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December 19, 2014

Mr. Steven Merritt
On-Scene Coordinator
United States Environmental Protection Agency, Region 8
Mail Code: 8EPR-ER
1595 Wynkoop Street
Denver, CO 80202

Re: Stone Castle Recycling - Removal Site Evaluation
Parowan, Iron County, Utah
TDD: 0001/1410-01
DCN: W0183.1A.00352
WO#: 20408.012.001.0183.00

Dear Mr. Merritt:

The United States Environmental Protection Agency (U.S. EPA) tasked the Weston Solutions, Inc., (WESTON®) Superfund Technical Assessment and Response Team (START) under Technical Direction Document (TDD) 0001/1410-01 to support U.S. EPA at the Stone Castle Recycling Assessment Site (Site) in Parowan, Iron County, Utah. The tasking included a targeted Removal Site Evaluation (RSE) to assess site specific contaminants and a Treatability Study to determine the most effective approach for binding leachable metals and reducing disposal costs. **Attachment A** provides the figures for this report. **Attachment B** provides the approved Sampling and Analysis Plan (SAP) for the assessment. **Attachment C** provides photographic documentation of Site conditions. **Attachment D** provides the Site Debris Treatability Study. **Attachment E** provides the analytical results tables. **Attachment F** provides a copy of the analytical results. **Attachment G** provides a copy of the Site Logbook.

SITE DESCRIPTION

The Site address is 1338 West 200 South, Parowan, Iron County, Utah. The site is located at latitude 37.8393198 and longitude -112.8572735 (Attachment A, Figure 1-2). This site was referred to EPA by the Utah Department of Environmental Quality's (UTDEQ) Division of Solid and Hazardous Waste, following a series of mysterious and well-publicized fires at electronics waste recycling facilities throughout the state operated by Stone Castle, LLC. This commercial property is currently owned by both the Wheeler Family Trust and the Carr Family Trust.



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SITE HISTORY

From the document *U.S. EPA Action Memorandum* dated 11/24/14:

The Site was discovered by the Solid and Hazardous Waste Division in the Utah Department of Environmental Quality (UTDEQ) during the course of an investigation into three electronics waste recycling facilities operated by Stone Castle, LLC (Stone Castle) in Clearfield, Cedar City, and Parowan, Utah. Stone Castle was in the business of scrapping used and donated cathode-ray tube (CRT) television sets on behalf non-profit organizations and municipalities along the Interstate 15 corridor in Utah. Stone Castle operated at the Site from approximately August 2013 to March 2014, when there was a fire at the Site. After the fire, the electronic waste materials at the Site were abandoned.

When it functioned as an operating entity, Stone Castle dismantled electronics, sold the component parts, and recovered raw materials. During this dismantling procedure, Stone Castle removed the cathode-ray from the leaded-glass vacuum tube inside CRT televisions. Stone Castle segregated, crushed, and sent this glass to other leaded glass makers to melt down and create new leaded-glass CRTs. Following the move from analog to digital broadcasting, and the corresponding shift from CRT televisions to plasma and liquid-crystal display (LCD) high-definition televisions, the market for leaded glass collapsed. Stone Castle had large volumes of nearly worthless CRTs and recovered raw materials without sufficient revenue to properly process electronic waste, to pay employees and facility leases, and to dispose of the electronic wastes.

These wastes were placed into corrugated cardboard "Gaylord boxes" and frequently stored outside of already full warehouse storage areas, where they rapidly deteriorated and failed, spilling their contents onto the ground, subjecting the contents to further weathering. The storage of these materials outside led to multiple fires at Stone Castle facilities, potentially caused by projection television lenses concentrating heat from solar radiation onto flammable materials. The CRT stockpile left outside at the Site caught fire on March 2, 2014. During the fire at the Site, the Parowan Fire Department used heavy equipment to push containerized CRTs and electronic wastes away from the waste materials engulfed in the fire to create a fire break. As a result, there are three discrete piles of material at the Site: burned electronic waste debris containing approximately 340 cubic yards of material, mixed electronic waste debris containing approximately 830 cubic yards of material, and 640 cubic yards of intact CRT televisions in deteriorating corrugated cardboard boxes (Attachment A, Figure 3).

On August 13, 2014, acting on information provided by both the EPA Region 8 Resource Conservation and Recovery Act (RCRA) Program and the Solid and Hazardous Waste Division of the Utah Department of Environmental Quality



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(UTDEQ), the OSC conducted a preliminary assessment of the Site to determine whether a Removal Site Evaluation was warranted. At the time of this visit, UTDEQ was pursuing all available enforcement remedies available under the Utah Solid and Hazardous Waste Act and RCRA to have the Stone Castle complete a clean-up of the Site by September 28, 2014. Because of that, and other factors, the EPA agreed to postpone activities until after the September 28, 2014 deadline.

On September 29, 2014, after Stone Castle failed to comply with the UTDEQ enforcement order deadline for removing wastes, the property owner contacted the OSC and agreed to provide access to the EPA. The OSC immediately tasked the START contractor to perform a Removal Site Evaluation and conduct a Treatability Study on the wastes present at the Site.

SCOPE OF WORK

Following discussion with OSC Steve Merritt, START completed a scoping plan on October 6, 2014. The plan outlined project staffing and the task structure for the assessment work. START was tasked by EPA with the following scope of work as part of the Removal Site Evaluation and Treatability Study to be performed at the Site:

- Develop a SAP detailing multimedia sampling and analysis sufficient to characterize the level of metals contamination in the waste materials, TCLP leachate, burned debris, and the soils beneath waste piles. In addition, any historical datasets from the area were to be reviewed and included as part of this assessment. All data generated was used to determine if removal actions are warranted at the Site (Attachment B).
- Collection of additional Site data including photo documentation, geospatial data collection, and general site documentation sufficient to characterize hazards and estimate waste volumes present (Attachments A and C). Uploading data to the website and/or viewer for this Site on EPAOSC.net promptly, in accordance with the EPA Region 8 Response Unit Data Management Plan (DMP).
- Explore the CRT television disassembly process and estimate the weight and volume of the components per unit, including segregating the panel glass, circuit boards, and surround enclosures.
- Locate an agricultural supply vendor near the Site with sufficient supply of phosphate fertilizers available year-round. Purchase a small quantity (approximately 40 pounds) of a higher phosphate fertilizer for use in a treatability study.
- Plan and execute a treatability study to determine whether there are field-expedient, innovative, cost-effective, or novel approaches to reducing the toxicity characteristic from site waste (Attachment D).
- Data evaluation to determine the most cost-effective disposal method for the large volumes of CRT wastes. Results and findings were to be communicated to EPA and other involved parties to ensure timely decision making and expedite conduct of any Removal Action.



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BACKGROUND RESEARCH

Current disposal of electronic waste and CRT televisions varies based on state-specific regulations. From *Leaching of Lead from Computer Printed Wire Boards and Cathode Ray Tubes by Municipal Solid Waste Landfill Leachates* by Yong-Chuljang and Timothy G. Townsend (Department of Environmental Engineering Sciences, University of Florida, Gainesville, Florida 32611-6450):

In the United States, under regulations promulgated as part of the Resource Conservation and Recovery Act (RCRA), solid wastes containing large amounts of leachable lead are regulated as hazardous wastes unless otherwise exempted. Lead leaching is measured using a batch extraction test known as the Toxicity Characteristic Leaching Procedure (TCLP, U.S. EPA Method 1311). In a previous study, color CRTs from televisions and computer monitors were found to leach enough lead using the TCLP to be toxicity characteristic (TC) hazardous wastes in most cases. The majority of samples tested exceeded the TC limit of 5 mg/L for lead. Discarded color CRTs are thus considered TC hazardous wastes unless test results show otherwise.

Generators other than households who dispose of more than 100 kg of color CRTs per month must manage them via a permitted hazardous waste facility. Conditionally exempt small quantity generators (CESQGs), who produce less than 100 kg per month, may under RCRA dispose of these wastes in a state-permitted solid waste management facility. Many states, however, ban CESQG hazardous waste from landfills.

RCRA regulations exclude solid waste produced by households from the definition of hazardous waste; a color television or computer monitor that is disposed by a household is not a hazardous waste. At least one state, California, has not adopted the household waste exclusion. Because many CRTs can still be legally disposed in municipal solid waste landfills, state environmental regulators and local communities must determine what additional initiatives, if any, should be enacted to address CRT disposal.

In an effort to divert the Site electronic wastes from landfill disposal, START researched whether commercial recycling of the waste was a viable option. Several private recycling facilities were located and contacted for quotes on recycling intact CRT televisions or the CRT glass only. This research identified two major obstacles to recycling the electronic wastes at the Site: labor costs to prepare the wastes for recycling and the transportation costs to the recycling facilities. The nearest certified recycling and processing facilities were several hundred miles away from the site in California or Arizona. In addition, most of the electronic waste at the Site would need to be sorted, repackaged, and disassembled to reduce the number of shipments. Based on waste volume estimates and the labor involved in sorting, packaging, and disassembly, START estimated the ERRS contract labor requirements for recycling only the intact televisions to exceed the cost for hazardous waste disposal of all wastes present at the Site.



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At about the same time, EPA determined that due to the provisions and amendments of RCRA and waste disposal regulations, the electronic wastes present at the site, including the intact CRTs, were no longer eligible for recycling. The conditional exclusions and exemptions for recycling CRTs instead of treating them as a hazardous waste do not apply if these materials were stored outside or abandoned. Thus, the decision was made to explore and evaluate methods of on-Site treatment for the hazardous debris as a method to reduce disposal costs.

START evaluated the applicability of accepted and proven treatment methodologies for non-volatile metals within soil matrices for potential applicability to the electronic wastes at the Site. From the EPA bulletin on *Treatment of Lead-Contaminated Soils* (EPA 540/2-91/009- April 1991):

Solidification/stabilization reduces the hazardous potential of contaminated sites by converting the contaminants into their least soluble, mobile, or toxic form, thus minimizing their potential migration offsite. The process has been well developed for above-ground application.

As a treatment agent, fertilizer with high phosphate content has been shown to be effective in treating non-volatile metals within soil matrices. From *Use of Phosphates to Immobilize Lead in Community Garden Soils* (Stilwell and Ranciato) bulletin:

The effectiveness of using phosphate-based compounds to immobilize lead in soils is well established (Hettiarachchi and Pierzynski 2004). This technique is based on the observation that insoluble lead compounds are produced after adding phosphates.

One of the potential issues outlined in the report was the potential for increased mobility of arsenic after treatment with phosphate:

Addition of phosphate to arsenic contaminated soils can have the undesired side effect of releasing arsenic into the soil solution, thus increasing its potential to contaminate runoff water. This increase in solution phase arsenic occurs because added phosphate (PO_4^{-3}) can replace arsenate AsO_4^{-3} in the soil particles (Peryea and Kammereck 1997, Peryea 1999).

The insoluble lead compounds, mostly consisting of pyromorphite minerals, will remain bound to soil and reduce the potential toxicity. From the article *Amending Soils with Phosphate as Means to Mitigate Soil Lead Hazard: A Critical Review of the State of the Science* (Scheckel, Diamond, Burgess, Klotzbach, Massaloni, Miller, Partridge, and Serda 2013):

The rationale for amending soils with phosphate is that phosphate will promote formation of highly insoluble lead species (e.g., pyromorphite minerals) in soil...



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... Numerous model batch studies were performed and demonstrated that lead minerals and lead sorbed to clay minerals and oxides result in the formation of pyromorphite when exposed to a phosphate source.

This research and the corresponding determination that the electronic wastes present at the site were ineligible for recycling under RCRA led START toward evaluating the use of proven solidification/stabilization techniques in the Treatability Study. START developed the plan for the Treatability Study around binding the lead present in the CRTs with phosphate to create insoluble pyromorphite minerals on hazardous debris surfaces for the waste present at the Site (Attachment D).

REMOVAL SITE EVALUATION

EPA tasked START with documenting and inventorying waste at the Site to determine if it posed a threat to human health or the environment. To assess the conditions at the Site, START was tasked with sample collection and site documentation. Prior to site work, a SAP was completed and approved which detailed multimedia sampling and analysis sufficient to characterize the waste at the site (Attachment B).

On October 14, 2013 Jeff Bryniarski, Eric Sandusky, and Ellie Kastner (WESTON START), mobilized to the Site. A safety meeting was held prior to beginning field work regarding the hazards of working near the waste at the Site. The stockpiles of waste were found to be in three distinct matrices: burned debris, general electronic waste, and intact CRT televisions. START inspected each waste matrix and estimated the volumes based on geospatial data. The volume estimates for the burned debris, general electronic waste, and intact CRT televisions were 317.78, 512.78, and 512.75 cubic yards (yd³), respectively. The total waste volume at the Site was estimated at 1,661.67 yd³.

Soil was collected from eleven locations to determine possible impacts from the metals present in the waste as well as the presence of toxic thermal decomposition byproducts from the fire at the Site. A duplicate soil sample was collected to satisfy quality assurance/quality control requirements. Each soil sample was collected using a hand auger at a depth of 0-6 inches below ground surface. Sampling at this interval was thought to properly characterize potential soil contamination beneath the abandoned wastes due to the fact that these materials had been on Site less than a year and deeper migration of contaminants into the soil profile was unlikely in that timeframe. Field screening results collected at each sampling location with x-ray fluorescence (XRF) instrumentation confirmed that surface soils contained lead values ranging from 6.0 ppm to 78.0 ppm, well below the typical EPA screening level of 400 parts per million. At each sampling location, photos and global positioning system (GPS) data were also collected.

START also collected composite samples of each of the waste matrices present at the Site for the purpose of documenting the toxicity characteristics and determining whether the lead from the



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CRT glass was prone to migrate if the material was left to weather and degrade on Site. In an effort to have sufficient representative quantities of waste material to work with for the Treatability Study, START also collected in bulk approximately 4 gallons each of the broken CRT glass, burned debris, mixed electronic waste, and impacted soil. Each of these waste materials was placed into 5 gallon plastic buckets, which were labeled, sealed, and transported back to the EPA Warehouse in Denver, Colorado for later processing and chemical treatment. These wastes would later be returned to the Site for proper disposal.

All samples, except the bulk wastes for the Treatability Study, were placed in laboratory grade glass jars, labeled, placed on ice, maintained at approximately 4 degrees Celsius, and transported under proper chain of custody procedures to the Accutest Laboratories in Wheat Ridge, Colorado. All soil samples were analyzed for target analysis list (TAL) Metals. Two of the soil samples were analyzed for Dioxins. The waste samples were analyzed for Toxic Characteristic Leaching Procedure (TCLP) Metals and semivolatile organic compounds (SVOCs) to determine if they exhibited toxicity or other hazardous waste characteristics.

While conducting the Removal Site Evaluation, START conducted additional assessment activities with an eye toward CRT recycling and waste disposal options. Included in these activities was documenting the quantity, volume, and mass of leaded-glass present in the intact televisions at the Site and determining the typical labor necessary to disassemble the television sets to recover the CRT and segregate all other components. From visual inspection, the average intact CRT television had a 27 inch screen and weighted approximately 40 pounds. The particular unit that START disassembled weighed 36 pounds. Following disassembly and segregation, the leaded-glass weighed 33 pounds, or roughly 92% of the total mass, the circuit board and electronic components weighed two pounds, or roughly 5% of the total mass, and the plastic enclosure weighed the remaining one pound, or roughly 3% of the total mass. The methodical disassembly of an average sized CRT television set took approximately five minutes.

Prior to departing the site, START found a local agricultural supplier, IFA Country Store, located in Cedar City, Utah. This vendor stocked ample supplies of various fertilizers in close proximity to the Site. START provided this information to both EPA and the Emergency and Rapid Response Services (ERRS) contractor for use in planning the removal action. START then purchased approximately 40 pounds of a monoammonium phosphate (MAP) fertilizer for use in the Treatability Study.

All data collected during the Removal Site Evaluation was uploaded to a geospatial map viewer and linked to the website at <http://www.epaosc.org/stonecastlerecyclingparowan>. The data displayed in the viewer included sample locations, waste pile volumes and areal extents, photographs, XRF soil screening data, and sample results, once they were received from the analytical laboratories and validated by START. The viewer was also constructed to support additional functionality for potential future work at the Site, including displaying real-time air monitoring data from particulate instruments.



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TREATABILITY STUDY

In order to evaluate the effectiveness of on-site waste treatment, START conducted a bench-scale Treatability Study. The first round of testing was conducted on October 29th at the EPA Warehouse in Denver, Colorado. Based on the research into previous studies and the availability of phosphate fertilizers near the Site, the first treatment product tested was agricultural grade MAP fertilizer which contained 11% nitrogen and 52% phosphate, by weight.

In order to meet the size criteria for TCLP Metals analysis specified in EPA Method 1311, in which the wastes need to pass through a 3/8" sieve, the waste needed to be crushed. START had all composite samples of the waste matrices at the Site processed by Hazen Research in Golden, Colorado using industrial grinding equipment. The grinding equipment was decontaminated after each sample was processed. The size reduction ensured that the phosphate would have better interaction with more surface area in the ground waste.

Following processing, the various waste matrices, CRT television glass, burned debris, and mixed waste, including both non-hazardous debris and soils from the Site, were prepared for treatment. The elements of the mixed waste matrix were determined by estimating the ratio of each material in the quantity it is likely to be found at the Site. This resulted in a mixture composed of roughly 30% intact television parts and non-hazardous debris, 30% broken leaded-glass, 30% burned debris, and 10% impacted soil.

All samples were treated with both 1% and 3% MAP phosphate. These treatment ratios were chosen based upon the research into proven metals-contaminated soil treatment with MAP from other treatability studies. The treatment ratios were determined by weighing dry samples and MAP prior to the addition of 10% water, by weight, to all of the samples (Attachment E, Table 1). In all samples except SCOU1T07, START used a mortar and pestle to pulverize the pelletized MAP into a powder. This step helped to increase the reagent surface area for more immediate reaction with the lead in the waste during mixing. Each sample was mixed in a separate, clean container and allowed to react for 24 hours. The total weight of each sample submitted for TCLP Metals analysis was controlled at 1,000 grams, which contained sufficient volume for the analysis. All samples were submitted to Accutest Laboratories in Wheat Ridge, Colorado for TCLP Metals analysis.

The results of these treatability samples indicated that two treatment ratios, SCOU1T02 (glass) and SCOU1T05 (mixed waste) were unsuccessful in binding the lead below the EPA regulatory limit of 5.0 mg/L via TCLP. The variability seen in the data was deemed unacceptable for reliably treating Site wastes. After discussion of the results from the first round of testing with EPA and the ERRS contractor, the need for additional treatability testing was identified. Further research and discussions with other resources at EPA lead to the identification of a second treatment agent, Portland cement. This agent was thought to provide physical binding of the mobile metals in the hazardous debris.



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EPA tasked START with conducting a second round of testing that included both Portland cement and MAP. For this second round, only the broken leaded-glass matrix was used since the initial analytical results indicated that this material contained the highest concentrations of leachable lead requiring treatment. For the appropriate treatment ratio of Portland cement to hazardous debris, START consulted related EPA removal projects and available technical literature, which indicated ratios of up to 30%, by weight.

Given the costs of transportation and disposal at the site, EPA expressed concerns about higher ratios due to the resultant additional volume and weight for transportation and disposal. As a result, START evaluated 3% (SCOU1T09) and 10% (SCOUT10) Portland cement treatment ratios for the second round of testing. START also tested the effect of both treatment agents together at 3% MAP and 3% Portland cement on another sample of leaded-glass (SCOU1T11). Finally, START submitted a sample to investigate the impact of large hazardous debris particle sizes being treated and mixed prior to the size reductions required to pass through the 3/8” sieve for TCLP testing. This sample, SCOU1T12, was intended to test whether there was sufficient available reagent left in the hazardous debris to bind new surface areas when particle size reduction occurred after treatment and the results are directly comparable to sample SCOU1T02.

As in the first round, the treatment ratios were determined by weighing dry samples and the treatment reagents prior to the addition of 10% water, by weight, to all of the samples (Attachment E, Table 2). The pelletized MAP was pulverized into powder by START using a mortar and pestle. This step helped to increase the reagent surface area for more immediate reaction with the lead in the waste during mixing. Each sample was mixed in a separate, clean container and allowed to react for 24 hours. The total weight of each sample submitted for TCLP Metals analysis was controlled at 1,000 grams, which contained sufficient volume for the analysis. All samples were submitted to Accutest Laboratories in Wheat Ridge, Colorado for TCLP Metals analysis.

Treatability Study	Sample ID (SCOU1__ __)											
	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10	T11	T12
Size (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3 **
Portland (% w/w)	0	0	0	0	0	0	0	0	3	10	3	0
MAP (% w/w)	1	3	1	3	1	3	3 *	0	0	0	3	3
Waste Matrix	Glass	Glass	Burned Debris	Burned Debris	Mixed Waste	Mixed Waste	Mixed Waste	Glass	Glass	Glass	Glass	Glass
TCLP Lead Concentration (mg/L) ***	3.9	<u>8.5</u>	3.2	1.8	<u>8.1</u>	0.6	0.7	<u>16.8</u>	<u>6.4</u>	1.7	0.1	<u>10.9</u>

* MAP agent was added in pellet form, without grinding in mortar and pestle

** Batch was mixed prior to size reduction

*** Italicized underlined red values exceed and green values are below RCRA regulatory limit (5.0 mg/L) for TCLP Metals



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As shown in the table above, the treatability study showed the best reduction in TCLP leachable lead in sample SCOU1T11, which dropped the TCLP lead concentration from 16.8 mg/L to 0.1 mg/L or roughly a 99% reduction, as compared to sample SCOU1T08, which was the control. Sample SCOU1T11 was also the only sample with a measurable amount of arsenic (0.058 mg/L), cadmium (0.025 mg/L), chromium (0.019 mg/L), and mercury (0.0014 mg/L), but all of these results are below the RCRA regulatory limits for TCLP Metals. Sample SCOU1T11 was crushed CRT leaded-glass that was mechanically ground down to pass through a 3/8" sieve before being wet with approximately 10% water, treated and mixed with 3% powdered MAP, allowed to react briefly, and finally treated and mixed with 3% Portland cement, and allowed to react for 24 hours. The mixture of the more expensive MAP, which has been proven to bind lead from the CRT substrates, with a similar amount of the heavier and less expensive Portland cement, proved that the bench-scale results could likely be implemented in the field on a larger scale with locally available reagents.

Based upon these results and discussions with both ERRS and START, EPA made the decision to process the hazardous debris at the Site and add the MAP using an industrial-scale horizontal grinder, followed by mixing the Portland cement into the partially treated stockpiles with a pug mill, and then packaging the entire mixture into roll-off dumpsters for disposal. If the wastes treated in the field using this treatment train achieve similar TCLP Metals results, as expected, this treatment methodology will allow the wastes to be disposed of in a RCRA Subtitle D solid waste landfill, rather than a RCRA Subtitle C hazardous waste landfill. Based upon initial pricing from landfills closest to the site, using treatment could reduce waste disposal costs by about 85%, from roughly \$270/ton for hazardous waste to just under \$40/ton. Once the treatment reagents, processing equipment rental, and labor involved in treating the wastes have been factored in, the overall costs savings may drop to around 60% less than simply disposing of the Site wastes in a RCRA Subtitle C facility.

