (A4E0201-21)			Matrix: Water					
Batch: 4050290								
Chloride	ND	1.00	1.00	mg/L	1	05/09/14 19:05	EPA 300.0	
Nitrate-Nitrogen	ND	0.250	0.250	"	"	"	"	H-06
Nitrite-Nitrogen	ND	0.250	0.250	"	"	"	"	H-06
Batch: 4050333								
Sulfate	14200	500	500	"	500	05/13/14 14:55	"	
Batch: 4050404								
Fluoride	ND	1.00	1.00	"	1	05/14/14 16:54	"	
BL-DW-462-050714 (A4E0201-23)			Matrix: Water					
Batch: 4050333								
Sulfate	61.3	5.00	5.00	mg/L	5	05/13/14 15:17	EPA 300.0	
BL-DW-12620-050714 (A4E0201-24)			Matrix: Water					
Batch: 4050333								
Sulfate	23.1	1.00	1.00	mg/L	1	05/12/14 22:25	EPA 300.0	
BL-DW-12620irrig-050714 (A4E0201-25)			Matrix: Water					
Batch: 4050333								
Sulfate	12.4	1.00	1.00	mg/L	1	05/12/14 22:46	EPA 300.0	
BL-RST-050714 (A4E0201-28)			Matrix: Water					
Batch: 4050290								
Chloride	ND	1.00	1.00	mg/L	1	05/09/14 18:44	EPA 300.0	
Nitrate-Nitrogen	ND	0.250	0.250	"	"	"	"	H-06
Nitrite-Nitrogen	ND	0.250	0.250	"	"	"	"	H-06

Apex Laboratories

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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

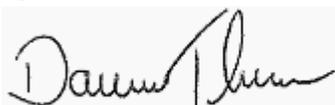
Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Anions by EPA 300.0/9056A (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-RST-050714 (A4E0201-28)			Matrix: Water					
Batch: 4050333								
Sulfate	7610	200	200	mg/L	200	05/13/14 15:38	EPA 300.0	
Batch: 4050404								
Fluoride	ND	1.00	1.00	"	1	05/14/14 18:18	"	
BL-SW-JC01-050714 (A4E0201-30)			Matrix: Water					
Batch: 4050333								
Sulfate	8.93	1.00	1.00	mg/L	1	05/12/14 23:29	EPA 300.0	
BL-SW-EC04-050714 (A4E0201-32)			Matrix: Water					
Batch: 4050333								
Sulfate	4.48	1.00	1.00	mg/L	1	05/12/14 23:51	EPA 300.0	
BL-SW-EC06-050714 (A4E0201-34)			Matrix: Water					
Batch: 4050333								
Sulfate	4.11	1.00	1.00	mg/L	1	05/13/14 00:12	EPA 300.0	
BL-DW-541-050714 (A4E0201-35)			Matrix: Water					
Batch: 4050333								
Sulfate	37.2	1.00	1.00	mg/L	1	05/13/14 01:17	EPA 300.0	
BL-DW-17607-050614 (A4E0201-36)			Matrix: Water					
Batch: 4050333								
Sulfate	22.7	1.00	1.00	mg/L	1	05/13/14 02:44	EPA 300.0	
BL-DW-17607-050614DUP (A4E0201-37)			Matrix: Water					
Batch: 4050333								
Sulfate	22.8	1.00	1.00	mg/L	1	05/13/14 03:05	EPA 300.0	

Apex Laboratories



Darwin Thomas, Business Development Director

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Cyanide - Total (Aqueous)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-RS-050614 (A4E0201-21)			Matrix: Water		Batch: 4050386			
Cyanide, Total	ND	0.0100	0.0100	mg/L	1	05/14/14 11:00	EPA 335.4	R-04
BL-RST-050714 (A4E0201-28)			Matrix: Water		Batch: 4050386			
Cyanide, Total	ND	0.0100	0.0100	mg/L	1	05/14/14 11:02	EPA 335.4	R-04

Apex Laboratories



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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Dissolved Hardness (Calculated) by EPA 6020

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
BL-SW-JC10-050614 (A4E0201-05)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	27.0	---	0.250	mg CaCO3/L	1	05/15/14 15:58	6020 Calc	
BL-SW-JC09-050614 (A4E0201-07)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	66.9	---	0.250	mg CaCO3/L	1	05/15/14 16:07	6020 Calc	
BL-SW-JC08-050614 (A4E0201-10)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	25.3	---	0.250	mg CaCO3/L	1	05/15/14 16:09	6020 Calc	
BL-SW-JC08-050614DUP (A4E0201-11)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	25.2	---	0.250	mg CaCO3/L	1	05/15/14 16:21	6020 Calc	
BL-RS-050614 (A4E0201-21)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	2570	---	25.0	mg CaCO3/L	100	05/15/14 18:00	6020 Calc	
BL-DW-462-050714 (A4E0201-23)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	216	---	1.25	mg CaCO3/L	5	05/15/14 17:37	6020 Calc	
BL-DW-12620-050714 (A4E0201-24)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	292	---	1.25	mg CaCO3/L	5	05/15/14 17:40	6020 Calc	
BL-DW-12620irrig-050714 (A4E0201-25)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	220	---	1.25	mg CaCO3/L	5	05/15/14 17:43	6020 Calc	
BL-RST-050714 (A4E0201-28)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	3800	---	25.0	mg CaCO3/L	100	05/15/14 18:03	6020 Calc	
BL-SW-JC01-050714 (A4E0201-30)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	50.7	---	0.250	mg CaCO3/L	1	05/15/14 17:16	6020 Calc	
BL-SW-EC04-050714 (A4E0201-32)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	47.6	---	0.250	mg CaCO3/L	1	05/15/14 17:04	6020 Calc	
BL-SW-EC06-050714 (A4E0201-34)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	45.5	---	0.250	mg CaCO3/L	1	05/15/14 17:07	6020 Calc	
BL-DW-541-050714 (A4E0201-35)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	252	---	1.25	mg CaCO3/L	5	05/15/14 17:51	6020 Calc	
BL-DW-17607-050614 (A4E0201-36)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	264	---	1.25	mg CaCO3/L	5	05/15/14 17:54	6020 Calc	
BL-DW-17607-050614DUP (A4E0201-37)			Matrix: Water		Batch: [CALC]			
Hardness - Dissolved	263	---	1.25	mg CaCO3/L	5	05/15/14 17:57	6020 Calc	

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Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

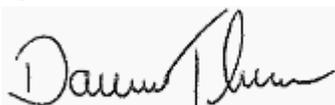
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06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-Basin2COMP-050614 (A4E0201-03) Matrix: Soil								
Batch: 4050340								
Arsenic	32.1	0.397	1.59	mg/kg dry	10	05/13/14 18:08	EPA 6020A	
Barium	295	0.794	1.59	"	"	"	"	
Cadmium	2.06	0.159	0.318	"	"	"	"	
Chromium	20.3	0.794	1.59	"	"	"	"	
Copper	1100	0.794	1.59	"	"	"	"	
Iron	47200	39.7	79.4	"	"	"	"	
Lead	143	0.159	0.318	"	"	"	"	
Mercury	0.770	0.0635	0.127	"	"	"	"	
Selenium	1.08	0.794	1.59	"	"	"	"	J
Silver	4.42	0.159	0.318	"	"	"	"	
Zinc	579	3.18	6.35	"	"	"	"	
BL-Basin3-050614 (A4E0201-04) Matrix: Soil								
Batch: 4050340								
Arsenic	6.20	0.341	1.36	mg/kg dry	10	05/13/14 18:11	EPA 6020A	
Barium	127	0.682	1.36	"	"	"	"	
Cadmium	1.92	0.136	0.273	"	"	"	"	
Chromium	17.8	0.682	1.36	"	"	"	"	
Copper	490	0.682	1.36	"	"	"	"	
Iron	14000	34.1	68.2	"	"	"	"	
Lead	19.8	0.136	0.273	"	"	"	"	
Mercury	0.0760	0.0545	0.109	"	"	"	"	J
Selenium	ND	0.682	1.36	"	"	"	"	
Silver	0.654	0.136	0.273	"	"	"	"	
Zinc	313	2.73	5.45	"	"	"	"	
BL-CS-JC10-050614 (A4E0201-06) Matrix: Soil								
Batch: 4050340								
Arsenic	1.14	0.640	2.56	mg/kg dry	10	05/13/14 18:14	EPA 6020A	J
Cadmium	0.128	0.128	0.256	"	"	"	"	J
Copper	43.8	0.640	1.28	"	"	"	"	
Iron	11900	32.0	64.0	"	"	"	"	
Lead	2.06	0.128	0.256	"	"	"	"	
Zinc	27.7	2.56	5.12	"	"	"	"	
BL-CS-JC09-050614 (A4E0201-08) Matrix: Soil								
Batch: 4050340								

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Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-JC09-050614 (A4E0201-08) Matrix: Soil								
Arsenic	50.8	1.01	4.05	mg/kg dry	10	05/13/14 18:17	EPA 6020A	
Cadmium	1.14	0.203	0.405	"	"	"	"	
Copper	973	1.01	2.03	"	"	"	"	
Iron	73900	50.7	101	"	"	"	"	
Lead	240	0.203	0.405	"	"	"	"	
Zinc	265	4.05	8.11	"	"	"	"	
BL-CS-JC09-050614DUP (A4E0201-09) Matrix: Soil								
Batch: 4050340								
Arsenic	61.7	0.892	3.57	mg/kg dry	10	05/13/14 18:26	EPA 6020A	
Cadmium	1.48	0.178	0.357	"	"	"	"	
Copper	1030	0.892	1.78	"	"	"	"	
Iron	83000	44.6	89.2	"	"	"	"	
Lead	256	0.178	0.357	"	"	"	"	
Zinc	326	3.57	7.14	"	"	"	"	
BL-CS-JC08-050614 (A4E0201-12) Matrix: Soil								
Batch: 4050340								
Arsenic	31.9	0.894	3.57	mg/kg dry	10	05/13/14 18:29	EPA 6020A	
Cadmium	4.84	0.179	0.357	"	"	"	"	
Copper	1790	4.47	8.94	"	50	05/14/14 14:56	"	
Iron	48200	44.7	89.4	"	10	05/13/14 18:29	"	
Lead	121	0.179	0.357	"	"	"	"	
Zinc	891	3.57	7.15	"	"	"	"	
BL-Basin1COMP-050614 (A4E0201-19) Matrix: Soil								
Batch: 4050340								
Arsenic	56.6	0.360	1.44	mg/kg dry	10	05/13/14 18:31	EPA 6020A	
Barium	171	0.720	1.44	"	"	"	"	
Cadmium	0.965	0.144	0.288	"	"	"	"	
Chromium	23.7	0.720	1.44	"	"	"	"	
Copper	654	0.720	1.44	"	"	"	"	
Iron	141000	360	720	"	100	06/11/14 10:55	"	
Lead	216	0.144	0.288	"	10	05/13/14 18:31	"	
Mercury	0.647	0.0576	0.115	"	"	"	"	
Selenium	2.32	0.720	1.44	"	"	"	"	
Silver	4.92	0.144	0.288	"	"	"	"	
Zinc	276	2.88	5.76	"	"	"	"	

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 Project Manager: Annica Nord

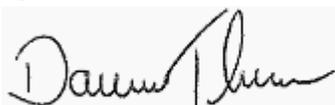
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-NS-050614 (A4E0201-20)		Matrix: Soil						
Batch: 4050340								
Antimony	ND	0.558	1.12	mg/kg dry	10	05/13/14 18:34	EPA 6020A	
Arsenic	8.02	0.279	1.12	"	"	"	"	
Barium	103	0.558	1.12	"	"	"	"	
Beryllium	0.301	0.112	0.223	"	"	"	"	
Cadmium	0.390	0.112	0.223	"	"	"	"	
Chromium	35.6	0.558	1.12	"	"	"	"	
Cobalt	17.9	0.112	0.223	"	"	"	"	
Copper	82.2	0.558	1.12	"	"	"	"	
Iron	33400	27.9	55.8	"	"	"	"	
Lead	6.84	0.112	0.223	"	"	"	"	
Mercury	0.0541	0.0446	0.0892	"	"	"	"	J
Molybdenum	0.914	0.558	1.12	"	"	"	"	J
Nickel	38.0	0.558	1.12	"	"	"	"	
Selenium	ND	0.558	1.12	"	"	"	"	
Silver	0.212	0.112	0.223	"	"	"	"	J
Thallium	ND	0.112	0.223	"	"	"	"	
Vanadium	47.1	0.558	1.12	"	"	"	"	
Zinc	98.5	2.23	4.46	"	"	"	"	

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 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
BL-RS-050614 (A4E0201-21)			Matrix: Water					
Batch: 4050394								
Aluminum	ND	2500	5000	ug/L	100	05/16/14 11:12	EPA 6020A	R-04
Antimony	ND	50.0	100	"	"	"	"	R-04, U
Arsenic	ND	25.0	100	"	"	"	"	R-04
Barium	ND	50.0	100	"	"	"	"	R-04, U
Beryllium	27.8	10.0	20.0	"	"	"	"	
Cadmium	413	4.00	20.0	"	"	"	"	
Chromium	ND	50.0	100	"	"	"	"	R-04, U
Copper	307	50.0	200	"	"	"	"	
Iron	4590000	2500	5000	"	"	"	"	
Lead	ND	10.0	20.0	"	"	"	"	R-04
Manganese	250000	250	500	"	500	05/16/14 13:52	"	
Mercury	ND	4.00	16.0	"	100	05/16/14 11:12	"	R-04, U
Nickel	2050	50.0	100	"	"	"	"	
Selenium	ND	50.0	100	"	"	"	"	R-04, U
Silver	ND	10.0	20.0	"	"	"	"	R-04, U
Thallium	ND	10.0	20.0	"	"	"	"	R-04, U
Zinc	131000	1000	2000	"	500	05/16/14 13:52	"	
BL-LS-050614 (A4E0201-22)			Matrix: Soil					
Batch: 4050340								
Antimony	ND	0.570	1.14	mg/kg dry	10	05/13/14 18:37	EPA 6020A	
Arsenic	6.64	0.285	1.14	"	"	"	"	
Barium	107	0.570	1.14	"	"	"	"	
Beryllium	ND	0.114	0.228	"	"	"	"	
Cadmium	0.354	0.114	0.228	"	"	"	"	
Chromium	21.0	0.570	1.14	"	"	"	"	
Cobalt	6.51	0.114	0.228	"	"	"	"	
Copper	34.8	0.570	1.14	"	"	"	"	
Iron	8930	28.5	57.0	"	"	"	"	
Lead	1.80	0.114	0.228	"	"	"	"	
Mercury	ND	0.0456	0.0912	"	"	"	"	
Molybdenum	1.17	0.570	1.14	"	"	"	"	
Nickel	35.3	0.570	1.14	"	"	"	"	
Selenium	ND	0.570	1.14	"	"	"	"	
Silver	ND	0.114	0.228	"	"	"	"	
Thallium	ND	0.114	0.228	"	"	"	"	

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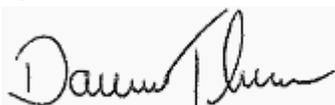
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
BL-LS-050614 (A4E0201-22)			Matrix: Soil					
Vanadium	21.5	0.570	1.14	mg/kg dry	10	"	EPA 6020A	
Zinc	22.7	2.28	4.56	"	"	"	"	
BL-NSL-050714 (A4E0201-26)			Matrix: Soil					
Batch: 4050340								
Antimony	ND	0.640	1.28	mg/kg dry	10	05/13/14 18:40	EPA 6020A	
Arsenic	7.89	0.320	1.28	"	"	"	"	
Barium	98.8	0.640	1.28	"	"	"	"	
Beryllium	0.320	0.128	0.256	"	"	"	"	
Cadmium	0.410	0.128	0.256	"	"	"	"	
Chromium	34.5	0.640	1.28	"	"	"	"	
Cobalt	16.8	0.128	0.256	"	"	"	"	
Copper	72.4	0.640	1.28	"	"	"	"	
Iron	32400	32.0	64.0	"	"	"	"	
Lead	6.44	0.128	0.256	"	"	"	"	
Mercury	ND	0.0512	0.102	"	"	"	"	
Molybdenum	ND	0.640	1.28	"	"	"	"	
Nickel	35.1	0.640	1.28	"	"	"	"	
Selenium	ND	0.640	1.28	"	"	"	"	
Silver	0.269	0.128	0.256	"	"	"	"	
Thallium	ND	0.128	0.256	"	"	"	"	
Vanadium	47.1	0.640	1.28	"	"	"	"	
Zinc	106	2.56	5.12	"	"	"	"	

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-LSL-050714 (A4E0201-27)		Matrix: Soil						
Batch: 4050340								
Antimony	ND	0.578	1.16	mg/kg dry	10	05/13/14 18:43	EPA 6020A	
Arsenic	6.92	0.289	1.16	"	"	"	"	
Barium	137	0.578	1.16	"	"	"	"	
Beryllium	ND	0.116	0.231	"	"	"	"	
Cadmium	0.474	0.116	0.231	"	"	"	"	
Chromium	29.9	0.578	1.16	"	"	"	"	
Cobalt	7.65	0.116	0.231	"	"	"	"	
Copper	51.6	0.578	1.16	"	"	"	"	
Iron	11600	28.9	57.8	"	"	"	"	
Lead	1.26	0.116	0.231	"	"	"	"	
Mercury	ND	0.0462	0.0924	"	"	"	"	
Molybdenum	1.52	0.578	1.16	"	"	"	"	
Nickel	42.1	0.578	1.16	"	"	"	"	
Selenium	0.658	0.578	1.16	"	"	"	"	J
Silver	ND	0.116	0.231	"	"	"	"	
Thallium	ND	0.116	0.231	"	"	"	"	
Vanadium	27.7	0.578	1.16	"	"	"	"	
Zinc	62.7	2.31	4.62	"	"	"	"	

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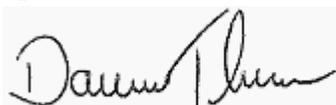
ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-RST-050714 (A4E0201-28) Matrix: Water								
Batch: 4050394								
Aluminum	4870	2500	5000	ug/L	100	05/16/14 11:21	EPA 6020A	R-04, J
Antimony	ND	50.0	100	"	"	"	"	R-04, U
Arsenic	ND	25.0	100	"	"	"	"	R-04
Barium	291	50.0	100	"	"	"	"	
Beryllium	67.8	10.0	20.0	"	"	"	"	
Cadmium	51.1	4.00	20.0	"	"	"	"	
Chromium	ND	50.0	100	"	"	"	"	R-04, U
Copper	ND	50.0	200	"	"	"	"	R-04
Iron	1500000	2500	5000	"	"	"	"	
Lead	ND	10.0	20.0	"	"	"	"	R-04
Manganese	300000	250	500	"	500	05/16/14 13:55	"	
Mercury	ND	4.00	16.0	"	100	05/16/14 11:21	"	R-04, U
Nickel	1510	50.0	100	"	"	"	"	
Selenium	ND	50.0	100	"	"	"	"	R-04, U
Silver	ND	10.0	20.0	"	"	"	"	R-04, U
Thallium	ND	10.0	20.0	"	"	"	"	R-04, U
Zinc	53900	200	400	"	"	"	"	
BL-CS-JC01-050714 (A4E0201-29) Matrix: Soil								
Batch: 4050340								
Arsenic	3.57	0.585	2.34	mg/kg dry	10	05/13/14 18:46	EPA 6020A	
Cadmium	2.16	0.117	0.234	"	"	"	"	
Copper	578	0.585	1.17	"	"	"	"	
Iron	16100	29.3	58.5	"	"	"	"	Q-42
Lead	10.3	0.117	0.234	"	"	"	"	
Zinc	593	2.34	4.68	"	"	"	"	
BL-CS-EC04-050714 (A4E0201-31) Matrix: Soil								
Batch: 4050340								
Arsenic	5.20	0.580	2.32	mg/kg dry	10	05/13/14 19:01	EPA 6020A	
Cadmium	0.394	0.116	0.232	"	"	"	"	
Copper	62.1	0.580	1.16	"	"	"	"	
Iron	17000	29.0	58.0	"	"	"	"	
Lead	4.49	0.116	0.232	"	"	"	"	
Zinc	64.2	2.32	4.64	"	"	"	"	
BL-CS-EC06-050714 (A4E0201-33) Matrix: Soil								

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-EC06-050714 (A4E0201-33)			Matrix: Soil					
Batch: 4050340								
Arsenic	3.09	0.672	2.69	mg/kg dry	10	05/13/14 19:04	EPA 6020A	
Cadmium	0.175	0.134	0.269	"	"	"	"	J
Copper	34.5	0.672	1.34	"	"	"	"	
Iron	12600	33.6	67.2	"	"	"	"	
Lead	3.90	0.134	0.269	"	"	"	"	
Zinc	34.7	2.69	5.38	"	"	"	"	

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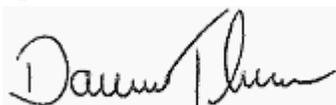
ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-JC10-050614 (A4E0201-05) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 15:58	EPA 6020A (Diss)	FILT1
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	8580	50.0	100	"	"	"	"	FILT1
Copper	0.789	0.500	1.00	"	"	"	"	FILT1, J
Iron	29.6	25.0	50.0	"	"	"	"	FILT1, J
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	1360	25.0	50.0	"	"	"	"	FILT1
Zinc	ND	2.00	4.00	"	"	"	"	FILT1, U
BL-SW-JC09-050614 (A4E0201-07) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 16:07	EPA 6020A (Diss)	FILT1
Cadmium	28.5	0.0400	0.200	"	"	"	"	FILT1
Calcium	22800	50.0	100	"	"	"	"	FILT1
Copper	3150	2.50	5.00	"	5	05/15/14 17:34	"	FILT1
Iron	237	25.0	50.0	"	1	05/15/14 16:07	"	FILT1
Lead	1.47	0.100	0.200	"	"	"	"	B, FILT1
Magnesium	2440	25.0	50.0	"	"	"	"	FILT1
Zinc	4900	10.0	20.0	"	5	05/15/14 17:34	"	FILT1
BL-SW-JC08-050614 (A4E0201-10) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 16:09	EPA 6020A (Diss)	FILT1
Cadmium	0.611	0.0400	0.200	"	"	"	"	FILT1
Calcium	8180	50.0	100	"	"	"	"	FILT1
Copper	52.3	0.500	1.00	"	"	"	"	FILT1
Iron	29.2	25.0	50.0	"	"	"	"	FILT1, J
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	1190	25.0	50.0	"	"	"	"	FILT1
Zinc	102	2.00	4.00	"	"	"	"	FILT1
BL-SW-JC08-050614DUP (A4E0201-11) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 16:21	EPA 6020A (Diss)	FILT1
Cadmium	0.567	0.0400	0.200	"	"	"	"	FILT1
Calcium	8100	50.0	100	"	"	"	"	FILT1
Copper	54.9	0.500	1.00	"	"	"	"	FILT1

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Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