ANALYTICAL RESULTS

Factors to be considered in determining the appropriateness of a potential removal action at a Site are delineated in the NCP at 40 CFR 300.415(b)(2). A summary of the factors applicable to this Site, based upon the findings of this Removal Site Evaluation, are presented below:

- Actual or potential exposure of nearby human populations, animals, or the food chain to hazardous substances, pollutants, or contaminants;

The Site is situated between agricultural and residential properties. During the Removal Site Evaluation, it was noted that the Site borders residential properties to the south, southwest, and west. Analytical results from the site assessment indicate that hazardous substances, as defined by CERCLA Part 101(14), are present at the Site and represent an actual or potential threat to nearby human populations. The lead in the CRT glass is the primary contaminant present at the Site. Lead is listed as a hazardous substance per 40 CFR §302.4. Lead is prone to leaching from



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the surfaces of broken CRT glass once the cathode ray tube is ruptured and exposed to weathering in the environment. Both the TCLP testing and soil sampling results demonstrate that the lead present in the debris at the Site is being released into soils. Four waste samples from the Site were analyzed for TCLP Metals. All but one of the four samples SCOU1W04 (mixed debris) significantly exceeded the RCRA regulatory levels for leachable lead via TCLP Metals analysis (Attachment E, Table 5). The likely reason that sample did not also exceed the regulatory limits for lead is because of dilution and adsorption of leachable lead onto non-hazardous packaging materials present in the sample. SVOCs 3&4-Methylphenol and Phenol were only detected above the laboratory detection limit in Sample SCOU1W04 (mixed debris) of the hazardous debris. Again, the most likely source of these SVOCs would be the wood glue or stains from the pieces of pallets and other shipping materials present in the sample.

Similarly, the soil samples collected at the Site showed the presence of arsenic, also listed as a hazardous substance per 40 CFR §302.4, at concentrations above both the EPA Residential and Industrial Regional Screening Levels (RSLs) in all soil samples (Attachment E, Table 6). Due to issues with the background soil sample, discussed below, it is unclear whether the arsenic levels are directly attributable to the electronic wastes or endemic to the soils in the area. The highest concentration of lead in the soil samples collected was 81.2 mg/kg in sample SCOU1S03, which did not exceed either of the RSLs, and indicates that the decomposition and migration of lead from the leaded-glass in the CRTs had not yet significantly impacted the soils at the Site.

Mercury was detected in sample SCOU1S01, which was supposed to be the background soil sample location, and at this location the mercury concentration was 102.9 mg/kg, exceeding both the EPA Residential and Industrial RSLs. This location was well away from where the electronic wastes were abandoned at the Site and the detection of significant concentrations of mercury is inconsistent with the other results from soils in and around the electronic wastes. This location was also the location for soil sample SCOU1S11, which was intended to be the background sample for determining whether the combustion of electronic wastes created elevated soil dioxin concentrations. Unfortunately, there were more significant dioxin detections of Penta-furans, Hexa-furans, Hexa-dioxins, Hepta-furans, Hepta-dioxins, octachlorodibenzofuran (OCDF), and octachlorodibenzo-p-dioxin (OCDD), in this sample than there were in sample SCOU1S12, which was taken from the burned electronic waste area.

There are myriad sources of both of these contaminants from unrelated historical and current activities at the Site, including a former used car dealership and vehicle servicing area, and the current outdoor recreational vehicle repair shop at the back of the property. Given that used oil and used automotive fluids were found in drums at the site, this contamination is very likely unrelated to the electronic waste abandonment and attributable instead to these other activities. As such, EPA has decided to exclude these data points from further discussion as they are outside the scope of the Removal Site Evaluation, which was focused on the abandoned electronic wastes and directly related contamination.



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- Hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release

There are approximately 1,661.67 yd³ of hazardous electronic debris that have been abandoned at the Site. It is estimated that there are over 380 tons of leaded glass in the electronic wastes at the Site. During the Removal Site Evaluation, the corrugated cardboard boxes holding the intact CRT televisions were found to be rapidly deteriorating and open. All of the burned debris and mixed electronic waste present at the Site was stockpiled on the ground without any cover or containment. There are no fences or other access restrictions between the nearby road and the abandoned hazardous debris present at the site. Laboratory results, discussed above, documented that nearly of the waste present at the Site, excluding the packaging materials, were characteristically hazardous for lead using TCLP Metals analysis. A release of the hazardous substance lead from the wastes at the Site is highly likely as containers continue to deteriorate, CRTs fall to the ground and break, and the leaded-glass breaks down over time, exposing it to migration from wind and precipitation. Additionally, more fires and combustion byproducts are another potential threat due to the unfettered access to the site and the potential for wastes to be ignited by concentrated solar radiation through curved CRT panel glass or projection lenses.

Sincerely,
WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Jeff Bryniarski".

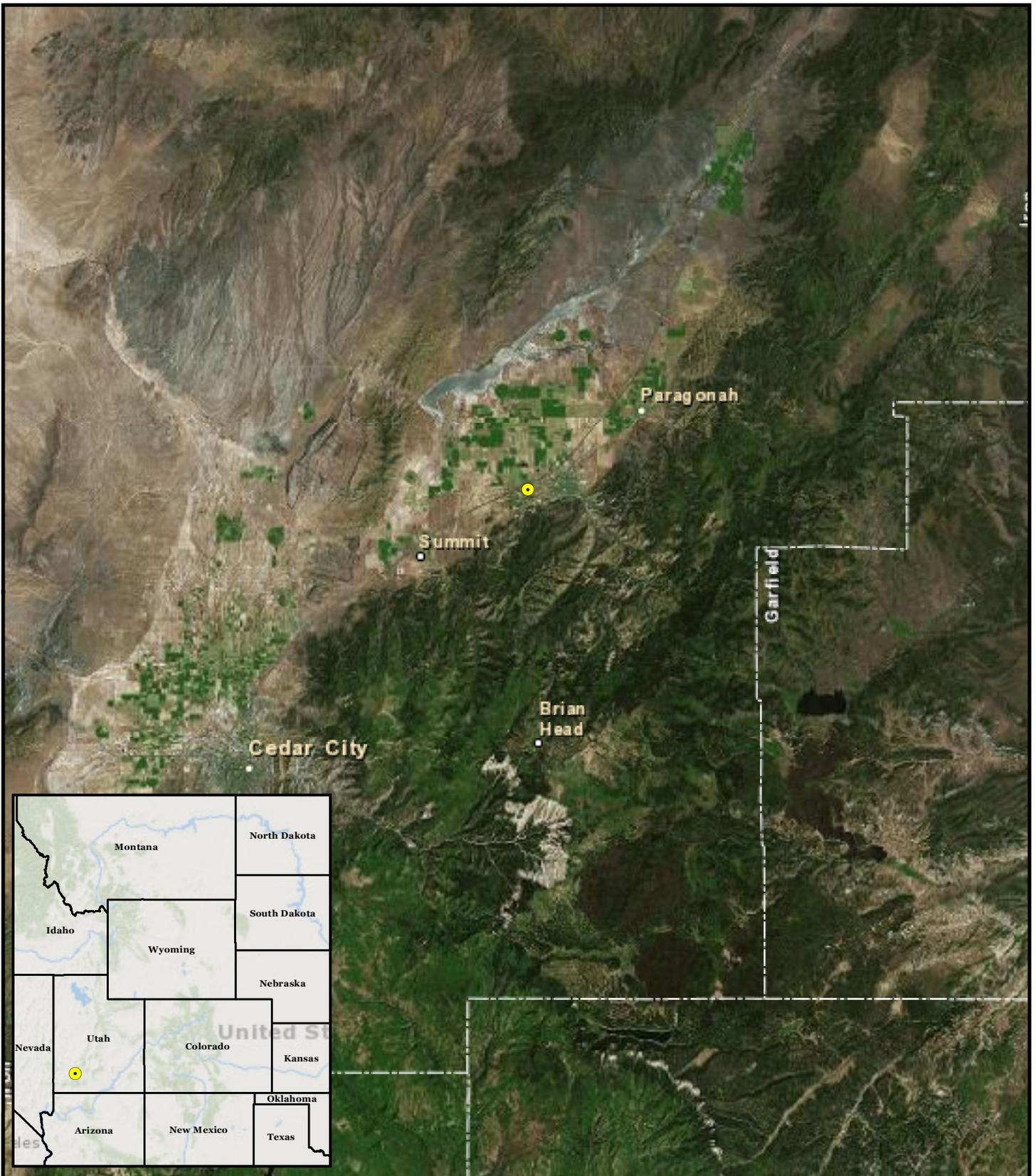
Jeff Bryniarski
Project Team Lead

Attachment:

- A – Figures
- B – Sampling and Analysis Plan
- C – Photo Log
- D – Site Debris Treatability Study
- E – Results Tables
- F – Laboratory Analytical Data
- G – Site Logbook
- H – TDD Scoping Plan

cc: Dave Robinson, Project Manager
START DCN File

Attachment A



Legend

● Site Location



Prepared for:
U.S. EPA Region 8



Contract No.:
EP-S8-13-01

TDD:
1410-01

TO:
0001

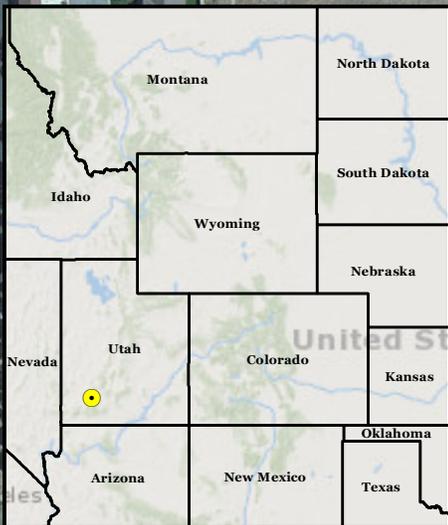


Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 1
SITE LOCATION MAP
STONE CASTLE RECYCLING
CITY OF PAROWAN
IRON COUNTY, UTAH

Date: 12/18/2014



Legend

 Site Boundary

0 100 200 400 Feet



Prepared for:
U.S. EPA Region 8



Contract No.:
EP-S8-13-01

TDD:
1410-01

TO:
0001

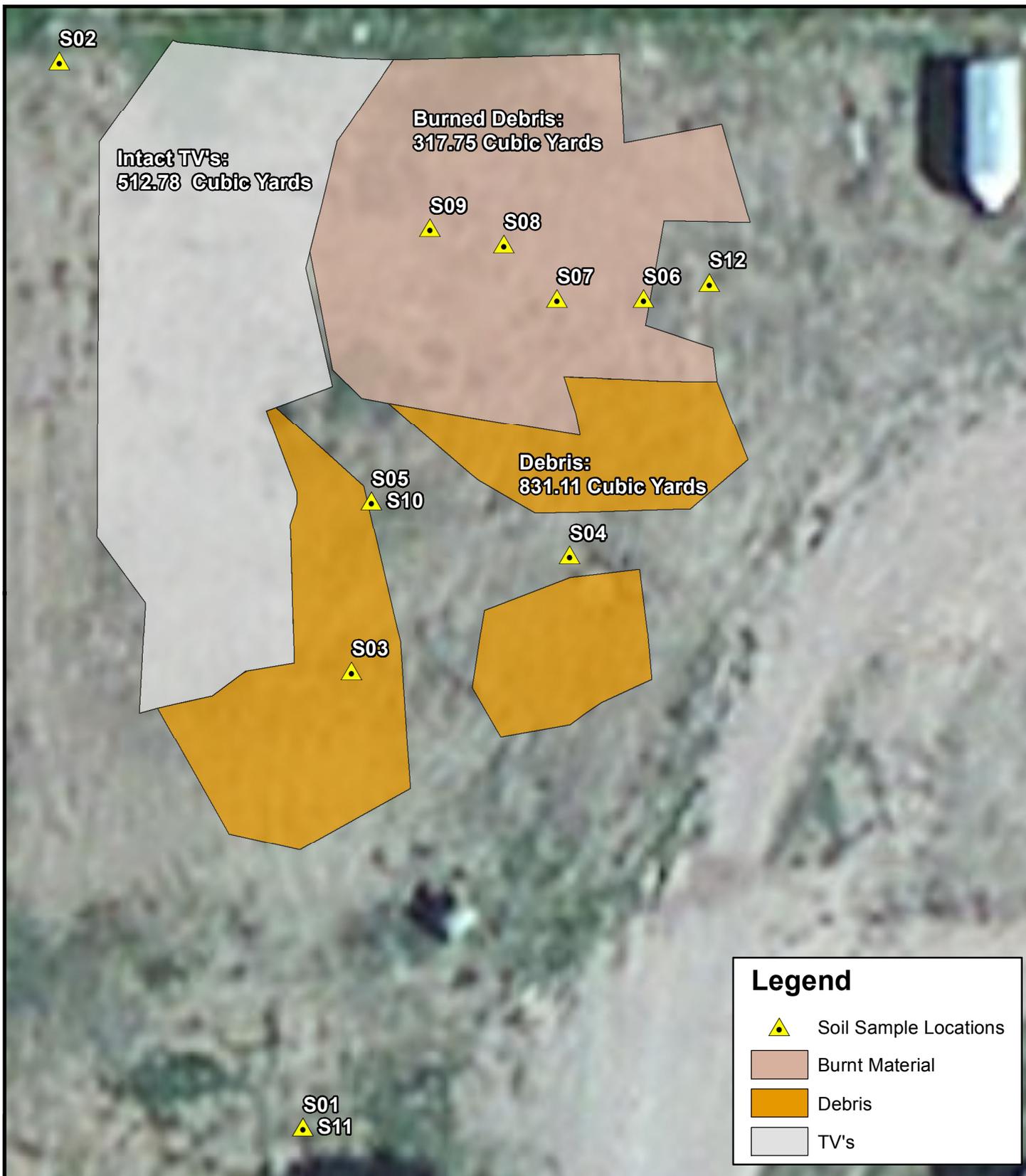


Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 2
SITE VICINITY MAP
STONE CASTLE RECYCLING
CITY OF PAROWAN
IRON COUNTY, UTAH

Date: 12/18/2014



Legend

-  Soil Sample Locations
-  Burnt Material
-  Debris
-  TV's

0 10 20 40 Feet



Prepared for:
 U.S. EPA Region 8

Contract No.:
 EP-S8-13-01

TDD:
 1410-01

TO:
 0001



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 Lakewood, CO 80215



FIGURE 3
SOIL SAMPLE
LOCATION MAP
STONE CASTLE RECYCLING
CITY OF PAROWAN
IRON COUNTY, UTAH

Date: 12/18/2014

Attachment B

**SAMPLING AND ANALYSIS PLAN
FOR
STONE CASTLE RECYCLING (OU1) SITE
PAROWAN, IRON, UTAH**

Prepared for
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 8

Prepared by
WESTON SOLUTIONS, INC.
Region 8 Superfund Technical Assessment and Response Team

Original Document Date
10/9/14
Document Revision Date
N/A

For approval signatures, see Worksheet 1 & 2.

Project Dates of Sampling:	10/14/14 to 10/16/14
Site Spill Identifier No.:	A8F5
Contract Name:	START IV
Contract No.:	EP-S8-13-01
Technical Direction Document No.:	0001/1410-01
Document Control No.:	W0183.1E.00308

SAP Revision Log

Site: Stone Castle Recycling (OU1)

OSC: Steve Merritt

TDD: 0001/1410-01

Date	Revision Number	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By

List of Acronyms

°C	degrees Celsius
%D	percent difference
%R	percent recovery
%RSD	percent relative standard deviation
ACM	asbestos containing material
AES	Atomic Emission Spectrometry
ANSI	American National Standards Institute
APP	Accident Prevention Plan
ARAR	applicable or relevant and appropriate requirements
ASQ	American Society for Quality
AST	aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
B	bias
CA	Corrective Action
CB	calibration blank
CCB	continuing calibration blank
CCV	continuing calibration verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERLIS	Comprehensive Environmental Response, Compensation, and Liability System
CHMM	Certified Hazardous Materials Manager
CLP	Contract Laboratory Program
cpm	counts per minute
CO	Contracting Officer
COC	Chain-of-Custody
COR	Contracting Officer Representative
Cr ⁺⁶	Hexavalent Chromium
CRL	Central Regional Laboratory
CRQL	Contract Required Quantitation Limits
CSM	Conceptual Site Model
CVAA	Cold Vapor Atomic Absorption
D	absolute range
DQI	Data Quality Indicator
DQO	Data Quality Objective
EDD	electronic data deliverable
EDX	Energy Dispersive X-Ray
ERM	Emergency Response Manager
ERT	Environmental Response Team
ESI	Expanded Site Inspection
FID	Flame Ionization Detector
FS	Feasibility Study
FSP	Field Sampling Plan
GC	gas chromatography
GC/MS	gas chromatography/mass spectrometry
GIS	Geographic Information System
HASP	Health and Safety Plan
HRGC/HRMS	high resolution gas chromatography/high resolution mass spectrometry

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List of Acronyms

HRGC/LRMS	high resolution gas chromatography/low resolution mass spectrometry
HRS	Hazard Ranking System
HPLC	high performance liquid chromatography
ICB	initial calibration blank
ICP	inductively coupled plasma
IDW	investigation-derived waste
ISTD	Instrument Standard
ITRC	Interstate Technology and Regulatory Council
LBP	lead based paint
LCS	laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MPC	Measurement Performance Criteria
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
NCP	National Contingency Plan
ND	non-detect
NIOSH	National Institute of Safety and Health
NPL	National Priorities List
NRCS	Natural Resource Conservation Service
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PAL	Project Action Limit
PCB	Pesticides/Polychlorinated biphenyls
PCDD	Polychlorinated Dibenzo-P-Dioxins
PCDF	Polychlorinated Dibenzofurans
PCM	Phase Contrast Microscopy
P.E.	Professional Engineer
PID	Photoionization Detector
PLM	polarized light microscopy
PM	Project Manager
PMP	Project Management Professional
POC	Point of Contact
PQL	Project Quantitation Limit
PQO	Project Quality Objectives
PPE	Personal Protective Equipment
PT	proficiency testing
PTL	Project Team Lead
PUF	polyurethane foam
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QMP	Quality Management Plan

W0183.1E.00308

List of Acronyms

Ra	Radium
RA	Risk Assessment
RAS	Routine Analytical Services
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RL	reporting limit
RM	Removal Manager
RML	Removal Management Levels
RPD	relative percent difference
RSD	relative standard deviation
RSL	regional screening levels
SAP	Sampling and Analysis Plan
SAS	Special Analytical Services
SCDM	Superfund Chemical Data Matrix
SI	Site Inspection
SOP	Standard Operating Procedure
SRM	Standard Reference Material
SSL	soil screening level
START IV	Superfund Technical Assessment and Response Team 4
SVOC	Semi-volatile Organic Compounds
TAL	Target Analyte List
TBD	to-be-determined
TCL	Target Compound List
TDD	Technical Direction Document
TEM	transmission electron microscopy
TSA	Technical Systems Audit
UFP-QAPP	Uniform Federal Policy–Quality Assurance Project Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
USGS	United States Department of the Interior Geologic Survey
UST	underground storage tank
VOC	Volatile Organic Compounds
WAM	Work Assignment Manager
WESTON	Weston Solutions, Inc.
XRD	x-ray diffraction
XRF	X-Ray Florescence

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Attachment A EPA Region 8 QA Document Review Crosswalk

Introduction

This SAP identifies the data collection activities and associated QA/QC measures specific to the Fort Belknap Wood Treatment Drums ER (the Site) located in Hays, Blaine, MT. All data will be generated in accordance with the quality requirements described in the Quality Assurance Project Plan for Region 8 CERCLA Removal and Emergency Response Activities in Colorado, Utah, Wyoming, Montana, North Dakota, and South Dakota (Weston 2013). The purpose of this SAP is to describe site-specific tasks that will be performed in support of the stated objectives. This SAP will reference the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment, and data review. Additional site-specific procedures and/or modifications to procedures described in the QAPP are described in the following SAP elements.

This SAP is prepared, reviewed, and approved in accordance with the procedures detailed in the QAPP. Any deviations or modifications to the approved SAP will be documented using the SAP Revision Form. This SAP is produced in accordance with the UFP for QAPPs and consists of the site-specific UFP Worksheets from the QAPP.

Project Organization and Team

Refer to the QAPP Worksheet 3 & 5, and 4, 7, & 8 for the program organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements. Project-specific information is provided below.

The following are key individuals identified for this project:

Name	Title/Role	Organization	Receive Copy of SAP?
Jeff Bryniarski	Project Team Lead	Weston	Yes
Dave Robinson	Project Manager	Weston	Yes
Steve Merritt	OSC	EPA	Yes

The individuals who will receive a copy of the Program QAPP are specified on QAPP Worksheet 3 & 5 (Project Organization and QAPP Distribution) as noted by the asterisk symbol adjacent to their names. The program QA Manager (QAPP Worksheet 4, 7 & 8) and the Project Manager will maintain the approved QA project plan consisting of the Program QAPP, Project SAP and SAP Document Review Crosswalk. The PTL will distribute the most current copy of the project QA documents via electronic or hard copy, as directed by the OSC. Files for this project will be kept in accordance with Section H.20 of Contract No.: EP-S8-13-01, stating a length of 10 years from close of the project or end of litigation.

QAPP Reference

Weston Solutions, Inc. 2013. Quality Assurance Project Plan for Region 8 CERCLA Removal and Emergency Response Activities in Colorado, Utah, Wyoming, Montana, North Dakota, and South Dakota. Prepared for the START IV Contract. July 2013.

Worksheet 1 & 2 — Title and Approval Page

(UFP-QAPP Manual Section 2.1)
(EPA 2106-G-05 Section 2.2.1)

1. Project Identifying Information

- a) Site Name/Project Name: Stone Castle Recycling (OU1)
- b) Site Location/Number: Parowan, Iron, UT
- c) Contract/Work Assignment Number: EP-S8-13-01/ 0001/1410-01

2) List Plans and reports from previous investigation relevant to this project.

The undersigned approves the entire UFP-QAPP document which includes this SAP and other elements that are found in the Region 8 Removal and Emergency Response QAPP (Revision 1.0).

**Lead Investigative Organization's SAP Author:
/ Project Team Leader**

Jeff Bryniarski/WESTON
Printed Name/Title



/ 10/9/14

Signature/Date

**Lead Investigative Organization's Project
Manager:**

Dave Robinson/WESTON
Printed Name/Title

David Robinson

Digitally signed by David Robinson
DN: cn=David Robinson, ou=Weston Solutions, Inc.,
c=US
Date: 2014.12.16 17:43:10 -0700

Signature/Date

**Lead Investigative Organization's Technical
Manager:**

<NAME>/WESTON
Printed Name/Title

Signature/Date

Federal Regulatory Agency OSC/Team Leader

Steve Merritt/OSC
Printed Name/Title

STEVEN MERRITT

c=US, o=U.S. Government,
ou=USEPA, ou=Staff, cn=STEVEN
MERRITT, dnQualifier=0000038999

10/15/14

Signature/Date

**Federal Regulatory Agency/ Delegated
Approval Officer:**

Printed Name/Title

Signature/Date

Document Control Numbering System: W0183.1E.00308

W0183.1E.00308

Worksheet 9 — Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1 and Figures 9-12)

(EPA 2106-G-05 Section 2.2.5)

Date of Planning Session: 8/11/14				
Location: Conference call				
Purpose: Scoping meeting for Fort Belknap Wood Treatment Drums ER				
Name	Title/Role	Organization	Phone No.	E-mail Address
Steve Merritt	OSC	EPA	303-312-6146	merritt.steven@epa.gov
Jeff Bryniarski	Project Team Lead	WESTON	303-729-6106	jeff.bryniarski@westonsolutions.com
Dave Robinson	Project Manager	WESTON	303-729-6181	david.robinson@westonsolutions.com

Notes/Comments:

A planning meeting was conducted in the Lakewood office after the EPA tasked START with sampling of waste at the Stone Castle Site, Iron County, Parowan, Utah. WESTON staff discussed the best way to proceed with the project. Discussed anticipated removal assessment activities and data management practices. Logistics for field work were also discussed.

Consensus Decisions Made:

- Mobilize on Monday, October 13, 2014, with site work beginning on Tuesday, October 14, 2014.
- START will utilize removal specific FileMaker Pro form on iPad to document pertinent information (form TBD). START will utilize Scribe mobile sampling application on iPad to document sampling activities.

Action Items:

Action	Responsible Party	Due Date
Develop a SAP	Jeff Bryniarski	10/10/14
Develop Health and Safety Plan	Jeff Bryniarski	10/10/14
Develop Equipment List	Eric Sandusky	10/9/14

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Worksheet 10 — Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2)

(EPA 2106-G-05 Section 2.2.5)

- **Problem Definition:**

The EPA has tasked START with documenting and inventorying of site waste at the Stone Castle Recycling (OU1) Site, Iron County, Parowan, Utah. START will collect samples for analysis to provide hazard characterization acceptable for disposal. Additional waste volume will be collected for a treatability study to be completed over the next month.

- **Background Information/Site History:**

This site was referred to EPA by the Solid and Hazardous Waste Program in the Utah Department of Environmental Quality, following a series of mysterious and well-publicized fires at electronics waste (e-waste) recycling facilities throughout the state operated by Stone Castle Recycling.

- **Contaminants of Concern/Target Analytes**

The site (OU1) contains large quantities of e-waste in containers of various sizes and conditions. The specific contaminants of concern are lead and other heavy metals to be determined.

Worksheet 11 — Project/Data Quality Objectives

(UFP-QAPP Manual Section 2.6.1)

(EPA 2106-G-05 Section 2.2.6)

1. State the Problem

E-waste in containers of various sizes and conditions are present on site. EPA has tasked START with sampling and analysis of site waste in order to efficiently manage into waste streams for transport and removal.

2. Identify the Goals of the Study

- START will collect samples for analysis to document and characterize site waste.
- START will collect waste for a treatability study to determine the effectiveness of potential on-site treatment options.
- START will document and inventory site waste for removal work approach.
- START staff will use SCRIBE and specific FileMaker Pro forms as data management tools to document site waste material.

3. Identify Information Inputs

Information that will be used to complete the above goals includes the following:

- Field X-Ray Fluorescence (XRF) analysis will be utilized to identify areas of metals contamination.
- Surface and subsurface soil samples will be collected, prepped, and run using XRF instrumentation.
- Additional samples will be sent to the laboratory for metals analysis as confirmation of the XRF results.
- Field sampling data will be recorded electronically in a Scribe mobile field sampling application on an iPad and uploaded into a Site-specific Scribe database.
- Additional field reconnaissance data may be collected using a Site-specific FileMaker assessment form (TBD).
- Sampling locations will be geospatially and photographically documented.
- All data will be loaded to the Site-specific geospatial viewer for operational purposes.
- All documentation will be loaded to the Site-specific EPAOSC.net website.
- Results of site waste treatability study will be released in a report document.

4. Define the Boundaries of the Study

Assessment activities, including sampling and field reconnaissance, will be conducted October 14-16, 2014 on only Operable Unit 1 (Parowan, UT).

5. Develop the Analytic Approach

Samples will be analyzed at an independent laboratory as follows:

- Surface and subsurface soil samples collected for field XRF analysis. Additional

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Worksheet 11 — Project/Data Quality Objectives

(UFP-QAPP Manual Section 2.6.1)

(EPA 2106-G-05 Section 2.2.6)

samples will be submitted to the laboratory for TAL Metals and Dioxin analysis.

- Waste samples will be submitted to the laboratory for SVOCs and TCLP Metals analysis.

Analytical sample results will be reviewed and verified by a WESTON START chemist to determine data usability. Analytical results will be compared to EPA Regional Screening Levels (RSLs) for residential soil and additional criteria as determined by the OSC. The OSC will develop site specific criteria for determining if a removal action is necessary.

6. Specify Performance or Acceptance Criteria

If uncertainty is identified during field screening, additional field tools will be employed to address the uncertainty. Performance and Acceptance criteria are addressed in Worksheet 17.

7. Develop the Detailed Plan for Obtaining Data

Data will be collected per the sampling design and rationale provided in Worksheet 17. Sample nomenclature is described in Worksheet 17, Identification and Handling. Sample descriptions will be logged in the field logbook using standard geologic descriptions. Documentation of assessment activities will be collected using a FileMaker Pro form loaded onto an iPad.

Sampling data will be collected using the Scribe Mobile Application loaded onto an iPad. Data will be entered into Scribe for data management and reporting purposes. Chain of custody forms will be generated from the Scribe database. A Scribe compatible EDD will be requested from the laboratory for importing analytical results into the database. Geospatial data will be collected using the iPad loaded with the ESRI mobile application and a Bluetooth connected GPS.

Worksheet 14 & 16 —Project Tasks & Schedule

(UFP-QAPP Manual Section 2.8.2)

(EPA 2106-G-05 Section 2.2.4)

Activity	Responsible Party	Planned Start Date	Planned Completion Date	Deliverable(s)	Deliverable Due Date
Develop a Draft SAP and the EPA Region 8 QA Document Review Crosswalk	WESTON	10/8/14	10/10/14	Draft SAP and the Draft EPA Region 8 QA Document Review Crosswalk	10/10/14
Address EPA comments on Draft SAP and the Draft EPA Region 8 QA Document Review Crosswalk	WESTON	Upon receiving comments	10/13/14	SAP and the Final EPA Region 8 QA Document Review Crosswalk	10/13/14
Develop HASP	WESTON	10/8/14	10/9/14	HASP	10/10/14
Mobilization/Demobilization	WESTON	10/13/14	10/17/14	Field Notes	NA
Sample Collection Tasks	WESTON	10/14/14	10/16/14	Field Notes	NA
Analytical Tasks	WESTON	10/17/14	10/30/14	Field Notes/Laboratory Reports	10/30/14
Quality Control Tasks	WESTON	10/30/14	10/31/14	Report of Analyses/Data Package	10/31/14
Validation	WESTON	10/30/14	10/31/14	Validation Summary Report	10/31/14

Worksheet 14 & 16 —Project Tasks & Schedule

(UFP-QAPP Manual Section 2.8.2)

(EPA 2106-G-05 Section 2.2.4)

Activity	Responsible Party	Planned Start Date	Planned Completion Date	Deliverable(s)	Deliverable Due Date
Summarize Data	WESTON	10/30/14	10/31/14	Data Report	10/31/14
Develop Report	WESTON	10/27/14	10/31/14	Draft Report	10/31/14
Address EPA comments on Draft Report	WESTON	Upon receiving comments	11/7/14	Final Report	11/14/14

Reports to management will be written and distributed in accordance with the QAPP Worksheet #6.

Worksheet 15 — Project Action Limits and Laboratory-Specific Detection/Quantitation Limits

(UFP-QAPP Manual Sections 2.6.2.3 and Figure 15)

(EPA 2106-G-05 Section 2.2.6)

The following information will be provided for each matrix, analyte, analytical method, and concentration level (if applicable).

Matrix: Waste

Analytical Method: See Worksheet 19 & 30

Concentration level (if applicable): TBD

Analyte ¹	PAL ²	PAL Reference ²	PQL Goal	Laboratory Quantitation Limit ³	Laboratory Detection Limit ³
SVOCs	TBD	TBD	TBD	TBD	TBD
TAL Metals	TBD	TBD	TBD	TBD	TBD
TCLP Metals	TBD	TBD	TBD	TBD	TBD
Dioxins	TBD	TBD	TBD	TBD	TBD

¹ CLP laboratories use accepted analytical methods for the isolation, detection, and quantitation of specific target compounds and analytes. The CLP TCL, TAL, and their corresponding CRQL are listed in QAPP Appendix B and QAPP Appendix C, respectively.

² Links to State regulatory cleanup standards are provided in QAPP Appendix D.

³ Terminology is project/laboratory-specific.

Worksheet 17 — Sampling Design and Rationale

(UFP-QAPP Manual Section 3.1.1)

(EPA 2106-G-05 Section 2.3.1)

Samples will be managed in accordance with SAP Worksheet 26 & 27.

Safety

All field activities will be conducted in strict accordance with an approved Health and Safety Plan (HASP), which will be developed before the start of field activities. It is anticipated that all field work can be accomplished in Level D Personal Protective Equipment (PPE) equipment. START personnel performing sampling will wear PPE appropriate to the hazard presented. At a minimum, the following guidelines should be followed: when on site steel toed-boots shall be worn; sampling gloves and eye protection should be worn.

Property Access and Logistics

Access to the property will be obtained and managed by the EPA before any sampling. START will have consent from all applicable property owners (on property and off-property) prior to the field sampling event.

Sample Collection

Surface samples will be collected using a disposable plastic scoop. In the event that the ground is too hard for use of a disposable scoop a decontaminated stainless steel shovel will be used.

Sub-surface soil samples will be collected with a hand auger, at three predetermined depth intervals: 0-6", 6-12" and 12-18" bgs. Soil core descriptions will be logged and photographed prior to sample collection. Geologic descriptions will be recorded in the Site-specific logbook.

Sampling data will be documented in a Scribe mobile application form on an iPad and entered into a Site-specific Scribe database for data management and reporting purposes. The Scribe database will be published to Scribe.net to allow for incorporation into EPA's geospatial viewer. A latitude and longitude will be recorded at each location to allow for visual representation of sampling activities on EPA's geospatial viewer. Sampling activities will be photo documented, and photos will be uploaded to EPAOSC.net to allow for incorporation into EPA's geospatial viewer.

Sampling activities are expected to start on October 14, 2014 and continue for approximately two days. The most efficient process for sampling all material will be determined in the field when current site conditions are determined.

Sample Identification and Handling

Samples will be analyzed for the parameters listed in SAP Table 1. Requirements for the sample container, volume, preservation, and QC samples are included in Table 1.

Sample analysis will be performed by a commercial laboratory. Surface and sub-surface soil samples will be analyzed via XRF instrumentation, with additional soil samples sent for laboratory confirmation analysis.

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Worksheet 17 — Sampling Design and Rationale

(UFP-QAPP Manual Section 3.1.1)

(EPA 2106-G-05 Section 2.3.1)

Samples will be analyzed for the parameters listed on Worksheet 15. In addition, requirements for the sample container, volume, preservation, and QC samples are listed on Worksheet 19 & 30 of the QAPP. Table 2 summarizes the information from Worksheet 15 and Worksheet 19 & 30.

Worksheet 18 — Sampling Locations and Methods

(UFP-QAPP Manual Section 3.1.1 and 3.1.2)

(EPA 2106-G-05 Sections 2.3.1 and 2.3.2)

Sample locations will be determined in the field.

All samples for analysis, will be given a unique sample number. The sample numbers will be recorded in the field logbook and on the chain-of-custody paperwork.

Sample nomenclature will include identifiers to allow for unique identification of all containers on site. Sample names will include:

- The first two characters will be “SC” for Stone Castle Recycling.
- The second two characters will denote the Operable Unit, for this site “OU1”
- The third field will be one character to denote the sample sub-matrix, “W” for waste and “S” for soil.
- The fourth field will be a two-digit number that represents the sequential number of the sample location.

An example of a waste sample collected from the third location on site would be SCOU1W03.

All sample information will be managed in SCRIBE so that waste, waste volumes, and waste streams can be managed.

Action levels will be determined by the EPA OSC.

Sample cross contamination will be reduced by using disposable plastic scoops for each sample. If a stainless steel scoop is used, it will be decontaminated between samples with a brush to remove gross particulate and a nitric acid rinse, followed by a distilled water rinse. The scoop will then be allowed to gravity drain.

Worksheet 19 & 30 — Sample Containers, Preservation, and Hold Times

(UFP-QAPP Manual Section 3.1.2.2)

(EPA 2106-G-05 Section 2.3.2)

Matrix	Analyte/ Analyte Group	Method/ SOP ¹	Accreditation Expiration Date	Container(s) (number, size & type per sample) ²	Preservation	Preparation Holding Time	Analytical Holding Time	Data Package Turnaround
Waste	SVOCs	EPA 8270D	TBD	One 8-oz glass jar	Store @ < 4°C	14 days	40 days	1 week
	TCLP Metals	SW1311/6010B/7470A	TBD	One 8-oz glass jar	Store @ < 4°C	N/A	180 days	1 week
Soil	TAL Metals	EPA 6010C	TBD	One 8-oz glass jar	Store @ < 4°C	N/A	180 days	1 week
	Dioxin	SW8290/1613B	TBD	One 8-oz glass jar	Store @ < 4°C	N/A	180 days	1 week

¹ Refer to the Analytical SOP References table (Worksheet 23).

² The minimum sample size is based on analysis allowing for sufficient sample for reanalysis. Additional volume is needed for the laboratory MS/MSD sample analysis.

³ Refers to requirements after processing of aquatic animal tissue by laboratory.

Worksheet 20 — Field Quality Control Sample Summary

(UFP-QAPP Manual Sections 3.1.1 and 3.1.2)

(EPA 2106-G-05 Section 2.3.5)

Matrix	Analyte/Analytical Group	No. of Field Samples ¹	No. of Field Duplicates	No. of MS/MSD	No. of Field Blanks	No. of Equip. Blanks	No. of Trip Blanks	No. of Other	Total No. of Samples to Laboratory
Waste	SVOCs	4	--	--	--	--	--	--	4
	TCLP Metals	4	--	--	--	--	--	--	4
Soil	TAL Metals	6	--	--	--	--	--	--	6
	Dioxin	2	--	--	--	--	--	--	2

¹ Samples that are collected at different depths at the same location, and analyzed separately, will be counted as separate field samples. Even if they are taken from the same container as the parent field sample, MS/MSDs are counted separately, because they are analyzed separately. If composite samples or incremental samples are collected, only the sample that will be analyzed will be included; subsamples and increments will not be listed separately.

The number and types of QC samples will be based on project-specific DQOs and this worksheet will be adapted, as necessary, to accommodate project-specific requirements. Project-specific QC samples may include field duplicate, field blank, equipment blank, trip blank, field split, MS/MSD, and PT samples and will be collected in accordance with the frequencies recorded on QAPP Worksheet 12.

Quality Assurance Assessment and Corrective Actions are found in QAPP Worksheet #28.

*No QC samples are anticipated as the sample results will be used to determine disposal options only.

Worksheet 21 — Field SOPs
 (UFP-QAPP Manual Section 3.1.2)
 (EPA 2106-G-05 Section 2.3.2)

SOP Number or Reference	Title, Revision, Date, and URL (if available)	Originating Organization	SOP Option or Equipment Type (if SOP provides different options)	Modified for Project? Y/N	Comments
2006	Sampling Equipment Decontamination, 6/2011	U.S. EPA, ERT	Project-specific	Project-specific	SOPs are available in QAPP Appendix I
2012	Soil Sampling, 6/2011	U.S. EPA, ERT	Project-specific	Project-specific	SOPs are available in QAPP Appendix I
2017	Waste Pile Sampling, 6/2011	U.S. EPA, ERT	Project-specific	Project-specific	SOPs are available in QAPP Appendix I
2049	IDW Management, 6/2011	U.S. EPA, ERT	Project-specific	Project-specific	SOPs are available in QAPP Appendix I
G-12	Specifications and Guidance for Contaminant-Free Sample Containers, 12/1992	U.S. EPA, Office of Solid Waste and Emergency Response	Project-specific	Project-specific	SOPs are available in QAPP Appendix I
2001	General Field Sampling Guidelines, 6/2011	U.S. EPA, ERT	Project-specific >	Project-specific	SOPs are available in QAPP Appendix I

Investigation Derived Waste

During sampling activities, IDW may be generated. IDW may consist of decontamination fluids, excess sampled media (e.g., soil, sediment, water, etc.), disposable sampling supplies, and PPE (e.g., Tyvek/Saranex coveralls, gloves, booties, etc.). Handling of IDW will be performed according with SOP 2049 as listed above as well as procedures described in *Management of Investigation Derived Wastes during Site Inspections (May 1991)*(QAPP Appendix S). Waste disposal for IDW will be dependent upon classification of the waste as either RCRA hazardous or RCRA nonhazardous waste.

Decontamination

General decontamination procedures are described in EPA ERT SOP #2006 Sampling Equipment Decontamination.

It is anticipated that START sample collection will exclusively use dedicated/ disposable sampling tools.

WESTON will review existing information and may conduct sampling for removal/emergency response activities. Environmental samples will be collected for RAS through the CLP, SAS analysis at the EPA Region 8 CRL, or by WESTON-subcontracted

laboratories. CLP-collected environmental samples will adhere to the procedures described in the *EPA Contract Laboratory Program Guidance for Field Samplers (January 2011)* (QAPP Appendix E).

Worksheet 22 — Field Equipment Calibration, Maintenance, Testing, and Inspection

(UFP-QAPP Manual Section 3.1.2.4)

(EPA 2106-G-05 Section 2.3.6)

Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Title or Position of Responsible Person	Verification	SOP Reference ¹
Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Title or Position of Responsible Person	Verification	SOP Reference ¹
Sampling Tools (Disposable Scoops)	NA	NA	NA	Visually inspect for obvious defects or broken parts	Prior to use	NA	Replace	Field personnel	WAM/COR	NA
Disposable, inert sample mixing containers	NA	NA	NA	Visually inspect for cleanliness	Prior to use	NA	Replace	Field personnel	WAM/COR	NA
Metal sampling equipment as necessary (trowels)	NA	Clean prior and after each use	NA	Visually inspect for cleanliness	Prior to use	Should be covered from previous decontamination procedure	Perform decontamination procedure again as needed	Field personnel	NA	Metal sampling equipment as necessary (trowels)

¹ Refer to Field SOPs (Worksheet 21) and Analytical SOPs (Worksheet 23).

Worksheet 23 — Analytical SOPs

(UFP-QAPP Manual Section 3.2.1)

(EPA 2106-G-05 Section 2.3.4)

Lab SOP Number ¹	Title, Revision Date, and/or Number and URL (if available)	Screening or Definitive Data	Matrix/Analytical Group	SOP Option or Equipment Type	Modified for Project? (Y/N)
TBD	METHOD 8260C VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS), 8/2006, http://www.epa.gov/osw/hazard/testmethods/pdfs/8260c.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/VOCs	GC/MS	TBD
TBD	METHOD 8270D SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS, 2/2007, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8270d.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/SVOCs	GC/MS	TBD
TBD	METHOD 8280B POLYCHLORINATED DIBENZO-p-DIOXINS (PCDDs) AND POLYCHLORINATED DIBENZOFURANS (PCDFs) BY HIGH-RESOLUTION GAS CHROMATOGRAPHY/ LOW-RESOLUTION MASS SPECTROMETRY (HRGC/LRMS) http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8280b.pdf	Definitive	Soil, sediment, water, fly ash, chemical waste/Dioxins	HRGC/LRMS	TBD
TBD	METHOD 8290A PCDDs AND PCDFs BY HRGC/HRMS http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8290a.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/Dioxins	HRGC/HRMS	TBD
TBD	METHOD 6010C INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY (ICP-AES), 11/2000, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/6010c.pdf	Definitive	Soil, sediment, debris, aquatic animal tissue, air/metals (no mercury)	ICP-AES	TBD
TBD	METHOD 6020A INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (ICP-MS), 2/2007, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/6020a.pdf	Definitive	Water and air/metals (no mercury)	ICP-MS	TBD

Worksheet 23 — Analytical SOPs

(UFP-QAPP Manual Section 3.2.1)

(EPA 2106-G-05 Section 2.3.4)

Lab SOP Number ¹	Title, Revision Date, and/or Number and URL (if available)	Screening or Definitive Data	Matrix/Analytical Group	SOP Option or Equipment Type	Modified for Project? (Y/N)
TBD	METHOD 8290A POLYCHLORINATED DIBENZO-p-DIOXINS (PCDDs) AND POLYCHLORINATED DIBENZOFURANS (PCDFs) BY HIGH-RESOLUTION GAS CHROMATOGRAPHY/HIGHRESOLUTION MASS SPECTROMETRY(HRGC/HRMS) http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8290a.pdf	Definitive	Soil, sediment, debris, water, aquatic tissue/Dioxins	HRGC/HRMS	TBD
TBD	METHOD 8330B NITROAROMATICS, NITRAMINES, AND NITRATE ESTERS BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC), 10/2006, http://www.epa.gov/osw/hazard/testmethods/pdfs/8330b.pdf	Definitive	Soil, sediment, debris, water/Explosives	HPLC	TBD
TBD	METHOD 613 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN APPENDIX A TO PART 136 METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER, 2013, http://water.epa.gov/scitech/methods/cwa/organics/upload/2007_07_10_methods_method_organics_613.pdf	Definitive	Water/Dioxins	GC/MS	TBD
TBD	METHOD 1613, Revision B Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS, 10/2004, http://water.epa.gov/scitech/methods/cwa/organics/dioxins/upload/2007_07_10_methods_method_dioxins_1613.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/Dioxins	HRGC/HRMS	TBD
TBD	Method 1668C Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS, 4/2010, http://water.epa.gov/scitech/methods/cwa/upload/M1668C_11June10-PCB_Congeners.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/Dioxins	HRGC/HRMS	TBD
TBD	Method TO-9A Determination Of Polychlorinated, Polybrominated And Brominated/Chlorinated Dibenzo-p-Dioxins And Dibenzofurans In Ambient Air, 1/1999, http://www.epa.gov/ttnamti1/files/ambient/airtox/to-9arr.pdf	Definitive	Air/Dioxins	HRGC-HRMS	TBD

Worksheet 23 — Analytical SOPs

(UFP-QAPP Manual Section 3.2.1)

(EPA 2106-G-05 Section 2.3.4)

Lab SOP Number ¹	Title, Revision Date, and/or Number and URL (if available)	Screening or Definitive Data	Matrix/Analytical Group	SOP Option or Equipment Type	Modified for Project? (Y/N)
SOM01.2	U.S. EPA CLP Statement of Work for Organic Analysis, SOM01.1, 5/2005, http://www.epa.gov/superfund/programs/clp/download/som/som11a-c.pdf MODIFICATIONS UPDATING SOM01.1 TO SOM01.2, 4/2007, http://www.epa.gov/superfund/programs/clp/download/som/som11tosom12mods.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/VOCs, SVOCs, Pesticides, Aroclors	Analyte specific	TBD
ISM01.3	U.S. EPA CLP Statement of Work for Inorganic Analysis, ISM01.2, 1/2010, http://www.epa.gov/superfund/programs/clp/download/ism/ism12a-c.pdf MODIFICATIONS UPDATING ISM01.2 TO ISM01.3, http://www.epa.gov/superfund/programs/clp/download/ism/ism12toism13mods.pdf	Definitive	Soil, sediment, debris, water, aquatic animal tissue/Metals and cyanide	Analyte specific	TBD

Worksheet 24 — Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)

(EPA 2106-G-05 Section 2.3.6)

As stated in Worksheet 22, WESTON field personnel are responsible for the calibration of WESTON and sub-contractor provided analytical field equipment. Documented and approved procedures will be used for calibrating measuring and testing equipment. Widely accepted procedures, such as those published by U.S. EPA and ASTM, or procedures provided by manufacturers in equipment manuals will be adopted.