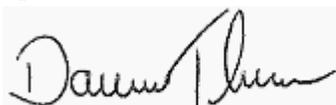
ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-JC08-050614DUP (A4E0201-11) Matrix: Water								
Iron	30.8	25.0	50.0	ug/L	1	"	EPA 6020A (Diss)	FILT1, J
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	1200	25.0	50.0	"	"	"	"	FILT1
Zinc	105	2.00	4.00	"	"	"	"	FILT1
BL-RS-050614 (A4E0201-21) Matrix: Water								
Batch: 4050418								
Arsenic	ND	25.0	50.0	ug/L	100	05/15/14 18:00	EPA 6020A (Diss)	R-04, FILT1
Cadmium	18.9	4.00	20.0	"	"	"	"	FILT1, R-04, J
Calcium	407000	5000	10000	"	"	"	"	FILT1
Copper	110	50.0	100	"	"	"	"	FILT1
Iron	4710000	2500	5000	"	"	"	"	FILT1
Lead	11.1	10.0	20.0	"	"	"	"	B, FILT1, R-04, J
Magnesium	379000	2500	5000	"	"	"	"	FILT1
Zinc	134000	1000	2000	"	500	05/15/14 18:07	"	FILT1
BL-DW-462-050714 (A4E0201-23) Matrix: Water								
Batch: 4050418								
Arsenic	1.73	0.250	0.500	ug/L	1	05/15/14 16:39	EPA 6020A (Diss)	B-02, FILT1
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	70600	250	500	"	5	05/15/14 17:37	"	FILT1
Copper	9.72	0.500	1.00	"	1	05/15/14 16:39	"	FILT1
Iron	257	25.0	50.0	"	"	"	"	FILT1
Lead	0.122	0.100	0.200	"	"	"	"	B, FILT1, J
Magnesium	9790	25.0	50.0	"	"	"	"	FILT1
Zinc	56.4	2.00	4.00	"	"	"	"	FILT1
BL-DW-12620-050714 (A4E0201-24) Matrix: Water								
Batch: 4050418								
Arsenic	2.88	0.250	0.500	ug/L	1	05/15/14 16:42	EPA 6020A (Diss)	B-02, FILT1
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	97300	250	500	"	5	05/15/14 17:40	"	FILT1
Copper	0.600	0.500	1.00	"	1	05/15/14 16:42	"	FILT1, J
Iron	340	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U

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ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-DW-12620-050714 (A4E0201-24) Matrix: Water								
Magnesium	12000	25.0	50.0	ug/L	1	"	EPA 6020A (Diss)	FILT1
Zinc	22.4	2.00	4.00	"	"	"	"	FILT1
BL-DW-12620irrig-050714 (A4E0201-25) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 16:45	EPA 6020A (Diss)	FILT1
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	65400	250	500	"	5	05/15/14 17:43	"	FILT1
Copper	2.39	0.500	1.00	"	1	05/15/14 16:45	"	FILT1
Iron	246	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	13700	25.0	50.0	"	"	"	"	FILT1
Zinc	35.2	2.00	4.00	"	"	"	"	FILT1
BL-RST-050714 (A4E0201-28) Matrix: Water								
Batch: 4050418								
Arsenic	ND	25.0	50.0	ug/L	100	05/15/14 18:03	EPA 6020A (Diss)	FILT1, R-04
Cadmium	26.7	4.00	20.0	"	"	"	"	FILT1
Calcium	1030000	5000	10000	"	"	"	"	FILT1
Copper	ND	50.0	100	"	"	"	"	FILT1, R-04, U
Iron	1570000	2500	5000	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	1	05/15/14 16:48	"	FILT1, U
Magnesium	298000	2500	5000	"	100	05/15/14 18:03	"	FILT1
Zinc	50900	200	400	"	"	"	"	FILT1
BL-SW-JC01-050714 (A4E0201-30) Matrix: Water								
Batch: 4050418								
Arsenic	ND	0.250	0.500	ug/L	1	05/15/14 17:16	EPA 6020A (Diss)	FILT1
Cadmium	0.378	0.0400	0.200	"	"	"	"	FILT1
Calcium	15400	50.0	100	"	"	"	"	FILT1
Copper	16.2	0.500	1.00	"	"	"	"	FILT1
Iron	81.8	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	2940	25.0	50.0	"	"	"	"	FILT1
Zinc	50.7	2.00	4.00	"	"	"	"	FILT1
BL-SW-EC04-050714 (A4E0201-32) Matrix: Water								

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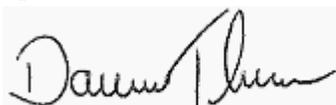
ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-EC04-050714 (A4E0201-32) Matrix: Water								
Batch: 4050418								
Arsenic	0.311	0.250	0.500	ug/L	1	05/15/14 17:04	EPA 6020A (Diss)	FILT1, J
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	12300	50.0	100	"	"	"	"	FILT1
Copper	1.72	0.500	1.00	"	"	"	"	FILT1
Iron	80.0	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	4110	25.0	50.0	"	"	"	"	FILT1
Zinc	4.70	2.00	4.00	"	"	"	"	FILT1
BL-SW-EC06-050714 (A4E0201-34) Matrix: Water								
Batch: 4050418								
Arsenic	0.344	0.250	0.500	ug/L	1	05/15/14 17:07	EPA 6020A (Diss)	FILT1, J
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	11600	50.0	100	"	"	"	"	FILT1
Copper	0.578	0.500	1.00	"	"	"	"	FILT1, J
Iron	79.2	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	4010	25.0	50.0	"	"	"	"	FILT1
Zinc	ND	2.00	4.00	"	"	"	"	FILT1, U
BL-DW-541-050714 (A4E0201-35) Matrix: Water								
Batch: 4050418								
Arsenic	4.12	0.250	0.500	ug/L	1	05/15/14 17:19	EPA 6020A (Diss)	B-02, FILT1
Cadmium	0.633	0.0400	0.200	"	"	"	"	FILT1
Calcium	79400	250	500	"	5	05/15/14 17:51	"	FILT1
Copper	6.23	0.500	1.00	"	1	05/15/14 17:19	"	FILT1
Iron	292	25.0	50.0	"	"	"	"	FILT1
Lead	3.01	0.100	0.200	"	"	"	"	FILT1, B
Magnesium	13000	25.0	50.0	"	"	"	"	FILT1
Zinc	1300	10.0	20.0	"	5	05/15/14 17:51	"	FILT1
BL-DW-17607-050614 (A4E0201-36) Matrix: Water								
Batch: 4050418								
Arsenic	0.256	0.250	0.500	ug/L	1	05/15/14 17:28	EPA 6020A (Diss)	FILT1, J
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	68300	250	500	"	5	05/15/14 17:54	"	FILT1
Copper	0.744	0.500	1.00	"	1	05/15/14 17:28	"	FILT1, J

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 Project Manager: Annica Nord

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ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-DW-17607-050614 (A4E0201-36)		Matrix: Water						
Iron	244	25.0	50.0	ug/L	1	"	EPA 6020A (Diss)	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	22700	25.0	50.0	"	"	"	"	FILT1
Zinc	3.00	2.00	4.00	"	"	"	"	FILT1, J
BL-DW-17607-050614DUP (A4E0201-37)		Matrix: Water						
Batch: 4050418								
Arsenic	0.278	0.250	0.500	ug/L	1	05/15/14 17:31	EPA 6020A (Diss)	FILT1, J
Cadmium	ND	0.0400	0.200	"	"	"	"	FILT1
Calcium	66600	250	500	"	5	05/15/14 17:57	"	FILT1
Copper	0.711	0.500	1.00	"	1	05/15/14 17:31	"	FILT1, J
Iron	249	25.0	50.0	"	"	"	"	FILT1
Lead	ND	0.100	0.200	"	"	"	"	FILT1, U
Magnesium	23600	25.0	50.0	"	"	"	"	FILT1
Zinc	3.03	2.00	4.00	"	"	"	"	FILT1, J

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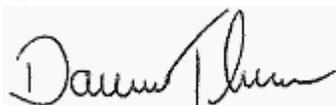
ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-Basin2COMP-050614 (A4E0201-03)			Matrix: Soil					
Batch: 4050390								
Soil pH (measured in H2O)	5.45			pH Units	1	05/14/14 11:03	EPA 9045D	
pH Temperature (deg C)	23.9			"	"	"	"	
BL-Basin3-050614 (A4E0201-04)			Matrix: Soil					
Batch: 4050390								
Soil pH (measured in H2O)	8.09			pH Units	1	05/14/14 11:07	EPA 9045D	
pH Temperature (deg C)	23.9			"	"	"	"	
BL-SW-JC10-050614 (A4E0201-05)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	13.0	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	36.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-SW-JC09-050614 (A4E0201-07)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	162	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-SW-JC08-050614 (A4E0201-10)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	43.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-SW-JC08-050614DUP (A4E0201-11)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	46.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-Basin1COMP-050614 (A4E0201-19)			Matrix: Soil					
Batch: 4050390								
Soil pH (measured in H2O)	3.56			pH Units	1	05/14/14 11:08	EPA 9045D	
pH Temperature (deg C)	23.8			"	"	"	"	
BL-NS-050614 (A4E0201-20)			Matrix: Soil					
Batch: 4050369								
Total Alkalinity	40.0	19.6	19.6	mg CaCO3/kg	1	05/13/14 14:30	SM 2320 B	
Bicarbonate Alkalinity	40.0	19.6	19.6	"	"	"	"	

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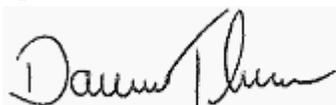
ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
BL-NS-050614 (A4E0201-20)			Matrix: Soil					
Carbonate Alkalinity	ND	19.6	19.6	mg CaCO3/kg	1	"	SM 2320 B	
Hydroxide Alkalinity	ND	19.6	19.6	"	"	"	"	
Batch: 4050390								
Soil pH (measured in H2O)	6.23			pH Units	"	05/14/14 11:09	EPA 9045D	
pH Temperature (deg C)	23.7			"	"	"	"	
BL-RS-050614 (A4E0201-21)			Matrix: Water					
Batch: 4050250								
pH	5.60			pH Units	1	05/08/14 15:21	EPA 150.1	H-06
pH Temperature (deg C)	18.4			"	"	"	"	H-06
Batch: 4050299								
Turbidity	460	0.10	0.10	NTU	"	05/09/14 15:33	EPA 180.1	H-06
Batch: 4050321								
Total Suspended Solids	236	20.0	20.0	mg/L	"	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	20300	100	100	"	"	05/14/14 13:46	SM 2540 C	
Batch: 4050453								
Conductivity	7410	2.50	2.50	umhos/cm	"	05/15/14 13:44	SM 2510 B	B
BL-LS-050614 (A4E0201-22)			Matrix: Soil					
Batch: 4050369								
Total Alkalinity	560	20.0	20.0	mg CaCO3/kg	1	05/13/14 14:30	SM 2320 B	
Bicarbonate Alkalinity	316	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	244	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
Batch: 4050390								
Soil pH (measured in H2O)	8.93			pH Units	"	05/14/14 11:11	EPA 9045D	
pH Temperature (deg C)	23.6			"	"	"	"	
BL-DW-462-050714 (A4E0201-23)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	5.00	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	291	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-DW-12620-050714 (A4E0201-24)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	330	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	

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ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-DW-12620irrig-050714 (A4E0201-25) Matrix: Water								
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	235	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-NSL-050714 (A4E0201-26) Matrix: Soil								
Batch: 4050369								
Total Alkalinity	1170	18.8	18.8	mg CaCO3/kg	1	05/13/14 14:30	SM 2320 B	
Bicarbonate Alkalinity	1150	18.8	18.8	"	"	"	"	
Carbonate Alkalinity	18.8	18.8	18.8	"	"	"	"	
Hydroxide Alkalinity	ND	18.8	18.8	"	"	"	"	
Batch: 4050390								
Soil pH (measured in H2O)	5.26			pH Units	"	05/14/14 11:13	EPA 9045D	
pH Temperature (deg C)	23.4			"	"	"	"	
BL-LSL-050714 (A4E0201-27) Matrix: Soil								
Batch: 4050369								
Total Alkalinity	28.3	18.5	18.5	mg CaCO3/kg	1	05/13/14 14:30	SM 2320 B	
Bicarbonate Alkalinity	28.3	18.5	18.5	"	"	"	"	
Carbonate Alkalinity	ND	18.5	18.5	"	"	"	"	
Hydroxide Alkalinity	ND	18.5	18.5	"	"	"	"	
Batch: 4050390								
Soil pH (measured in H2O)	7.61			pH Units	"	05/14/14 11:15	EPA 9045D	
pH Temperature (deg C)	22.9			"	"	"	"	
BL-RST-050714 (A4E0201-28) Matrix: Water								
Batch: 4050250								
pH	4.94			pH Units	1	05/08/14 15:22	EPA 150.1	H-06
pH Temperature (deg C)	19.2			"	"	"	"	H-06
Batch: 4050257								
Turbidity	1500	0.10	0.10	NTU	"	05/08/14 18:08	EPA 180.1	
Batch: 4050321								
Total Suspended Solids	790	25.0	25.0	mg/L	"	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	11100	50.0	50.0	"	"	05/14/14 13:46	SM 2540 C	
Batch: 4050453								
Conductivity	5300	2.50	2.50	umhos/cm	"	05/15/14 13:44	SM 2510 B	B
BL-SW-JC01-050714 (A4E0201-30) Matrix: Water								

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Project Manager: Annica Nord

Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-JC01-050714 (A4E0201-30)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	63.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-SW-EC04-050714 (A4E0201-32)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	64.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-SW-EC06-050714 (A4E0201-34)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	59.0	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-DW-541-050714 (A4E0201-35)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	284	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-DW-17607-050614 (A4E0201-36)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	263	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	
BL-DW-17607-050614DUP (A4E0201-37)			Matrix: Water					
Batch: 4050321								
Total Suspended Solids	ND	5.00	5.00	mg/L	1	05/13/14 10:23	SM 2540 D	
Batch: 4050322								
Total Dissolved Solids	279	10.0	10.0	"	"	05/14/14 13:46	SM 2540 C	

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

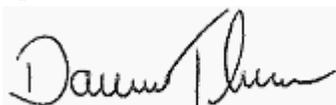
ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-JC10-050614 (A4E0201-06)			Matrix: Soil		Batch: 4050621			
Percent Retained 4.75 mm sieve (#4)	5.05			% of Total	1	05/14/14 11:26	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	12.5			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	24.1			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	17.5			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	7.61			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	6.97			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	5.54			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	5.62			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	2.69			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	10.8			"	"	"	"	GS-01
Clay (< 0.005 mm)	1.60			"	"	"	"	GS-01
BL-CS-JC09-050614 (A4E0201-08)			Matrix: Soil		Batch: 4050621			
Percent Retained 4.75 mm sieve (#4)	4.61			% of Total	1	05/14/14 11:43	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	3.81			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	6.64			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	8.12			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	5.08			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	5.43			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	5.30			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	7.08			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	5.10			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	45.7			"	"	"	"	GS-01
Clay (< 0.005 mm)	3.20			"	"	"	"	GS-01

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 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-JC09-050614DUP (A4E0201-09)			Matrix: Soil	Batch: 4050621				
Percent Retained 4.75 mm sieve (#4)	4.88			% of Total	1	05/14/14 12:03	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	5.52			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	9.97			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	7.95			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	4.38			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	4.73			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	4.92			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	6.63			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	4.72			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	42.9			"	"	"	"	GS-01
Clay (< 0.005 mm)	3.30			"	"	"	"	GS-01
BL-CS-JC08-050614 (A4E0201-12)			Matrix: Soil	Batch: 4050621				
Percent Retained 4.75 mm sieve (#4)	14.9			% of Total	1	05/14/14 12:30	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	5.23			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	5.96			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	10.0			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	10.8			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	11.6			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	7.07			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	6.47			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	3.62			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	22.3			"	"	"	"	GS-01

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-JC08-050614 (A4E0201-12)			Matrix: Soil	Batch: 4050621				
Clay (< 0.005 mm)	2.00			% of Total	1	"	ASTM D 422m	GS-01
BL-CS-JC01-050714 (A4E0201-29)			Matrix: Soil	Batch: 4050621				
Percent Retained 4.75 mm sieve (#4)	17.8			% of Total	1	05/14/14 12:49	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	20.5			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	26.6			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	21.1			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	6.94			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	2.58			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	0.93			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	0.73			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	0.38			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	2.00			"	"	"	"	GS-01
Clay (< 0.005 mm)	0.40			"	"	"	"	GS-01
BL-CS-EC04-050714 (A4E0201-31)			Matrix: Soil	Batch: 4050621				
Percent Retained 4.75 mm sieve (#4)	5.44			% of Total	1	05/14/14 13:16	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	7.93			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	31.3			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	30.3			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	14.3			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	5.67			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	1.63			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	0.99			"	"	"	"	GS-01

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Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Grain Size by ASTM D 422

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-CS-EC04-050714 (A4E0201-31)			Matrix: Soil	Batch: 4050621				
Percent Retained 0.063 mm sieve (#230)	0.43			% of Total	1	"	ASTM D 422m	GS-01
Silt (> 0.005 mm < 0.063 mm)	1.50			"	"	"	"	GS-01
Clay (< 0.005 mm)	0.50			"	"	"	"	GS-01
BL-CS-EC06-050714 (A4E0201-33)			Matrix: Soil	Batch: 4050621				
Percent Retained 4.75 mm sieve (#4)	0.08			% of Total	1	05/14/14 13:38	ASTM D 422m	GS-01
Percent Retained 2.00 mm sieve (#10)	0.09			"	"	"	"	GS-01
Percent Retained 0.85 mm sieve (#20)	1.63			"	"	"	"	GS-01
Percent Retained 0.425 mm sieve (#40)	17.0			"	"	"	"	GS-01
Percent Retained 0.250 mm sieve (#60)	37.3			"	"	"	"	GS-01
Percent Retained 0.150 mm sieve (#100)	25.9			"	"	"	"	GS-01
Percent Retained 0.106 mm sieve (#140)	8.31			"	"	"	"	GS-01
Percent Retained 0.075 mm sieve (#200)	4.46			"	"	"	"	GS-01
Percent Retained 0.063 mm sieve (#230)	1.48			"	"	"	"	GS-01
Silt (> 0.005 mm < 0.063 mm)	2.70			"	"	"	"	GS-01
Clay (< 0.005 mm)	1.00			"	"	"	"	GS-01

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-SW-JC10-050614 (A4E0201-05) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:22	NA	H-06
Batch: 4050315								
Total Alkalinity	26.0	20.0	20.0	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	26.0	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
BL-SW-JC09-050614 (A4E0201-07) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:25	NA	H-06
Batch: 4050315								
Total Alkalinity	ND	20.0	20.0	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
BL-SW-JC08-050614 (A4E0201-10) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:27	NA	H-06
Batch: 4050315								
Total Alkalinity	22.6	19.7	19.7	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	22.6	19.7	19.7	"	"	"	"	
Carbonate Alkalinity	ND	19.7	19.7	"	"	"	"	
Hydroxide Alkalinity	ND	19.7	19.7	"	"	"	"	
BL-SW-JC08-050614DUP (A4E0201-11) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:29	NA	H-06
Batch: 4050315								
Total Alkalinity	23.3	19.4	19.4	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	23.3	19.4	19.4	"	"	"	"	
Carbonate Alkalinity	ND	19.4	19.4	"	"	"	"	
Hydroxide Alkalinity	ND	19.4	19.4	"	"	"	"	
BL-RS-050614 (A4E0201-21) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:31	NA	H-06
Batch: 4050315								

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Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-RS-050614 (A4E0201-21) Matrix: Water								
Total Alkalinity	114	20.0	20.0	mg CaCO3/L	1	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	114	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
BL-DW-462-050714 (A4E0201-23) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:33	NA	H-06
Batch: 4050315								
Total Alkalinity	161	20.0	20.0	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	161	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
BL-DW-12620-050714 (A4E0201-24) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:35	NA	H-06
Batch: 4050315								
Total Alkalinity	277	19.8	19.8	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	277	19.8	19.8	"	"	"	"	
Carbonate Alkalinity	ND	19.8	19.8	"	"	"	"	
Hydroxide Alkalinity	ND	19.8	19.8	"	"	"	"	
BL-DW-12620irrig-050714 (A4E0201-25) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:37	NA	H-06
Batch: 4050315								
Total Alkalinity	218	20.0	20.0	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	218	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	"	"	
BL-RST-050714 (A4E0201-28) Matrix: Water								
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:39	NA	H-06
Batch: 4050315								
Total Alkalinity	ND	20.0	20.0	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	ND	20.0	20.0	"	"	"	"	
Carbonate Alkalinity	ND	20.0	20.0	"	"	"	"	

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Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-RST-050714 (A4E0201-28)			Matrix: Water					
Hydroxide Alkalinity	ND	20.0	20.0	mg CaCO3/L	1	"	SM 2320B (Diss)	
BL-SW-JC01-050714 (A4E0201-30)			Matrix: Water					
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:41	NA	H-06
Batch: 4050315								
Total Alkalinity	46.1	17.7	17.7	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	46.1	17.7	17.7	"	"	"	"	
Carbonate Alkalinity	ND	17.7	17.7	"	"	"	"	
Hydroxide Alkalinity	ND	17.7	17.7	"	"	"	"	
BL-SW-EC04-050714 (A4E0201-32)			Matrix: Water					
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:43	NA	H-06
Batch: 4050315								
Total Alkalinity	45.4	18.2	18.2	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	45.4	18.2	18.2	"	"	"	"	
Carbonate Alkalinity	ND	18.2	18.2	"	"	"	"	
Hydroxide Alkalinity	ND	18.2	18.2	"	"	"	"	
BL-SW-EC06-050714 (A4E0201-34)			Matrix: Water					
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:45	NA	H-06
Batch: 4050315								
Total Alkalinity	44.6	19.8	19.8	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	44.6	19.8	19.8	"	"	"	"	
Carbonate Alkalinity	ND	19.8	19.8	"	"	"	"	
Hydroxide Alkalinity	ND	19.8	19.8	"	"	"	"	
BL-DW-541-050714 (A4E0201-35)			Matrix: Water					
Batch: 4050249								
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:47	NA	H-06
Batch: 4050315								
Total Alkalinity	220	19.9	19.9	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	220	19.9	19.9	"	"	"	"	
Carbonate Alkalinity	ND	19.9	19.9	"	"	"	"	
Hydroxide Alkalinity	ND	19.9	19.9	"	"	"	"	
BL-DW-17607-050614 (A4E0201-36)			Matrix: Water					
Batch: 4050249								

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-DW-17607-050614 (A4E0201-36)			Matrix: Water					
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:50	NA	H-06
Batch: 4050315								
Total Alkalinity	242	19.2	19.2	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	242	19.2	19.2	"	"	"	"	
Carbonate Alkalinity	ND	19.2	19.2	"	"	"	"	
Hydroxide Alkalinity	ND	19.2	19.2	"	"	"	"	
BL-DW-17607-050614DUP (A4E0201-37)			Matrix: Water					
Lab Filtration (prep only)	0.00			N/A	1	05/08/14 15:52	NA	H-06
Batch: 4050249								
Batch: 4050315								
Total Alkalinity	242	19.6	19.6	mg CaCO3/L	"	05/12/14 14:58	SM 2320B (Diss)	
Bicarbonate Alkalinity	242	19.6	19.6	"	"	"	"	
Carbonate Alkalinity	ND	19.6	19.6	"	"	"	"	
Hydroxide Alkalinity	ND	19.6	19.6	"	"	"	"	