The responsibility for the calibration of laboratory equipment rests with the selected laboratories. Each type of instrumentation and each U.S. EPA-approved method have specific requirements for the calibration procedures, depending on the analytes of interest and the sample medium. The calibration procedures and frequencies of the equipment used to perform the analyses will be in accordance with requirements established by the U.S. EPA. The laboratory QA manager will be responsible for ensuring that the laboratory instrumentation is maintained in accordance with specifications. Individual laboratory SOPs will be followed for corrective actions and preventative maintenance frequencies. Laboratory quality control, calibration procedures, corrective action procedures, and instrument preventative maintenance will be included in an addendum to this QAPP once the laboratories have been selected for each of the TBA sites. Items may include, but are not limited to those identified in the table below.

Worksheet 24 — Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)

(EPA 2106-G-05 Section 2.3.6)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action	Title/Position Responsible for CA	SOP Reference ¹
Colorimetric	See 7196A	Once per sample matrix analyzed	Spiked aliquots recovery within $\pm 15\%$ of true value	If analysis solution over concentrated, dilute solution and re-calculate results. If under concentrated, dilute sample and reanalyze.	Lab Manager/ Analyst	7196A
CVAA	See 7470A, 7471B, ISM01.3	Daily initial calibration prior to sample analysis. Perform instrument re-calibration once per year minimum.	$R^2 \geq 0.995$ for linear regression	Correct problem then repeat initial calibration. If calibration fails again, re-digest the entire digestion batch.	Lab Manager/ Analyst	7470A, 7471B, ISM01.3
GC/ GC/MD	See 8081B, 8082A, 8151A, TO-4A, TO-18	Initial calibration after instrument set up, then when daily 12-hour calibration verification criteria are not met	For all target compounds, initial $r^2 > 0.995$; and calibration verification % difference $< 15\%$	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	8081B, 8082A, 8151A, TO-4A, TO-18
GC/MS	See 8260C, 8270D, 613, TO-13A, TO-15, SOM01.2	Initial calibration after instrument set up, then when daily 12-hour calibration verification criteria are not met	For all target compounds, initial $r^2 > 0.995$; and calibration verification % difference $< 15\%$	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	8260C, 8270D, 613, TO-13A, TO-15, SOM01.2
HRGC/ HRMS	See 1613B, 1668C	Calibration and initial calibration verification after instrument set up, then daily; repeat every 6 months (or whenever new calibration standard solutions are prepared)	Initial and continuing calibration verification within $\pm 20\%$ of true values	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	1613B, 1668C

Worksheet 24 — Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)

(EPA 2106-G-05 Section 2.3.6)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action	Title/Position Responsible for CA	SOP Reference ¹
HPLC	See 8330A, 8330B	Calibration and initial calibration verification after instrument set up, then daily; continuing calibration verification 10% or every 2 hours, whichever is more frequent	Calibration – $r^2 \geq 0.99$, $r \geq 0.995$; initial and continuing calibration verification within $\pm 20\%$ of true values	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	8330A, 8330B
ICP-AES	See 6010C	Calibration and initial calibration verification after instrument set up, then daily; continuing calibration verifications. Upper range within 10%. New upper range limits should be determined whenever a significant change in instrument response or every six months. LLCCV standard with 30%.	Initial and continuing calibration verification within $\pm 10\%$ of upper range true values and $\pm 30\%$ LLCCV true values.	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	6010C
ICP/ ICP-MS	See 6010C, 6020A, ISM01.3	Calibration and initial calibration verification after instrument set up, then daily; continuing calibration verification 10% or every 2 hours, whichever is more frequent	Calibration $r^2 > 0.995$; initial and continuing calibration verification within $\pm 20\%$ of true values	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	6010C, 6020A, ISM01.3
TEM	See 540/R-97/028, 100.1, 100.2, NIOSH Method 7402	Calibration and initial calibration verification after instrument set up, then as needed (at least once daily use)	Qualitative electron diffraction; calibration of TEM magnification and EDX system within typical range profiles	Re-calibrate qualitative electron diffraction; calibration of TEM magnification and EDX system; re-run calibration and affected samples	Lab Manager/ Analyst	540/R-97/028, 100.1, 100.2, NIOSH Method 7402

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Worksheet 26 & 27 — Sample Handling, Custody, and Disposal

(UFP-QAPP Manual Section 3.3)

(EPA 2106-G-05 Manual Section 2.3.3)

Examples of field form (QAPP Appendix F), chain-of-custody (QAPP Appendix G), and sample label and custody seal (QAPP Appendix H) documentation are in the QAPP. SOPs for sample handling are identified below and are located in QAPP Appendix I.

Sampling Organization: WESTON

Laboratory: TBD

Method of sample delivery (shipper/carrier): START will deliver all samples to the laboratory.

Number of days from reporting until sample disposal: TBD

Activity	Organization and Title or Position of Person Responsible for the Activity	SOP Reference
Sample Labeling	START Field Personnel- Jeff Bryniarski	QAPP Appendix I, SOP G-1 & G-3
Chain-of-Custody Form Completion	START Field Personnel- Jeff Bryniarski	QAPP Appendix I, SOP G-8
Sample Packaging	START Field Personnel- Jeff Bryniarski	QAPP Appendix I, SOP G-9
Shipping Coordination	START Field Personnel- NA	QAPP, Appendix I, SOP G-9
Sample Receipt, Inspection, & Log-in	Laboratory Sample Custodian	Laboratory SOP
Sample Custody and Storage	Laboratory Sample Custodian/Laboratory Analytical Personnel	Laboratory SOP
Sample Disposal	Laboratory Sample Custodian/EPA ERRS Contractor	QAPP Appendix I, SOP G-1 & G-3 Laboratory SOP

Supplies and consumables can be received at a WESTON office, U.S. EPA Warehouse or at a site. When supplies are received at a WESTON office or U.S. EPA Warehouse, the PM or PTL will sort the supplies according to vendor, check packing slips against purchase orders, and inspect the condition of all supplies before the supplies are accepted for use on a project. If the supplies do not meet the acceptance criteria, deficiencies will be noted on the packing slip and purchase order. The item will then be returned to the vendor for replacement or repair. Procedures for receiving supplies and consumables in the field are similar to those described above. Upon receipt, items will be inspected by the WESTON PM or PTL against the acceptance criteria. Any deficiencies or problems will be noted in the field logbook, and deficient items will be returned for immediate replacement.

Worksheet 36 — Data Validation Procedures

(UFP-QAPP Manual Section 5.2.2)

(EPA 2106-G-05 Section 2.5.1)

Data Validator: WESTON

Analytical Group/ Method	Data Deliverable Requirements	Analytical Specifications	MPC	Percent of Data Packages to be Validated	Percent of Raw Data Reviewed	Percent of Results to be Recalculated	Validation Procedure	Validation Code ¹	Electronic Validation Program/ Version
All	TBD	TBD	Worksheets 11, 12, 19 & 30	TBD	TBD	TBD	TBD	TBD	TBD
All	TBD	TBD	Worksheets 11, 12, 19 & 30	TBD	TBD	TBD	TBD	TBD	TBD

¹ Validation Codes are provided in QAPP Appendix M.

Validation will be performed on all laboratory analytical data unless a defined quantity or percentage of samples is identified by the U.S. EPA in the Technical Direction Document or during the project scoping meeting on a project-specific basis.. Project validation criteria as per QAPP Worksheets 12, 15, 19 & 30, 28, and 36, and cited EPA SW-846 methodology will be used. WESTON-contracted laboratory data packages will be verified and validated using a Stage 2A validation, as described in the EPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009) (QAPP Appendix J) unless otherwise specified by the U.S. EPA WAM/COR during the development of the DQOs. Validation Qualifiers will be applied using the following hierarchy: Region 8 UFP-QAPP for Removal Actions and Emergency Responses; the site-specific SAP, and/or QAPP; *EPA National Functional Guidelines for Organic Data Review* (QAPP Appendix K); *EPA National Functional Guidelines for Inorganic Data Review* (QAPP Appendix L); EPA Publication SW-846; and the laboratory-specific SOP. Methods for which no data validation guidelines exist will be validated following the guidance deemed most appropriate by the data validator.

The data validator will receive all laboratory packages and analytical results electronically. Additionally, the validator will be required to submit final validation reports via PDF format and must provide an annotated laboratory analytical result EDD with applicable data validation qualifiers (QAPP Appendix M) identified in the site-specific SAP, and/or QAPP, and/or result value modifications. The Delegated QA Manager will use EPA document *Using Qualified Data to Document an Observed Release and Observed Contamination* (July 1996) to aid in determining the use of qualified data to document all observed release and observed contamination by chemical analysis under U.S. EPA's HRS. Approved data will be released by the Delegated QA Manager for reporting.

Worksheet 36 — Data Validation Procedures

(UFP-QAPP Manual Section 5.2.2)

(EPA 2106-G-05 Section 2.5.1)

QAPP Worksheet 35 describes the issue resolution process and the individual responsible for conveying results to data users. For issues internal to the laboratory, the laboratory PM will be the responsible party for data resolution issues and will be responsible for conveying this information to the Delegate QA Manager or delegated authority. For external laboratory data and quality issues, the Delegated QA Manager or delegated authority will provide issue resolution information and will be the responsible party for conveying this information to data users. For quality documents, reports, and field information, the Delegated QA Manager, delegated authority, or other persons identified in the table in QAPP Worksheet 35 will be responsible for issue resolutions of such items and will be the responsible party for conveying that information to data users.

TABLES

Table 1
Sampling and Analysis Summary

Site: Stone Castle Recycling (OU1)
OSC: Steve Merritt
TDD: 0001/1410-01

Matrix	Analytical Parameter	Analytical Method	Containers (Numbers, Size, and Type)	Preservation Requirements	Number of Sampling Locations	Number of Field Duplicates	Number of MS/MSDs ²	Number of Blanks (Trip, Field, Equipment, Rinsate) ¹	Total Number of Samples to Lab ³	Holding Time
Waste	SVOCs	SW8270D	One 8-oz glass jar	Store @ < 4°C	4	--	--	--	4	40 days
Waste	TCLP Metals	SW1311/ 6010B/ 7470A	One 8-oz glass jar	Store @ < 4°C	4	--	--	--	4	40 days
Soil	TAL Metals	SW846	One 8-oz glass jar	Store @ < 4°C	6	--	--	--	6	180 days
Soil	Dioxin	SW8290/1 613B	One 8-oz glass jar	Store @ < 4°C	2	--	--	--	2	180 days

Notes:

¹ Trip blanks are only required for VOCs in water samples.

² For the samples designated for MS/MSDs, triple volume is required for VOCs and double volume for other water parameters.

³ Total number of samples to the laboratory does not include MS/MSD samples.

ATTACHMENTS

EPA REGION 8 QA DOCUMENT REVIEW CROSSWALK

QAPP/FSP/SAP for: <i>(check appropriate box)</i>	Entity <i>Weston START IV Contract</i>	Regulatory Authority and/or Funding Mechanism	40 CFR 31 for Grants
<input type="checkbox"/> GRANTEE	Region 8 START Contractor		48 CFR Part 46 for Contracts
<input checked="" type="checkbox"/> CONTRACTOR			Interagency Agreement
<input type="checkbox"/> EPA			EPA Administrative Order
<input type="checkbox"/> Other			EPA Program Funding
		EPA Program Regulation	
	EPA CIO 2105		
Document Title <i>[Note: Title will be repeated in Header]</i>	Stone Castle Recycling (OU1) SAP		
QAPP/FSP/SAP Preparer	Jeff Bryniarski		
Period of Performance (of QAPP/FSP/SAP)	1 year from date of EPA approval of Task Level QAPP	Date Submitted for Review	10/10/2014
EPA Project Officer	Joyce Ackerman	PO Phone #	303-312-6822
EPA Project Manager	Steven Merritt	PM Phone #	303-312-6146
QA Program Reviewer or Approving Official	Martin McComb	Date of Review	303-312-6963

Documents to Review:

- QAPP written by Grantee or EPA must also include for review:
Work Plan(WP) / Statement of Work (SOW) / Program Plan (PP) / Research Proposal (RP)
- QAPP written by Contractor must also include for review:
 - Copy of signed QARF for Task Order
 - Copy of Task Order SOW
 - Made available hard or electronic copy of approved QMP
 - If QMP not approved, provide Contract SOW
- For a Field Sampling Plan (FSP) or Sampling & Analyses Plan (SAP), the Project QAPP must also be provided.

OR

The FSP or SAP must be clearly identified as a stand-alone QA document and must contain all QAPP required elements (Project Management, Data Generation/Acquisition, Assessment and Oversight, and Data Validation and Usability).

Documents Submitted for QAPP Review:

1. QA Document(s) submitted for review:

QA Document	Document Date	Document Stand-alone	Document with QAPP
QAPP		Yes / No	
FSP		Yes / No	Yes / No
SAP	10/10/2014	Yes / No	Yes / No
SOP(s)		Yes / No	Yes / No

- WP/SOW/TO/PP/RP Date** _____
WP/SOW/TO/PP/RP Performance Period _____

3. QA document consistent with the:

- WP/SOW/PP for grants? Yes / No
SOW/TO for contracts? Yes / No

4. QARF signed by R8 QAM Yes / No / NA

Funding Mechanism IA / contract / grant / NA

Amount _____

Summary of Comments *(highlight significant concerns/issues):*

- Comment #1
- Comment #2
- Comment #3
- The Region 8 START Contractor must address the comments in the Summary of Comments, as well as those identified in the Comment section(s) that includes a “Response (date)” and Resolved (date)”.**

Element	Acceptable	Location	Comments
	Yes/No/NA		
A. Project Management			
A1. Title and Approval Sheet			
a. Contains project title	Yes	SAP Title Page and Introduction SAP Worksheet 1 & 2	
b. Date and revision number line (for when needed)	Yes	SAP Title Page and Revision Log	
c. Indicates organization's name	Yes	SAP Title Page	
d. Date and signature line for organization's project manager	Yes	QAPP and SAP Worksheets 1 & 2	
e. Date and signature line for organization's QA manager	Yes	QAPP Worksheets 1 & 2	
f. Other date and signatures lines, as needed	Yes	SAP and QAPP Worksheets 1 & 2	
A2. Table of Contents			
a. Lists QA Project Plan information sections	Yes	SAP Table of Contents, SAP List of Appendices	
b. Document control information indicated	Yes	SAP Worksheet 1 & 2	
A3. Distribution List			
Includes all individuals who are to receive a copy of the QA Project Plan and identifies their organization	Yes	SAP Introduction QAPP Worksheet 3 & 5	
A4. Project/Task Organization			
a. Identifies key individuals involved in all major aspects of the project, including contractors	Yes	QAPP Worksheet 3 & 5, SAP Introduction	
b. Discusses their responsibilities	Yes	QAPP Worksheet 4, 7 & 8; SAP Introduction	
c. Project QA Manager position indicates independence from unit generating data	Yes	QAPP Worksheet 3 & 5	
d. Identifies individual responsible for maintaining the official, approved QA Project Plan	Yes	SAP Introduction QAPP Worksheet 4, 7 & 8	
e. Organizational chart shows lines of authority and reporting responsibilities	Yes	QAPP Worksheet 3 & 5; SAP Introduction	
A5. Problem Definition/Background			
a. States decision(s) to be made, actions to be taken, or outcomes expected from the information to be obtained	Yes	SAP Worksheet 11	
b. Clearly explains the reason (site background or historical context) for initiating this project	Yes	SAP Worksheet 10	
c. Identifies regulatory information, applicable criteria, action limits, etc. necessary to the project	Yes	SAP Worksheets 10, 11, 15	
A6. Project/Task Description			
a. Summarizes work to be performed, for example, measurements to be made, data files to be obtained, etc., that support the projects goals	Yes		

Element	Acceptable	Location	Comments
	Yes/No/NA		
b. Provides work schedule indicating critical project points, e.g., start and completion dates for activities such as sampling, analysis, data or file reviews, and assessments	Yes	SAP Worksheets 11, 14 & 16	
c. Details geographical locations to be studied, including maps where possible	Yes	SAP Worksheets 10, 11	
d. Discusses resource and time constraints, if applicable	Yes		
A7. Quality Objectives and Criteria			
a. Identifies - performance/measurement criteria for all information to be collected and acceptance criteria for information obtained from previous studies, - including project action limits and laboratory detection limits and - range of anticipated concentrations of each parameter of interest	Yes	SAP Worksheets 11, 15, QAPP Worksheets 12.1 - 12.4	
b. Discusses precision	Yes	QAPP Worksheet 37	
c. Addresses bias	Yes		
d. Discusses representativeness	Yes		
e. Identifies the need for completeness	Yes		
f. Describes the need for comparability	Yes		
g. Discusses desired method sensitivity	Yes		
A8. Special Training/Certifications			
a. Identifies any project personnel specialized training or certifications	Yes	QAPP Worksheet 4, 7 & 8	
b. Discusses how this training will be provided	Yes		
c. Indicates personnel responsible for assuring training/certifications are satisfied	Yes		
d. identifies where this information is documented	Yes		
A9. Documentation and Records			
a. Identifies report format and summarizes all data report package information	Yes	SAP Worksheets 14 & 16 QAPP Worksheet 29	
b. Lists all other project documents, records, and electronic files that will be produced	Yes	SAP Worksheet 14 & 16	
c. Identifies where project information should be kept and for how long	Yes	SAP Introduction QAPP Worksheet 29	
d. Discusses back up plans for records stored electronically	Yes	QAPP Worksheet 29	
e. States how individuals identified in A3 will receive the most current copy of the approved QA Project Plan, identifying the individual responsible for this	Yes	SAP Introduction QAPP Worksheet 4 & 5	
B. Data Generation/Acquisition			

Element	Acceptable	Location	Comments
	Yes/No/NA		
B1. Sampling Process Design (Experimental Design)			
a. Describes and justifies design strategy, indicating size of the area, volume, or time period to be represented by a sample	Yes	SAP Worksheets 11, 17 SAP Figure 3, as needed	
b. Details the type and total number of sample types/matrix or test runs/trials expected and needed	Yes	SAP Worksheets 11, 17, 18 SAP Figure 3, as needed	
c. Indicates where samples should be taken, how sites will be identified/located	Yes		
d. Discusses what to do if sampling sites become inaccessible	Yes	SAP Worksheet 17	
e. Identifies project activity schedules such as each sampling event, times samples should be sent to the laboratory, etc.	Yes		
f. Specifies what information is critical and what is for informational purposes only	Yes		
g. Identifies sources of variability and how this variability should be reconciled with project information	Yes		
B2. Sampling Methods			
a. Identifies all sampling SOPs by number, date, and regulatory citation, indicating sampling options or modifications to be taken	Yes	SAP Worksheet 21	
b. Indicates how each sample/matrix type should be collected	Yes	SAP Worksheet 17 QAPP Worksheet 19 & 30	
c. If in situ monitoring, indicates how instruments should be deployed and operated to avoid contamination and ensure maintenance of proper data	Yes	SAP Worksheet 22	
d. If continuous monitoring, indicates averaging time and how instruments should store and maintain raw data, or data averages	Yes	SAP Worksheet 22	
e. Indicates how samples are to be homogenized, composited, split, or filtered, if needed	Yes	SAP Worksheet 17	
f. Indicates what sample containers and sample volumes should be used	Yes	SAP Worksheet 17 SAP Table 1 QAPP Worksheet 19 & 30	
g. Identifies whether samples should be preserved and indicates methods that should be followed	Yes		
h. Indicates whether sampling equipment and samplers should be cleaned and/or decontaminated, identifying how this should be done and by-products disposed of	Yes	SAP Worksheet 21	
i. Identifies any equipment and support facilities needed	Yes	SAP Worksheet 22	
j. Addresses actions to be taken when problems occur, identifying individual(s) responsible for corrective action and how this should be documented	Yes	SAP Worksheet 17 QAPP Worksheet 31, 32 & 33	
B3. Sample Handling and Custody			

Element	Acceptable	Location	Comments
	Yes/No/NA		
a. States maximum holding times allowed from sample collection to extraction and/or analysis for each sample type and, for in-situ or continuous monitoring, the maximum time before retrieval of information	Yes	SAP and QAPP Worksheet 19 & 30	
b. Identifies how samples or information should be physically handled, transported, and then received and held in the laboratory or office (including temperature upon receipt)	Yes	SAP Worksheet 26 & 27	
c. Indicates how sample or information handling and custody information should be documented, such as in field notebooks and forms, identifying individual responsible	Yes	SAP Worksheets 17, 26 & 27	
d. Discusses system for identifying samples, for example, numbering system, sample tags and labels, and attaches forms to the plan	Yes	SAP Worksheet 11, 17, 18, 26 & 27	COC Generated in Scribe
e. Identifies chain-of-custody procedures and includes form to track custody	Yes		
B4. Analytical Methods			
a. Identifies all analytical SOPs (field, laboratory and/or office) that should be followed by number, date, and regulatory citation, indicating options or modifications to be taken, such as sub-sampling and extraction procedures	Yes	SAP Worksheet 23	
b. Identifies equipment or instrumentation needed	Yes	SAP Worksheets 23, 24	
c. Specifies any specific method performance criteria	Yes	SAP Worksheet 22, 24	Worksheet 22 - Field Equipment Worksheet 24 - Analytical Instruments
d. Identifies procedures to follow when failures occur, identifying individual responsible for corrective action and appropriate documentation	Yes		
e. Identifies sample disposal procedures	Yes	SAP Worksheet 26 & 27 QAPP Appendix I	
f. Specifies laboratory turnaround times needed	Yes	SAP Worksheet 26 & 27 SAP and QAPP Worksheet 19 & 30	
g. Provides method validation information and SOPs for nonstandard methods	Yes	SAP Worksheets 23 QAPP Worksheets 25 & 28	
B5. Quality Control			
a. For each type of sampling, analysis, or measurement technique, identifies QC activities which should be used, for example, blanks, spikes, duplicates, etc., and at what frequency	Yes	SAP Worksheet 20	
b. Details what should be done when control limits are exceeded, and how effectiveness of control actions will be determined and documented	Yes	SAP Worksheets 26 & 27, QAPP Worksheet 25 & 28	

Element	Acceptable	Location	Comments
	Yes/No/NA		
c. Identifies procedures and formulas for calculating applicable QC statistics, for example, for precision, bias, outliers and missing data	Yes	QAPP Worksheet 37	
B6. Instrument/Equipment Testing, Inspection, and Maintenance			
a. Identifies field and laboratory equipment needing periodic maintenance, and the schedule for this	Yes	SAP Worksheets 22, 24 QAPP Worksheet 25	
b. Identifies testing criteria	Yes		
c. Notes availability and location of spare parts	NA		
d. Indicates procedures in place for inspecting equipment before usage	Yes	SAP Worksheets 22, 24 QAPP Worksheet 25	
e. Identifies individual(s) responsible for testing, inspection and maintenance	Yes		
f. Indicates how deficiencies found should be resolved, re-inspections performed, and effectiveness of corrective action determined and documented	Yes	SAP Worksheets 22, 24	
B7. Instrument/Equipment Calibration and Frequency			
a. Identifies equipment, tools, and instruments that should be calibrated and the frequency for this calibration	Yes	SAP Worksheet 22 QAPP Worksheet 24	
b. Describes how calibrations should be performed and documented, indicating test criteria and standards or certified equipment	Yes	SAP Worksheet 22 QAPP Worksheet 24, 25	
c. Identifies how deficiencies should be resolved and documented	Yes		
B8. Inspection/Acceptance for Supplies and Consumables			
a. Identifies critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials	Yes	SAP Worksheet 22, 26 & 27 SAP Attachment E, as needed	
b. Identifies the individual(s) responsible for this	Yes		
B9. Use of Existing Data (Non-direct Measurements)			
a. Identifies data sources, for example, computer databases or literature files, or models that should be accessed and used	Yes	SAP Worksheet 11 QAPP Worksheet 13	
b. Describes the intended use of this information and the rationale for their selection, i.e., its relevance to project	Yes		
c. Indicates the acceptance criteria for these data sources and/or models	Yes		
d. Identifies key resources/support facilities needed	Yes	SAP Worksheet 11 QAPP Worksheet 13	
e. Describes how limits to validity and operating conditions should be determined, for example, internal checks of the program and Beta testing	Yes		
B10. Data Management			

Element	Acceptable	Location	Comments
	Yes/No/NA		
a. Describes data management scheme from field to final use and storage	Yes	SAP Worksheets 26 & 27, QAPP Worksheets 29 & 35 DMP section 3a flow diagram, Section 4 Data Collection, Processing and Field Storage, Section 5 Data Verification, Section 6 Data Reporting and Storage.	
b. Discusses standard record-keeping and tracking practices, and the document control system or cites other written documentation such as SOPs	Yes	SAP Worksheets 26 & 27 QAPP Worksheet 29	
c. Identifies data handling equipment/procedures that should be used to process, compile, analyze, and transmit data reliably and accurately	Yes	SAP Worksheets 22, 23, QAPP Worksheet 29 DMP Section 4 Data Collection, Processing and Field Storage and Section 5 Data Verification	
d. Identifies individual(s) responsible for this	Yes	QAPP Worksheet 29 DMP section 3b Roles and responsibilities, DMP section 6a Data Analysis & Reporting	
e. Describes the process for data archival and retrieval	Yes		
f. Describes procedures to demonstrate acceptability of hardware and software configurations	Yes	SAP Worksheets 22, 23 DMP Section 4b Data Collection SOPs & Checklists, 4c Data Processing SOPs & Checklists, 4d Data Storage SOPs & Checklists	
g. Attaches checklists and forms that should be used	Yes	DMP Section 4b Data Collection SOPs & Checklists, 4c Data Processing SOPs & Checklists, 4d Data Storage SOPs & Checklists	
C. Assessment and Oversight			
C1. Assessments and Response Actions			
a. Lists the number, frequency, and type of assessment activities that should be conducted, with the approximate dates	Yes	QAPP Worksheet 31, 32 & 33	
b. Identifies individual(s) responsible for conducting assessments, indicating their authority to issue stop work orders, and any other possible participants in the assessment process	Yes		
c. Describes how and to whom assessment information should be reported	Yes		
d. Identifies how corrective actions should be addressed and by whom, and how they should be verified and documented	Yes		
C2. Reports to Management			
a. Identifies what project QA status reports are needed and how frequently	Yes	QAPP Worksheet 31, 32 & 33	
b. Identifies who should write these reports and who should receive this information	Yes	QAPP Worksheet 31, 32 & 33	
D. Data Validation and Usability			
D1. Data Review, Verification, and Validation			
Describes criteria that should be used for accepting, rejecting, or qualifying project data	Yes	SAP Worksheet 36	
D2. Verification and Validation Methods			

Element	Acceptable	Location	Comments
	Yes/No/NA		
a. Describes process for data verification and validation, providing SOPs and indicating what data validation software should be used, if any	Yes	QAPP Worksheets 34, 35, 36	
b. Identifies who is responsible for verifying and validating different components of the project data/information, for example, chain-of-custody forms, receipt logs, calibration information, etc.	Yes	QAPP Worksheet 35	
c. Identifies issue resolution process, and method and individual responsible for conveying these results to data users	Yes	QAPP Worksheets 35 SAP Worksheet 36	
d. Attaches checklists, forms, and calculations	Yes	QAPP Worksheet 34, 37 QAPP Appendix J	
D3. Reconciliation with User Requirements			
a. Describes procedures to evaluate the uncertainty of the validated data	Yes	QAPP Worksheets 12, 37 QAPP Appendix J	
b. Describes how limitations on data use should be reported to the data users	Yes	QAPP Worksheet 37	
D3. Reconciliation with User Requirements			
a. Describes procedures to evaluate the uncertainty of the validated data	Yes	SAP Worksheets 11 QAPP Worksheets 12, 35, 36	
b. Describes how limitations on data use should be reported to the data users	Yes	QAPP Worksheet 12	

Attachment C



Photo Number: IMG_0523.JPG **Date:** 10/14/14 **Direction:** Northeast **Photographer:** Kastner
Subject: CRT televisions stock piled at the Site



Photo Number: IMG_0525.JPG **Date:** 10/14/14 **Direction:** Overhead **Photographer:** Kastner
Subject: Soil sample collected amongst CRT television debris



Photo Number: IMG_0527.JPG **Date:** 10/14/14 **Direction:** North **Photographer:** Kastner
Subject: CRT televisions and other electronic debris stock piled at the Site



Photo Number: IMG_0528.JPG **Date:** 10/14/14 **Direction:** West **Photographer:** Kastner
Subject: Burned debris and CRT televisions stock piled at the Site



Photo Number: IMG_0535.JPG **Date:** 10/14/14 **Direction:** Overhead **Photographer:** Kastner
Subject: START Sandusky disassembles a CRT television and separates the components



Photo Number: IMG_0537.JPG **Date:** 10/14/14 **Direction:** Northwest **Photographer:** Kastner
Subject: Burned debris along the north Site boundary



Photo Number: IMG_0541.JPG **Date:** 10/14/14 **Direction:** South **Photographer:** Kastner
Subject: Electronic debris near neighboring property



Photo Number: IMG_0549.JPG **Date:** 10/14/14 **Direction:** Southwest **Photographer:** Kastner
Subject: Electronic debris, burned debris, and CRT televisions stock piled at the Site



Photo Number: IMG_0550.JPG **Date:** 10/14/14 **Direction:** North **Photographer:** Kastner
Subject: CRT televisions and electronic debris stock piled at the Site



Photo Number: IMG_0551.JPG **Date:** 10/14/14 **Direction:** Northeast **Photographer:** Kastner
Subject: CRT televisions stock piled at the Site

Attachment D

**Site Debris Treatability Study
Stone Castle Recycling (OU1), Parowan, UT**

Application of Mono-Ammonium Phosphate to Contaminated Debris for Immobilization of Lead

(Updated 12/8/14)

1. Project Description

From the document U.S. EPA Action Memorandum dated 11/24/14:

Stone Castle was in the business of scrapping used and donated cathode-ray tube (CRT) television sets on behalf non-profit organizations and municipalities along the Interstate 15 corridor in Utah. Stone Castle operated at the Site from approximately August 2013 to March 2014, when there was a fire at the Site. After the fire, the electronic waste materials at the Site were abandoned. When it functioned as an operating entity, Stone Castle dismantled electronics, sold the component parts, and recovered raw materials. During this dismantling procedure, Stone Castle removed the cathode-ray from the leaded-glass vacuum tube inside CRT televisions. Stone Castle segregated, crushed, and sent this glass to other leaded glass makers to melt down and create new leaded-glass CRTs. Following the move from analog to digital broadcasting, and the corresponding shift from CRT televisions to plasma and liquid-crystal display (LCD) high-definition televisions, the market for leaded glass collapsed. Stone Castle had large volumes of nearly worthless CRTs and recovered raw materials without sufficient revenue to properly process electronic waste, to pay employees and facility leases, and to dispose of the electronic wastes.

After conducting site assessment field work, the following waste streams have been identified: (1) burned electronics debris, (2) broken televisions and miscellaneous electronic devices, and (3) intact televisions.

2. Treatment Technology Description

Lead chemical immobilization using phosphate addition is an accepted technique to immobilize lead in contaminated debris. The application of phosphate amendments cause lead in debris to shift from forms with high availability to immobile lead forms. Field-usable treatment ratios and other parameters will be determined by a bench top study using site wastes and soils.

The timetable for completing this study prior to removal action work will limits the combinations of variables to be tested. Use of previously-established procedures, primarily designed for soil contamination provides a starting point for determining a treatment solution for the waste streams on site. This plan was developed following a review of collected literature references, procedures used at other sites (soil contamination) and the need to quickly identify a practical and effective method.

3. Test Objectives

The objective of this study is to determine the effectiveness of on-site treatment of site waste. Treatment product ratios will also be tested for use in site treatment estimates. The volume of treatment products used on site significantly affects the cost of the removal action.

4. Experimental Design and Procedures

- Treatment Product

Based on research of previous studies and local availability, the treatment products selected for the study are Portland cement and agricultural grade monoammonium phosphate (MAP) fertilizer. The MAP product contains 11% Nitrogen and 52% Phosphate.

- Application Ratio

Previous work with soils indicates that application ratios of 1-3% phosphate by weight are effective at reducing lead contamination below TCLP limits. The different properties of mixed glass, plastic, and other debris, including some site soils, may have an impact on what application ratio is most effective on the mixed e-waste from the sites. Application ratios of 1% and 3% MAP will be tested for effectiveness at heavy metal fixation in the waste. The treatment ratios defined within this SOP will be determined by a bench top study using glass waste, soils and burn debris/waste from the site.

- Retention time

Previous studies indicated that a minimum contact time of 24 hours is necessary for phosphate to effectively immobilize lead in soils. As a starting point, test aliquots of debris will be allowed to react for a minimum of 24 hours prior to sampling for TCLP Analysis. Should the study indicate inconclusive results, different contact times may be considered.

Test Procedure

1. Test quantities of site wastes will be size reduced to meet the criteria for TCLP analysis specified in EPA Method 1311 (wastes needs to pass through a 3/8" sieve). In all but one of the samples, the waste will be size reduced prior to mixing.
2. The test batches will be wetted to achieve approximately 10% moisture content.
3. Separate aliquots of each waste will be treated with varied amounts of treatment products, by weight percent, and mixed thoroughly (see chart below). The MAP agent purchased was in pellet form. For all but one of the samples, the MAP was ground prior to mixing.
4. The treatment will be allowed to set for a minimum of 24 hours and then samples will be collected from each of the dosing aliquots for TCLP analyses.

5. Equipment and Materials

- Quantity

Approximately 4 gallons of each waste stream was containerized from the site for use in this treatability study. Following size reduction, each waste stream will be weighted as

part of the treatment testing. Also, sufficient amounts of Portland cement and the MAP treatment agent were purchased for use in the study.

- **Volume/Capacity**
The initial run of testing consisted of seven samples (three waste matrixes and two dose levels). The need for additional testing runs was determined after evaluating the results of the first run. Five additional samples (one matrix and varied products and doses) were tested during the second testing run.
- **Calibration or Scale**
All testing runs will be submitted for independent laboratory analysis. No specific equipment calibration is anticipated.
- **Equipment Manufacture and Model Number**
No specialized equipment is anticipated in the testing procedure. Disposable scoops, buckets, and sampling containers will be utilized.
- **Reagent Grade and Concentration**
The treatment product will be mixed to achieve the desired dose concentrations (see chart below).

6. Sampling and Analysis

The testing runs will be analyzed for TCLP Metals to determine the effectiveness of the treatment product.

7. Data Management

All data for the study will be managed in a SCRIBE database and results tabulated.

8. Data Analysis and Interpretation

The ERRS contractor will be consulted to develop scaled-up methods for excavation, moisture control, treatment product application techniques and mixing/stockpiling materials undergoing treatment.

9. Health and Safety

A site assessment health and safety plan (HASP) was prepared prior to mobilization. In accordance with that plan, Level D PPE will be utilized and the study will be conducted within the lab room at the EPA Region 8 Warehouse.

10. Residuals Management

All residual materials left at the conclusion of the study will be returned to the site. They will be incorporated into the site waste streams for disposal.

11. Community Relations

Not applicable.

12. Reports

The results will be evaluated and an SOP for treatment of site wastes will be prepared which details the parameters identified in the study as optimum for lead reduction.

13. Schedule

TBD

14. Management and Staffing

TBD

15. Budget

The work and analysis for this treatability study will be included in the original budget for the START site assessment TDD.

Table 1: Treatability Study Sample Treatment

	Sample ID (abbreviated)												
	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10	T11	T12	
Size (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3**
Portland cement (%)	0	0	0	0	0	0	0	0	3	10	3	0	
MAP (%)	1	3	1	3	1	3	3*	0	0	0	3	3	
Waste Matrix	Glass	Glass	Burned Debris	Burned Debris	Mixed Waste	Mixed Waste	Mixed Waste	Glass	Glass	Glass	Glass	Glass	

* MAP agent was added in pellet form

** batch was mixed prior to size reduction

Attachment E

Table 1
 Stone Castle OU1
 Treatability Study 1
 10/29/14

Treatability Study 1	Sample ID						
	T01	T02	T03	T04	T05	T06	T07
Size	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
PO ₄ ³⁻ (%)	1	3	1	3	1	3	3*
Test Matrix	Glass	Glass	Burned Debris	Burned Debris	Mixed Waste	Mixed Waste	Mixed Waste

* PO₄³⁻ agent was added in pellet form

Table 2
Stone Castle OU1
Treatability Study 2
11/7/14

Treatability Study 2	Sample ID				
	T08	T09	T10	T11	T12
Size	3/8"	3/8"	3/8"	3/8"	3"*
Portland (%)	0	3	10	3	0
PO ₄ ³⁻ (%)	0	0	0	3	3
Test Matrix	Glass	Glass	Glass	Glass	Glass

* batch was mixed prior to size reduction

Table 3
 Stone Castle OU1
 Treatability Study 1
 TCLP Metals Analysis
 10/29/14

Analyte	Units	EPA Limit	Sample ID						
			SCOU1T01	SCOU1T02	SCOU1T03	SCOU1T04	SCOU1T05	SCOU1T06	SCOU1T07
Arsenic	mg/L	5.0	<0.025	<0.025	0.027	<0.025	<0.025	0.025	0.032
Barium	mg/L	100.0	1.9	2.5	1	<1.0	2	<1.0	<1.0
Cadmium	mg/L	1.0	0.04	0.08	0.17	0.089	0.053	0.077	0.1
Chromium	mg/L	5.0	<0.010	<0.010	0.034	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	5.0	3.9	8.5	3.2	1.8	8.1	0.6	0.69
Mercury	mg/L	0.2	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Selenium	mg/L	1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver	mg/L	5.0	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030

3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	Size
Glass	Glass	Burned Debris	Burned Debris	Mixed Waste	Mixed Waste	Mixed Waste	Test Matrix
1	3	1	3	1	3	3*	PO ₄ ³⁻ (%)
0	0	0	0	0	0	0	Portland (%)

Notes:

* treatment agent was not preprocessed

% = Percentage

PO₄³⁻ = Phosphate

Analyte exceeds regulatory action level

Table 4
 Stone Castle OU1
 Treatability Study 2
 TCLP Metals Analysis
 11/7/14

Analyte	Units	EPA Limit	Sample ID				
			SCOU1T08	SCOU1T09	SCOU1T10	SCOU1T11	SCOU1T12
Arsenic	mg/L	5.0	<0.025	<0.025	<0.025	0.058	0.048
Barium	mg/L	100.0	3.6	2.6	2.3	<1.0	<1.0
Cadmium	mg/L	1.0	<0.010	<0.010	<0.010	0.025	0.024
Chromium	mg/L	5.0	<0.010	0.048	0.07	0.019	<0.010
Lead	mg/L	5.0	16.8	6.4	1.7	0.1	10.9
Mercury	mg/L	0.2	<0.00010	<0.00010	<0.00010	0.0014	<0.00010
Selenium	mg/L	1.0	<0.050	<0.050	<0.050	<0.050	<0.050
Silver	mg/L	5.0	<0.030	<0.030	<0.030	<0.030	<0.030

3/8"	3/8"	3/8"	3/8"	3"	Size
Glass	Glass	Glass	Glass	Glass	Test Matrix
0	0	0	3	3	PO ₄ ³⁻ (%)
0	3	10	3	0	Portland (%)

Notes:

* treatment agent was not preprocessed

% = Percentage

PO₄³⁻ = Phosphate

Analyte exceeds regulatory action level

Table 5
 Stone Castle OU1
 TCLP Metals Analysis
 10/14/14

Analyte	Units	EPA Limit	Sample ID				
			SCOU1W01	SCOU1W02	SCOU1W03	SCOU1W04	
Arsenic	mg/L	5.0	0.025 U	0.025 U	0.025 U	0.097	
Barium	mg/L	100.0	2.8	2.3	4	11.8	
Cadmium	mg/L	1.0	0.01 U	0.01 U	0.01 U	0.01 U	
Chromium	mg/L	5.0	0.01 U	0.01 U	0.011	0.01 U	
Lead	mg/L	5.0	33.4	13.3	50.1	3.6	
Mercury	mg/L	0.2	0.0001 U	0.0001 U	0.0001 U	0.0001 U	
Selenium	mg/L	1.0	0.05 U	0.05 U	0.05 U	0.075 U	
Silver	mg/L	5.0	0.03 U	0.03 U	0.03 U	0.15 U	
			burned debris	burned debris	glass	mixed waste	Matrix

Notes:

U - Not detected at the method detection limit

Analyte exceeds regulatory action levels

Table 6
Stone Castle OU1
Soil TAL Metals Analysis
10/14/14

Analyte	Units	EPA Residential RSL	EPA Industrial RSL	Sample ID							
				SCOU1S01	SCOU1S03	SCOU1S05	SCOU1S06	SCOU1S07	SCOU1S08	SCOU1S09	SCOU1S10
Aluminum	mg/kg	77,000	1,100,000	3,870	2,630	2,940	3,430	5,970	2,770	2,540	2,860
Antimony	mg/kg	31	470	3.4	3.4	4.4	11.8	6	7.1	3.5	4.2
Arsenic	mg/kg	0.67	3	7	6.4	7	6.4	7.1	7.1	6	7.5
Barium	mg/kg	15,000	220,000	87.6	56.6	63.1	79.7	110	58.8	65.7	61.9
Beryllium	mg/kg	160	2,300	1.1 U	1 U	1.1 U	1 U	5.4 U	1 U	1.1 U	1 U
Cadmium	mg/kg	70	980	1.1 U	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1 U
Calcium	mg/kg	NE	NE	69,700	78,800	78,700	67,600	32,200	74,400	76,500	83,800
Chromium	mg/kg	NE	NE	6.9	6.8	6	6	6.5	5.9	5.2	6
Cobalt	mg/kg	23	350	4.9	2.6	2.3	4.2	11.5	2.2	1.9	2.4
Copper	mg/kg	3,100	47,000	10	9.6	5.7	64.1	22.4	5.8	4.1	5.1
Iron	mg/kg	55,000	820,000	7,550	5,910	5,460	7,820	15,100	5,430	4,690	5,540
Lead	mg/kg	400	800	14.2	81.2	9.9	18.7	8.6	7.2	6.1	8.4
Magnesium	mg/kg	NE	NE	14,700	12,900	15,100	15,600	18,200	15,500	14,100	16,100
Manganese	mg/kg	1,800	26,000	234	198	181	200	272	164	149	178
Mercury	mg/kg	9.4	40	102.9	0.093 U	0.09 U	0.1 U	0.11 U	0.09 U	0.088 U	0.11 U
Nickel	mg/kg	1,500	22,000	16.2	9.4	5.3	13.7	43.5	5.2	4.3	5.5
Potassium	mg/kg	NE	NE	1,530	1,030	1,400	1,270	1,650	1,180	1,220	1,340
Selenium	mg/kg	390	5,800	5.5 U	5.1 U	5.3 U	5.1 U	5.4 U	5 U	5.4 U	5.2 U
Silver	mg/kg	390	5,800	3.3 U	3.1 U	3.2 U	3.1 U	3.2 U	3 U	3.2 U	3.1 U
Sodium	mg/kg	NE	NE	220	98.2	102	259	712	84.1	98.4	106
Thallium	mg/kg	0.78	12	1.1 U	1 U	1.1 U	1 U	5.4 U	1 U	1.1 U	1 U
Vanadium	mg/kg	390	5,800	11	8.5	9	9.7	17.3	9.1	8.1	8.8
Zinc	mg/kg	23,000	350,000	35.6	34.9	27.4	28.9	23.3	24.1	19	23.2

Notes:

-- Not analyzed

NE - No benchmark established

ND - Not Detected

U = Not detected; the associated numerical value is the reporting limit

Analyte exceeds one or more of the regulatory action levels

Table 7
Stone Castle OU1
SVOC Analysis
10/14/14

Analyte	Sample ID			
	SCOU1W01	SCOU1W02	SCOU1W03	SCOU1W04
1,2,4-Trichlorobenzene	10000 U	20000 U	1000 U	22000 U
1,2-Dichlorobenzene	10000 U	20000 U	1000 U	22000 U
1,3-Dichlorobenzene	10000 U	20000 U	1000 U	22000 U
1,4-Dichlorobenzene	10000 U	20000 U	1000 U	22000 U
2,4,5-Trichlorophenol	10000 U	20000 U	1000 U	22000 U
2,4,6-Trichlorophenol	10000 U	20000 U	1000 U	22000 U
2,4-Dichlorophenol	10000 U	20000 U	1000 U	22000 U
2,4-Dimethylphenol	10000 U	20000 U	1000 U	22000 U
2,4-Dinitrophenol	40000 U	79000 U	4000 U	86000 U
2,4-Dinitrotoluene	10000 U	20000 U	1000 U	22000 U
2,6-Dinitrotoluene	10000 U	20000 U	1000 U	22000 U
2-Chloronaphthalene	10000 U	20000 U	1000 U	22000 U
2-Chlorophenol	10000 U	20000 U	1000 U	22000 U
2-Methylnaphthalene	10000 U	20000 U	1000 U	22000 U
2-Methylphenol	10000 U	20000 U	1000 U	22000 U
2-Nitroaniline	10000 U	20000 U	1000 U	22000 U
2-Nitrophenol	10000 U	20000 U	1000 U	22000 U
3&4-Methylphenol	20000 U	39000 U	2000 U	14,500 J
3,3'-Dichlorobenzidine	20000 U	39000 U	2000 U	43000 U
3-Nitroaniline	10000 U	20000 U	1000 U	22000 U
4,6-Dinitro-o-cresol	20000 U	39000 U	2000 U	43000 U
4-Bromophenyl phenyl ether	10000 U	20000 U	1000 U	22000 U
4-Chloro-3-methyl phenol	10000 U	20000 U	1000 U	22000 U
4-Chloroaniline	10000 U	20000 U	1000 U	22000 U
4-Chlorophenyl phenyl ether	10000 U	20000 U	1000 U	22000 U
4-Nitroaniline	10000 U	20000 U	1000 U	22000 U
4-Nitrophenol	20000 U	39000 U	2000 U	43000 U
Acenaphthene	10000 U	20000 U	1000 U	22000 U
Acenaphthylene	10000 U	20000 U	1000 U	22000 U
Anthracene	10000 U	20000 U	1000 U	22000 U
Benzo(a)anthracene	10000 U	20000 U	1000 U	22000 U
Benzo(a)pyrene	10000 U	20000 U	1000 U	22000 U
Benzo(b)fluoranthene	10000 U	20000 U	1000 U	22000 U
Benzo(g,h,i)perylene	10000 U	20000 U	1000 U	22000 U
Benzo(k)fluoranthene	10000 U	20000 U	1000 U	22000 U
Benzoic acid	40000 U	79000 U	4000 U	86000 U
Benzyl Alcohol	10000 U	20000 U	1000 U	22000 U
bis(2-Chloroethoxy)methane	10000 U	20000 U	1000 U	22000 U
bis(2-Chloroethyl)ether	10000 U	20000 U	1000 U	22000 U
bis(2-Chloroisopropyl)ether	10000 U	20000 U	1000 U	22000 U
bis(2-Ethylhexyl)phthalate	20000 U	39000 U	2000 U	43000 U
Butyl benzyl phthalate	10000 U	20000 U	1000 U	22000 U
Chrysene	10000 U	20000 U	1000 U	22000 U

Table 7
Stone Castle OU1
SVOC Analysis
10/14/14

Analyte	Sample ID			
	SCOU1W01	SCOU1W02	SCOU1W03	SCOU1W04
Dibenzo(a,h)anthracene	10000 U	20000 U	1000 U	22000 U
Dibenzofuran	10000 U	20000 U	1000 U	22000 U
Diethyl phthalate	10000 U	20000 U	1000 U	22000 U
Dimethyl phthalate	10000 U	20000 U	1000 U	22000 U
Di-n-butyl phthalate	10000 U	20000 U	1000 U	22000 U
Di-n-octyl phthalate	10000 U	20000 U	1000 U	22000 U
Fluoranthene	10000 U	20000 U	1000 U	22000 U
Fluorene	10000 U	20000 U	1000 U	22000 U
Hexachlorobenzene	10000 U	20000 U	1000 U	22000 U
Hexachlorobutadiene	10000 U	20000 U	1000 U	22000 U
Hexachlorocyclopentadiene	10000 U	20000 U	1000 U	22000 U
Hexachloroethane	10000 U	20000 U	1000 U	22000 U
Indeno(1,2,3-cd)pyrene	10000 U	20000 U	1000 U	22000 U
Isophorone	10000 U	20000 U	1000 U	22000 U
Naphthalene	10000 U	20000 U	1000 U	22000 U
Nitrobenzene	10000 U	20000 U	1000 U	22000 U
N-Nitroso-di-n-propylamine	10000 U	20000 U	1000 U	22000 U
N-Nitrosodiphenylamine	10000 U	20000 U	1000 U	22000 U
Pentachlorophenol	20000 U	39000 U	2000 U	43000 U
Phenanthrene	10000 U	20000 U	1000 U	22000 U
Phenol	10000 U	20000 U	1000 U	398,000
Pyrene	10000 U	20000 U	1000 U	22000 U

Notes

J = Estimated value

U = Not detected; the associated numerical value is the reporting limit

Highlighted cells were the only results above the detection limit

Attachment F

Technical Report for

Weston Solutions, Inc.