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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight								
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
BL-Basin2COMP-050614 (A4E0201-03)			Matrix: Soil	Batch: 4050329				
% Solids	66.7	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-Basin3-050614 (A4E0201-04)			Matrix: Soil	Batch: 4050329				
% Solids	75.3	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-JC10-050614 (A4E0201-06)			Matrix: Soil	Batch: 4050329				
% Solids	81.6	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-JC09-050614 (A4E0201-08)			Matrix: Soil	Batch: 4050329				
% Solids	51.6	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-JC09-050614DUP (A4E0201-09)			Matrix: Soil	Batch: 4050329				
% Solids	60.4	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-JC08-050614 (A4E0201-12)			Matrix: Soil	Batch: 4050329				
% Solids	57.1	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-Basin1COMP-050614 (A4E0201-19)			Matrix: Soil	Batch: 4050329				
% Solids	68.5	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-NS-050614 (A4E0201-20)			Matrix: Soil	Batch: 4050329				
% Solids	90.4	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-LS-050614 (A4E0201-22)			Matrix: Soil	Batch: 4050329				
% Solids	95.3	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-NSL-050714 (A4E0201-26)			Matrix: Soil	Batch: 4050329				
% Solids	76.1	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-LSL-050714 (A4E0201-27)			Matrix: Soil	Batch: 4050329				
% Solids	90.0	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-JC01-050714 (A4E0201-29)			Matrix: Soil	Batch: 4050329				
% Solids	89.4	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-EC04-050714 (A4E0201-31)			Matrix: Soil	Batch: 4050329				
% Solids	87.1	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	
BL-CS-EC06-050714 (A4E0201-33)			Matrix: Soil	Batch: 4050329				
% Solids	74.1	1.00	1.00	% by Weight	1	05/13/14 08:35	EPA 8000C	

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Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

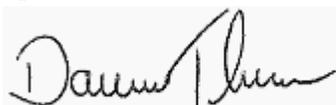
QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by EPA 300.0/9056A (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050290 - Method Prep: Aq						Water						
Blank (4050290-BLK1)						Prepared: 05/09/14 13:14 Analyzed: 05/09/14 16:22						
EPA 300.0												
Chloride	ND	1.00	1.00	mg/L	1	---	---	---	---	---	---	---
Nitrate-Nitrogen	ND	0.250	0.250	"	"	---	---	---	---	---	---	---
Nitrite-Nitrogen	ND	0.250	0.250	"	"	---	---	---	---	---	---	---
LCS (4050290-BS1)						Prepared: 05/09/14 13:14 Analyzed: 05/09/14 16:42						
EPA 300.0												
Chloride	7.28	1.00	1.00	mg/L	1	8.00	---	91	90-110%	---	---	---
Nitrate-Nitrogen	1.98	0.250	0.250	"	"	2.00	---	99	"	---	---	---
Nitrite-Nitrogen	1.88	0.250	0.250	"	"	"	---	94	"	---	---	---
Batch 4050333 - Method Prep: Aq						Water						
Blank (4050333-BLK1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 16:40						
EPA 300.0												
Sulfate	ND	1.00	1.00	mg/L	1	---	---	---	---	---	---	---
LCS (4050333-BS1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 17:02						
EPA 300.0												
Sulfate	8.37	1.00	1.00	mg/L	1	8.00	---	105	90-110%	---	---	---
Duplicate (4050333-DUP1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 18:49						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
EPA 300.0												
Sulfate	4.10	1.00	1.00	mg/L	1	---	4.08	---	---	0.4	15%	---
Duplicate (4050333-DUP2)						Prepared: 05/12/14 13:04 Analyzed: 05/13/14 01:39						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
EPA 300.0												
Sulfate	37.1	1.00	1.00	mg/L	1	---	37.2	---	---	0.4	15%	---
Matrix Spike (4050333-MS1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 19:11						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
EPA 300.0												
Sulfate	14.3	1.25	1.25	mg/L	1	10.0	4.08	102	80-120%	---	---	---

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 Project Manager: Annica Nord

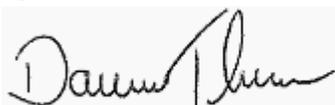
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by EPA 300.0/9056A (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050333 - Method Prep: Aq						Water						
Matrix Spike (4050333-MS1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 19:11						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
Matrix Spike (4050333-MS2)						Prepared: 05/12/14 13:04 Analyzed: 05/13/14 02:01						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
EPA 300.0												
Sulfate	47.2	1.25	1.25	mg/L	1	10.0	37.2	99	80-120%	---	---	
Matrix Spike Dup (4050333-MSD1)						Prepared: 05/12/14 13:04 Analyzed: 05/12/14 19:33						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
EPA 300.0												
Sulfate	14.5	1.25	1.25	mg/L	1	10.0	4.08	104	80-120%	2	15%	
Matrix Spike Dup (4050333-MSD2)						Prepared: 05/12/14 13:04 Analyzed: 05/13/14 02:22						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
EPA 300.0												
Sulfate	47.0	1.25	1.25	mg/L	1	10.0	37.2	98	80-120%	0.3	15%	

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 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by EPA 300.0/9056A (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050404 - Method Prep: Aq						Water						
Blank (4050404-BLK1)						Prepared: 05/14/14 11:05 Analyzed: 05/14/14 12:35						
EPA 300.0												
Fluoride	ND	1.00	1.00	mg/L	1	---	---	---	---	---	---	---
LCS (4050404-BS1)						Prepared: 05/14/14 11:05 Analyzed: 05/14/14 12:57						
EPA 300.0												
Fluoride	8.18	1.00	1.00	mg/L	1	8.00	---	102	90-110%	---	---	---

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QUALITY CONTROL (QC) SAMPLE RESULTS

Cyanide - Total (Aqueous)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050386 - Method Prep: Aq						Water						
Blank (4050386-BLK1)						Prepared: 05/14/14 07:18 Analyzed: 05/14/14 10:56						
EPA 335.4												
Cyanide, Total	ND	0.00500	0.00500	mg/L	1	---	---	---	---	---	---	
LCS (4050386-BS1)						Prepared: 05/14/14 07:18 Analyzed: 05/14/14 10:58						
EPA 335.4												
Cyanide, Total	0.272	0.00500	0.00500	mg/L	1	0.250	---	109	85-115%	---	---	

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Darwin Thomas, Business Development Director

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Engineering/Remediation Resource Group, Inc
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Project: **Blue Ledge Mine 2013**
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 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050340 - EPA 3051A						Soil						
Blank (4050340-BLK1)						Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:02						
EPA 6020A												
Antimony	ND	0.500	1.00	mg/kg wet	10	---	---	---	---	---	---	
Arsenic	ND	0.250	1.00	"	"	---	---	---	---	---	---	
Arsenic	ND	0.500	2.00	"	"	---	---	---	---	---	---	
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Beryllium	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Cobalt	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Iron	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	U
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Molybdenum	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Thallium	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Vanadium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	U

LCS (4050340-BS1)

Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:05

EPA 6020A												
Antimony	24.7	0.500	1.00	mg/kg wet	10	25.0	---	99	80-120%	---	---	
Arsenic	25.4	0.250	1.00	"	"	"	---	102	"	---	---	
Arsenic	25.4	0.500	2.00	"	"	"	---	102	"	---	---	
Barium	24.5	0.500	1.00	"	"	"	---	98	"	---	---	
Beryllium	25.0	0.100	0.200	"	"	"	---	100	"	---	---	
Cadmium	25.1	0.100	0.200	"	"	"	---	100	"	---	---	
Cadmium	25.1	0.100	0.200	"	"	"	---	100	"	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050340 - EPA 3051A						Soil						
LCS (4050340-BS1)						Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:05						
Chromium	24.6	0.500	1.00	mg/kg wet	"	"	---	98	"	---	---	
Cobalt	24.6	0.100	0.200	"	"	"	---	99	"	---	---	
Copper	25.0	0.500	1.00	"	"	"	---	100	"	---	---	
Iron	4820	25.0	50.0	"	"	5000	---	96	"	---	---	
Lead	24.2	0.100	0.200	"	"	25.0	---	97	"	---	---	
Mercury	0.987	0.0400	0.0800	"	"	1.00	---	99	"	---	---	
Molybdenum	25.3	0.500	1.00	"	"	25.0	---	101	"	---	---	
Nickel	24.4	0.500	1.00	"	"	"	---	98	"	---	---	
Selenium	27.4	0.500	1.00	"	"	"	---	109	"	---	---	
Silver	23.9	0.100	0.200	"	"	"	---	95	"	---	---	
Thallium	23.5	0.100	0.200	"	"	"	---	94	"	---	---	Q-41
Vanadium	23.8	0.500	1.00	"	"	"	---	95	"	---	---	
Zinc	26.3	2.00	4.00	"	"	"	---	105	"	---	---	

Matrix Spike (4050340-MS1)

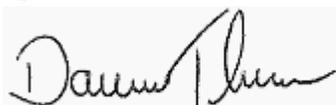
Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:49

QC Source Sample: BL-CS-JC01-050714 (A4E0201-29)

EPA 6020A												
Antimony	29.7	0.605	1.21	mg/kg dry	10	30.3	ND	98	75-125%	---	---	
Arsenic	34.6	0.303	1.21	"	"	"	3.57	103	"	---	---	
Arsenic	34.6	0.605	2.42	"	"	"	3.57	103	"	---	---	
Barium	59.8	0.605	1.21	"	"	"	37.3	74	"	---	---	Q-01
Beryllium	31.4	0.121	0.242	"	"	"	ND	104	"	---	---	
Cadmium	34.7	0.121	0.242	"	"	"	2.16	107	"	---	---	
Cadmium	34.7	0.121	0.242	"	"	"	2.16	107	"	---	---	
Chromium	46.8	0.605	1.21	"	"	"	16.4	100	"	---	---	
Cobalt	40.1	0.121	0.242	"	"	"	9.30	102	"	---	---	
Copper	638	0.605	1.21	"	"	"	578	198	"	---	---	Q-03
Iron	20100	30.3	60.5	"	"	6050	16100	66	"	---	---	Q-01
Lead	42.8	0.121	0.242	"	"	30.3	10.3	108	"	---	---	
Mercury	1.35	0.0484	0.0968	"	"	1.21	0.0631	106	"	---	---	
Molybdenum	32.5	0.605	1.21	"	"	30.3	0.761	105	"	---	---	

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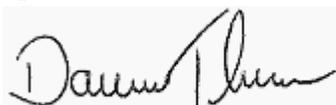
QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050340 - EPA 3051A						Soil						
Matrix Spike (4050340-MS1)						Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:49						
QC Source Sample: BL-CS-JC01-050714 (A4E0201-29)												
Nickel	44.5	0.605	1.21	mg/kg dry	"	"	16.9	91	"	---	---	
Selenium	32.9	0.605	1.21	"	"	"	ND	109	"	---	---	
Silver	31.0	0.121	0.242	"	"	"	0.644	100	"	---	---	
Thallium	30.3	0.121	0.242	"	"	"	ND	100	"	---	---	Q-41
Vanadium	49.6	0.605	1.21	"	"	"	19.9	98	"	---	---	
Zinc	647	2.42	4.84	"	"	"	593	178	"	---	---	Q-03
Matrix Spike Dup (4050340-MSD1)						Prepared: 05/12/14 15:26 Analyzed: 05/13/14 18:52						
QC Source Sample: BL-CS-JC01-050714 (A4E0201-29)												
EPA 6020A												
Antimony	28.0	0.619	1.24	mg/kg dry	10	30.9	ND	91	75-125%	6	40%	
Arsenic	34.2	0.309	1.24	"	"	"	3.57	99	"	1	40%	
Arsenic	34.2	0.619	2.47	"	"	"	3.57	99	"	1	40%	
Barium	77.1	0.619	1.24	"	"	"	37.3	128	"	25	40%	Q-01
Beryllium	30.2	0.124	0.247	"	"	"	ND	98	"	4	40%	
Cadmium	33.2	0.124	0.247	"	"	"	2.16	100	"	4	40%	
Cadmium	33.2	0.124	0.247	"	"	"	2.16	100	"	4	40%	
Chromium	46.8	0.619	1.24	"	"	"	16.4	98	"	0.09	40%	
Cobalt	38.2	0.124	0.247	"	"	"	9.30	94	"	5	40%	
Copper	659	0.619	1.24	"	"	"	578	262	"	3	40%	Q-03
Iron	18500	30.9	61.9	"	"	6190	16100	39	"	8	40%	Q-01
Lead	42.5	0.124	0.247	"	"	30.9	10.3	104	"	0.8	40%	
Mercury	1.35	0.0495	0.0990	"	"	1.24	0.0631	104	"	0.4	40%	
Molybdenum	31.9	0.619	1.24	"	"	30.9	0.761	101	"	2	40%	
Nickel	45.2	0.619	1.24	"	"	"	16.9	91	"	2	40%	
Selenium	32.3	0.619	1.24	"	"	"	ND	104	"	2	40%	
Silver	29.8	0.124	0.247	"	"	"	0.644	94	"	4	40%	
Thallium	29.2	0.124	0.247	"	"	"	ND	94	"	4	40%	Q-41
Vanadium	45.5	0.619	1.24	"	"	"	19.9	83	"	9	40%	
Zinc	601	2.47	4.95	"	"	"	593	26	"	7	40%	Q-03

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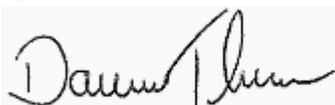
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050340 - EPA 3051A						Soil						
Post Spike (4050340-PS1)						Prepared: 05/15/14 17:05 Analyzed: 05/15/14 17:13						
QC Source Sample: BL-CS-JC01-050714 (A4E0201-29)												
EPA 6020A												
Barium	1900			ug/L	10	1540	245	108	80-120%		---	
Copper	5250			"	"	"	3800	94	"		---	ESTa
Iron	190000			"	"	76900	106000	109	"		---	ESTa
Zinc	5480			"	"	1540	3900	103	"		---	ESTa
Post Spike (4050340-PS2)						Prepared: 05/15/14 17:15 Analyzed: 05/15/14 17:21						
Chromium	1120			ug/L	10	769	252	113	80-120%		---	EST
Iron	351000			"	"	154000	183000	109	"		---	EST
Vanadium	1320			"	"	769	374	123	"		---	EST, PS-02
Zinc	1130			"	"	"	291	109	"		---	EST
Post Spike (4050340-PS3)						Prepared: 05/15/14 17:15 Analyzed: 05/15/14 17:24						
Antimony	518			ug/L	10	495	-0.0990	105	80-120%		---	

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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050394 - EPA 3015A						Water						
Blank (4050394-BLK1)						Prepared: 05/14/14 09:02 Analyzed: 05/16/14 10:37						
EPA 6020A												
Aluminum	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Antimony	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Arsenic	ND	0.250	1.00	"	"	---	---	---	---	---	---	
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Beryllium	ND	0.100	0.200	"	"	---	---	---	---	---	---	U
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Copper	ND	0.500	2.00	"	"	---	---	---	---	---	---	
Iron	ND	25.0	50.0	"	"	---	---	---	---	---	---	U
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.160	"	"	---	---	---	---	---	---	U
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	U
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	U
Thallium	ND	0.100	0.200	"	"	---	---	---	---	---	---	U
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	

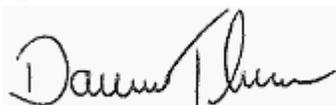
LCS (4050394-BS1)

Prepared: 05/14/14 09:02 Analyzed: 05/16/14 10:46

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 6020A												
Aluminum	5110	25.0	50.0	ug/L	1	5560	---	92	80-120%	---	---	
Antimony	27.5	0.500	1.00	"	"	27.8	---	99	"	---	---	
Arsenic	54.7	0.250	1.00	"	"	55.6	---	98	85-115%	---	---	
Barium	55.7	0.500	1.00	"	"	"	---	100	80-120%	---	---	
Beryllium	28.3	0.100	0.200	"	"	27.8	---	102	"	---	---	
Cadmium	53.2	0.0400	0.200	"	"	55.6	---	96	"	---	---	
Chromium	56.3	0.500	1.00	"	"	"	---	101	"	---	---	
Copper	56.1	0.500	2.00	"	"	"	---	101	"	---	---	
Iron	5450	25.0	50.0	"	"	5560	---	98	"	---	---	
Lead	55.1	0.100	0.200	"	"	55.6	---	99	"	---	---	

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050394 - EPA 3015A						Water						
LCS (4050394-BS1)						Prepared: 05/14/14 09:02		Analyzed: 05/16/14 10:46				
Manganese	55.3	0.500	1.00	ug/L	"	"	---	100	"	---	---	
Mercury	1.10	0.0400	0.160	"	"	1.11	---	99	"	---	---	
Nickel	57.1	0.500	1.00	"	"	55.6	---	103	"	---	---	
Selenium	27.4	0.500	1.00	"	"	27.8	---	99	"	---	---	
Silver	27.3	0.100	0.200	"	"	"	---	98	"	---	---	
Thallium	27.6	0.100	0.200	"	"	"	---	99	"	---	---	
Zinc	55.3	2.00	4.00	"	"	55.6	---	99	"	---	---	

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Project: **Blue Ledge Mine 2013**
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Project Manager: Annica Nord

Reported:
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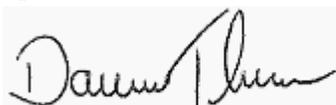
QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050418 - Matrix Matched Direct Inject						Water						
Blank (4050418-BLK1)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 15:52						
EPA 6020A (Diss)												
Arsenic	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	FILT3
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	FILT3
Calcium	ND	50.0	100	"	"	---	---	---	---	---	---	FILT3, U
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	FILT3, U
Iron	ND	25.0	50.0	"	"	---	---	---	---	---	---	FILT3, U
Lead	0.322	0.100	0.200	"	"	---	---	---	---	---	---	B, FILT3
Magnesium	ND	25.0	50.0	"	"	---	---	---	---	---	---	FILT3, U
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	FILT3, U
LCS (4050418-BS1)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 15:55						
EPA 6020A (Diss)												
Arsenic	51.6	0.250	0.500	ug/L	1	55.6	---	93	85-115%	---	---	
Cadmium	52.8	0.0400	0.200	"	"	"	---	95	80-120%	---	---	
Calcium	5430	50.0	100	"	"	5560	---	98	"	---	---	
Copper	54.1	0.500	1.00	"	"	55.6	---	97	"	---	---	
Iron	5500	25.0	50.0	"	"	5560	---	99	"	---	---	
Lead	56.2	0.100	0.200	"	"	55.6	---	101	"	---	---	B
Magnesium	5380	25.0	50.0	"	"	5560	---	97	"	---	---	
Zinc	52.2	2.00	4.00	"	"	55.6	---	94	"	---	---	
Matrix Spike (4050418-MS1)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 16:01						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
EPA 6020A (Diss)												
Arsenic	94.4	0.450	0.900	ug/L	1	100	ND	94	75-125%	---	---	
Cadmium	97.9	0.0720	0.360	"	"	"	ND	98	"	---	---	
Calcium	18800	90.0	180	"	"	10000	8580	102	"	---	---	
Copper	98.7	0.900	1.80	"	"	100	0.789	98	"	---	---	
Iron	10100	45.0	90.0	"	"	10000	29.6	100	"	---	---	
Lead	102	0.180	0.360	"	"	100	ND	102	"	---	---	B
Magnesium	11200	45.0	90.0	"	"	10000	1360	99	"	---	---	
Zinc	94.9	3.60	7.20	"	"	100	ND	95	"	---	---	

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Project Manager: Annica Nord

Reported:
06/18/14 16:10

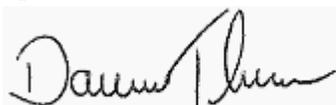
QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050418 - Matrix Matched Direct Inject						Water						
Matrix Spike (4050418-MS2)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 17:22						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
EPA 6020A (Diss)												
Arsenic	103	0.450	0.900	ug/L	1	100	4.12	99	75-125%	---	---	
Cadmium	98.5	0.0720	0.360	"	"	"	0.633	98	"	---	---	
Calcium	88400	90.0	180	"	"	10000	79400	91	"	---	---	
Copper	106	0.900	1.80	"	"	100	6.23	100	"	---	---	
Iron	10800	45.0	90.0	"	"	10000	292	106	"	---	---	
Lead	104	0.180	0.360	"	"	100	3.01	101	"	---	---	B
Magnesium	24000	45.0	90.0	"	"	10000	13000	110	"	---	---	
Zinc	1320	3.60	7.20	"	"	100	1300	19	"	---	---	PS-03, Q-03
Matrix Spike Dup (4050418-MSD1)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 16:04						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
EPA 6020A (Diss)												
Arsenic	92.5	0.450	0.900	ug/L	1	100	ND	93	75-125%	2	20%	
Cadmium	94.8	0.0720	0.360	"	"	"	ND	95	"	3	20%	
Calcium	18100	90.0	180	"	"	10000	8580	95	"	4	20%	
Copper	95.8	0.900	1.80	"	"	100	0.789	95	"	3	20%	
Iron	9930	45.0	90.0	"	"	10000	29.6	99	"	1	20%	
Lead	101	0.180	0.360	"	"	100	ND	101	"	1	20%	B
Magnesium	11000	45.0	90.0	"	"	10000	1360	97	"	2	20%	
Zinc	92.7	3.60	7.20	"	"	100	ND	93	"	2	20%	
Matrix Spike Dup (4050418-MSD2)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 17:25						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
EPA 6020A (Diss)												
Arsenic	99.1	0.450	0.900	ug/L	1	100	4.12	95	75-125%	4	20%	
Cadmium	94.5	0.0720	0.360	"	"	"	0.633	94	"	4	20%	
Calcium	85500	90.0	180	"	"	10000	79400	61	"	3	20%	PS-03, Q-03
Copper	103	0.900	1.80	"	"	100	6.23	96	"	3	20%	
Iron	10500	45.0	90.0	"	"	10000	292	102	"	4	20%	

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Engineering/Remediation Resource Group, Inc
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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050418 - Matrix Matched Direct Inject						Water						
Matrix Spike Dup (4050418-MSD2)						Prepared: 05/14/14 14:38 Analyzed: 05/15/14 17:25						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
Lead	100	0.180	0.360	ug/L	"	100	3.01	97	"	4	20%	B
Magnesium	23100	45.0	90.0	"	"	10000	13000	101	"	4	20%	
Zinc	1260	3.60	7.20	"	"	100	1300	-37	"	4	20%	PS-03, Q-03