Stone Castle

20408.016.001.0183.00

Accutest Job Number: D63507

Sampling Date: 10/14/14

Report to:

**Weston Solutions, Inc.
1435 Garrison Street Suite 100
Lakewood, CO 80215
jeff.bryniarski@westonsolutions.com**

ATTN: Jeff Bryniarski

Total number of pages in report: 81



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions, Inc.

Job No: D63507

Stone Castle
 Project No: 20408.016.001.0183.00

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D63507-1	10/14/14	08:55 ES	10/15/14	SO	Soil	SCOU1S01
D63507-2	10/14/14	09:15 ES	10/15/14	SO	Soil	SCOU1S03
D63507-3	10/14/14	09:30 ES	10/15/14	SO	Soil	SCOU1S05
D63507-4	10/14/14	09:40 ES	10/15/14	SO	Soil	SCOU1S06
D63507-5	10/14/14	09:45 ES	10/15/14	SO	Soil	SCOU1S07
D63507-6	10/14/14	10:00 ES	10/15/14	SO	Soil	SCOU1S08
D63507-7	10/14/14	10:15 ES	10/15/14	SO	Soil	SCOU1S09
D63507-8	10/14/14	09:35 ES	10/15/14	SO	Soil	SCOU1S10
D63507-9	10/14/14	12:50 ES	10/15/14	SO	Soil	SCOU1W01
D63507-9A	10/14/14	12:50 ES	10/15/14	SO	Soil	SCOU1W01
D63507-10	10/14/14	13:00 ES	10/15/14	SO	Soil	SCOU1W02
D63507-10A	10/14/14	13:00 ES	10/15/14	SO	Soil	SCOU1W02
D63507-11	10/14/14	12:45 ES	10/15/14	SO	Soil	SCOU1W03

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary (continued)

Weston Solutions, Inc.

Job No: D63507

Stone Castle

Project No: 20408.016.001.0183.00

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D63507-11A	10/14/14	12:45	ES	10/15/14	SO Soil	SCOU1W03
D63507-12	10/14/14	13:30	ES	10/15/14	SO Soil	SCOU1W04
D63507-12A	10/14/14	13:30	ES	10/15/14	SO Soil	SCOU1W04

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D63507

Site: Stone Castle

Report Date 11/1/2014 9:46:06 AM

On 10/15/2014, 12 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D63507 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: C:OP11094

- The data for SW846 8270C meets quality control requirements.
- D63507-9: Reporting limits raised due to nature of the sample matrix (glass/asphalt); extract was dark, viscous and would not concentrate. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.
- D63507-12: Reporting Limits raised due to nature of the sample matrix (glass/electric materials); and extract was dark, viscous and would not concentration. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.
- D63507-11: Reporting limits raised due to nature of the sample matrix (glass); extract was dark and viscous. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.
- D63507-10: Reporting limits raised due to nature of the sample matrix (glass/asphalt); extract was dark, viscous and would not concentrate. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.

Metals By Method SW846 6010C

Matrix: LEACHATE **Batch ID:** MP14362

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63484-1MS, D63484-1MSD, D63484-1SDL were used as the QC samples for the metals analysis.
- The blank spike (BS) recovery(s) of Selenium are outside control limits. Because the bias is high and all associated sample results are < RL, no further action is required.
- The matrix spike duplicate (MSD) recovery(s) of Selenium are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Selenium are outside control limits for sample MP14362-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D63507-12A for Silver: Elevated detection limit due to dilution required for possible matrix interference.
- MP14362-SD1 for Barium: Serial dilution indicates possible matrix interference.

Matrix: SO **Batch ID:** MP14326

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63449-1MS, D63449-1MSD, D63449-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Antimony, Manganese are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike (MS) recovery(s) of Aluminum, Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Arsenic, Cadmium, Cobalt, Nickel, Sodium are outside control limits for sample MP14326-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP14326-S2 for Lead: High RPD due to possible sample nonhomogeneity.
- MP14326-MB1 for Iron: All sample results < RL or > 10x MB concentration.
- MP14326-SD1 for Iron, Potassium, Zinc: Serial dilution indicates possible matrix interference.
- D63507-5 for Beryllium: Elevated detection limit due to dilution required for possible matrix interference.
- D63507-5 for Thallium: Elevated detection limit due to dilution required for possible matrix interference.

Metals By Method SW846 7470A

Matrix: LEACHATE **Batch ID:** MP14363

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63484-1MS, D63484-1MSD were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO **Batch ID:** MP14346

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63507-1MS, D63507-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO **Batch ID:** GN26975

- The data for SM2540G-2011 M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D63507

Site: WESTCOL: Stone Castle

Report Date 10/31/2014 4:14:45 P

4 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 10/14/2014 and were received at Accutest on 10/15/2014 properly preserved and intact, unless noted below. These Samples received an Accutest job number of D63507. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP11094

- Sample(s) D63617-3MS, D63617-3MSD were used as the QC samples indicated.
- D63507-9, D63507-10: Reporting limits raised due to nature of the sample matrix (glass/asphalt); extract was dark, viscous and would not concentrate.
- D63507-12: Reporting limits raised due to nature of the sample matrix (glass/electric materials); extract was dark, viscous and would not concentrate.
- D63507-11: Reporting limits raised due to nature of the sample matrix (glass); extract was dark and viscous.

Accutest Laboratories Northern California (ALNCA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALNCA and as stated on the COC. ALNCA certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALNCA Quality Manual except as noted above. This report is to be used in its entirety. ALNCA is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: D63507
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/14/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D63507-1	SCOU1S01					
Aluminum		3870	11		mg/kg	SW846 6010C
Antimony		3.4	3.3		mg/kg	SW846 6010C
Arsenic		7.0	2.8		mg/kg	SW846 6010C
Barium		87.6	1.1		mg/kg	SW846 6010C
Calcium		69700	44		mg/kg	SW846 6010C
Chromium		6.9	1.1		mg/kg	SW846 6010C
Cobalt		4.9	0.55		mg/kg	SW846 6010C
Copper		10.0	1.1		mg/kg	SW846 6010C
Iron		7550	7.8		mg/kg	SW846 6010C
Lead		14.2	5.5		mg/kg	SW846 6010C
Magnesium		14700	22		mg/kg	SW846 6010C
Manganese		234	0.55		mg/kg	SW846 6010C
Nickel		16.2	3.3		mg/kg	SW846 6010C
Potassium		1530	220		mg/kg	SW846 6010C
Sodium		220	44		mg/kg	SW846 6010C
Vanadium		11.0	1.1		mg/kg	SW846 6010C
Zinc		35.6	3.3		mg/kg	SW846 6010C
D63507-2	SCOU1S03					
Aluminum		2630	10		mg/kg	SW846 6010C
Antimony		3.4	3.1		mg/kg	SW846 6010C
Arsenic		6.4	2.6		mg/kg	SW846 6010C
Barium		56.6	1.0		mg/kg	SW846 6010C
Calcium		78800	41		mg/kg	SW846 6010C
Chromium		6.8	1.0		mg/kg	SW846 6010C
Cobalt		2.6	0.51		mg/kg	SW846 6010C
Copper		9.6	1.0		mg/kg	SW846 6010C
Iron		5910	7.2		mg/kg	SW846 6010C
Lead		81.2	5.1		mg/kg	SW846 6010C
Magnesium		12900	21		mg/kg	SW846 6010C
Manganese		198	0.51		mg/kg	SW846 6010C
Nickel		9.4	3.1		mg/kg	SW846 6010C
Potassium		1030	210		mg/kg	SW846 6010C
Sodium		98.2	41		mg/kg	SW846 6010C
Vanadium		8.5	1.0		mg/kg	SW846 6010C
Zinc		34.9	3.1		mg/kg	SW846 6010C
D63507-3	SCOU1S05					
Aluminum		2940	11		mg/kg	SW846 6010C
Antimony		4.4	3.2		mg/kg	SW846 6010C
Arsenic		7.0	2.6		mg/kg	SW846 6010C

Summary of Hits

Job Number: D63507
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/14/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
		63.1	1.1		mg/kg	SW846 6010C
		78700	42		mg/kg	SW846 6010C
		6.0	1.1		mg/kg	SW846 6010C
		2.3	0.53		mg/kg	SW846 6010C
		5.7	1.1		mg/kg	SW846 6010C
		5460	7.4		mg/kg	SW846 6010C
		9.9	5.3		mg/kg	SW846 6010C
		15100	21		mg/kg	SW846 6010C
		181	0.53		mg/kg	SW846 6010C
		5.3	3.2		mg/kg	SW846 6010C
		1400	210		mg/kg	SW846 6010C
		102	42		mg/kg	SW846 6010C
		9.0	1.1		mg/kg	SW846 6010C
		27.4	3.2		mg/kg	SW846 6010C

D63507-4 SCOU1S06

		3430	10		mg/kg	SW846 6010C
		11.8	3.1		mg/kg	SW846 6010C
		6.4	2.6		mg/kg	SW846 6010C
		79.7	1.0		mg/kg	SW846 6010C
		67600	41		mg/kg	SW846 6010C
		6.0	1.0		mg/kg	SW846 6010C
		4.2	0.51		mg/kg	SW846 6010C
		64.1	1.0		mg/kg	SW846 6010C
		7820	7.2		mg/kg	SW846 6010C
		18.7	5.1		mg/kg	SW846 6010C
		15600	20		mg/kg	SW846 6010C
		200	0.51		mg/kg	SW846 6010C
		13.7	3.1		mg/kg	SW846 6010C
		1270	200		mg/kg	SW846 6010C
		259	41		mg/kg	SW846 6010C
		9.7	1.0		mg/kg	SW846 6010C
		28.9	3.1		mg/kg	SW846 6010C

D63507-5 SCOU1S07

		5970	11		mg/kg	SW846 6010C
		6.0	3.2		mg/kg	SW846 6010C
		7.1	2.7		mg/kg	SW846 6010C
		110	1.1		mg/kg	SW846 6010C
		32200	43		mg/kg	SW846 6010C
		6.5	1.1		mg/kg	SW846 6010C
		11.5	0.54		mg/kg	SW846 6010C
		22.4	1.1		mg/kg	SW846 6010C

Summary of Hits

Job Number: D63507
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/14/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

Iron		15100	7.5		mg/kg	SW846 6010C
Lead		8.6	5.4		mg/kg	SW846 6010C
Magnesium		18200	21		mg/kg	SW846 6010C
Manganese		272	0.54		mg/kg	SW846 6010C
Nickel		43.5	3.2		mg/kg	SW846 6010C
Potassium		1650	210		mg/kg	SW846 6010C
Sodium		712	43		mg/kg	SW846 6010C
Vanadium		17.3	1.1		mg/kg	SW846 6010C
Zinc		23.3	3.2		mg/kg	SW846 6010C

D63507-6 SCOU1S08

Aluminum		2770	10		mg/kg	SW846 6010C
Antimony		7.1	3.0		mg/kg	SW846 6010C
Arsenic		7.1	2.5		mg/kg	SW846 6010C
Barium		58.8	1.0		mg/kg	SW846 6010C
Calcium		74400	40		mg/kg	SW846 6010C
Chromium		5.9	1.0		mg/kg	SW846 6010C
Cobalt		2.2	0.50		mg/kg	SW846 6010C
Copper		5.8	1.0		mg/kg	SW846 6010C
Iron		5430	7.0		mg/kg	SW846 6010C
Lead		7.2	5.0		mg/kg	SW846 6010C
Magnesium		15500	20		mg/kg	SW846 6010C
Manganese		164	0.50		mg/kg	SW846 6010C
Nickel		5.2	3.0		mg/kg	SW846 6010C
Potassium		1180	200		mg/kg	SW846 6010C
Sodium		84.1	40		mg/kg	SW846 6010C
Vanadium		9.1	1.0		mg/kg	SW846 6010C
Zinc		24.1	3.0		mg/kg	SW846 6010C

D63507-7 SCOU1S09

Aluminum		2540	11		mg/kg	SW846 6010C
Antimony		3.5	3.2		mg/kg	SW846 6010C
Arsenic		6.0	2.7		mg/kg	SW846 6010C
Barium		65.7	1.1		mg/kg	SW846 6010C
Calcium		76500	43		mg/kg	SW846 6010C
Chromium		5.2	1.1		mg/kg	SW846 6010C
Cobalt		1.9	0.54		mg/kg	SW846 6010C
Copper		4.1	1.1		mg/kg	SW846 6010C
Iron		4690	7.5		mg/kg	SW846 6010C
Lead		6.1	5.4		mg/kg	SW846 6010C
Magnesium		14100	21		mg/kg	SW846 6010C
Manganese		149	0.54		mg/kg	SW846 6010C
Nickel		4.3	3.2		mg/kg	SW846 6010C

Summary of Hits

Job Number: D63507
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/14/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

Potassium		1220	210		mg/kg	SW846 6010C
Sodium		98.4	43		mg/kg	SW846 6010C
Vanadium		8.1	1.1		mg/kg	SW846 6010C
Zinc		19.0	3.2		mg/kg	SW846 6010C

D63507-8 SCOU1S10

Aluminum		2860	10		mg/kg	SW846 6010C
Antimony		4.2	3.1		mg/kg	SW846 6010C
Arsenic		7.5	2.6		mg/kg	SW846 6010C
Barium		61.9	1.0		mg/kg	SW846 6010C
Calcium		83800	41		mg/kg	SW846 6010C
Chromium		6.0	1.0		mg/kg	SW846 6010C
Cobalt		2.4	0.52		mg/kg	SW846 6010C
Copper		5.1	1.0		mg/kg	SW846 6010C
Iron		5540	7.2		mg/kg	SW846 6010C
Lead		8.4	5.2		mg/kg	SW846 6010C
Magnesium		16100	21		mg/kg	SW846 6010C
Manganese		178	0.52		mg/kg	SW846 6010C
Nickel		5.5	3.1		mg/kg	SW846 6010C
Potassium		1340	210		mg/kg	SW846 6010C
Sodium		106	41		mg/kg	SW846 6010C
Vanadium		8.8	1.0		mg/kg	SW846 6010C
Zinc		23.2	3.1		mg/kg	SW846 6010C

D63507-9 SCOU1W01

No hits reported in this sample.

D63507-9A SCOU1W01

Barium		2.8	1.0		mg/l	SW846 6010C
Lead		33.4	0.050		mg/l	SW846 6010C

D63507-10 SCOU1W02

No hits reported in this sample.

D63507-10A SCOU1W02

Barium		2.3	1.0		mg/l	SW846 6010C
Lead		13.3	0.050		mg/l	SW846 6010C

Summary of Hits

Job Number: D63507
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/14/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D63507-11 SCOU1W03

No hits reported in this sample.

D63507-11A SCOU1W03

Barium	4.0	1.0			mg/l	SW846 6010C
Chromium	0.011	0.010			mg/l	SW846 6010C
Lead	50.1	0.050			mg/l	SW846 6010C

D63507-12 SCOU1W04

3&4-Methylphenol ^a	14500 J	43000	10000		ug/kg	SW846 8270C
Phenol ^a	398000	22000	8900		ug/kg	SW846 8270C

D63507-12A SCOU1W04

Arsenic	0.097	0.025			mg/l	SW846 6010C
Barium	11.8	1.0			mg/l	SW846 6010C
Lead	3.6	0.050			mg/l	SW846 6010C

(a) Reporting Limits raised due to nature of the sample matrix (glass/electric materials); and extract was dark, viscous and would not concentration. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: SCOU1S01 Lab Sample ID: D63507-1 Matrix: SO - Soil Project: Stone Castle	Date Sampled: 10/14/14 Date Received: 10/15/14 Percent Solids: 90.3
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Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	3870	11	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	3.4	3.3	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	7.0	2.8	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	87.6	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	69700	44	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Chromium	6.9	1.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Cobalt	4.9	0.55	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	10.0	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	7550	7.8	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	14.2	5.5	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	14700	22	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Manganese	234	0.55	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.11	0.11	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	16.2	3.3	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1530	220	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.5	5.5	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.3	3.3	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	220	44	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Thallium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	11.0	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	35.6	3.3	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5390
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: SCOU1S03 Lab Sample ID: D63507-2 Matrix: SO - Soil Project: Stone Castle	Date Sampled: 10/14/14 Date Received: 10/15/14 Percent Solids: 95.5
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Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	2630	10	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	3.4	3.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	6.4	2.6	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	56.6	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	78800	41	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Chromium	6.8	1.0	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Cobalt	2.6	0.51	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	9.6	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	5910	7.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	81.2	5.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	12900	21	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Manganese	198	0.51	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.093	0.093	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	9.4	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1030	210	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.1	5.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.1	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	98.2	41	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Thallium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	8.5	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	34.9	3.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5390
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SCOU1S05 Lab Sample ID: D63507-3 Matrix: SO - Soil Project: Stone Castle	Date Sampled: 10/14/14 Date Received: 10/15/14 Percent Solids: 88.6
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Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	2940	11	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	4.4	3.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	7.0	2.6	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	63.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	78700	42	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	6.0	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	2.3	0.53	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	5.7	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	5460	7.4	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	9.9	5.3	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	15100	21	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	181	0.53	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.090	0.090	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	5.3	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1400	210	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.3	5.3	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.2	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	102	42	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	9.0	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	27.4	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5391
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.3
4

Report of Analysis

Client Sample ID: SCOU1S06	Date Sampled: 10/14/14
Lab Sample ID: D63507-4	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 92.2
Project: Stone Castle	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	3430	10	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	11.8	3.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	6.4	2.6	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	79.7	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	67600	41	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	6.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	4.2	0.51	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	64.1	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	7820	7.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	18.7	5.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	15600	20	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	200	0.51	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.10	0.10	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	13.7	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1270	200	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.1	5.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.1	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	259	41	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	9.7	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	28.9	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5391
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: SCOU1S07	Date Sampled: 10/14/14
Lab Sample ID: D63507-5	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 92.5
Project: Stone Castle	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	5970	11	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	6.0	3.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	7.1	2.7	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	110	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium ^a	< 5.4	5.4	mg/kg	5	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	32200	43	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	6.5	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	11.5	0.54	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	22.4	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	15100	7.5	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	8.6	5.4	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	18200	21	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	272	0.54	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.11	0.11	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	43.5	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1650	210	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.4	5.4	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.2	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	712	43	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium ^a	< 5.4	5.4	mg/kg	5	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Vanadium	17.3	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	23.3	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5391
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

4.5
4

Report of Analysis

Client Sample ID: SCOU1S08	Date Sampled: 10/14/14
Lab Sample ID: D63507-6	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 92.6
Project: Stone Castle	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	2770	10	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	7.1	3.0	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	7.1	2.5	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	58.8	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	74400	40	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	5.9	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	2.2	0.50	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	5.8	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	5430	7.0	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	7.2	5.0	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	15500	20	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	164	0.50	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.090	0.090	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	5.2	3.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1180	200	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.0	5.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.0	3.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	84.1	40	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	9.1	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	24.1	3.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5391
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.6
4

Report of Analysis

Client Sample ID: SCOU1S09	Date Sampled: 10/14/14
Lab Sample ID: D63507-7	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 91.2
Project: Stone Castle	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	2540	11	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	3.5	3.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	6.0	2.7	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	65.7	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	76500	43	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	5.2	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	1.9	0.54	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	4.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	4690	7.5	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	6.1	5.4	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	14100	21	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	149	0.54	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.088	0.088	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	4.3	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1220	210	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.4	5.4	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.2	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	98.4	43	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium	< 1.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	8.1	1.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	19.0	3.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA5391

(2) Instrument QC Batch: MA5404

(3) Instrument QC Batch: MA5410

(4) Prep QC Batch: MP14326

(5) Prep QC Batch: MP14346

RL = Reporting Limit

Report of Analysis

Client Sample ID: SCOU1S10	Date Sampled: 10/14/14
Lab Sample ID: D63507-8	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 90.6
Project: Stone Castle	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	2860	10	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Antimony	4.2	3.1	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Arsenic	7.5	2.6	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Barium	61.9	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Beryllium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Calcium	83800	41	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Chromium	6.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Cobalt	2.4	0.52	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Copper	5.1	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Iron	5540	7.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Lead	8.4	5.2	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Magnesium	16100	21	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Manganese	178	0.52	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.11	0.11	mg/kg	1	10/22/14	10/22/14 KV	SW846 7471B ²	SW846 7471B ⁵
Nickel	5.5	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Potassium	1340	210	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.2	5.2	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.1	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Sodium	106	41	mg/kg	1	10/16/14	10/23/14 KV	SW846 6010C ³	SW846 3050B ⁴
Thallium	< 1.0	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Vanadium	8.8	1.0	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴
Zinc	23.2	3.1	mg/kg	1	10/16/14	10/17/14 KV	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA5391
- (2) Instrument QC Batch: MA5404
- (3) Instrument QC Batch: MA5410
- (4) Prep QC Batch: MP14326
- (5) Prep QC Batch: MP14346