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

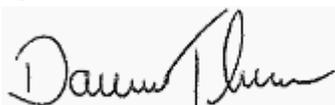
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050250 - Method Prep: Aq						Water						
Reference (4050250-SRM1)						Prepared: 05/08/14 15:08 Analyzed: 05/08/14 15:20						
EPA 150.1												
pH	6.01			pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (4050250-SRM2)						Prepared: 05/08/14 15:08 Analyzed: 05/08/14 15:23						
EPA 150.1												
pH	8.01			pH Units	1	8.00		100	98.75-101.25%	---	---	
Reference (4050250-SRM3)						Prepared: 05/08/14 16:41 Analyzed: 05/08/14 16:41						
EPA 150.1												
pH	6.01			pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (4050250-SRM4)						Prepared: 05/08/14 16:41 Analyzed: 05/08/14 16:46						
EPA 150.1												
pH	7.99			pH Units	1	8.00		99.9	98.75-101.25%	---	---	
Reference (4050250-SRM5)						Prepared: 05/08/14 18:40 Analyzed: 05/08/14 18:40						
EPA 150.1												
pH	6.00			pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (4050250-SRM6)						Prepared: 05/08/14 18:40 Analyzed: 05/08/14 18:46						
EPA 150.1												
pH	7.97			pH Units	1	8.00		99.6	98.75-101.25%	---	---	

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050257 - Method Prep: Aq						Water						
Blank (4050257-BLK1)						Prepared: 05/08/14 17:52 Analyzed: 05/08/14 18:06						
EPA 180.1												
Turbidity	ND	0.10	0.10	NTU	1	---	---	---	---	---	---	---
LCS (4050257-BS1)						Prepared: 05/08/14 17:52 Analyzed: 05/08/14 18:07						
EPA 180.1												
Turbidity	21.0	0.10	0.10	NTU	1	20.0	---	105	90-110%	---	---	---
Duplicate (4050257-DUP1)						Prepared: 05/08/14 17:52 Analyzed: 05/08/14 18:10						
QC Source Sample: BL-RST-050714 (A4E0201-28)												
EPA 180.1												
Turbidity	1470	0.10	0.10	NTU	1	---	1460	---	---	1	20%	---

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 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050299 - Method Prep: Aq						Water						
Blank (4050299-BLK1)						Prepared: 05/09/14 15:19 Analyzed: 05/09/14 15:31						
EPA 180.1												
Turbidity	ND	0.10	0.10	NTU	1	---	---	---	---	---	---	---
LCS (4050299-BS1)						Prepared: 05/09/14 15:19 Analyzed: 05/09/14 15:32						
EPA 180.1												
Turbidity	21.0	0.10	0.10	NTU	1	20.0	---	105	90-110%	---	---	---
Duplicate (4050299-DUP1)						Prepared: 05/09/14 15:19 Analyzed: 05/09/14 15:34						
QC Source Sample: BL-RS-050614 (A4E0201-21)												
EPA 180.1												
Turbidity	472	0.10	0.10	NTU	1	---	460	---	---	3	20%	---

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Project: **Blue Ledge Mine 2013**
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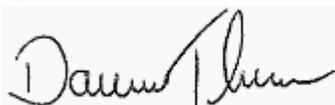
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050321 - Total Suspended Solids						Water						
Blank (4050321-BLK1)						Prepared: 05/12/14 12:35 Analyzed: 05/13/14 10:23						
SM 2540 D												
Total Suspended Solids	ND	5.00	5.00	mg/L	1	---	---	---	---	---	---	---
Duplicate (4050321-DUP1)						Prepared: 05/12/14 12:35 Analyzed: 05/13/14 10:23						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
SM 2540 D												
Total Suspended Solids	13.0	5.00	5.00	mg/L	1	---	13.0	---	---	0	20%	
Duplicate (4050321-DUP2)						Prepared: 05/12/14 12:35 Analyzed: 05/13/14 10:23						
QC Source Sample: BL-SW-EC04-050714 (A4E0201-32)												
SM 2540 D												
Total Suspended Solids	ND	5.00	5.00	mg/L	1	---	ND	---	---	---	20%	
Reference (4050321-SRM1)						Prepared: 05/12/14 12:35 Analyzed: 05/13/14 10:23						
SM 2540 D												
Total Suspended Solids	94.0			mg/L	1	100		94	90-110%	---	---	

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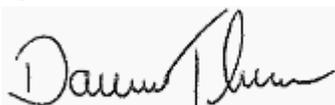
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050322 - Total Dissolved Solids						Water						
Blank (4050322-BLK1)						Prepared: 05/12/14 12:29 Analyzed: 05/14/14 13:46						
SM 2540 C												
Total Dissolved Solids	ND	10.0	10.0	mg/L	1	---	---	---	---	---	---	---
Duplicate (4050322-DUP1)						Prepared: 05/12/14 12:29 Analyzed: 05/14/14 13:46						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
SM 2540 C												
Total Dissolved Solids	38.0	10.0	10.0	mg/L	1	---	36.0	---	---	5	20%	
Duplicate (4050322-DUP2)						Prepared: 05/12/14 12:29 Analyzed: 05/14/14 13:46						
QC Source Sample: BL-SW-EC04-050714 (A4E0201-32)												
SM 2540 C												
Total Dissolved Solids	67.0	10.0	10.0	mg/L	1	---	64.0	---	---	5	20%	
Reference (4050322-SRM1)						Prepared: 05/12/14 12:29 Analyzed: 05/14/14 13:46						
SM 2540 C												
Total Dissolved Solids	1020			mg/L	1	1000		102	90-110%	---	---	

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Darwin Thomas, Business Development Director

Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

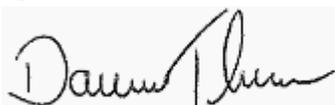
Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050369 - Method Prep: Non-Aq						Soil						
Blank (4050369-BLK1)						Prepared: 05/13/14 10:23 Analyzed: 05/13/14 14:30						
SM 2320 B												
Total Alkalinity	ND	20.0	20.0	mg	1	---	---	---	---	---	---	
				CaCO3/kg								
Bicarbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	
LCS (4050369-BS1)						Prepared: 05/13/14 10:23 Analyzed: 05/13/14 14:30						
SM 2320 B												
Total Alkalinity	1880	20.0	20.0	mg	1	1910	---	98	85-115%	---	---	
				CaCO3/kg								
Duplicate (4050369-DUP1)						Prepared: 05/13/14 10:23 Analyzed: 05/13/14 14:30						
QC Source Sample: BL-NS-050614 (A4E0201-20)												
SM 2320 B												
Total Alkalinity	20.4	20.0	20.0	mg	1	---	40.0	---	---	65	20%	Q-05
				CaCO3/kg								
Bicarbonate Alkalinity	20.4	20.0	20.0	"	"	---	40.0	---	---	65	20%	Q-05
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	

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Engineering/Remediation Resource Group, Inc
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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050390 - Method Prep: Non-Aq						Soil						
Duplicate (4050390-DUP1)						Prepared: 05/14/14 08:32 Analyzed: 05/14/14 11:04						
QC Source Sample: BL-Basin2COMP-050614 (A4E0201-03)												
EPA 9045D												
Soil pH (measured in H2O)	5.44			pH Units	1	---	5.45	---	---	0.184	10%	
pH Temperature (deg C)	23.8			"	"	---	23.9	---	---	0.419	30%	
Reference (4050390-SRM1)						Prepared: 05/14/14 08:32 Analyzed: 05/14/14 11:02						
EPA 9045D												
Soil pH (measured in H2O)	6.01			pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (4050390-SRM2)						Prepared: 05/14/14 08:32 Analyzed: 05/14/14 11:16						
EPA 9045D												
Soil pH (measured in H2O)	8.01			pH Units	1	8.00		100	98.75-101.25%	---	---	
Reference (4050390-SRM3)						Prepared: 05/14/14 08:32 Analyzed: 05/14/14 11:18						
EPA 9045D												
Soil pH (measured in H2O)	2.03			pH Units	1	2.00		102	95-105%	---	---	

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050453 - Method Prep: Aq						Water						
Blank (4050453-BLK1)						Prepared: 05/15/14 12:47 Analyzed: 05/15/14 13:44						
SM 2510 B												
Conductivity	10.0	2.50	2.50	umhos/cm	1	---	---	---	---	---	---	B
Duplicate (4050453-DUP1)						Prepared: 05/15/14 12:47 Analyzed: 05/15/14 13:44						
QC Source Sample: BL-RS-050614 (A4E0201-21)												
SM 2510 B												
Conductivity	6530	2.50	2.50	umhos/cm	1	---	7410	---	---	13	10%	Q-17, B
Reference (4050453-SRM1)						Prepared: 05/15/14 12:47 Analyzed: 05/15/14 13:44						
SM 2510 B												
Conductivity	12900			umhos/cm	1	12900		100	95-105%	---	---	B

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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
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 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050249 - Method Prep: Aq						Water						
Blank (4050249-BLK1)						Prepared: 05/08/14 15:06 Analyzed: 05/08/14 15:20						
NA												
Lab Filtration (prep only)	0.00			N/A	1	---	---	---	---	---	---	

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Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

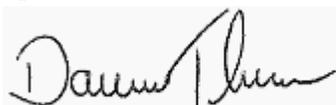
QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters - Dissolved

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050315 - Method Prep: Aq						Water						
Blank (4050315-BLK1)						Prepared: 05/12/14 08:57 Analyzed: 05/12/14 14:58						
SM 2320B (Diss)												
Total Alkalinity	ND	20.0	20.0	mg CaCO3/L	1	---	---	---	---	---	---	---
Bicarbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
LCS (4050315-BS1)						Prepared: 05/12/14 08:57 Analyzed: 05/12/14 14:58						
SM 2320B (Diss)												
Total Alkalinity	189	20.0	20.0	mg CaCO3/L	1	191	---	99	85-115%	---	---	---
Duplicate (4050315-DUP1)						Prepared: 05/12/14 08:57 Analyzed: 05/12/14 14:58						
QC Source Sample: BL-SW-JC10-050614 (A4E0201-05)												
SM 2320B (Diss)												
Total Alkalinity	27.0	20.0	20.0	mg CaCO3/L	1	---	26.0	---	---	4	20%	---
Bicarbonate Alkalinity	27.0	20.0	20.0	"	"	---	26.0	---	---	4	20%	---
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	---
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	---
Duplicate (4050315-DUP2)						Prepared: 05/12/14 08:57 Analyzed: 05/12/14 14:58						
QC Source Sample: BL-DW-541-050714 (A4E0201-35)												
SM 2320B (Diss)												
Total Alkalinity	221	20.0	20.0	mg CaCO3/L	1	---	220	---	---	0.4	20%	---
Bicarbonate Alkalinity	221	20.0	20.0	"	"	---	220	---	---	0.4	20%	---
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	---
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	ND	---	---	---	20%	---

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Engineering/Remediation Resource Group, Inc
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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

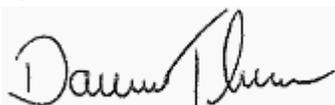
QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4050329 - Total Solids (Dry Weight)						Soil						
Duplicate (4050329-DUP1)						Prepared: 05/12/14 12:07 Analyzed: 05/13/14 08:35						
QC Source Sample: BL-CS-JC01-050714 (A4E0201-29)												
EPA 8000C												
% Solids	92.6	1.00	1.00	% by Weight	1	---	89.4	---	---	4	20%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Anions by EPA 300.0/9056A (Ion Chromatography)

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050290							
A4E0201-21	Water	EPA 300.0	05/06/14 15:52	05/09/14 13:14	10mL/10mL	10mL/10mL	1.00
A4E0201-28	Water	EPA 300.0	05/07/14 09:37	05/09/14 13:14	10mL/10mL	10mL/10mL	1.00
Batch: 4050333							
A4E0201-05	Water	EPA 300.0	05/06/14 12:22	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-07	Water	EPA 300.0	05/06/14 14:15	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-10	Water	EPA 300.0	05/06/14 14:30	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-11	Water	EPA 300.0	05/06/14 14:30	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-21	Water	EPA 300.0	05/06/14 15:52	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-23	Water	EPA 300.0	05/07/14 08:30	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-24	Water	EPA 300.0	05/07/14 08:34	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-25	Water	EPA 300.0	05/07/14 08:36	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-28	Water	EPA 300.0	05/07/14 09:37	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-30	Water	EPA 300.0	05/07/14 11:15	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-32	Water	EPA 300.0	05/07/14 11:50	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-34	Water	EPA 300.0	05/07/14 11:32	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-35	Water	EPA 300.0	05/07/14 12:09	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-36	Water	EPA 300.0	05/06/14 16:45	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
A4E0201-37	Water	EPA 300.0	05/06/14 16:45	05/12/14 13:04	10mL/10mL	10mL/10mL	1.00
Batch: 4050404							
A4E0201-21	Water	EPA 300.0	05/06/14 15:52	05/14/14 11:05	10mL/10mL	10mL/10mL	1.00
A4E0201-28	Water	EPA 300.0	05/07/14 09:37	05/14/14 11:05	10mL/10mL	10mL/10mL	1.00

Cyanide - Total (Aqueous)

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050386							
A4E0201-21	Water	EPA 335.4	05/06/14 15:52	05/14/14 07:18	3mL/6mL	6mL/6mL	2.00
A4E0201-28	Water	EPA 335.4	05/07/14 09:37	05/14/14 07:18	3mL/6mL	6mL/6mL	2.00

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050394							

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-21	Water	EPA 6020A	05/06/14 15:52	05/14/14 09:02	45mL/50mL	45mL/50mL	1.00
A4E0201-28	Water	EPA 6020A	05/07/14 09:37	05/14/14 09:02	45mL/50mL	45mL/50mL	1.00

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050340							
A4E0201-03	Soil	EPA 6020A	05/06/14 00:00	05/12/14 15:26	0.472g/50mL	0.5g/50mL	1.06
A4E0201-04	Soil	EPA 6020A	05/06/14 11:09	05/12/14 15:26	0.487g/50mL	0.5g/50mL	1.03
A4E0201-06	Soil	EPA 6020A	05/06/14 12:25	05/12/14 15:26	0.479g/50mL	0.5g/50mL	1.04
A4E0201-08	Soil	EPA 6020A	05/06/14 14:18	05/12/14 15:26	0.478g/50mL	0.5g/50mL	1.05
A4E0201-09	Soil	EPA 6020A	05/06/14 14:18	05/12/14 15:26	0.464g/50mL	0.5g/50mL	1.08
A4E0201-12	Soil	EPA 6020A	05/06/14 14:35	05/12/14 15:26	0.49g/50mL	0.5g/50mL	1.02
A4E0201-19	Soil	EPA 6020A	05/06/14 00:00	05/12/14 15:26	0.507g/50mL	0.5g/50mL	0.99
A4E0201-20	Soil	EPA 6020A	05/06/14 15:40	05/12/14 15:26	0.496g/50mL	0.5g/50mL	1.01
A4E0201-22	Soil	EPA 6020A	05/06/14 16:02	05/12/14 15:26	0.46g/50mL	0.5g/50mL	1.09
A4E0201-26	Soil	EPA 6020A	05/07/14 09:21	05/12/14 15:26	0.513g/50mL	0.5g/50mL	0.98
A4E0201-27	Soil	EPA 6020A	05/07/14 09:23	05/12/14 15:26	0.481g/50mL	0.5g/50mL	1.04
A4E0201-29	Soil	EPA 6020A	05/07/14 11:10	05/12/14 15:26	0.478g/50mL	0.5g/50mL	1.05
A4E0201-31	Soil	EPA 6020A	05/07/14 11:52	05/12/14 15:26	0.495g/50mL	0.5g/50mL	1.01
A4E0201-33	Soil	EPA 6020A	05/07/14 11:35	05/12/14 15:26	0.502g/50mL	0.5g/50mL	1.00

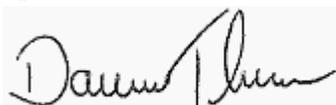
Dissolved Metals by EPA 6020 (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050418							
A4E0201-05	Water	EPA 6020A (Diss)	05/06/14 12:22	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-07	Water	EPA 6020A (Diss)	05/06/14 14:15	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-10	Water	EPA 6020A (Diss)	05/06/14 14:30	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-11	Water	EPA 6020A (Diss)	05/06/14 14:30	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-21	Water	EPA 6020A (Diss)	05/06/14 15:52	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-23	Water	EPA 6020A (Diss)	05/07/14 08:30	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-24	Water	EPA 6020A (Diss)	05/07/14 08:34	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-25	Water	EPA 6020A (Diss)	05/07/14 08:36	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-28	Water	EPA 6020A (Diss)	05/07/14 09:37	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-30	Water	EPA 6020A (Diss)	05/07/14 11:15	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00

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Engineering/Remediation Resource Group, Inc
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 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Dissolved Metals by EPA 6020 (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-32	Water	EPA 6020A (Diss)	05/07/14 11:50	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-34	Water	EPA 6020A (Diss)	05/07/14 11:32	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-35	Water	EPA 6020A (Diss)	05/07/14 12:09	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-36	Water	EPA 6020A (Diss)	05/06/14 16:45	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00
A4E0201-37	Water	EPA 6020A (Diss)	05/06/14 16:45	05/14/14 14:38	45mL/50mL	45mL/50mL	1.00

Conventional Chemistry Parameters

Prep: Method Prep: Aq

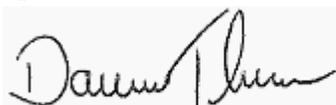
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050250							
A4E0201-21	Water	EPA 150.1	05/06/14 15:52	05/08/14 15:08	20mL/20mL	20mL/20mL	NA
A4E0201-28	Water	EPA 150.1	05/07/14 09:37	05/08/14 15:08	20mL/20mL	20mL/20mL	NA
Batch: 4050257							
A4E0201-28	Water	EPA 180.1	05/07/14 09:37	05/08/14 17:52	30mL/30mL	30mL/30mL	1.00
Batch: 4050299							
A4E0201-21	Water	EPA 180.1	05/06/14 15:52	05/09/14 15:19	30mL/30mL	30mL/30mL	1.00
Batch: 4050453							
A4E0201-21	Water	SM 2510 B	05/06/14 15:52	05/15/14 12:47	40mL/40mL	40mL/40mL	NA
A4E0201-28	Water	SM 2510 B	05/07/14 09:37	05/15/14 12:47	40mL/40mL	40mL/40mL	NA

Prep: Method Prep: Non-Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050369							
A4E0201-20	Soil	SM 2320 B	05/06/14 15:40	05/13/14 10:23	5.0942g/50mL	5g/50mL	0.98
A4E0201-22	Soil	SM 2320 B	05/06/14 16:02	05/13/14 10:23	5.0117g/50mL	5g/50mL	1.00
A4E0201-26	Soil	SM 2320 B	05/07/14 09:21	05/13/14 10:23	5.3298g/50mL	5g/50mL	0.94
A4E0201-27	Soil	SM 2320 B	05/07/14 09:23	05/13/14 10:23	5.3978g/50mL	5g/50mL	0.93
Batch: 4050390							
A4E0201-03	Soil	EPA 9045D	05/06/14 00:00	05/14/14 08:32	20g/20mL	20g/20mL	NA
A4E0201-04	Soil	EPA 9045D	05/06/14 11:09	05/14/14 08:32	20g/20mL	20g/20mL	NA
A4E0201-19	Soil	EPA 9045D	05/06/14 00:00	05/14/14 08:32	20g/20mL	20g/20mL	NA
A4E0201-20	Soil	EPA 9045D	05/06/14 15:40	05/14/14 08:32	20g/20mL	20g/20mL	NA
A4E0201-22	Soil	EPA 9045D	05/06/14 16:02	05/14/14 08:32	20g/20mL	20g/20mL	NA
A4E0201-26	Soil	EPA 9045D	05/07/14 09:21	05/14/14 08:32	20g/20mL	20g/20mL	NA

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Darwin Thomas, Business Development Director

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Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Conventional Chemistry Parameters

Prep: Method Prep: Non-Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-27	Soil	EPA 9045D	05/07/14 09:23	05/14/14 08:32	20g/20mL	20g/20mL	NA

Prep: Total Dissolved Solids

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
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Batch: 4050322

A4E0201-05	Water	SM 2540 C	05/06/14 12:22	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-07	Water	SM 2540 C	05/06/14 14:15	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-10	Water	SM 2540 C	05/06/14 14:30	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-11	Water	SM 2540 C	05/06/14 14:30	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-21	Water	SM 2540 C	05/06/14 15:52	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-23	Water	SM 2540 C	05/07/14 08:30	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-24	Water	SM 2540 C	05/07/14 08:34	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-25	Water	SM 2540 C	05/07/14 08:36	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-28	Water	SM 2540 C	05/07/14 09:37	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-30	Water	SM 2540 C	05/07/14 11:15	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-32	Water	SM 2540 C	05/07/14 11:50	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-34	Water	SM 2540 C	05/07/14 11:32	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-35	Water	SM 2540 C	05/07/14 12:09	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-36	Water	SM 2540 C	05/06/14 16:45	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-37	Water	SM 2540 C	05/06/14 16:45	05/12/14 12:29	1N/A/1N/A	1N/A/1N/A	NA

Prep: Total Suspended Solids

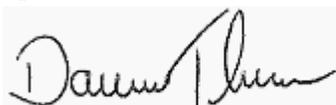
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
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Batch: 4050321

A4E0201-05	Water	SM 2540 D	05/06/14 12:22	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-07	Water	SM 2540 D	05/06/14 14:15	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-10	Water	SM 2540 D	05/06/14 14:30	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-11	Water	SM 2540 D	05/06/14 14:30	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-21	Water	SM 2540 D	05/06/14 15:52	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-23	Water	SM 2540 D	05/07/14 08:30	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-24	Water	SM 2540 D	05/07/14 08:34	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-25	Water	SM 2540 D	05/07/14 08:36	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-28	Water	SM 2540 D	05/07/14 09:37	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-30	Water	SM 2540 D	05/07/14 11:15	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-32	Water	SM 2540 D	05/07/14 11:50	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Conventional Chemistry Parameters

Prep: Total Suspended Solids

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-34	Water	SM 2540 D	05/07/14 11:32	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-35	Water	SM 2540 D	05/07/14 12:09	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-36	Water	SM 2540 D	05/06/14 16:45	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-37	Water	SM 2540 D	05/06/14 16:45	05/12/14 12:35	1N/A/1N/A	1N/A/1N/A	NA

Grain Size by ASTM D 422

Prep: ASTM D 421

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050621							
A4E0201-06	Soil	ASTM D 422m	05/06/14 12:25	05/14/14 11:26	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-08	Soil	ASTM D 422m	05/06/14 14:18	05/14/14 11:43	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-09	Soil	ASTM D 422m	05/06/14 14:18	05/14/14 12:03	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-12	Soil	ASTM D 422m	05/06/14 14:35	05/14/14 12:30	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-29	Soil	ASTM D 422m	05/07/14 11:10	05/14/14 12:49	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-31	Soil	ASTM D 422m	05/07/14 11:52	05/14/14 13:16	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-33	Soil	ASTM D 422m	05/07/14 11:35	05/14/14 13:38	1N/A/1N/A	1N/A/1N/A	NA

Conventional Chemistry Parameters - Dissolved

Prep: Method Prep: Ag

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050249							
A4E0201-05	Water	NA	05/06/14 12:22	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-07	Water	NA	05/06/14 14:15	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-10	Water	NA	05/06/14 14:30	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-11	Water	NA	05/06/14 14:30	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-21	Water	NA	05/06/14 15:52	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-23	Water	NA	05/07/14 08:30	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-24	Water	NA	05/07/14 08:34	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-25	Water	NA	05/07/14 08:36	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-28	Water	NA	05/07/14 09:37	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-30	Water	NA	05/07/14 11:15	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-32	Water	NA	05/07/14 11:50	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-34	Water	NA	05/07/14 11:32	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-35	Water	NA	05/07/14 12:09	05/08/14 15:06	50mL/50mL	50mL/50mL	NA

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Conventional Chemistry Parameters - Dissolved

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-36	Water	NA	05/06/14 16:45	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
A4E0201-37	Water	NA	05/06/14 16:45	05/08/14 15:06	50mL/50mL	50mL/50mL	NA
Batch: 4050315							
A4E0201-05	Water	SM 2320B (Diss)	05/06/14 12:22	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-07	Water	SM 2320B (Diss)	05/06/14 14:15	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-10	Water	SM 2320B (Diss)	05/06/14 14:30	05/12/14 08:57	50.8mL/50mL	50mL/50mL	NA
A4E0201-11	Water	SM 2320B (Diss)	05/06/14 14:30	05/12/14 08:57	51.5mL/50mL	50mL/50mL	NA
A4E0201-21	Water	SM 2320B (Diss)	05/06/14 15:52	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-23	Water	SM 2320B (Diss)	05/07/14 08:30	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-24	Water	SM 2320B (Diss)	05/07/14 08:34	05/12/14 08:57	50.5mL/50mL	50mL/50mL	NA
A4E0201-25	Water	SM 2320B (Diss)	05/07/14 08:36	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-28	Water	SM 2320B (Diss)	05/07/14 09:37	05/12/14 08:57	50mL/50mL	50mL/50mL	NA
A4E0201-30	Water	SM 2320B (Diss)	05/07/14 11:15	05/12/14 08:57	56.4mL/50mL	50mL/50mL	NA
A4E0201-32	Water	SM 2320B (Diss)	05/07/14 11:50	05/12/14 08:57	55mL/50mL	50mL/50mL	NA
A4E0201-34	Water	SM 2320B (Diss)	05/07/14 11:32	05/12/14 08:57	50.4mL/50mL	50mL/50mL	NA
A4E0201-35	Water	SM 2320B (Diss)	05/07/14 12:09	05/12/14 08:57	50.2mL/50mL	50mL/50mL	NA
A4E0201-36	Water	SM 2320B (Diss)	05/06/14 16:45	05/12/14 08:57	52.1mL/50mL	50mL/50mL	NA
A4E0201-37	Water	SM 2320B (Diss)	05/06/14 16:45	05/12/14 08:57	50.9mL/50mL	50mL/50mL	NA

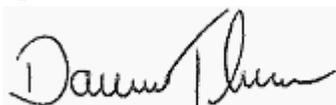
Lab Filtration

Prep: Lab Filtration

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050253							
A4E0201-05	Water	NA	05/06/14 12:22	05/08/14 16:25	100mL/100mL		NA
A4E0201-07	Water	NA	05/06/14 14:15	05/08/14 16:26	100mL/100mL		NA
A4E0201-10	Water	NA	05/06/14 14:30	05/08/14 16:27	100mL/100mL		NA
A4E0201-11	Water	NA	05/06/14 14:30	05/08/14 16:28	100mL/100mL		NA
A4E0201-21	Water	NA	05/06/14 15:52	05/08/14 16:28	100mL/100mL		NA
A4E0201-23	Water	NA	05/07/14 08:30	05/08/14 16:30	100mL/100mL		NA
A4E0201-24	Water	NA	05/07/14 08:34	05/08/14 16:31	100mL/100mL		NA
A4E0201-25	Water	NA	05/07/14 08:36	05/08/14 16:31	100mL/100mL		NA
A4E0201-28	Water	NA	05/07/14 09:37	05/08/14 16:33	100mL/100mL		NA
A4E0201-30	Water	NA	05/07/14 11:15	05/08/14 16:34	100mL/100mL		NA
A4E0201-32	Water	NA	05/07/14 11:50	05/08/14 16:35	100mL/100mL		NA

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Engineering/Remediation Resource Group, Inc
 4585 Pacheco Blvd, Suite 200 (Corporate address)
 Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
 Project Number: Blue Ledge Mine 2013
 Project Manager: Annica Nord

Reported:
 06/18/14 16:10

SAMPLE PREPARATION INFORMATION

Lab Filtration

Prep: Lab Filtration

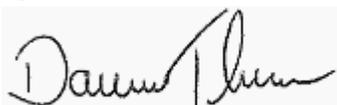
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E0201-34	Water	NA	05/07/14 11:32	05/08/14 16:36	100mL/100mL		NA
A4E0201-35	Water	NA	05/07/14 12:09	05/08/14 16:36	100mL/100mL		NA
A4E0201-36	Water	NA	05/06/14 16:45	05/08/14 16:37	100mL/100mL		NA
A4E0201-37	Water	NA	05/06/14 16:45	05/08/14 16:38	100mL/100mL		NA

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4050329							
A4E0201-03	Soil	EPA 8000C	05/06/14 00:00	05/12/14 12:07	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-04	Soil	EPA 8000C	05/06/14 11:09	05/12/14 12:07	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-06	Soil	EPA 8000C	05/06/14 12:25	05/12/14 12:56	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-08	Soil	EPA 8000C	05/06/14 14:18	05/12/14 12:56	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-09	Soil	EPA 8000C	05/06/14 14:18	05/12/14 12:56	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-12	Soil	EPA 8000C	05/06/14 14:35	05/12/14 12:56	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-19	Soil	EPA 8000C	05/06/14 00:00	05/12/14 12:07	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-20	Soil	EPA 8000C	05/06/14 15:40	05/12/14 15:54	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-22	Soil	EPA 8000C	05/06/14 16:02	05/12/14 15:54	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-26	Soil	EPA 8000C	05/07/14 09:21	05/12/14 15:54	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-27	Soil	EPA 8000C	05/07/14 09:23	05/12/14 15:54	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-29	Soil	EPA 8000C	05/07/14 11:10	05/12/14 12:07	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-31	Soil	EPA 8000C	05/07/14 11:52	05/12/14 12:07	1N/A/1N/A	1N/A/1N/A	NA
A4E0201-33	Soil	EPA 8000C	05/07/14 11:35	05/12/14 12:56	1N/A/1N/A	1N/A/1N/A	NA

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Darwin Thomas, Business Development Director

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Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

Notes and Definitions

Qualifiers:

- B Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02 Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- ESTa Result reported as an Estimated Value. Internal Standard recovery high (128.8%).
- FILT1 Sample was lab filtered and acid preserved prior to analysis. See sample preparation section of report for date and time of filtration.
- FILT3 This is a laboratory filtration blank, associated with filtration batch 4050253. See Prep page of report for associated samples.
- GS-01 See detailed Particle Size Analysis results, accumulation curves, and Case Narratives at the end of this report.
- H-06 This sample was received, or the analysis requested, outside the recommended holding time.
- J Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- PS-03 Percent recovery is outside control limits due to the high concentration of analyte present in the sample. Post spike is not performed.
- Q-01 Spike recovery and/or RPD is outside acceptance limits.
- Q-03 Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-05 Analyses are not controlled on RPD values from sample or duplicate concentrations below 5 times the reporting level.
- Q-17 RPD between original and duplicate sample is outside of established control limits.
- Q-41 Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- R-04 Reporting levels elevated due to dilution necessary for analysis.
- U Analyte included in the analysis, but not detected

Notes and Conventions:

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
- Batch QC Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.

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Engineering/Remediation Resource Group, Inc

4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**

Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

Blank Policy Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

--- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

*** Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Darwin Thomas, Business Development Director

Page 65 of 69

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

Lab # 44E0201 COC 1 of 4

CHAIN OF CUSTODY

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: ERRG	Project Mgr: Annica Nord	Project Name: Blue Ledge 2013-081	Project # 2010-084																								
Address: 616 First Ave #300	Phone: 503-512-3100	Email: annica.nord@errg.com																									
Sampled by: Annica Nord																											
Site Location: OR WA																											
Other: CA																											
SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTRPH-ID	NWTRPH-DK	NWTRPH-GA	8360 VOC	8360 RHM VOCs	8360 BTEX	8290 SVOC	8270 SEM PAHs	8182 PCBs	600 TIO	RCA Metals (B)	TCLP Metals (B)	As Pb Cr Ni Cu Zn Cd Hg Mn Fe	SR As Pb Cr Ni Cu Zn Cd Hg Mn Fe	TOTAL MS/MSD	MS/MSD	alkalinity	total dissolved solids	total suspended solids			
1. BL-Basin 2A-050614		5/6/14	1035 S	1	1											X	X	X	X	X	X	X	X	X	X	X	X
2. BL-Basin 2B-050614			1046 S	1	1											X	X	X	X	X	X	X	X	X	X	X	
3. BL-Basin 3-050614			1109 S	2	2											X	X	X	X	X	X	X	X	X	X	X	
4. BL-SW-3C10-050614			1222 W	6	6											X	X	X	X	X	X	X	X	X	X	X	
5. BL-SW-3C10-050614			1225 S	3	3											X	X	X	X	X	X	X	X	X	X	X	
6. BL-SW-3C09-050614			1415 W	2	2											X	X	X	X	X	X	X	X	X	X	X	
7. BL-CS-3C09-050614			1418 S	3	3											X	X	X	X	X	X	X	X	X	X	X	
8. BL-CS-3C09-050614 DVP			1418 S	3	3											X	X	X	X	X	X	X	X	X	X	X	
9. BL-SW-3C08-050614			1430 W	2	2											X	X	X	X	X	X	X	X	X	X	X	
10. BL-SW-3C08-050614 DVP			1430 W	2	2											X	X	X	X	X	X	X	X	X	X	X	

Normal Turn Around Time (TAT) = 5-10 Business Days

TAT Requested (circle): **1 Day** 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS: **Return MS/MSD on BL-SW-3C10-050614**

RELINQUISHED BY: *[Signature]* Date: **5/28/14** Signature: **Annica Nord** Date: **5/28/14**

RECEIVED BY: *[Signature]* Date: _____ Signature: _____ Date: _____

Printed Name: **Kellin Frisco** Printed Name: _____

Company: **Apex** Company: _____

Apex Laboratories

[Signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Engineering/Remediation Resource Group, Inc
4585 Pacheco Blvd, Suite 200 (Corporate address)
Martinez, CA 94553

Project: **Blue Ledge Mine 2013**
Project Number: Blue Ledge Mine 2013
Project Manager: Annica Nord

Reported:
06/18/14 16:10

Lab # A4E0201 coc 2 of 4

CHAIN OF CUSTODY

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Contaminant: ERRG Address: 616 1st Ave # 300 Seattle WA 98101 Sampled by: Annica Nord		Project Mgr: Annica Nord Project Name: Blue Ledge Project #: 2010-084 Email: annica.nord@erreg.com																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Site Location: OR WA Other: CA		Project #: 512-5170 Fax:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
LAB ID #		ANALYSIS REQUEST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-CID	NWTPH-DA	NWTPH-CX	R26 VOC	R26 RHM VOCs	R26 BTEX	R270 SVOC	R270 SIM PAHs	R882 PCBs	680 TTO	R270 PCBs (B)	TCLP Metals (B)	TRIA (B)	TRIA (A)	TRIA (C)	TRIA (D)	TRIA (E)	TRIA (F)	TRIA (G)	TRIA (H)	TRIA (I)	TRIA (J)	TRIA (K)	TRIA (L)	TRIA (M)	TRIA (N)	TRIA (O)	TRIA (P)	TRIA (Q)	TRIA (R)	TRIA (S)	TRIA (T)	TRIA (U)	TRIA (V)	TRIA (W)	TRIA (X)	TRIA (Y)	TRIA (Z)	TRIA (AA)	TRIA (AB)	TRIA (AC)	TRIA (AD)	TRIA (AE)	TRIA (AF)	TRIA (AG)	TRIA (AH)	TRIA (AI)	TRIA (AJ)	TRIA (AK)	TRIA (AL)	TRIA (AM)	TRIA (AN)	TRIA (AO)	TRIA (AP)	TRIA (AQ)	TRIA (AR)	TRIA (AS)	TRIA (AT)	TRIA (AU)	TRIA (AV)	TRIA (AW)	TRIA (AX)	TRIA (AY)	TRIA (AZ)	TRIA (BA)	TRIA (BB)	TRIA (BC)	TRIA (BD)	TRIA (BE)	TRIA (BF)	TRIA (BG)	TRIA (BH)	TRIA (BI)	TRIA (BJ)	TRIA (BK)	TRIA (BL)	TRIA (BL)	TRIA (BM)	TRIA (BN)	TRIA (BO)	TRIA (BP)	TRIA (BQ)	TRIA (BR)	TRIA (BS)	TRIA (BT)	TRIA (BU)	TRIA (BV)	TRIA (BW)	TRIA (BX)	TRIA (BY)	TRIA (BZ)	TRIA (CA)	TRIA (CB)	TRIA (CC)	TRIA (CD)	TRIA (CE)	TRIA (CF)	TRIA (CG)	TRIA (CH)	TRIA (CI)	TRIA (CJ)	TRIA (CK)	TRIA (CL)	TRIA (CM)	TRIA (CN)	TRIA (CO)	TRIA (CP)	TRIA (CQ)	TRIA (CR)	TRIA (CS)	TRIA (CT)	TRIA (CU)	TRIA (CV)	TRIA (CW)	TRIA (CX)	TRIA (CY)	TRIA (CZ)	TRIA (DA)	TRIA (DB)	TRIA (DC)	TRIA (DD)	TRIA (DE)	TRIA (DF)	TRIA (DG)	TRIA (DH)	TRIA (DI)	TRIA (DJ)	TRIA (DK)	TRIA (DL)	TRIA (DM)	TRIA (DN)	TRIA (DO)	TRIA (DP)	TRIA (DP)	TRIA (DQ)	TRIA (DR)	TRIA (DS)	TRIA (DT)	TRIA (DU)	TRIA (DV)	TRIA (DW)	TRIA (DX)	TRIA (DY)	TRIA (DZ)	TRIA (EA)	TRIA (EB)	TRIA (EC)	TRIA (ED)	TRIA (EE)	TRIA (EF)	TRIA (EG)	TRIA (EH)	TRIA (EI)	TRIA (EJ)	TRIA (EK)	TRIA (EL)	TRIA (EM)	TRIA (EN)	TRIA (EO)	TRIA (EP)	TRIA (EP)	TRIA (EQ)	TRIA (ER)	TRIA (ES)	TRIA (ET)	TRIA (EU)	TRIA (EV)	TRIA (EW)	TRIA (EX)	TRIA (EY)	TRIA (EZ)	TRIA (FA)	TRIA (FB)	TRIA (FC)	TRIA (FD)	TRIA (FE)	TRIA (FF)	TRIA (FG)	TRIA (FH)	TRIA (FI)	TRIA (FJ)	TRIA (FK)	TRIA (FL)	TRIA (FM)	TRIA (FN)	TRIA (FO)	TRIA (FP)	TRIA (FP)	TRIA (FQ)	TRIA (FR)	TRIA (FS)	TRIA (FT)	TRIA (FU)	TRIA (FV)	TRIA (FW)	TRIA (FX)	TRIA (FY)	TRIA (FZ)	TRIA (GA)	TRIA (GB)	TRIA (GC)	TRIA (GD)	TRIA (GE)	TRIA (GF)	TRIA (GG)	TRIA (GH)	TRIA (GI)	TRIA (GJ)	TRIA (GK)	TRIA (GL)	TRIA (GM)	TRIA (GN)	TRIA (GO)	TRIA (GP)	TRIA (GP)	TRIA (GQ)	TRIA (GR)	TRIA (GS)	TRIA (GT)	TRIA (GU)	TRIA (GV)	TRIA (GW)	TRIA (GX)	TRIA (GY)	TRIA (GZ)	TRIA (HA)	TRIA (HB)	TRIA (HC)	TRIA (HD)	TRIA (HE)	TRIA (HF)	TRIA (HG)	TRIA (HH)	TRIA (HI)	TRIA (HJ)	TRIA (HK)	TRIA (HL)	TRIA (HM)	TRIA (HN)	TRIA (HO)	TRIA (HP)	TRIA (HP)	TRIA (HQ)	TRIA (HR)	TRIA (HS)	TRIA (HT)	TRIA (HU)	TRIA (HV)	TRIA (HW)	TRIA (HX)	TRIA (HY)	TRIA (HZ)	TRIA (IA)	TRIA (IB)	TRIA (IC)	TRIA (ID)	TRIA (IE)	TRIA (IF)	TRIA (IG)	TRIA (IH)	TRIA (II)	TRIA (IJ)	TRIA (IK)	TRIA (IL)	TRIA (IM)	TRIA (IN)	TRIA (IO)	TRIA (IP)	TRIA (IP)	TRIA (IQ)	TRIA (IR)	TRIA (IS)	TRIA (IT)	TRIA (IU)	TRIA (IV)	TRIA (IW)	TRIA (IX)	TRIA (IY)	TRIA (IZ)	TRIA (JA)	TRIA (JB)	TRIA (JC)	TRIA (JD)	TRIA (JE)	TRIA (JF)	TRIA (JG)	TRIA (JH)	TRIA (JI)	TRIA (JJ)	TRIA (JK)	TRIA (JL)	TRIA (JM)	TRIA (JN)	TRIA (JO)	TRIA (JP)	TRIA (JP)	TRIA (JQ)	TRIA (JR)	TRIA (JS)	TRIA (JT)	TRIA (JU)	TRIA (JV)	TRIA (JW)	TRIA (JX)	TRIA (JY)	TRIA (JZ)	TRIA (KA)	TRIA (KB)	TRIA (KC)	TRIA (KD)	TRIA (KE)	TRIA (KF)	TRIA (KG)	TRIA (KH)	TRIA (KI)	TRIA (KJ)	TRIA (KK)	TRIA (KL)	TRIA (KM)	TRIA (KN)	TRIA (KO)	TRIA (KP)	TRIA (KP)	TRIA (KQ)	TRIA (KR)	TRIA (KS)	TRIA (KT)	TRIA (KU)	TRIA (KV)	TRIA (KW)	TRIA (KX)	TRIA (KY)	TRIA (KZ)	TRIA (LA)	TRIA (LB)	TRIA (LC)	TRIA (LD)	TRIA (LE)	TRIA (LF)	TRIA (LG)	TRIA (LH)	TRIA (LI)	TRIA (LJ)	TRIA (LK)	TRIA (LM)	TRIA (LN)	TRIA (LO)	TRIA (LP)	TRIA (LP)	TRIA (LQ)	TRIA (LR)	TRIA (LS)	TRIA (LT)	TRIA (LU)	TRIA (LV)	TRIA (LW)	TRIA (LX)	TRIA (LY)	TRIA (LZ)	TRIA (MA)	TRIA (MB)	TRIA (MC)	TRIA (MD)	TRIA (ME)	TRIA (MF)	TRIA (MG)	TRIA (MH)	TRIA (MI)	TRIA (MJ)	TRIA (MK)	TRIA (ML)	TRIA (MN)	TRIA (MO)	TRIA (MP)	TRIA (MP)	TRIA (MQ)	TRIA (MR)	TRIA (MS)	TRIA (MT)	TRIA (MU)	TRIA (MV)	TRIA (MW)	TRIA (MX)	TRIA (MY)	TRIA (MZ)	TRIA (NA)	TRIA (NB)	TRIA (NC)	TRIA (ND)	TRIA (NE)	TRIA (NF)	TRIA (NG)	TRIA (NH)	TRIA (NI)	TRIA (NJ)	TRIA (NK)	TRIA (NL)	TRIA (NM)	TRIA (NO)	TRIA (NP)	TRIA (NP)	TRIA (NQ)	TRIA (NR)	TRIA (NS)	TRIA (NT)	TRIA (NU)	TRIA (NV)	TRIA (NW)	TRIA (NX)	TRIA (NY)	TRIA (NZ)	TRIA (OA)	TRIA (OB)	TRIA (OC)	TRIA (OD)	TRIA (OE)	TRIA (OF)	TRIA (OG)	TRIA (OH)	TRIA (OI)	TRIA (OJ)	TRIA (OK)	TRIA (OL)	TRIA (OM)	TRIA (ON)	TRIA (OO)	TRIA (OP)	TRIA (OP)	TRIA (OQ)	TRIA (OR)	TRIA (OS)	TRIA (OT)	TRIA (OU)	TRIA (OV)	TRIA (OW)	TRIA (OX)	TRIA (OY)	TRIA (OZ)	TRIA (PA)	TRIA (PB)	TRIA (PC)	TRIA (PD)	TRIA (PE)	TRIA (PF)	TRIA (PG)	TRIA (PH)	TRIA (PI)	TRIA (PJ)	TRIA (PK)	TRIA (PL)	TRIA (PM)	TRIA (PN)	TRIA (PO)	TRIA (PP)	TRIA (PP)	TRIA (PQ)	TRIA (PR)	TRIA (PS)	TRIA (PT)	TRIA (PU)	TRIA (PV)	TRIA (PW)	TRIA (PX)	TRIA (PY)	TRIA (PZ)	TRIA (QA)	TRIA (QB)	TRIA (QC)	TRIA (QD)	TRIA (QE)	TRIA (QF)	TRIA (QG)	TRIA (QH)	TRIA (QI)	TRIA (QJ)	TRIA (QK)	TRIA (QL)	TRIA (QM)	TRIA (QN)	TRIA (QO)	TRIA (QP)	TRIA (QP)	TRIA (QQ)	TRIA (QR)	TRIA (QS)	TRIA (QT)	TRIA (QU)	TRIA (QV)	TRIA (QW)	TRIA (QX)	TRIA (QY)	TRIA (QZ)	TRIA (RA)	TRIA (RB)	TRIA (RC)	TRIA (RD)	TRIA (RE)	TRIA (RF)	TRIA (RG)	TRIA (RH)	TRIA (RI)	TRIA (RJ)	TRIA (RK)	TRIA (RL)	TRIA (RM)	TRIA (RN)	TRIA (RO)	TRIA (RP)	TRIA (RP)	TRIA (RQ)	TRIA (RR)	TRIA (RS)	TRIA (RT)	TRIA (RU)	TRIA (RV)	TRIA (RW)	TRIA (RX)	TRIA (RY)	TRIA (RZ)	TRIA (SA)	TRIA (SB)	TRIA (SC)	TRIA (SD)	TRIA (SE)	TRIA (SF)	TRIA (SG)	TRIA (SH)	TRIA (SI)	TRIA (SJ)	TRIA (SK)	TRIA (SL)	TRIA (SM)	TRIA (SN)	TRIA (SO)	TRIA (SP)	TRIA (SP)	TRIA (SQ)	TRIA (SR)	TRIA (SS)	TRIA (ST)	TRIA (SU)	TRIA (SV)	TRIA (SW)	TRIA (SX)	TRIA (SY)	TRIA (SZ)	TRIA (TA)	TRIA (TB)	TRIA (TC)	TRIA (TD)	TRIA (TE)	TRIA (TF)	TRIA (TG)	TRIA (TH)	TRIA (TI)	TRIA (TJ)	TRIA (TK)	TRIA (TL)	TRIA (TM)	TRIA (TN)	TRIA (TO)	TRIA (TP)	TRIA (TP)	TRIA (TQ)	TRIA (TR)	TRIA (TS)	TRIA (TT)	TRIA (TU)	TRIA (TV)	TRIA (TW)	TRIA (TX)	TRIA (TY)	TRIA (TZ)	TRIA (UA)	TRIA (UB)	TRIA (UC)	TRIA (UD)	TRIA (UE)	TRIA (UF)	TRIA (UG)	TRIA (UH)	TRIA (UI)	TRIA (UJ)	TRIA (UK)	TRIA (UL)	TRIA (UM)	TRIA (UN)	TRIA (UO)	TRIA (UP)	TRIA (UP)	TRIA (UQ)	TRIA (UR)	TRIA (US)	TRIA (UT)	TRIA (UU)	TRIA (UV)	TRIA (UW)	TRIA (UX)	TRIA (UY)	TRIA (UZ)	TRIA (VA)	TRIA (VB)	TRIA (VC)	TRIA (VD)	TRIA (VE)	TRIA (VF)	TRIA (VG)	TRIA (VH)	TRIA (VI)	TRIA (VJ)	TRIA (VK)	TRIA (VL)	TRIA (VM)	TRIA (VN)	TRIA (VO)	TRIA (VP)	TRIA (VP)	TRIA (VQ)	TRIA (VR)	TRIA (VS)	TRIA (VT)	TRIA (VU)	TRIA (VV)	TRIA (VW)	TRIA (VX)	TRIA (VY)	TRIA (VZ)	TRIA (WA)	TRIA (WB)	TRIA (WC)	TRIA (WD)	TRIA (WE)	TRIA (WF)	TRIA (WG)	TRIA (WH)	TRIA (WI)	TRIA (WJ)	TRIA (WK)	TRIA (WL)	TRIA (WM)	TRIA (WN)	TRIA (WO)	TRIA (WP)	TRIA (WP)	TRIA (WQ)	TRIA (WR)	TRIA (WS)	TRIA (WT)	TRIA (WU)	TRIA (WV)	TRIA (WW)	TRIA (WX)	TRIA (WY)	TRIA (WZ)	TRIA (XA)	TRIA (XB)	TRIA (XC)	TRIA (XD)	TRIA (XE)	TRIA (XF)	TRIA (XG)	TRIA (XH)	TRIA (XI)	TRIA (XJ)	TRIA (XK)	TRIA (XL)	TRIA (XM)	TRIA (XN)	TRIA (XO)	TRIA (XP)	TRIA (XP)	TRIA (XQ)	TRIA (XR)	TRIA (XS)	TRIA (XT)	TRIA (XU)	TRIA (XV)	TRIA (XW)	TRIA (XX)	TRIA (XY)	TRIA (XZ)	TRIA (YA)	TRIA (YB)	TRIA (YC)	TRIA (YD)	TRIA (YE)	TRIA (YF)	TRIA (YG)	TRIA (YH)	TRIA (YI)	TRIA (YJ)	TRIA (YK)	TRIA (YL)	TRIA (YM)	TRIA (YN)	TRIA (YO)	TRIA (YP)	TRIA (YP)	TRIA (YQ)	TRIA (YR)	TRIA (YS)	TRIA (YT)	TRIA (YU)	TRIA (YV)	TRIA (YW)	TRIA (YX)	TRIA (YY)	TRIA (YZ)	TRIA (ZA)	TRIA (ZB)	TRIA (ZC)	TRIA (ZD)	TRIA (ZE)	TRIA (ZF)	TRIA (ZG)	TRIA (ZH)	TRIA (ZI)	TRIA (ZJ)	TRIA (ZK)	TRIA (ZL)	TRIA (ZM)	TRIA (ZN)	TRIA (ZO)	TRIA (ZP)	TRIA (ZP)	TRIA (ZQ)	TRIA (ZR)	TRIA (ZS)	TRIA (ZT)	TRIA (ZU)	TRIA (ZV)	TRIA (ZW)	TRIA (ZX)	TRIA (ZY)	TRIA (ZZ)