RL = Reporting Limit

4.8
 4

Report of Analysis

Client Sample ID:	SCOU1W01	Date Sampled:	10/14/14
Lab Sample ID:	D63507-9	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	99.6
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	Z8224.D	10	10/31/14	ANC	10/21/14	C:OP11094	C:EZ400
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.00 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	40000	9500	ug/kg	
95-57-8	2-Chlorophenol	ND	10000	4300	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	10000	4300	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	10000	4700	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	10000	3900	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	40000	8000	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	20000	3800	ug/kg	
95-48-7	2-Methylphenol	ND	10000	5300	ug/kg	
	3&4-Methylphenol	ND	20000	4700	ug/kg	
88-75-5	2-Nitrophenol	ND	10000	4800	ug/kg	
100-02-7	4-Nitrophenol	ND	20000	2400	ug/kg	
87-86-5	Pentachlorophenol	ND	20000	2000	ug/kg	
108-95-2	Phenol	ND	10000	4200	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	10000	4500	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	10000	4300	ug/kg	
83-32-9	Acenaphthene	ND	10000	4400	ug/kg	
208-96-8	Acenaphthylene	ND	10000	4700	ug/kg	
120-12-7	Anthracene	ND	10000	3200	ug/kg	
56-55-3	Benzo(a)anthracene	ND	10000	2000	ug/kg	
50-32-8	Benzo(a)pyrene	ND	10000	2000	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	10000	2000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	10000	2600	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	10000	2000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	10000	4000	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	10000	2000	ug/kg	
100-51-6	Benzyl Alcohol	ND	10000	5400	ug/kg	
91-58-7	2-Chloronaphthalene	ND	10000	4600	ug/kg	
106-47-8	4-Chloroaniline	ND	10000	3000	ug/kg	
218-01-9	Chrysene	ND	10000	2000	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	10000	4500	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	10000	4000	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	10000	4000	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SCOU1W01	Date Sampled:	10/14/14
Lab Sample ID:	D63507-9	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	99.6
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	10000	4600	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	10000	4500	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	10000	4400	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	10000	4300	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	10000	4300	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	10000	4500	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	20000	4200	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	10000	2500	ug/kg	
132-64-9	Dibenzofuran	ND	10000	4400	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	10000	2000	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	10000	2000	ug/kg	
84-66-2	Diethyl phthalate	ND	10000	1700	ug/kg	
131-11-3	Dimethyl phthalate	ND	10000	960	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	20000	4000	ug/kg	
206-44-0	Fluoranthene	ND	10000	2000	ug/kg	
86-73-7	Fluorene	ND	10000	4400	ug/kg	
118-74-1	Hexachlorobenzene	ND	10000	4300	ug/kg	
87-68-3	Hexachlorobutadiene	ND	10000	5800	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	10000	5600	ug/kg	
67-72-1	Hexachloroethane	ND	10000	4300	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	10000	2600	ug/kg	
78-59-1	Isophorone	ND	10000	4200	ug/kg	
91-57-6	2-Methylnaphthalene	ND	10000	4800	ug/kg	
88-74-4	2-Nitroaniline	ND	10000	4000	ug/kg	
99-09-2	3-Nitroaniline	ND	10000	3000	ug/kg	
100-01-6	4-Nitroaniline	ND	10000	2600	ug/kg	
91-20-3	Naphthalene	ND	10000	4600	ug/kg	
98-95-3	Nitrobenzene	ND	10000	4700	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	10000	4400	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	10000	3900	ug/kg	
85-01-8	Phenanthrene	ND	10000	3500	ug/kg	
129-00-0	Pyrene	ND	10000	2000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	10000	4500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		14-99%
4165-62-2	Phenol-d5	58%		18-100%
118-79-6	2,4,6-Tribromophenol	55%		25-107%
4165-60-0	Nitrobenzene-d5	84%		15-101%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W01 Lab Sample ID: D63507-9 Matrix: SO - Soil Method: SW846 8270C SW846 3546 Project: Stone Castle	Date Sampled: 10/14/14 Date Received: 10/15/14 Percent Solids: 99.6
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ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	101%		15-104%
1718-51-0	Terphenyl-d14	108%		56-123%

(a) Reporting limits raised due to nature of the sample matrix (glass/asphalt); extract was dark, viscous and would not concentrate. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

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4

Report of Analysis

Client Sample ID: SCOU1W01	Date Sampled: 10/14/14
Lab Sample ID: D63507-9A	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 99.6
Project: Stone Castle	

4.10
4

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Barium	2.8	D005	100	1.0	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	33.4	D008	5.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	10/21/14	10/22/14 KV	SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5399
- (2) Instrument QC Batch: MA5402
- (3) Prep QC Batch: MP14362
- (4) Prep QC Batch: MP14363

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID: SCOU1W02		Date Sampled: 10/14/14
Lab Sample ID: D63507-10		Date Received: 10/15/14
Matrix: SO - Soil		Percent Solids: 99.8
Method: SW846 8270C SW846 3546		
Project: Stone Castle		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	Z8225.D	20	10/31/14	ANC	10/21/14	C:OP11094	C:EZ400
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.10 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	79000	19000	ug/kg	
95-57-8	2-Chlorophenol	ND	20000	8400	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	20000	8400	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	20000	9200	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	20000	7700	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	79000	16000	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	39000	7300	ug/kg	
95-48-7	2-Methylphenol	ND	20000	10000	ug/kg	
	3&4-Methylphenol	ND	39000	9300	ug/kg	
88-75-5	2-Nitrophenol	ND	20000	9300	ug/kg	
100-02-7	4-Nitrophenol	ND	39000	4700	ug/kg	
87-86-5	Pentachlorophenol	ND	39000	4000	ug/kg	
108-95-2	Phenol	ND	20000	8100	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	20000	8800	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	20000	8300	ug/kg	
83-32-9	Acenaphthene	ND	20000	8600	ug/kg	
208-96-8	Acenaphthylene	ND	20000	9200	ug/kg	
120-12-7	Anthracene	ND	20000	6300	ug/kg	
56-55-3	Benzo(a)anthracene	ND	20000	3900	ug/kg	
50-32-8	Benzo(a)pyrene	ND	20000	3900	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	20000	3900	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	20000	5100	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	20000	3900	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	20000	7900	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	20000	3900	ug/kg	
100-51-6	Benzyl Alcohol	ND	20000	10000	ug/kg	
91-58-7	2-Chloronaphthalene	ND	20000	8900	ug/kg	
106-47-8	4-Chloroaniline	ND	20000	5900	ug/kg	
218-01-9	Chrysene	ND	20000	3900	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	20000	8800	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	20000	7900	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	20000	7900	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SCOU1W02	Date Sampled:	10/14/14
Lab Sample ID:	D63507-10	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	99.8
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	20000	8900	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	20000	8800	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	20000	8700	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	20000	8400	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	20000	8400	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	20000	8800	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	39000	8200	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	20000	4900	ug/kg	
132-64-9	Dibenzofuran	ND	20000	8600	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	20000	3900	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	20000	4000	ug/kg	
84-66-2	Diethyl phthalate	ND	20000	3300	ug/kg	
131-11-3	Dimethyl phthalate	ND	20000	1900	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	39000	7900	ug/kg	
206-44-0	Fluoranthene	ND	20000	3900	ug/kg	
86-73-7	Fluorene	ND	20000	8500	ug/kg	
118-74-1	Hexachlorobenzene	ND	20000	8300	ug/kg	
87-68-3	Hexachlorobutadiene	ND	20000	11000	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	20000	11000	ug/kg	
67-72-1	Hexachloroethane	ND	20000	8300	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20000	5000	ug/kg	
78-59-1	Isophorone	ND	20000	8100	ug/kg	
91-57-6	2-Methylnaphthalene	ND	20000	9400	ug/kg	
88-74-4	2-Nitroaniline	ND	20000	7900	ug/kg	
99-09-2	3-Nitroaniline	ND	20000	5900	ug/kg	
100-01-6	4-Nitroaniline	ND	20000	5100	ug/kg	
91-20-3	Naphthalene	ND	20000	9100	ug/kg	
98-95-3	Nitrobenzene	ND	20000	9200	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	20000	8500	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	20000	7700	ug/kg	
85-01-8	Phenanthrene	ND	20000	6800	ug/kg	
129-00-0	Pyrene	ND	20000	3900	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	20000	8800	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-99%
4165-62-2	Phenol-d5	47%		18-100%
118-79-6	2,4,6-Tribromophenol	38%		25-107%
4165-60-0	Nitrobenzene-d5	65%		15-101%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W02	Date Sampled: 10/14/14
Lab Sample ID: D63507-10	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 99.8
Method: SW846 8270C SW846 3546	
Project: Stone Castle	

4.11
4

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	74%		15-104%
1718-51-0	Terphenyl-d14	79%		56-123%

(a) Reporting limits raised due to nature of the sample matrix (glass/asphalt); extract was dark, viscous and would not concentrate. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W02 Lab Sample ID: D63507-10A Matrix: SO - Soil Project: Stone Castle	Date Sampled: 10/14/14 Date Received: 10/15/14 Percent Solids: 99.8
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4.12
4

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Barium	2.3	D005	100	1.0	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	13.3	D008	5.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	10/21/14	10/22/14 KV	SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5399
- (2) Instrument QC Batch: MA5402
- (3) Prep QC Batch: MP14362
- (4) Prep QC Batch: MP14363

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	SCOU1W03	Date Sampled:	10/14/14
Lab Sample ID:	D63507-11	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	100.0
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	Z8221.D	1	10/31/14	ANC	10/21/14	C:OP11094	C:EZ400
Run #2							

	Initial Weight	Final Volume
Run #1	5.00 g	1.0 ml
Run #2		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	4000	950	ug/kg	
95-57-8	2-Chlorophenol	ND	1000	430	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1000	430	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1000	470	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1000	390	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	4000	800	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	2000	370	ug/kg	
95-48-7	2-Methylphenol	ND	1000	530	ug/kg	
	3&4-Methylphenol	ND	2000	470	ug/kg	
88-75-5	2-Nitrophenol	ND	1000	470	ug/kg	
100-02-7	4-Nitrophenol	ND	2000	240	ug/kg	
87-86-5	Pentachlorophenol	ND	2000	200	ug/kg	
108-95-2	Phenol	ND	1000	410	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1000	450	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1000	420	ug/kg	
83-32-9	Acenaphthene	ND	1000	440	ug/kg	
208-96-8	Acenaphthylene	ND	1000	470	ug/kg	
120-12-7	Anthracene	ND	1000	320	ug/kg	
56-55-3	Benzo(a)anthracene	ND	1000	200	ug/kg	
50-32-8	Benzo(a)pyrene	ND	1000	200	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	1000	200	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	1000	260	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	1000	200	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	1000	400	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	1000	200	ug/kg	
100-51-6	Benzyl Alcohol	ND	1000	530	ug/kg	
91-58-7	2-Chloronaphthalene	ND	1000	450	ug/kg	
106-47-8	4-Chloroaniline	ND	1000	300	ug/kg	
218-01-9	Chrysene	ND	1000	200	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	1000	450	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	1000	400	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	1000	400	ug/kg	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SCOU1W03	Date Sampled:	10/14/14
Lab Sample ID:	D63507-11	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	100.0
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	1000	450	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1000	450	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1000	440	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1000	430	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	1000	430	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	1000	450	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	2000	420	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	1000	250	ug/kg	
132-64-9	Dibenzofuran	ND	1000	440	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	1000	200	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	1000	200	ug/kg	
84-66-2	Diethyl phthalate	ND	1000	170	ug/kg	
131-11-3	Dimethyl phthalate	ND	1000	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2000	400	ug/kg	
206-44-0	Fluoranthene	ND	1000	200	ug/kg	
86-73-7	Fluorene	ND	1000	430	ug/kg	
118-74-1	Hexachlorobenzene	ND	1000	420	ug/kg	
87-68-3	Hexachlorobutadiene	ND	1000	580	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	1000	550	ug/kg	
67-72-1	Hexachloroethane	ND	1000	420	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1000	260	ug/kg	
78-59-1	Isophorone	ND	1000	410	ug/kg	
91-57-6	2-Methylnaphthalene	ND	1000	480	ug/kg	
88-74-4	2-Nitroaniline	ND	1000	400	ug/kg	
99-09-2	3-Nitroaniline	ND	1000	300	ug/kg	
100-01-6	4-Nitroaniline	ND	1000	260	ug/kg	
91-20-3	Naphthalene	ND	1000	460	ug/kg	
98-95-3	Nitrobenzene	ND	1000	470	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	1000	430	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1000	390	ug/kg	
85-01-8	Phenanthrene	ND	1000	350	ug/kg	
129-00-0	Pyrene	ND	1000	200	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1000	450	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		14-99%
4165-62-2	Phenol-d5	38%		18-100%
118-79-6	2,4,6-Tribromophenol	49%		25-107%
4165-60-0	Nitrobenzene-d5	56%		15-101%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W03		Date Sampled: 10/14/14
Lab Sample ID: D63507-11		Date Received: 10/15/14
Matrix: SO - Soil		Percent Solids: 100.0
Method: SW846 8270C SW846 3546		
Project: Stone Castle		

4.13
4

ABN HSL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	64%		15-104%
1718-51-0	Terphenyl-d14	78%		56-123%

(a) Reporting limits raised due to nature of the sample matrix (glass); extract was dark and viscous. CO#original OP#10846. Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W03	Date Sampled: 10/14/14
Lab Sample ID: D63507-11A	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 100.0
Project: Stone Castle	

4.14
4

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Barium	4.0	D005	100	1.0	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Chromium	0.011	D007	5.0	0.010	mg/l	1	10/21/14	10/22/14 KV	SW846 6010C ³	SW846 3010A ⁴
Lead	50.1	D008	5.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	10/21/14	10/22/14 KV	SW846 7470A ¹	SW846 7470A ⁵
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴

- (1) Instrument QC Batch: MA5399
- (2) Instrument QC Batch: MA5402
- (3) Instrument QC Batch: MA5403
- (4) Prep QC Batch: MP14362
- (5) Prep QC Batch: MP14363

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	SCOU1W04	Date Sampled:	10/14/14
Lab Sample ID:	D63507-12	Date Received:	10/15/14
Matrix:	SO - Soil	Percent Solids:	99.7
Method:	SW846 8270C SW846 3546		
Project:	Stone Castle		

ABN HSL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl phenyl ether	ND	22000	9800	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	22000	9700	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	22000	9600	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	22000	9300	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	22000	9300	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	22000	9700	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	43000	9000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	22000	5400	ug/kg	
132-64-9	Dibenzofuran	ND	22000	9500	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	22000	4300	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	22000	4400	ug/kg	
84-66-2	Diethyl phthalate	ND	22000	3600	ug/kg	
131-11-3	Dimethyl phthalate	ND	22000	2100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	43000	8600	ug/kg	
206-44-0	Fluoranthene	ND	22000	4300	ug/kg	
86-73-7	Fluorene	ND	22000	9400	ug/kg	
118-74-1	Hexachlorobenzene	ND	22000	9200	ug/kg	
87-68-3	Hexachlorobutadiene	ND	22000	12000	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	22000	12000	ug/kg	
67-72-1	Hexachloroethane	ND	22000	9200	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	22000	5500	ug/kg	
78-59-1	Isophorone	ND	22000	8900	ug/kg	
91-57-6	2-Methylnaphthalene	ND	22000	10000	ug/kg	
88-74-4	2-Nitroaniline	ND	22000	8700	ug/kg	
99-09-2	3-Nitroaniline	ND	22000	6500	ug/kg	
100-01-6	4-Nitroaniline	ND	22000	5600	ug/kg	
91-20-3	Naphthalene	ND	22000	10000	ug/kg	
98-95-3	Nitrobenzene	ND	22000	10000	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	22000	9400	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	22000	8500	ug/kg	
85-01-8	Phenanthrene	ND	22000	7500	ug/kg	
129-00-0	Pyrene	ND	22000	4300	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	22000	9700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		14-99%
4165-62-2	Phenol-d5	38%		18-100%
118-79-6	2,4,6-Tribromophenol	33%		25-107%
4165-60-0	Nitrobenzene-d5	59%		15-101%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SCOU1W04	Date Sampled: 10/14/14
Lab Sample ID: D63507-12A	Date Received: 10/15/14
Matrix: SO - Soil	Percent Solids: 99.7
Project: Stone Castle	

4.16

4

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.097	D004	5.0	0.025	mg/l	1	10/21/14	10/22/14 KV	SW846 6010C ³	SW846 3010A ⁴
Barium	11.8	D005	100	1.0	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Lead	3.6	D008	5.0	0.050	mg/l	1	10/21/14	10/21/14 KV	SW846 6010C ²	SW846 3010A ⁴
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	10/21/14	10/22/14 KV	SW846 7470A ¹	SW846 7470A ⁵
Selenium	< 0.075	D010	1.0	0.075	mg/l	1	10/21/14	10/22/14 KV	SW846 6010C ³	SW846 3010A ⁴
Silver ^a	< 0.15	D011	5.0	0.15	mg/l	5	10/21/14	10/22/14 KV	SW846 6010C ³	SW846 3010A ⁴

- (1) Instrument QC Batch: MA5399
- (2) Instrument QC Batch: MA5402
- (3) Instrument QC Batch: MA5403
- (4) Prep QC Batch: MP14362
- (5) Prep QC Batch: MP14363

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



ALS Environmental
Field Chain-of-Custody Record

CoC #:

D63507

Page 2 of 2

Client Name & Address: Jeff Bryniarski Western Solutions 1435 Garrison St., Suite 100 Lakewood, CO 80215		Project Name & No.: Stone Castle Out 20408-016-001-0183-00		ALS Quote No:		Report to: Jeff		Report to e-mail:		No. of Containers Sample for Matrix OC ICP Metals SVOCs Pesticides	Analyses Requested				Preservation Code Sample Matrix Code	Matrix Codes: W: Water B: Bulk L: Liquid F: Filter S: Soil G: Wipe C: Solid M: Media		Preservation Codes: 1) Cool to 4°C 2) HCl to pH=2, 4°C 3) H ₂ SO ₄ to pH=2, 4°C 4) HNO ₃ to pH=2, 4°C 5) NaOH to pH=12, 4°C 6) 2HNO ₃ /NaOH to pH=8, 4°C		Remarks	
Phone: 708-284-2490		Bill to: Tara Jones		Field Sample Number		Date		Time			Depth		ALS Sample Number			1311		14912			
e-mail: jeff.bryniarski@westernsolutions.com		Tara Jones		SC011W03		10/14/14		1245								1311		14912			
				SC011W04		10/14/14		1330								1513		1614			
				SC011S01		10/14/14		1310													
				SC011S02		10/14/14		1320													
				SC011S03		10/14/14															
				SC011S04		10/14/14															
				SC011S05		10/14/14															
				SC011S06		10/14/14															
				SC011S07		10/14/14															
				SC011S08		10/14/14															
				SC011S09		10/14/14															
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				SC011S31		10/14/14															
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				SC011S39		10/14/14															
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				SC011S45		10/14/14															
				SC011S46		10/14/14															
				SC011S47		10/14/14															
				SC011S48		10/14/14															
				SC011S49		10/14/14															
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				SC011S51		10/14/14															
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				SC011S59		10/14/14															
				SC011S60		10/14/14															
				SC011S61		10/14/14															
				SC011S62		10/14/14															
				SC011S63		10/14/14															
				SC011S64		10/14/14															
				SC011S65		10/14/14															
				SC011S66		10/14/14															
				SC011S67		10/14/14															
				SC011S68		10/14/14															
				SC011S69		10/14/14															
				SC011S70		10/14/14															
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				SC011S72		10/14/14															
				SC011S73		10/14/14															
				SC011S74		10/14/14															
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				SC011S76		10/14/14															
				SC011S77		10/14/14															
				SC011S78		10/14/14															
				SC011S79		10/14/14															
				SC011S80		10/14/14															
				SC011S81		10/14/14															
				SC011S82		10/14/14															
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				SC011S89		10/14/14															
				SC011S90		10/14/14															
				SC011S91		10/14/14															
				SC011S92		10/14/14															
				SC011S93		10/14/14															
				SC011S94		10/14/14															
				SC011S95		10/14/14															
				SC011S96		10/14/14															
				SC011S97		10/14/14															
				SC011S98		10/14/14															
				SC011S99		10/14/14															
				SC011S100		10/14/14															

5.1
5

10/15/14
16:35

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison <input type="checkbox"/> Rad <input type="checkbox"/> Unknown		Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab (fees assessed for samples retained > 3 months)		Data Deliverable: <input checked="" type="checkbox"/> Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 <input type="checkbox"/> Level 4		Requested Turn Around Time <input type="checkbox"/> 2 Days (Rush) <input type="checkbox"/> 3 Days (Rush) <input checked="" type="checkbox"/> 7 Days (Rush) <input type="checkbox"/> 14 Days (Rush = email data by COB on day due. Surcharges assessed.)		Carrier/Airbill #:	
--	--	--	--	--	--	--	--	--------------------	--

Relinquished by: (Signature) <i>[Signature]</i>	Date 10/15/14	Time 1630	Received by: (Signature) <i>[Signature]</i>	Date 10/15/14	Time 16:35	Shipped to: ALS Environmental 860 West LeVoy Drive Salt Lake City, UT 84123 Phone: (801) 558-9135 Phone: (801) 268-7700 FAX: (801) 268-9992 WZB: www.alsglobal.com
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	

ALSCoC 12/10/13

White - Laboratory Copy

Yellow - Client Copy

4.3

12/12/2013

Accutest Job Number: D63507 **Client:** WESTON **Project:** _____
Date / Time Received: 10/15/2014 4:35:00 PM **Delivery Method:** _____ **Airbill #'s:** HD
Cooler Temps (Initial/Adjusted): 0

Cooler Security

	<u>Y or N</u>			<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler Temperature

	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	_____ ; _____	
3. Cooler media:	Ice (Bag) _____	
4. No. Coolers:	1 _____	

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Comments

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.1
5

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14326
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/16/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.86	1.8	1.9	<10
Antimony	3.0	.21	.5	-0.14	<3.0
Arsenic	2.5	.38	.63	0.18	<2.5
Barium	1.0	.02	.36	0.050	<1.0
Beryllium	1.0	.08	.06	0.020	<1.0
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.030	<1.0
Calcium	40	.22	6.8	7.6	<40
Chromium	1.0	.03	.03	0.070	<1.0
Cobalt	0.50	.04	.039	-0.030	<0.50
Copper	1.0	.08	.13	0.23	<1.0
Iron	7.0	.22	1.8	4.5	* (a)
Lead	5.0	.21	.25	0.020	<5.0
Lithium	0.50	.04	.13		
Magnesium	20	.68	1.8	2.3	<20
Manganese	0.50	.001	.038	0.060	<0.50
Molybdenum	1.0	.04	.13		
Nickel	3.0	.05	.07	0.040	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	9.9	12	10.0	<200
Selenium	5.0	.71	1.1	-0.24	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	0.060	<3.0
Sodium	40	.49	3.7	9.3	<40
Strontium	5.0	.001	.022		
Thallium	1.0	.18	.46	-0.010	<1.0
Tin	5.0	1.3	2.3		
Titanium	1.0	.01	.46		
Uranium	5.0	.29	.31		
Vanadium	1.0	.04	.043	-0.010	<1.0
Zinc	3.0	.04	.16	0.57	<3.0

Associated samples MP14326: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

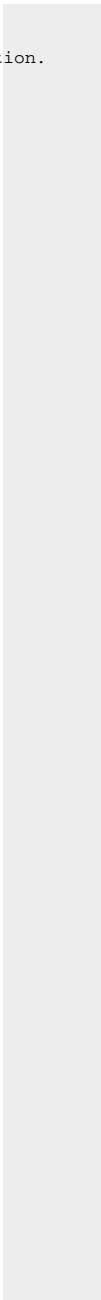
QC Batch ID: MP14326
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/16/14

Metal	RL	IDL	MDL	MB raw	final
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(*) Outside of QC limits
(anr) Analyte not requested
(a) All sample results < RL or > 10x MB concentration.