SPECIAL INSTRUCTIONS:
Please analyze BL-RS-050614 for the analytes on the attached pages (Table 64131-A, 64119-A, 64119-B and see detection limits on table 64132-A)

RECEIVED BY: [Signature] Date: 5/8/14

RECEIVED BY: [Signature] Date: 5/8/14

Signature: [Signature] Date: 5/8/14

Printed Name: Neil Finstein Title: DLS

Company: Apex

Apex Laboratories

Darwin Thomas

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-06	Client Sample ID:	BL-CS-JC10-050614	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	SAND with some Gravel and Silt and trace Clay		Max Particle Size:	Gravel	
Particle Shape:	Sub-rounded to sub-angular		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	10.962	466.357	455.40	0.67	452.3

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.322	24.161	22.84	22.84	5.0	95.0
10	2.00	6.345	62.693	56.35	79.19	12.5	82.5
Pan		11.731	387.440	375.71	454.90	82.5	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9933	E20106	1.325	30.013	29.821	0.67

Hydrometer Analysis

Start Date/Time	5/14/2014	11:26	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	105.478		G _s Correction Factor (α)	1.000
Percent Passing No. 10 Sieve	82.5		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	104.77		Corrected Dry Weight of Soil Tested (g) (W)	127.01

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	22	23.2	15.86	12.5	12.5	0.01317	0.047	10.30
2	15.5	23.2	9.36	7.4	13.5	0.01317	0.034	6.08
4	13.5	23.2	7.36	5.8	13.8	0.01317	0.024	4.78
8	11	23.1	4.82	3.8	14.3	0.01317	0.018	3.13
15	10	23.1	3.82	3.0	14.5	0.01317	0.013	2.48
30	9.5	23.2	3.36	2.6	14.5	0.01317	0.009	2.18
60	8.5	23.5	2.46	1.9	14.7	0.01301	0.006	1.60
90	8.5	23.6	2.49	2.0	14.7	0.01301	0.005	1.62
120	8	23.8	2.06	1.6	14.8	0.01301	0.005	1.34
240	7	25	1.47	1.2	15	0.01286	0.003	0.96
360	6	26.4	0.95	0.8	15.2	0.01272	0.003	0.62
1440	6.5	23.1	0.32	0.3	15	0.01317	0.001	0.21

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.314	31.951	30.64	188.31	24.1	58.4
40	0.425	1.312	23.573	22.26	267.61	17.5	40.8
60	0.250	1.313	10.980	9.67	302.04	7.6	33.2
100	0.150	1.310	10.164	8.85	333.58	7.0	26.3
140	0.105	1.308	8.343	7.04	358.64	5.5	20.7
200	0.075	1.310	8.444	7.13	384.05	5.6	15.1
230	0.063	1.316	4.738	3.42	396.24	2.7	12.4
			Sum	89.01	230 Minus	15.76	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-JC10-050614 (A4E0201-06)

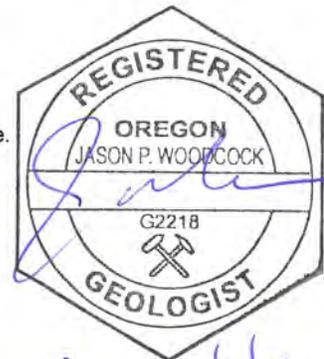
Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			17.51
Retained on No. 4 sieve	4.75	94.95	5.05
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	82.49	12.46
Sand			70.08
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	58.37	24.12
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	40.84	17.53
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	33.23	7.61
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	26.26	6.97
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	20.72	5.54
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	15.1	5.62
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	12.41	2.69
Silt and Clay (Measurements in the Clay fraction are noted)			12.41
Hydrometer Test	0.0466	10.3	2.11
Hydrometer Test	0.0342	6.08	4.22
Hydrometer Test	0.0245	4.78	1.3
Hydrometer Test	0.0176	3.13	1.65
Hydrometer Test	0.0129	2.48	0.65
Hydrometer Test	0.0092	2.18	0.3
Hydrometer Test	0.0064	1.6	0.58
Hydrometer Test	0.0053	1.62	0
Hydrometer Test Clay	0.0046	1.34	0.26
Hydrometer Test Clay	0.0032	0.96	0.38
Hydrometer Test Clay	0.0026	0.62	0.34
Hydrometer Test Clay	0.0013	0.21	0.41

Grain Size Summary	Percent of Total Sample
Gravel	17.5
Sand	70.1
Coarse sand	24.1
Medium sand	32.1
Fine sand	13.9
Silt	10.8
Clay	1.6

Case Narrative for Sample ID: BL-CS-JC10-050614 (A4E0201-06)

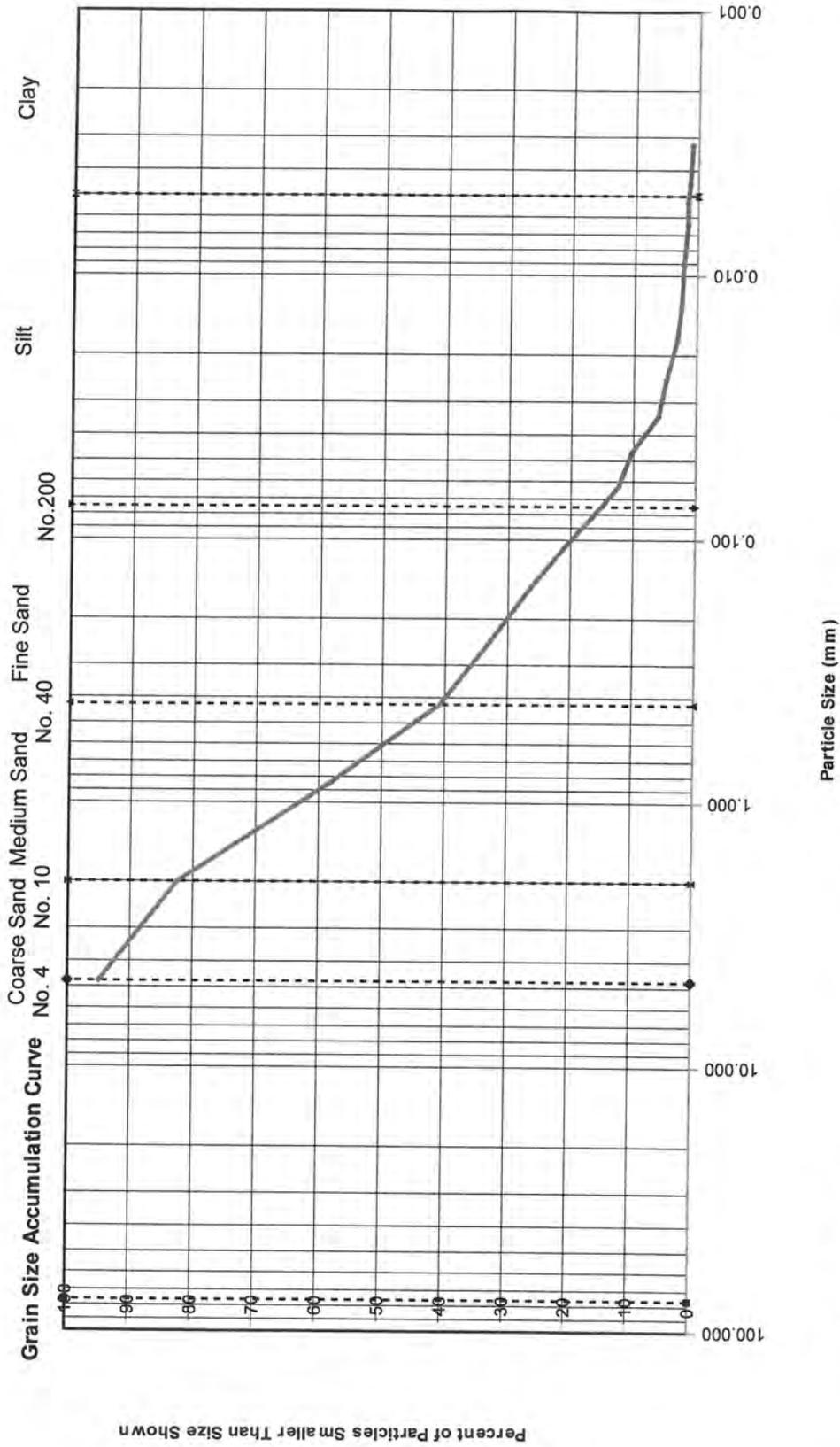
This data is not to be used for engineering purposes.
 No difficulty dispersing the fraction passing the No. 10 sieve.
 Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.
 The assumed specific gravity used in the calculations was 2.65.

Hydrometer readings for 1, 2, 4, and 8 minutes are estimated due to the presence of foam.
 Trace organic debris present in +4 and +10 fractions.



Express reply
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Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified



Sample ID:	BL-CS-JC10-050614 (A4E0201-06)			SOIL DESCRIPTION
Specific Gravity	GRAVEL & SAND			
	MAXIMUM PARTICLE SIZE	PARTICLE SHAPE	HARDNESS	
2.65	Gravel	Sub-rounded to sub-angular	Hard and durable	SAND with some Gravel and Silt and trace Clay

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-08	Client Sample ID:	BL-CS-JC09-050614	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	Sandy SILT with trace Gravel and Clay		Max Particle Size:	Gravel	
Particle Shape:	Angular to sub-angular		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	11.167	336.508	325.34	2.47	317.5

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.322	15.949	14.63	14.63	4.6	95.4
10	2.00	1.314	13.396	12.08	26.71	3.8	91.6
Pan		5.561	303.305	297.74	324.45	91.5	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
0.9759		E20108	1.309	23.049	22.526	2.47

Hydrometer Analysis

Start Date/Time	5/14/2014	11:43	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	57.008		G _s Correction Factor (α)	1.000
Percent Passing No. 10 Sieve	91.6		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	55.64		Corrected Dry Weight of Soil Tested (g) (W)	60.75

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	29.5	23.3	23.39	38.5	11.2	0.01317	0.044	35.26
2	23.5	23.3	17.39	28.6	12.2	0.01317	0.033	26.22
4	17	23.3	10.89	17.9	13.3	0.01317	0.024	16.42
8	13.5	23.3	7.39	12.2	13.8	0.01317	0.017	11.14
15	11.5	23.2	5.36	8.8	14.2	0.01317	0.013	8.07
30	10	23.2	3.86	6.3	14.5	0.01317	0.009	5.81
60	9	23.6	2.99	4.9	14.7	0.01301	0.006	4.51
90	8	23.9	2.1	3.4	14.8	0.01301	0.005	3.16
120	8	24	2.13	3.5	14.8	0.01301	0.005	3.21
240	7	25	1.47	2.4	15	0.01286	0.003	2.22
360	6	26.5	0.99	1.6	15.2	0.01258	0.003	1.49
1440	6.5	22.9	0.25	0.4	15	0.01317	0.001	0.38

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.321	5.353	4.03	47.77	6.6	85.0
40	0.425	1.310	6.240	4.93	73.52	8.1	76.8
60	0.250	1.322	4.406	3.08	89.62	5.1	71.8
100	0.150	1.313	4.611	3.30	106.85	5.4	66.3
140	0.105	1.315	4.533	3.22	123.66	5.3	61.0
200	0.075	1.309	5.612	4.30	146.13	7.1	53.9
230	0.063	1.313	4.409	3.10	162.30	5.1	48.9
			Sum	25.96	230 Minus	29.68	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-JC09-050614 (A4E0201-08)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			8.41
Retained on No. 4 sieve	4.75	95.39	4.61
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	91.59	3.81
Sand			42.74
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	84.95	6.64
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	76.83	8.12
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	71.76	5.08
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	66.33	5.43
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	61.03	5.3
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	53.95	7.08
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	48.85	5.1
Silt and Clay (Measurements in the Clay fraction are noted)			48.85
Hydrometer Test	0.0441	35.26	13.59
Hydrometer Test	0.0325	26.22	9.05
Hydrometer Test	0.0240	16.42	9.8
Hydrometer Test	0.0173	11.14	5.28
Hydrometer Test	0.0128	8.07	3.07
Hydrometer Test	0.0092	5.81	2.26
Hydrometer Test	0.0064	4.51	1.3
Hydrometer Test	0.0053	3.16	1.35
Hydrometer Test	Clay	0.0046	3.21
Hydrometer Test	Clay	0.0032	2.22
Hydrometer Test	Clay	0.0026	1.49
Hydrometer Test	Clay	0.0013	0.38

Grain Size Summary	Percent of Total Sample
Gravel	8.4
Sand	42.7
Coarse sand	6.6
Medium sand	18.6
Fine sand	17.5
Silt	45.7
Clay	3.2

Case Narrative for Sample ID: BL-CS-JC09-050614 (A4E0201-08)

This data is not to be used for engineering purposes.

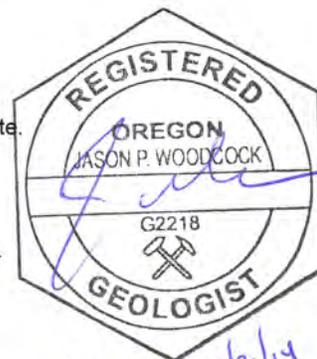
No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

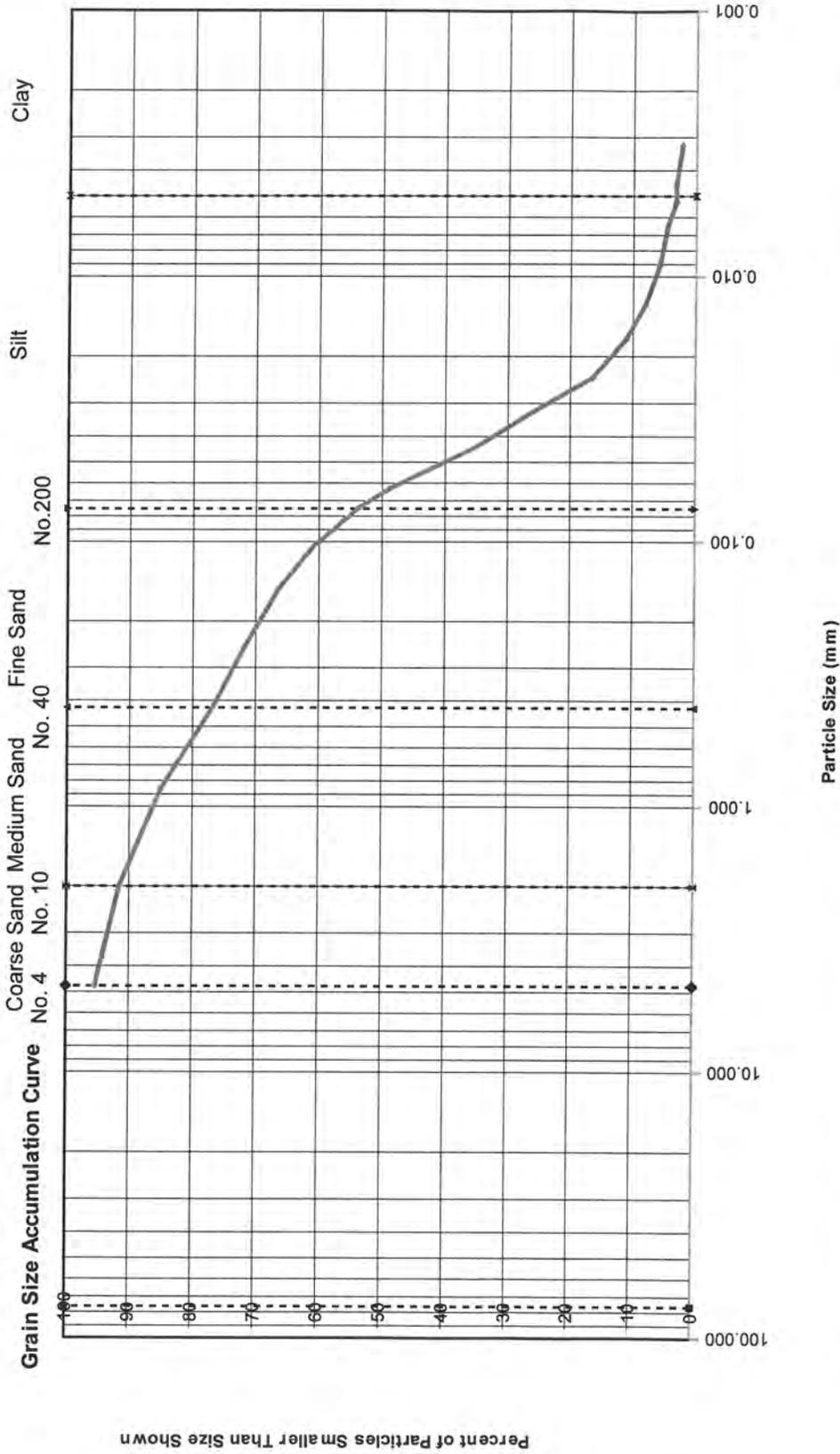
The assumed specific gravity used in the calculations was 2.65.

Organic material (pine needles, moss, tree debris) present in +4, +10, +20 and +40 fractions.

Hydrometer readings for 1, 2, and 4 minutes are estimated due to the presence of foam.



Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified



Sample ID: BL-CS-JC09-050614 (A4E0201-08)		GRAVEL & SAND		SOIL DESCRIPTION
Specific Gravity	2.65	MAXIMUM PARTICLE SIZE	Gravel	
		PARTICLE SHAPE	Angular to sub-angular	Sandy SILT with trace Gravel and Clay
		HARDNESS	Hard and durable	

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-09	Client Sample ID:	BL-CS-JC09-050614DUP	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	Silty SAND with trace Gravel and Clay		Max Particle Size:	Gravel	
Particle Shape:	Angular to sub-angular		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	10.787	319.436	308.65	2.68	300.6

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.321	15.982	14.66	14.66	4.9	95.1
10	2.00	6.297	22.898	16.60	31.26	5.5	89.6
Pan		5.373	281.346	275.97	307.24	89.3	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
	0.9739	E20109	1.305	24.247	23.648	2.68

Hydrometer Analysis

Start Date/Time	5/14/2014	12:03	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	52.475		G _s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	89.6		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	51.10		Corrected Dry Weight of Soil Tested (g) (W)	57.04

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	28.5	23.5	22.46	39.4	11.4	0.01301	0.044	35.28
2	23	23.5	16.96	29.7	12.4	0.01301	0.032	26.64
4	19	23.5	12.96	22.7	13	0.01301	0.023	20.36
8	15.5	23.4	9.42	16.5	13.5	0.01317	0.017	14.80
15	12.5	23.5	6.46	11.3	14	0.01301	0.013	10.15
30	10.5	23.6	4.49	7.9	14.3	0.01301	0.009	7.06
60	9	23.7	3.03	5.3	14.7	0.01301	0.006	4.75
90	8	24	2.13	3.7	14.8	0.01301	0.005	3.35
120	8	24.2	2.2	3.9	14.8	0.01301	0.005	3.45
240	7	25.2	1.54	2.7	15	0.01286	0.003	2.42
360	6.5	26.4	1.45	2.5	15	0.01272	0.003	2.28
1440	6	23.2		0.0	15	0.01317	0.001	0.00

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.313	6.997	5.68	61.15	10.0	79.6
40	0.425	1.318	5.855	4.54	85.02	8.0	71.7
60	0.250	1.324	3.825	2.50	98.17	4.4	67.3
100	0.150	1.315	4.010	2.70	112.34	4.7	62.6
140	0.105	1.322	4.129	2.81	127.10	4.9	57.6
200	0.075	1.312	5.094	3.78	146.99	6.6	51.0
230	0.063	1.320	4.014	2.69	161.16	4.7	46.3
			Sum	24.70	230 Minus	26.40	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-JC09-050614DUP (A4E0201-09)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			10.4
Retained on No. 4 sieve	4.75	95.12	4.88
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	89.6	5.52
Sand			43.31
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	79.63	9.97
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	71.68	7.95
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	67.29	4.38
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	62.57	4.73
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	57.65	4.92
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	51.02	6.63
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	46.29	4.72
Silt and Clay (Measurements in the Clay fraction are noted)			46.29
Hydrometer Test	0.0439	35.28	11.01
Hydrometer Test	0.0324	26.64	8.64
Hydrometer Test	0.0235	20.36	6.28
Hydrometer Test	0.0171	14.8	5.55
Hydrometer Test	0.0126	10.15	4.66
Hydrometer Test	0.0090	7.06	3.09
Hydrometer Test	0.0064	4.75	2.3
Hydrometer Test	0.0053	3.35	1.41
Hydrometer Test Clay	0.0046	3.45	0
Hydrometer Test Clay	0.0032	2.42	0.92
Hydrometer Test Clay	0.0026	2.28	0.14
Hydrometer Test Clay	0.0014	2.28	0

Grain Size Summary	Percent of Total Sample
Gravel	10.4
Sand	43.3
Coarse sand	10.0
Medium sand	17.1
Fine sand	16.3
Silt	42.9
Clay	3.3

Case Narrative for Sample ID: BL-CS-JC09-050614DUP (A4E0201-09)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

Organic material (pine cone, moss, tree debris) present in +4, +10, +20 and +40 fractions.

Hydrometer readings for 1, 2, 4, and 8 minutes are estimated due to the presence of foam.



Express 12/21/14

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-12	Client Sample ID:	BL-CS-JC08-050614	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	Silty SAND with some Gravel and trace Clay		Max Particle Size:	Gravel	
Particle Shape:	Sub-angular to sub-rounded		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	11.256	233.534	222.28	2.19	217.5

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	6.244	38.585	32.34	32.34	14.9	85.1
10	2.00	6.299	17.666	11.37	43.71	5.2	79.9
Pan		5.641	181.963	176.32	220.03	79.3	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
		0.9786	E20112	1.311	18.828	18.453

Hydrometer Analysis

Start Date/Time	5/14/2014	12:30	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	101.635		G _s Correction Factor (α)	1.000
Percent Passing No. 10 Sieve	79.9		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	99.46		Corrected Dry Weight of Soil Tested (g) (W)	124.47

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	30.5	23.6	24.49	19.7	11.1	0.01301	0.043	15.72
2	20.5	23.6	14.49	11.6	12.7	0.01301	0.033	9.30
4	16.5	23.6	10.49	8.4	13.3	0.01301	0.024	6.74
8	14.5	23.6	8.49	6.8	13.7	0.01301	0.017	5.45
15	13	23.6	6.99	5.6	14	0.01301	0.013	4.49
30	11.5	23.7	5.53	4.4	14.2	0.01301	0.009	3.55
60	9.5	24.1	3.66	2.9	14.5	0.01301	0.006	2.35
90	9	24.1	3.16	2.5	14.7	0.01301	0.005	2.03
120	9	24.5	3.3	2.7	14.7	0.01286	0.005	2.12
240	7.5	25.4	2.11	1.7	14.8	0.01286	0.003	1.35
360	7	26.2	1.88	1.5	15	0.01272	0.003	1.21
1440	7	23.5	0.96	0.8	15	0.01301	0.001	0.62

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.315	8.734	7.42	56.58	6.0	73.9
40	0.425	1.318	13.813	12.50	78.26	10.0	63.9
60	0.250	1.311	14.769	13.46	101.60	10.8	53.1
100	0.150	1.320	15.714	14.39	126.58	11.6	41.5
140	0.105	1.313	10.107	8.79	141.83	7.1	34.5
200	0.075	1.312	9.369	8.06	155.81	6.5	28.0
230	0.063	1.316	5.825	4.51	163.63	3.6	24.4
			Sum	69.13	230 Minus	30.33	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-JC08-050614 (A4E0201-12)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			20.09
Retained on No. 4 sieve	4.75	85.13	14.87
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	79.91	5.23
Sand			55.54
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	73.95	5.96
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	63.91	10.04
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	53.09	10.81
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	41.53	11.56
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	34.47	7.07
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	27.99	6.47
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	24.37	3.62
Silt and Clay (Measurements in the Clay fraction are noted)			24.37
Hydrometer Test	0.0433	15.72	8.65
Hydrometer Test	0.0328	9.3	6.42
Hydrometer Test	0.0237	6.74	2.57
Hydrometer Test	0.0170	5.45	1.28
Hydrometer Test	0.0126	4.49	0.96
Hydrometer Test	0.0090	3.55	0.94
Hydrometer Test	0.0064	2.35	1.2
Hydrometer Test	0.0053	2.03	0.32
Hydrometer Test	Clay	0.0045	2.12
Hydrometer Test	Clay	0.0032	1.35
Hydrometer Test	Clay	0.0026	1.21
Hydrometer Test	Clay	0.0013	0.59

Grain Size Summary	Percent of Total Sample
Gravel	20.1
Sand	55.5
Coarse sand	6.0
Medium sand	32.4
Fine sand	17.2
Silt	22.3
Clay	2.0

Case Narrative for Sample ID: BL-CS-JC08-050614 (A4E0201-12)

This data is not to be used for engineering purposes.
 No difficulty dispersing the fraction passing the No. 10 sieve.
 Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.
 The assumed specific gravity used in the calculations was 2.65.

Organic material (pine cone, tree litter) present in +4, +10, +20 and +40 fractions.
 Hydrometer readings for 1, 2, 4, 8, and 15 minutes are estimated due to the presence of foam.



Express 12/31/14

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-29	Client Sample ID:	BL-CS-JC01-050714	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	Gravelly SAND with trace Silt and Clay		Max Particle Size:	Gravel	
Particle Shape:	Sub-angular to sub-rounded		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	16.125	666.156	650.03	0.37	647.7

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	6.272	121.771	115.50	115.50	17.8	82.2
10	2.00	6.364	139.152	132.79	248.29	20.5	61.7
Pan		11.607	412.588	400.98	649.27	61.7	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
		0.9963	E20129	1.314	40.091	39.949

Hydrometer Analysis

Start Date/Time	5/14/2014	12:49	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	103.504		G _s Correction Factor (α)	1.000
Percent Passing No.10 Sieve	61.7		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	103.12		Corrected Dry Weight of Soil Tested (g) (W)	167.24

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	10	23.7	4.03	2.4	14.5	0.01301	0.050	1.48
2	9.5	23.7	3.53	2.1	14.5	0.01301	0.035	1.30
4	9	23.7	3.03	1.8	14.7	0.01301	0.025	1.12
8	8	23.7	2.03	1.2	14.8	0.01301	0.018	0.75
15	8	23.7	2.03	1.2	14.8	0.01301	0.013	0.75
30	7.5	23.8	1.56	0.9	14.8	0.01301	0.009	0.58
60	7	23.9	1.1	0.7	15	0.01301	0.007	0.40
90	7	24.2	1.2	0.7	15	0.01301	0.005	0.44
120	6.5	24.6	0.84	0.5	15	0.01286	0.005	0.31
240	6	25.6	0.68	0.4	15.2	0.01272	0.003	0.25
360	6	25.9	0.78	0.5	15.2	0.01272	0.003	0.29
1440	6	23.7	0.03	0.0	15	0.01301	0.001	0.01

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.313	45.876	44.56	420.93	26.6	35.0
40	0.425	1.315	36.591	35.26	557.59	21.1	13.9
60	0.250	1.310	12.920	11.61	602.57	6.9	7.0
100	0.150	1.305	5.626	4.32	619.31	2.6	4.4
140	0.105	1.319	2.882	1.56	625.36	0.9	3.5
200	0.075	1.317	2.536	1.22	630.08	0.7	2.7
230	0.063	1.309	1.938	0.63	632.52	0.4	2.4
Sum			99.18		230 Minus	3.94	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-JC01-050714 (A4E0201-29)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			38.34
Retained on No. 4 sieve	4.75	82.17	17.83
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	61.66	20.5
Sand			59.31
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	35.02	26.65
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	13.92	21.09
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	6.98	6.94
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	4.4	2.58
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	3.46	0.93
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	2.73	0.73
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	2.36	0.38
Silt and Clay (Measurements in the Clay fraction are noted)			2.36
Hydrometer Test	0.0495	1.48	0.87
Hydrometer Test	0.0350	1.3	0.18
Hydrometer Test	0.0249	1.12	0.18
Hydrometer Test	0.0177	0.75	0.37
Hydrometer Test	0.0129	0.75	0
Hydrometer Test	0.0091	0.58	0.17
Hydrometer Test	0.0065	0.4	0.17
Hydrometer Test	0.0053	0.44	0
Hydrometer Test	Clay	0.0045	0.31
Hydrometer Test	Clay	0.0032	0.25
Hydrometer Test	Clay	0.0026	0
Hydrometer Test	Clay	0.0013	0.24

Grain Size Summary	Percent of Total Sample
Gravel	38.3
Sand	59.3
Coarse sand	26.6
Medium sand	30.6
Fine sand	2.0
Silt	2.0
Clay	0.4

Case Narrative for Sample ID: BL-CS-JC01-050714 (A4E0201-29)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

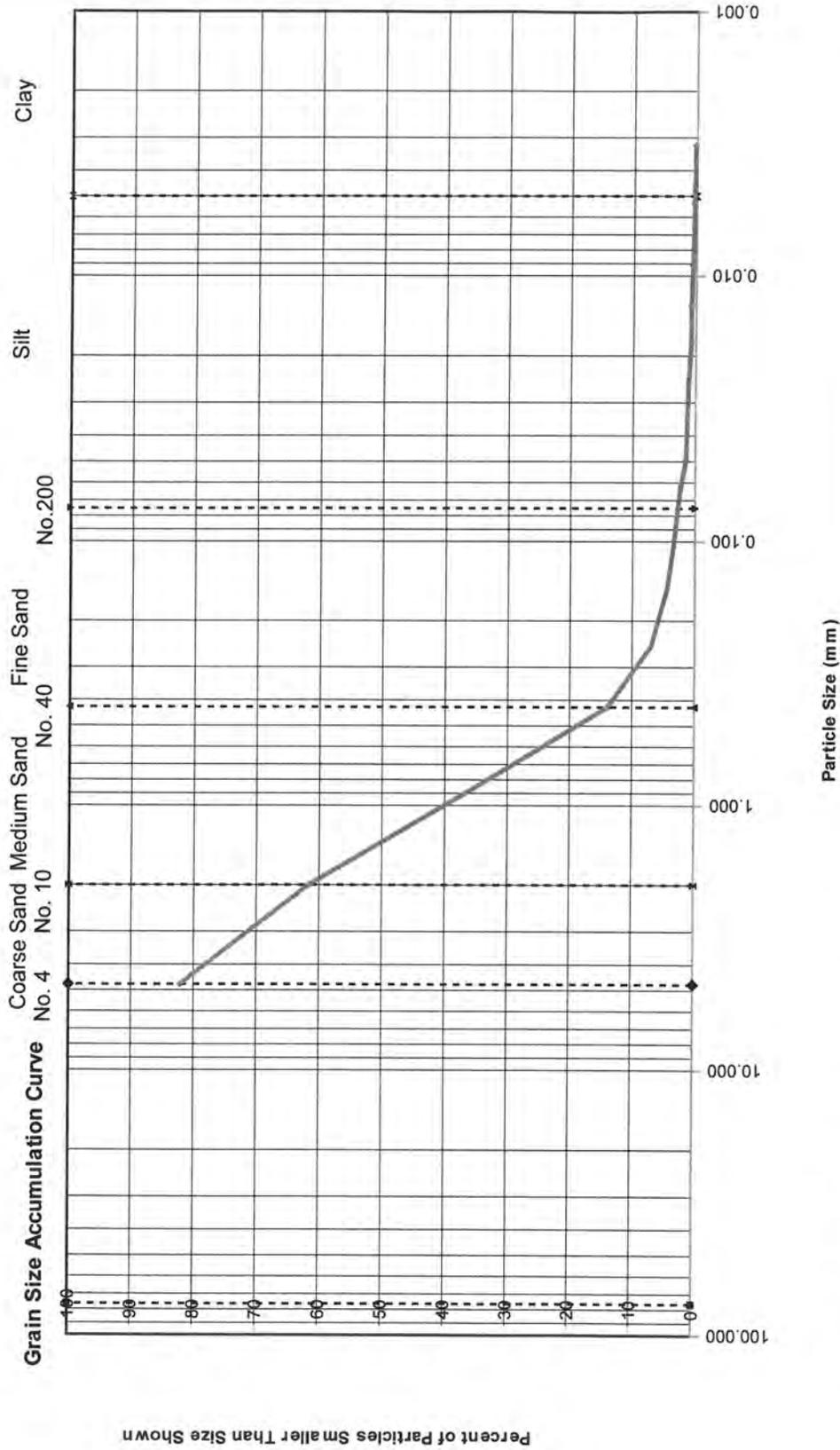
Hydrometer readings for 1, 2, and 4 minutes are estimated due to the presence of foam.

Trace organic debris present in +4 and +10 fractions.



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Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified



Sample ID: BL-CS-JC01-050714 (A4E0201-29)				
Specific Gravity	2.65	GRAVEL & SAND		SOIL DESCRIPTION
		MAXIMUM PARTICLE SIZE	PARTICLE SHAPE	
		Gravel	Sub-angular to sub-rounded	Gravelly SAND with trace Silt and Clay
			Hard and durable	

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-31	Client Sample ID:	BL-CS-EC04-050714	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	SAND with trace Gravel, Silt, and Clay		Max Particle Size:	Gravel	
Particle Shape:	Sub-angular to sub-rounded		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	16.771	651.506	634.74	0.26	633.1

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	6.272	40.687	34.42	34.42	5.4	94.6
10	2.00	6.272	56.497	50.23	84.64	7.9	86.6
Pan		10.937	560.734	549.80	634.44	86.6	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
		0.9974	E20131	1.319	37.996	37.900

Hydrometer Analysis

Start Date/Time	5/14/2014	13:16	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	114.705		G _s Correction Factor (α)	1.000
Percent Passing No. 10 Sieve	86.6		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	114.40		Corrected Dry Weight of Soil Tested (g) (W)	132.06

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	8.5	23.8	2.56	1.9	14.7	0.01301	0.050	1.68
2	8.5	23.8	2.56	1.9	14.7	0.01301	0.035	1.68
4	8	23.8	2.06	1.6	14.8	0.01301	0.025	1.35
8	8	23.8	2.06	1.6	14.8	0.01301	0.018	1.35
15	8	23.9	2.1	1.6	14.8	0.01301	0.013	1.37
30	7	23.9	1.1	0.8	15	0.01301	0.009	0.72
60	7	24.3	1.23	0.9	15	0.01301	0.007	0.81
90	6.5	24.6	0.84	0.6	15	0.01286	0.005	0.55
120	6.5	24.8	0.9	0.7	15	0.01286	0.005	0.59
240	6	25.6	0.68	0.5	15.2	0.01272	0.003	0.44
360	6	25.9	0.78	0.6	15.2	0.01272	0.003	0.51
1440	6	24	0.13	0.1	15	0.01301	0.001	0.09

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.304	42.621	41.32	282.68	31.3	55.3
40	0.425	1.309	41.291	39.98	474.32	30.3	25.1
60	0.250	1.322	20.186	18.86	564.74	14.3	10.8
100	0.150	1.311	8.801	7.49	600.64	5.7	5.1
140	0.105	1.307	3.454	2.15	610.93	1.6	3.5
200	0.075	1.323	2.624	1.30	617.16	1.0	2.5
230	0.063	1.314	1.887	0.57	619.91	0.4	2.1
Sum				111.67	230 Minus	2.73	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-EC04-050714 (A4E0201-31)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			13.37
Retained on No. 4 sieve	4.75	94.56	5.44
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	86.63	7.93
Sand			84.56
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	55.34	31.29
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	25.07	30.28
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	10.78	14.28
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	5.11	5.67
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	3.49	1.63
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	2.5	0.99
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	2.07	0.43
Silt and Clay (Measurements in the Clay fraction are noted)			2.07
Hydrometer Test	0.0499	1.68	0.39
Hydrometer Test	0.0353	1.68	0
Hydrometer Test	0.0250	1.35	0.33
Hydrometer Test	0.0177	1.35	0
Hydrometer Test	0.0129	1.37	0
Hydrometer Test	0.0092	0.72	0.63
Hydrometer Test	0.0065	0.81	0
Hydrometer Test	0.0053	0.55	0.17
Hydrometer Test	Clay	0.0045	0
Hydrometer Test	Clay	0.0032	0.1
Hydrometer Test	Clay	0.0026	0
Hydrometer Test	Clay	0.0013	0.36

Grain Size Summary	Percent of Total Sample
Gravel	13.4
Sand	84.6
Coarse sand	31.3
Medium sand	50.2
Fine sand	3.0
Silt	1.5
Clay	0.5

Case Narrative for Sample ID: BL-CS-EC04-050714 (A4E0201-31)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

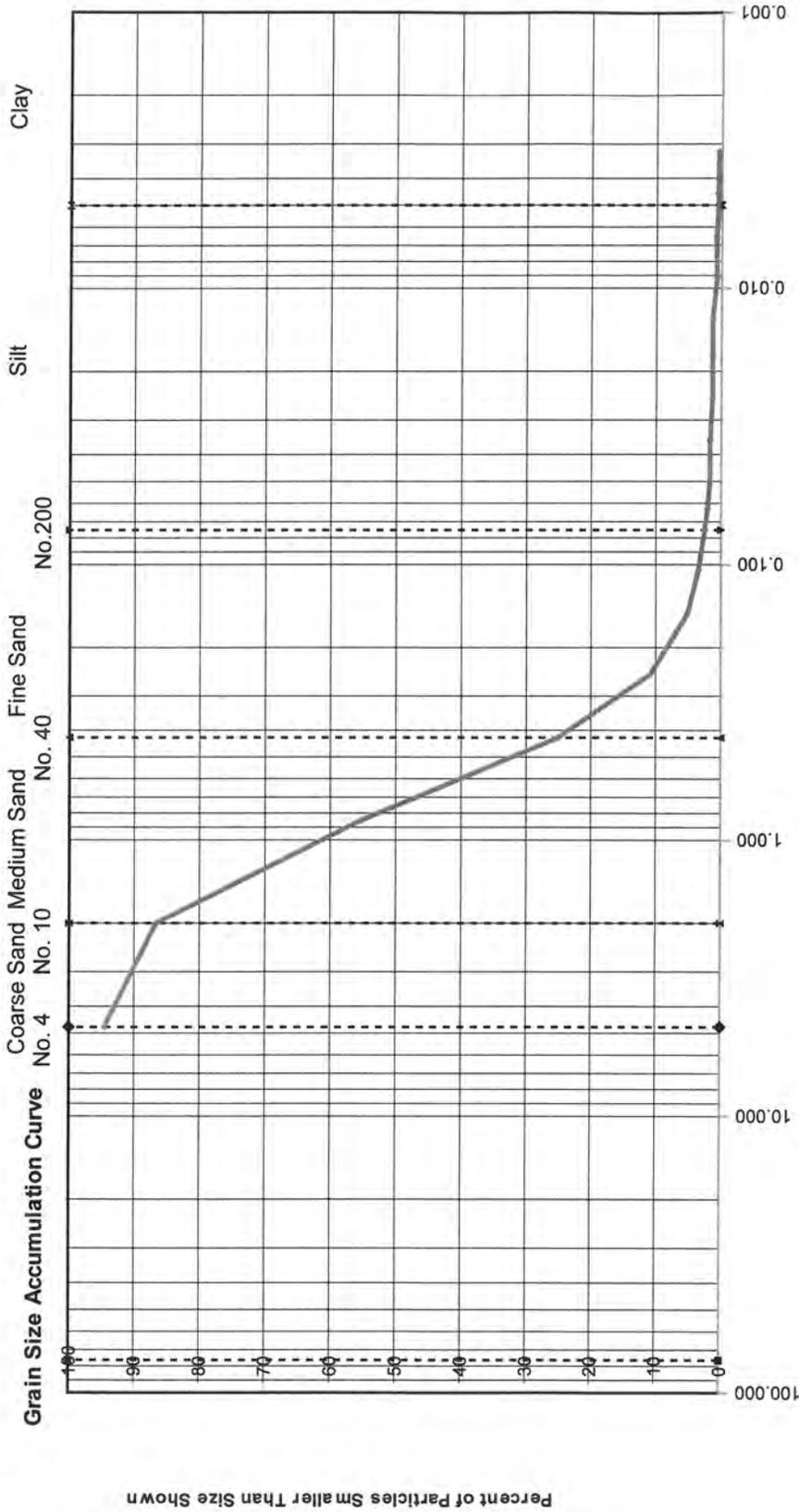
The assumed specific gravity used in the calculations was 2.65.

Organic material (wood, tree litter) present in +4 and +10 fractions.



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Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified



Sample ID: BL-CS-EC04-050714 (A4E0201-31)		GRAVEL & SAND		SOIL DESCRIPTION
Specific Gravity	2.65	MAXIMUM PARTICLE SIZE	HARDNESS	
		Gravel	Hard and durable	
		PARTICLE SHAPE		SAND with trace Gravel, Silt, and Clay
		Sub-angular to sub-rounded		

Apex Laboratories, LLC

Particle Size Analysis of Soil by ASTM D 422

Sample ID:	A4E0201-33	Client Sample ID:	BL-CS-EC06-050714	Batch Number:	4050621
Data Entered by:	JSJ	Date:	05/21/14	Data Reviewed by:	JPW
Date:				Date:	05/22/14
Sample Description:	SAND with trace Silt and Clay		Max Particle Size:	Gravel	
Particle Shape:	Sub-rounded		Hardness	Hard and durable	

Whole Sample	Tare	Air Dry + Tare	Air Dry	Moisture	Dry Wt.
	10.460	584.536	574.08	0.28	572.5

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Wt. Retained	% Retained	% Passing
4	4.75	1.316	1.784	0.47	0.47	0.1	99.9
10	2.00	1.318	1.827	0.51	0.98	0.1	99.8
Pan		10.899	583.649	572.75	573.73	99.8	

Hygroscopic Moisture Correction

Hygroscopic Correction Factor	Oven Sample	Pan No.	Tare	Air Dry + Tare	Oven Dry + Tare	Moisture
		0.9972	E20133	1.314	31.127	31.044

Hydrometer Analysis

Start Date/Time	5/14/2014	13:38	Dispersing Agent	NaPO ₃
Air Dry Sample Wt. for Hydrometer Test (g)	117.048		G _s Correction Factor (α)	1.000
Percent Passing No. 10 Sieve	99.8		Specific Gravity (G _s)	2.65
Dry Weight of Soil Tested (g)	116.72		Corrected Dry Weight of Soil Tested (g) (W)	116.92

Elapsed Time (min)	Hydrometer Reading	Temperature (°C)	Corrected Hydrometer Reading [R]	% Finer of Hydrometer Sample	L	K	Particle Diameter (mm)	Percent Passing
1	9.5	23.9	3.6	3.1	14.5	0.01301	0.050	3.07
2	9	23.9	3.1	2.6	14.7	0.01301	0.035	2.64
4	9	23.9	3.1	2.6	14.7	0.01301	0.025	2.64
8	8	24	2.13	1.8	14.8	0.01301	0.018	1.82
15	8	24.1	2.16	1.9	14.8	0.01301	0.013	1.85
30	7	24.2	1.2	1.0	15	0.01301	0.009	1.02
60	7	24.4	1.27	1.1	15	0.01301	0.007	1.08
90	7	24.6	1.34	1.1	15	0.01286	0.005	1.14
120	6.5	24.8	0.9	0.8	15	0.01286	0.005	0.77
240	6	26.4	0.95	0.8	15.2	0.01272	0.003	0.81
360	5.5	25.8	0.25	0.2	15.2	0.01272	0.003	0.21
1440	6	24.2	0.2	0.2	15	0.01301	0.001	0.17

Sieve Analysis of Portion Finer Than No. 10 Sieve

Sieve Number	Opening (mm)	Tare	Dry + Tare	Weight Retained	Cumulative Retained	% Retained	% Passing
20	0.850	1.316	3.223	1.91	10.31	1.6	98.2
40	0.425	1.321	21.235	19.91	107.75	17.0	81.2
60	0.250	1.308	44.931	43.62	321.21	37.3	43.9
100	0.150	1.310	31.584	30.27	469.35	25.9	18.0
140	0.105	1.318	11.037	9.72	516.91	8.3	9.7
200	0.075	1.312	6.529	5.22	542.44	4.5	5.2
230	0.063	1.311	3.047	1.74	550.93	1.5	3.7
			Sum	112.39	230 Minus	4.33	

Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified

Sample ID: BL-CS-EC06-050714 (A4E0201-33)

Grain Size Analysis Summary from Sieving and Hydrometer Testing	Particle Size (mm)	Percent Finer	Total Percent of Sample
Gravel			0.17
Retained on No. 4 sieve	4.75	99.92	0.08
Gravel, passing No. 4 sieve and retained on No. 10 sieve	2.00	99.83	0.09
Sand			96.12
Coarse sand, passing No.10 sieve and retained on No. 20 sieve	0.8500	98.2	1.63
Medium sand, passing No.20 sieve and retained on No. 40 sieve	0.4250	81.17	17.03
Medium sand, passing No.40 sieve and retained on No. 60 sieve	0.2500	43.86	37.31
Medium sand, passing No. 60 sieve and retained on No.100 sieve	0.1500	17.96	25.89
Fine sand, passing No. 100 sieve and retained on No.140 sieve	0.1060	9.65	8.31
Fine sand passing No. 140 sieve and retained on No. 200 sieve	0.0750	5.19	4.46
Fine sand, passing No. 200 sieve and retained on No. 230 sieve	0.0630	3.71	1.48
Silt and Clay (Measurements in the Clay fraction are noted)			3.71
Hydrometer Test	0.0495	3.07	0.64
Hydrometer Test	0.0353	2.64	0.43
Hydrometer Test	0.0249	2.64	0
Hydrometer Test	0.0177	1.82	0.82
Hydrometer Test	0.0129	1.85	0
Hydrometer Test	0.0092	1.02	0.8
Hydrometer Test	0.0065	1.08	0
Hydrometer Test	0.0053	1.14	0
Hydrometer Test	Clay	0.0045	0.77
Hydrometer Test	Clay	0.0032	0.81
Hydrometer Test	Clay	0.0026	0.56
Hydrometer Test	Clay	0.0013	0.04

Grain Size Summary

Percent of Total Sample

Gravel	0.2
Sand	96.1
Coarse sand	1.6
Medium sand	80.2
Fine sand	14.3
Silt	2.7
Clay	1.0

Case Narrative for Sample ID: BL-CS-EC06-050714 (A4E0201-33)

This data is not to be used for engineering purposes.

No difficulty dispersing the fraction passing the No. 10 sieve.

Dispersion device used: Commercial drink mixer operating at least 10,000 rpm for one minute.

The assumed specific gravity used in the calculations was 2.65.

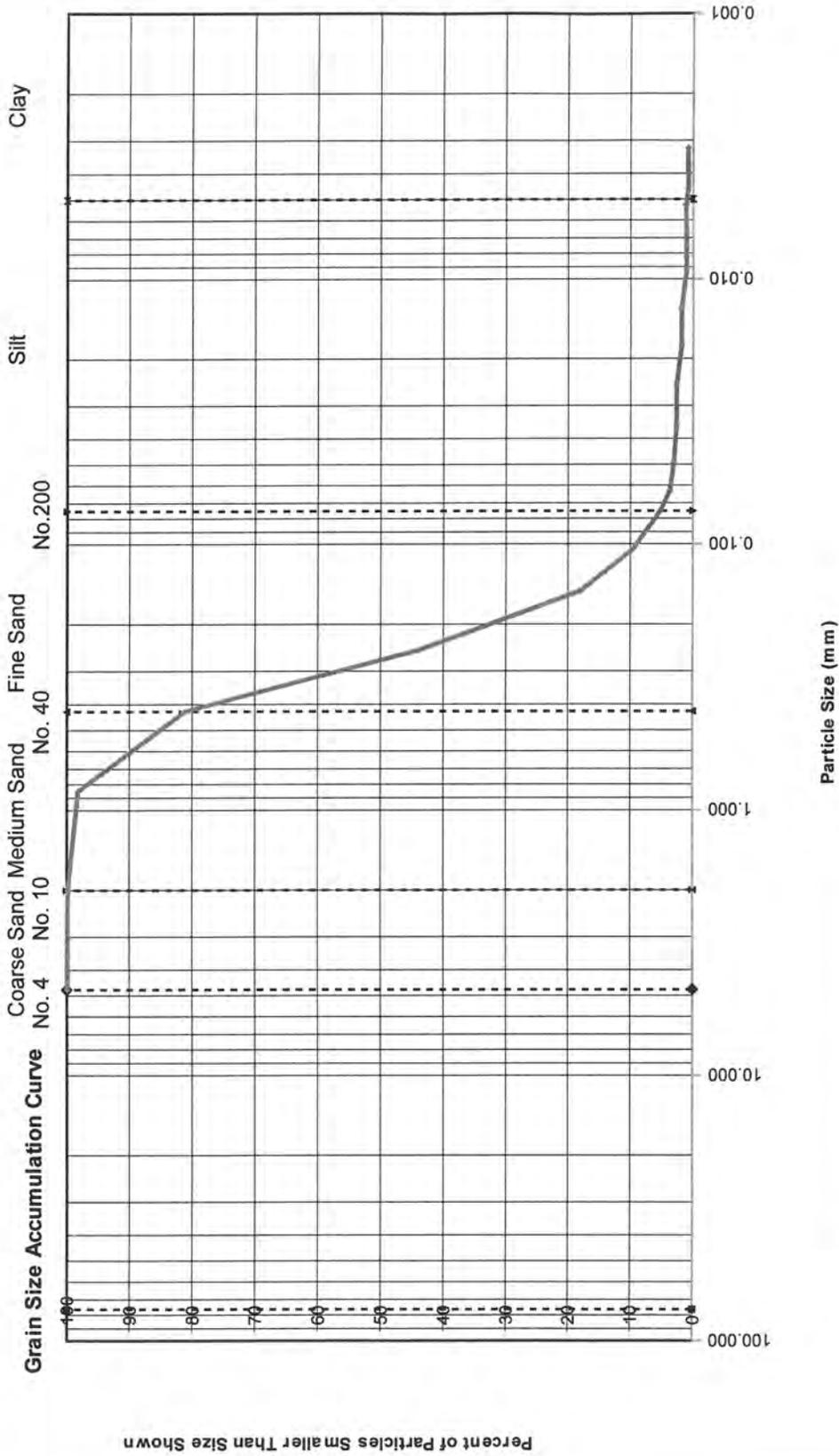
Organic material (roots, grass) present in +4 and +10 fractions.

Hydrometer readings for 1, 2, and 4 minutes are estimated due to the presence of foam.



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Apex Laboratories, LLC
Particle Size Analysis of Soil by ASTM D 422 Modified



Sample ID: BL-CS-EC06-050714 (A4E0201-33)		SOIL DESCRIPTION	
Specific Gravity	2.65	GRAVEL & SAND	
		MAXIMUM PARTICLE SIZE	HARDNESS
	Gravel	PARTICLE SHAPE	HARDNESS
		Sub-rounded	Hard and durable
			SAND with trace Silt and Clay

Appendix C. Spring 2014 Biannual Monitoring Field Notes



DAILY FIELD ACTIVITY LOG

Prepared by: Annica Nord Client: USFS
 Day: one Date: 5/6/14
 Project Name: Blue Ledge Project No.: 2010-084
 Weather: overcast Page: 1 of 2
 Site Vistors: Jonathan Heyl (USFS)

Description of Field Activities:

800 AN on site. Meet Brian ~~Wetstein~~ Wetstein, Jeremy Podvin, and Eric West at the Conex. Load up with sample supplies. They will perform pilot testing on various methods for disposing of the leachate.

815 AN at the repository. Depth to water in repository sump is 244 inches

Sump leachate

9.95°C
 12482 µS/cm
 52.5 % DO
 5.44 DO mg/L
 2.96 pH
 341.0 ORP
 6.7 NTU
 pH measured = 3.56 w/ pH meter

1035 Collect sediment sample BL-Basin 2A-050614 from basin 2A.

1046 Collect sediment sample BL-Basin 2B-050614 from basin 2B.

1109 Collect sediment sample BL-Basin 3-050614 from basin 3.

1222 Collect surface water sample BL-SW-JC10-050614 from JC10.

5.40°C
 66 µS/cm
 0.040 mS/cm
 72.5 ORP
 0.4 NTU
 82.2 DO%
 10.45 DO mg/L
 6.45 pH

1225 Collect sediment sample BL-CS-JC10-050614 from JC10.

1310 Collect one sample jar from basin 1A through 1F for a composite sample of WRP.

Signed: [Signature] Date: 5/6/14



DAILY FIELD ACTIVITY LOG

Prepared by: Annica Nord Client: USFS
 Day: one Date: 5/6/14
 Project Name: Blue Ledge Project No.: 2010-084
 Weather: cloudy Page: 2 of 3
 Site Vistors: Jonathan Heyl (USFS)

Description of Field Activities:

~~1418~~ ~~JC09~~ - Collect creek sediment sample ~~from~~ BL-CS-JC09-050614 and BL-CS-JC09-050614
 7.02°C 271.9 ORP
 133 µS/cm 2.3 NTU
 0.086 mS/cm
 81.2 DO%
 10.44 DO mg/L
 4.80 pH

~~1418~~ ~~JC08~~ Collect surface water sample BL-SW-JC09-050614

~~1430~~ JC08 - Collect surface water samples BL-SW-JC08-050614 and BL-SW-JC08-050614
 5.83°C
 62 µS/cm 183.6 ORP
 0.039 mS/cm 0.8 NTU
 83.0 DO%
 10.31 DO mg/L
 5.94 pH

~~1435~~ Collect creek sediment sample BL-CS-JC08-050614

~~1540~~ Collect native soil sample BL-NS-050614
 Sump leachate after removing 600 gallons.
 10.94°C 46.4 ORP
 12135 µS/cm 113.0 NTU
 8.843 mS/cm
 31.0 DO% * collected from the sump
 3.09 DO mg/L
 5.47 pH

1552 Collect leachate sample (after pumping 600 gallons out) BL-RS-050614
 collected from the sump
 Signed: [Signature] Date: 5/6/14



DAILY FIELD ACTIVITY LOG

Prepared by: Annica Nord Client: USFS
 Day: one Date: 5/6/14
 Project Name: Blue Ledge Project No.: 2010-084
 Weather: overcast Page: 3 of 3
 Site Vistors: Jonathan Heyl (USFS)

Description of Field Activities:

^(in tank)
 600 gallons removed this morning. Leachate geochemical parameters
 from sump: 14.66 °C 6.6 ORP
 11777 $\mu\text{S}/\text{cm}$ 59.4 NTU
~~988~~ 5.588 mS/cm
 8.0 DO% * collected from the above
 0.72 DO mg/L ground tank
 5.52 pH

1602 Collect clean limestone sample (the kind used in the sediment basins): BL-LS-050614.

1645: 17607 - collect drinking water sample and duplicate:
 BL-DW-17607-050614 and BL-DW-17607-050614 DUP
 12.78 °C -623 ORP
 511 $\mu\text{S}/\text{cm}$ *0.8 NTU
 0.392 mS/cm
 96.7 DO%
 10.16 DO mg/L
 7.88 pH

Bridgett is not home, Johan is not home and water is not on per Luke's investigation. I will try tomorrow.

1700 AN off site. Eric w Jeremy off site.

Signed: *Annica Nord*

Date: 5/6/14



DAILY FIELD ACTIVITY LOG

Prepared by: Annica Nord Client: USFS
 Day: two Date: 5/7/14
 Project Name: Blue Ledge Project No.: 2010-084
 Weather: sunny Page: 1 of 3
 Site Visitors: -

Description of Field Activities:

Bridget is home (462). Ask her if I can sample her water.
 830 Collect water sample from hose by bldg closest to road: ~~BL-462~~
 8.26°C 77.4 ORP BL-DW-462-050714
 293 µS/cm 3.3 NTU
 0.200 mS/cm
 76.0 DO%
 8.73 DO mg/L
 7.85 pH

Rob Fordell is at James house (12620).
 834 12620: Sample water from hose by house: BL-DW-12620-050714.
 10.56°C 52.5 ORP
 562 µS/cm 5.3 NTU
 0.408 mS/cm
 60.0 DO%
 5.92 DO mg/L
 7.65 pH

836 12620 Tiling: Sample irrigation water: BL-DW-12620irrig-050714.
 10.98°C 17.6 ORP
 444 µS/cm 15.5 NTU
 0.325 mS/cm
 44.9 DO%
 4.19 DO mg/L
 7.72 pH

ANI head up to repository to sample soil & leachate after mixing leachate and soil and letting sit all night.

Signed: [Signature] Date: 5/7/14



DAILY FIELD ACTIVITY LOG

Prepared by: <u>Annica Nord</u>	Client: <u>USFS</u>
Day: <u>TWO</u>	Date: <u>5/7/14</u>
Project Name: <u>Blue Ledge</u>	Project No.: <u>2010-084</u>
Weather: <u>Sunny</u>	Page: <u>2</u> of <u>3</u>
Site Visitors:	

Description of Field Activities:

Leachate after running through limestone and native soil (measured by YSJ)

6.51°C	-1.3 ORP
4892 μ S/cm	1925.8 NTU
5.492 mS/cm	
65.1 DO%	
7.60 DOmg/L	
6.13 pH	

921 Collect soil sample BL-NSL-050714 of native soil after running through leachate through limestone + then soil.

4 gallons of leachate was poured through 2.5 gallon (35 lbs) of limestone and then 2.5 gallons^(29 lbs) of native soil.

923 Collect sample of limestone from above test: BL-LSL-050714

937 Collect leachate after running through limestone and native soil as described above: BL-RST-050714.

~~110~~ 110 Collect sediment sample BL-CS-JC01-050714

115 Collect water sample BL-SW-JC01-050714

7.34°C	8.18 pH
115 μ S/cm	53.9 ORP
0.076 mS/cm	21.0 NTU
77.9 DO%	
9.45 DOmg/L	

Signed: *Annica Nord*

Date: 5/7/14



DAILY FIELD ACTIVITY LOG

Prepared by: Annica Nord Client: USFS
 Day: Tue Date: 5/7/14
 Project Name: Blue Ledge Project No.: 2010-084
 Weather: Sunny Page: 3 of 3
 Site Vistors: _____

Description of Field Activities:

1132 Collect surface water sample BL-SW-EC06-050714
 1135 Collect sediment sample BL-CS-EC06-050714
 7.38°C 31.6 ORP
 108 µs/cm 2.2 NTU
 0.072 mS/cm
 78.7 DO%
 9.52 DO mg/L
 8.16 pH

1150 Collect sediment sample BL-CS-EC04-050714.
 1152 Collect surface water sample BL-SW-EC04-050714
 7.57°C 35.3 ORP
 109 µs/cm 5.3 NTU
 0.073 mS/cm
 79.7 DO%
 9.53 DO mg/L
 8.07 pH

Bob takes us to Johann's house to let us inside to sample.
 1209 Collect drinking water sample (and HS/MSD) BL-DW-541-050714
 13.14°C 67.5 ORP
 503 µs/cm 1.9 NTU
 0.389 mS/cm
 46.1 DO%
 4.66 DO mg/L
 7.43 pH

1220 AN, Eric, Jeremy + Brian off site.

Signed: [Signature] Date: 5/7/14



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surveys shall be repeated every five years.

Article 4. Primary Standards--Inorganic Chemicals

§64431. Maximum Contaminant Levels--Inorganic Chemicals.

(a) Public water systems shall comply with the primary MCLs in Table 64431-A as specified in this article.

**Table 64431-A
Maximum Contaminant Levels
Inorganic Chemicals**

<i>Chemical</i>	<i>Maximum Contaminant Level, mg/L</i>
Aluminum	1.
Antimony	0.006
Arsenic	0.010
Asbestos	7 MFL
Barium	1.
Beryllium	0.004
Cadmium	0.005
Chromium	0.05
Cyanide	0.15
Fluoride	2.0
Mercury	0.002
Nickel	0.1
Nitrate (as NO ₃)	45.
Nitrate+Nitrite (sum as nitrogen)	10.
Nitrite (as nitrogen)	1.
Perchlorate	0.006
Selenium	0.05
Thallium	0.002

* MFL=million fibers per liter; MCL for fibers exceeding 10 um in length.

* See detection limits on next page (85)

§64432. Monitoring and Compliance--Inorganic Chemicals.

(a) All public water systems shall monitor to determine compliance with the nitrate and nitrite MCLs in Table 64431-A, pursuant to subsections (c) through (e) and §64432.1. All community and nontransient-noncommunity water systems shall monitor to determine compliance with the perchlorate MCL, pursuant to subsections (c), (d), (j), and Section 64432.3. All community and nontransient-noncommunity water systems shall also monitor to determine compliance with the other MCLs in Table 64431-A, pursuant to subsections (b) through (n) and, for asbestos, Section 64432.2. Monitoring shall be conducted in the year designated by the Department of each compliance period beginning with the compliance period starting January 1, 1993.

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(b) Unless directed otherwise by the Department, each community and nontransient-noncommunity water system shall initiate monitoring for an inorganic chemical within six months following the effective date of the regulation establishing the MCL for the chemical and the addition of the chemical to Table 64431-A.

(c) Unless more frequent monitoring is required pursuant to this Chapter, the frequency of monitoring for the inorganic chemicals listed in Table 64431-A, except for asbestos, nitrate/nitrite, and perchlorate, shall be as follows:

(1) Each compliance period, all community and nontransient-noncommunity systems using groundwater shall monitor once during the year designated by the Department. The Department will designate the year based on historical monitoring frequency and laboratory capacity. All community and nontransient-noncommunity systems using approved surface water shall monitor annually. All systems monitoring at distribution entry points which have combined surface and groundwater sources shall monitor annually.

(2) Quarterly samples shall be collected and analyzed for any chemical if analyses of such samples indicate a continuous or persistent trend toward higher levels of that chemical, based on an evaluation of previous data.

(d) For the purposes of Sections 64432, 64432.1, 64432.2, and 64432.3, detection shall be defined by the detection limits for purposes of reporting (DLRs) in Table 64432-A.

**Table 64432-A
Detection Limits for Purposes of Reporting (DLRs) for Regulated Inorganic Chemicals**

<i>Chemical</i>	<i>Detection Limit for Purposes of Reporting (DLR) (mg/L)</i>
Aluminum	0.05
Antimony	0.006
Arsenic	0.002
Asbestos	0.2 MFL > 10um*
Barium	0.1
Beryllium	0.001
Cadmium	0.001
Chromium	0.01
Cyanide	0.1
Fluoride	0.1
Mercury	0.001
Nickel	0.01
Nitrate (as NO ₃)	2.
Nitrite (as nitrogen)	0.4
Perchlorate	0.004
Selenium	0.005
Thallium	0.001



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Table 64449-B
Secondary Maximum Contaminant Levels
“Consumer Acceptance Contaminant Level Ranges”

+ DISSOLVED OXYGEN mg/L = 9.0
 + pH = 8.5-7.0
 + HARDNESS mg/L = 60

Maximum Contaminant Level Ranges

X
X
X

Constituent, Units	Recommended	Upper	Short Term
Total Dissolved Solids, mg/L or	500	1,000	1,500
Specific Conductance, μ S/cm	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

(b) Each community water system shall monitor its groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually for the following:

- (1) Secondary MCLs listed in Tables 64449-A and 64449-B; and
- (2) Bicarbonate, carbonate, and hydroxide alkalinity, calcium, magnesium, sodium, pH, and total hardness.

(c) If the level of any constituent in Table 64449-A exceeds an MCL, the community water system shall proceed as follows:

- (1) If monitoring quarterly, determine compliance by a running annual average of four quarterly samples;
- (2) If monitoring less than quarterly, initiate quarterly monitoring and determine compliance on the basis of an average of the initial sample and the next three consecutive quarterly samples collected;
- (3) If a violation has occurred (average of four consecutive quarterly samples exceeds an MCL), inform the Department when reporting pursuant to Section 64451;
- (4) After one year of quarterly monitoring during which all the results are below the MCL and the results do not indicate any trend toward exceeding the MCL, the system may request the Department to allow a reduced monitoring frequency.

(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

- (1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.
- (2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.

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Article 14. Treatment Techniques

§64448. Treatment Technique Requirements.

(a) A public water system which uses acrylamide and/or epichlorohydrin in drinking water treatment shall certify annually in writing to the Department that the combination of dose and monomer does not exceed the following levels:

- (1) Acrylamide: 0.05% monomer in polyacrylamide dosed at 1 mg/L, or equivalent.
- (2) Epichlorohydrin: 0.01% residual of epichlorohydrin dosed at 20 mg/L, or equivalent.

Article 16. Secondary Drinking Water Standards

§64449. Secondary Maximum Contaminant Levels and Compliance.

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

**Table 64449-A
Secondary Maximum Contaminant Levels
“Consumer Acceptance Contaminant Levels”**

<i>Constituents</i>	<i>Maximum Contaminant Levels/Units</i>
X Aluminum	0.2 mg/L
X Color	15 Units
X Copper	1.0 mg/L
X Feeding Agents (MBAS)	0.5 mg/L
X Iron	0.3 mg/L
X Manganese	0.05 mg/L
X Methyl tert-butyl ether (MTBE)	0.005 mg/L
X Odor Threshold	5 Units
X Silver	0.1 mg/L
X Thiobencarb	0.001 mg/L
X Turbidity	5 Units
X Zinc	5.0 mg/L