6.1.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 10/16/14

Metal	D63449-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum	2700	5050	551	426.7(a)	75-125
Antimony	0.0	23.8	55	45.2N(b)	75-125
Arsenic	2.3	105	110	93.2	75-125
Barium	119	343	220	101.7	75-125
Beryllium	0.0	48.3	55.1	87.7	75-125
Boron					
Cadmium	0.076	50.8	55.1	92.1	75-125
Calcium	1800	4660	2750	103.9	75-125
Chromium	4.6	68.0	55.1	115.1	75-125
Cobalt	1.8	52.9	55.1	92.8	75-125
Copper	3.8	55.1	55.1	93.1	75-125
Iron	3140	4670	551	283.2(a)	75-125
Lead	26.7	136	110	99.2	75-125
Lithium					
Magnesium	933	3880	2750	107.0	75-125
Manganese	104	206	55.1	185.2N(c)	75-125
Molybdenum					
Nickel	2.5	53.5	55.1	92.6	75-125
Phosphorus					
Potassium	803	3580	2750	100.8	75-125
Selenium	0.0	104	110	94.4	75-125
Silicon					
Silver	0.0	20.0	22	90.8	75-125
Sodium	34.5	2470	2750	88.4	75-125
Strontium					
Thallium	0.0	102	110	92.6	75-125
Tin	anr				
Titanium					
Uranium					
Vanadium	8.2	58.5	55.1	91.3	75-125
Zinc	17.3	73.5	55.1	102.0	75-125

Associated samples MP14326: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 10/16/14

Metal	D63449-1 Original MS	Spike/lot ICPAL2	% Rec	QC Limits
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- (*) Outside of QC limits
- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- (c) Spike recovery indicates possible matrix interference.

6.1.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 10/16/14

Metal	D63449-1 Original MSD		SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum	2700	4640	540	359.1(a)	8.5	20
Antimony	0.0	24.0	54	44.4N(b)	3.3	20
Arsenic	2.3	104	108	94.1	1.0	20
Barium	119	332	216	98.6	3.3	20
Beryllium	0.0	48.4	54	89.6	0.2	20
Boron						
Cadmium	0.076	51.0	54	94.3	0.4	20
Calcium	1800	4500	2700	100.0	3.5	20
Chromium	4.6	56.9	54	96.8	17.8	20
Cobalt	1.8	52.6	54	94.0	0.6	20
Copper	3.8	54.4	54	93.7	1.3	20
Iron	3140	4270	540	214.7(a)	8.9	20
Lead	26.7	112	108	79.0	19.5 (c)	20
Lithium						
Magnesium	933	3780	2700	105.4	2.6	20
Manganese	104	182	54	144.4N(d)	12.4	20
Molybdenum						
Nickel	2.5	53.0	54	93.5	0.9	20
Phosphorus						
Potassium	803	3490	2700	99.5	2.5	20
Selenium	0.0	104	108	96.3	0.0	20
Silicon						
Silver	0.0	20.2	21.6	93.5	1.0	20
Sodium	34.5	2500	2700	91.3	1.2	20
Strontium						
Thallium	0.0	101	108	93.5	1.0	20
Tin	anr					
Titanium						
Uranium						
Vanadium	8.2	57.8	54	91.8	1.2	20
Zinc	17.3	70.1	54	97.7	4.7	20

Associated samples MP14326: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 10/16/14

Metal	D63449-1 Original MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
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- (*) Outside of QC limits
- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- (c) High RPD due to possible sample nonhomogeneity.
- (d) Spike recovery indicates possible matrix interference.

6.1.2
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 10/16/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	479	500	95.8	80-120
Antimony	44.7	50	89.4	80-120
Arsenic	104	100	104.0	80-120
Barium	195	200	97.5	80-120
Beryllium	49.4	50	98.8	80-120
Boron				
Cadmium	51.8	50	103.6	80-120
Calcium	2600	2500	104.0	80-120
Chromium	53.4	50	106.8	80-120
Cobalt	51.8	50	103.6	80-120
Copper	50.3	50	100.6	80-120
Iron	486	500	97.2	80-120
Lead	100	100	100.0	80-120
Lithium				
Magnesium	2510	2500	100.4	80-120
Manganese	52.7	50	105.4	80-120
Molybdenum				
Nickel	51.5	50	103.0	80-120
Phosphorus				
Potassium	2510	2500	100.4	80-120
Selenium	105	100	105.0	80-120
Silicon				
Silver	21.1	20	105.5	80-120
Sodium	2450	2500	98.0	80-120
Strontium				
Thallium	104	100	104.0	80-120
Tin	anr			
Titanium				
Uranium				
Vanadium	50.5	50	101.0	80-120
Zinc	51.5	50	103.0	80-120

Associated samples MP14326: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

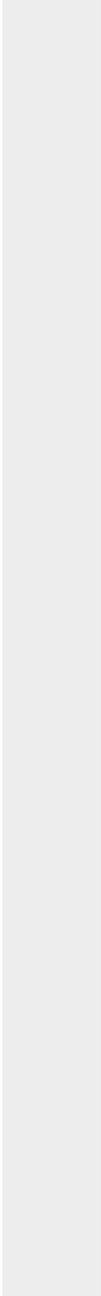
QC Batch ID: MP14326
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/16/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
-------	---------------	---------------------	-------	--------------

(*) Outside of QC limits
(anr) Analyte not requested



SERIAL DILUTION RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14326
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 10/16/14

Metal	D63449-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	24700	26800	8.2	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	20.8	37.0	77.9 (a)	0-10
Barium	1090	1180	8.5	0-10
Beryllium	0.00	0.00	NC	0-10
Boron				
Cadmium	0.700	0.00	100.0(a)	0-10
Calcium	16500	18000	9.1	0-10
Chromium	42.2	45.0	6.6	0-10
Cobalt	16.2	19.5	20.4 (a)	0-10
Copper	34.4	33.5	2.6	0-10
Iron	28700	32400	13.6*(b)	0-10
Lead	245	268	9.4	0-10
Lithium				
Magnesium	8550	9290	8.6	0-10
Manganese	958	1040	8.9	0-10
Molybdenum				
Nickel	23.2	27.0	16.4 (a)	0-10
Phosphorus				
Potassium	7370	8590	16.6*(b)	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	317	281	11.2 (a)	0-10
Strontium				
Thallium	0.00	13.0	NC	0-10
Tin				
Titanium				
Uranium				
Vanadium	74.8	81.0	8.3	0-10
Zinc	159	183	15.1*(b)	0-10

Associated samples MP14326: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes

SERIAL DILUTION RESULTS SUMMARY

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14326
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/16/14

Metal	D63449-1	QC
	Original SDL 1:5 %DIF	Limits

- (*) Outside of QC limits
- (anr) Analyte not requested
- (a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- (b) Serial dilution indicates possible matrix interference.

6.1.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14346
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 10/22/14

Metal	RL	IDL	MDL	MB raw	final
-------	----	-----	-----	-----------	-------

Mercury 0.083 .00088 .0067 -0.0025 <0.083

Associated samples MP14346: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14346
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/22/14

Metal	D63507-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
-------	-------------------------	--------------------	-------	--------------

Mercury 0.013 0.42 0.396 102.9 75-125

Associated samples MP14346: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14346
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/22/14

Metal	D63507-1 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.013	0.43	0.443	94.1	2.4

Associated samples MP14346: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14346
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/22/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.34	0.333	102.0	80-120

Associated samples MP14346: D63507-1, D63507-2, D63507-3, D63507-4, D63507-5, D63507-6, D63507-7, D63507-8

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.2.3

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14362
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/21/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	0.10	.011	.041		
Antimony	0.030	.0021	.019		
Arsenic	0.025	.0038	.0085	0.012	<0.025
Barium	1.0	.0002	.0014	0.029	<1.0
Beryllium	0.010	.0009	.0011		
Boron	0.050	.0008	.0066		
Cadmium	0.010	.0002	.00036	0.00010	<0.010
Calcium	0.40	.0024	.041		
Chromium	0.010	.0003	.0004	0.0012	<0.010
Cobalt	0.0050	.0005	.00057		
Copper	0.010	.0008	.0019		
Iron	0.070	.0015	.0095		
Lead	0.050	.0021	.02	-0.00050	<0.050
Lithium	0.0050	.0004	.0027		
Magnesium	0.20	.0068	.019		
Manganese	0.0050	.0005	.00046		
Molybdenum	2000	.0004	.00084		
Nickel	0.030	.0005	.00087		
Phosphorus	0.10	.015	.02		
Potassium	1.0	.099	.27		
Selenium	0.050	.0071	.012	0.021	<0.050
Silicon	0.050	.0047	.0052		
Silver	0.030	.0003	.0006	0.00030	<0.030
Sodium	0.40	.0073	.17		
Strontium	0.050	.00001	.00012		
Thallium	0.010	.0018	.004		
Tin	0.050	.012	.016		
Titanium	0.010	.0001	.0021		
Uranium	0.050	.0029	.0055		
Vanadium	0.010	.0004	.0004		
Zinc	0.030	.0004	.0032		

Associated samples MP14362: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

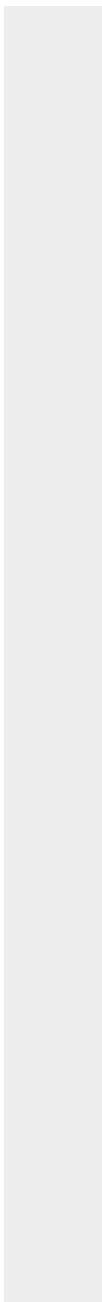
QC Batch ID: MP14362
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/21/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



6.3.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14362
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0	1.1	1.0	110.0	75-125
Barium	0.35	2.5	2.0	107.5	75-125
Beryllium					
Boron					
Cadmium	0.0077	0.55	0.50	108.5	75-125
Calcium					
Chromium	0.028	0.56	0.50	106.4	75-125
Cobalt					
Copper					
Iron					
Lead	0.088	1.1	1.0	101.2	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	0.026	1.2	1.0	117.4	75-125
Silicon					
Silver	0.0	0.22	0.20	110.0	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP14362: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

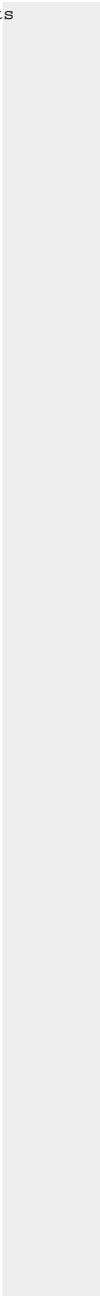
QC Batch ID: MP14362
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original MS	SpikeLot ICPAL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested



6.3.2
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14362
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original	MSD	SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	1.2	1.0	120.0	8.7	20
Barium	0.35	2.5	2.0	107.5	0.0	20
Beryllium						
Boron						
Cadmium	0.0077	0.57	0.50	112.5	3.6	20
Calcium						
Chromium	0.028	0.57	0.50	108.4	1.8	20
Cobalt						
Copper						
Iron						
Lead	0.088	1.2	1.0	111.2	8.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	0.026	1.3	1.0	127.4N(a)	8.0	20
Silicon						
Silver	0.0	0.23	0.20	115.0	4.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP14362: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14362
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Spike recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14362
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/21/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.2	1.0	120.0	80-120
Barium	2.2	2.0	110.0	80-120
Beryllium				
Boron				
Cadmium	0.56	0.50	112.0	80-120
Calcium				
Chromium	0.55	0.50	110.0	80-120
Cobalt				
Copper				
Iron				
Lead	1.1	1.0	110.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	1.3	1.0	130.0*(a)	80-120
Silicon				
Silver	0.24	0.20	120.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14362: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14362
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/21/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested
(a) All sample results < RL



6.3.3

6

SERIAL DILUTION RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14362
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: ug/l

Prep Date: 10/21/14

Metal	D63484-1		%DIF	QC Limits
	Original	SDL 1:5		
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	349	410	17.5*(a)	0-10
Beryllium				
Boron				
Cadmium	7.70	7.00	9.1	0-10
Calcium				
Chromium	28.1	30.5	8.5	0-10
Cobalt				
Copper				
Iron				
Lead	87.6	95.5	9.0	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	26.4	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14362: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14362
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/21/14

Metal	D63484-1	QC
	Original SDL 1:5 %DIF	Limits

- (anr) Analyte not requested
- (a) Serial dilution indicates possible matrix interference.
- (b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

6.3.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63507
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14363
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 10/21/14

Metal	RL	IDL	MDL	MB raw	final
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Mercury 0.00010 .000011 .000009 0.0000039<0.00010

Associated samples MP14363: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.4.1

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14363
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original MS	SpikeLot HGWSR1	% Rec	QC Limits
Mercury	0.0	0.0030	0.0031 96.0	75-125

Associated samples MP14363: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

6.4.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14363
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 10/21/14

Metal	D63484-1 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
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Mercury 0.0 0.0032 0.0031 102.4 6.5 20

Associated samples MP14363: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.4.2

6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63507
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14363
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 10/21/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
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Mercury 0.0032 0.0031 102.4 80-120

Associated samples MP14363: D63507-9A, D63507-10A, D63507-11A, D63507-12A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.4.3

6

GC/MS Semi-volatiles

QC Data Summaries

(Accutest Northern California, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MB ^a	Z8216.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	670	160	ug/kg	
95-57-8	2-Chlorophenol	ND	170	71	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	72	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	78	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	670	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	330	62	ug/kg	
95-48-7	2-Methylphenol	ND	170	88	ug/kg	
	3&4-Methylphenol	ND	330	79	ug/kg	
88-75-5	2-Nitrophenol	ND	170	79	ug/kg	
100-02-7	4-Nitrophenol	ND	330	40	ug/kg	
87-86-5	Pentachlorophenol	ND	330	34	ug/kg	
108-95-2	Phenol	ND	170	69	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	75	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	71	ug/kg	
83-32-9	Acenaphthene	ND	170	73	ug/kg	
208-96-8	Acenaphthylene	ND	170	78	ug/kg	
120-12-7	Anthracene	ND	170	54	ug/kg	
56-55-3	Benzo(a)anthracene	ND	170	33	ug/kg	
50-32-8	Benzo(a)pyrene	ND	170	33	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	170	33	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	170	43	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	170	33	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	67	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	33	ug/kg	
100-51-6	Benzyl Alcohol	ND	170	89	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	76	ug/kg	
106-47-8	4-Chloroaniline	ND	170	50	ug/kg	
218-01-9	Chrysene	ND	170	33	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	74	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	67	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	67	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	76	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	75	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	74	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	72	ug/kg	

Method Blank Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MB ^a	Z8216.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	Result	RL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	ND	170	72	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	75	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	330	70	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	170	41	ug/kg	
132-64-9	Dibenzofuran	ND	170	73	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	170	33	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	34	ug/kg	
84-66-2	Diethyl phthalate	ND	170	28	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	16	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	330	67	ug/kg	
206-44-0	Fluoranthene	ND	170	33	ug/kg	
86-73-7	Fluorene	ND	170	72	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	71	ug/kg	
87-68-3	Hexachlorobutadiene	ND	170	96	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	92	ug/kg	
67-72-1	Hexachloroethane	ND	170	71	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	170	43	ug/kg	
78-59-1	Isophorone	ND	170	69	ug/kg	
91-57-6	2-Methylnaphthalene	ND	170	80	ug/kg	
88-74-4	2-Nitroaniline	ND	170	67	ug/kg	
99-09-2	3-Nitroaniline	ND	170	50	ug/kg	
100-01-6	4-Nitroaniline	ND	170	43	ug/kg	
91-20-3	Naphthalene	ND	170	77	ug/kg	
98-95-3	Nitrobenzene	ND	170	78	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	72	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	65	ug/kg	
85-01-8	Phenanthrene	ND	170	58	ug/kg	
129-00-0	Pyrene	ND	170	33	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	170	75	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
367-12-4	2-Fluorophenol	87%	16-130%
4165-62-2	Phenol-d5	88%	18-130%
118-79-6	2,4,6-Tribromophenol	92%	17-130%

Method Blank Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MB ^a	Z8216.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	87%	19-130%
321-60-8	2-Fluorobiphenyl	86%	30-130%
1718-51-0	Terphenyl-d14	87%	40-130%

(a) CO#original OP10846

Blank Spike Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-BS ^a	Z8217.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic acid	1670	1220	73	32-130
95-57-8	2-Chlorophenol	1670	1200	72	47-130
59-50-7	4-Chloro-3-methyl phenol	1670	1370	82	52-130
120-83-2	2,4-Dichlorophenol	1670	1350	81	52-130
105-67-9	2,4-Dimethylphenol	1670	1260	76	43-130
51-28-5	2,4-Dinitrophenol	1670	1400	84	32-130
534-52-1	4,6-Dinitro-o-cresol	1670	1390	83	37-130
95-48-7	2-Methylphenol	1670	1310	79	43-130
	3&4-Methylphenol	1670	1370	82	41-130
88-75-5	2-Nitrophenol	1670	1360	82	50-130
100-02-7	4-Nitrophenol	1670	1330	80	41-130
87-86-5	Pentachlorophenol	1670	1280	77	46-130
108-95-2	Phenol	1670	1290	77	46-130
95-95-4	2,4,5-Trichlorophenol	1670	1510	91	52-130
88-06-2	2,4,6-Trichlorophenol	1670	1330	80	53-130
83-32-9	Acenaphthene	1670	1300	78	58-130
208-96-8	Acenaphthylene	1670	1360	82	58-130
120-12-7	Anthracene	1670	1380	83	67-130
56-55-3	Benzo(a)anthracene	1670	1400	84	63-130
50-32-8	Benzo(a)pyrene	1670	1430	86	47-155
205-99-2	Benzo(b)fluoranthene	1670	1350	81	42-157
191-24-2	Benzo(g,h,i)perylene	1670	1440	86	49-152
207-08-9	Benzo(k)fluoranthene	1670	1420	85	38-175
101-55-3	4-Bromophenyl phenyl ether	1670	1430	86	65-130
85-68-7	Butyl benzyl phthalate	1670	1340	80	61-130
100-51-6	Benzyl Alcohol	1670	1360	82	45-130
91-58-7	2-Chloronaphthalene	1670	1320	79	55-130
106-47-8	4-Chloroaniline	1670	785	47	37-130
218-01-9	Chrysene	1670	1380	83	68-130
111-91-1	bis(2-Chloroethoxy)methane	1670	1350	81	49-130
111-44-4	bis(2-Chloroethyl)ether	1670	1380	83	45-130
108-60-1	bis(2-Chloroisopropyl)ether	1670	1200	72	45-130
7005-72-3	4-Chlorophenyl phenyl ether	1670	1450	87	58-130
95-50-1	1,2-Dichlorobenzene	1670	1250	75	49-130
541-73-1	1,3-Dichlorobenzene	1670	1240	74	49-130
106-46-7	1,4-Dichlorobenzene	1670	1220	73	49-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-BS ^a	Z8217.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
121-14-2	2,4-Dinitrotoluene	1670	1520	91	64-130
606-20-2	2,6-Dinitrotoluene	1670	1480	89	63-130
91-94-1	3,3'-Dichlorobenzidine	1670	1700	102	10-180
53-70-3	Dibenzo(a,h)anthracene	1670	1470	88	48-152
132-64-9	Dibenzofuran	1670	1370	82	60-130
84-74-2	Di-n-butyl phthalate	1670	1460	88	65-130
117-84-0	Di-n-octyl phthalate	1670	1250	75	35-169
84-66-2	Diethyl phthalate	1670	1410	85	60-130
131-11-3	Dimethyl phthalate	1670	1400	84	59-130
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1310	79	59-130
206-44-0	Fluoranthene	1670	1430	86	64-130
86-73-7	Fluorene	1670	1420	85	58-130
118-74-1	Hexachlorobenzene	1670	1420	85	66-130
87-68-3	Hexachlorobutadiene	1670	1180	71	51-130
77-47-4	Hexachlorocyclopentadiene	1670	1690	101	34-130
67-72-1	Hexachloroethane	1670	1330	80	45-130
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1530	92	45-153
78-59-1	Isophorone	1670	1400	84	50-130
91-57-6	2-Methylnaphthalene	1670	1270	76	54-130
88-74-4	2-Nitroaniline	1670	1480	89	54-130
99-09-2	3-Nitroaniline	1670	1310	79	28-133
100-01-6	4-Nitroaniline	1670	1490	89	55-130
91-20-3	Naphthalene	1670	1260	76	53-130
98-95-3	Nitrobenzene	1670	1390	83	49-130
621-64-7	N-Nitroso-di-n-propylamine	1670	1330	80	47-130
86-30-6	N-Nitrosodiphenylamine	1670	1360	82	52-133
85-01-8	Phenanthrene	1670	1440	86	66-130
129-00-0	Pyrene	1670	1280	77	68-130
120-82-1	1,2,4-Trichlorobenzene	1670	1240	74	53-130

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	82%	16-130%
4165-62-2	Phenol-d5	71%	18-130%
118-79-6	2,4,6-Tribromophenol	98%	17-130%

* = Outside of Control Limits.

7.2.1
7

Blank Spike Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-BS ^a	Z8217.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	81%	19-130%
321-60-8	2-Fluorobiphenyl	81%	30-130%
1718-51-0	Terphenyl-d14	74%	40-130%

(a) CO#original OP10846

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MS ^a	Z8218.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
OP11094-MSD ^a	Z8219.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
D63617-3	Z8220.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	D63617-3 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	ND	1780	711	40	1770	832	47	16	10-130/30
95-57-8	2-Chlorophenol	ND	1780	1240	70	1770	1290	73	4	27-130/30
59-50-7	4-Chloro-3-methyl phenol	ND	1780	1420	80	1770	1480	83	4	26-130/30
120-83-2	2,4-Dichlorophenol	ND	1780	1390	78	1770	1440	81	4	28-130/30
105-67-9	2,4-Dimethylphenol	ND	1780	1240	70	1770	1290	73	4	10-130/30
51-28-5	2,4-Dinitrophenol	ND	1780	1380	78	1770	1450	82	5	10-130/30
534-52-1	4,6-Dinitro-o-cresol	ND	1780	1410	79	1770	1480	83	5	10-130/30
95-48-7	2-Methylphenol	ND	1780	1350	76	1770	1400	79	4	22-130/30
	3&4-Methylphenol	ND	1780	1390	78	1770	1470	83	6	10-130/30
88-75-5	2-Nitrophenol	ND	1780	1430	80	1770	1480	83	3	24-130/30
100-02-7	4-Nitrophenol	ND	1780	1360	76	1770	1420	80	4	10-130/30
87-86-5	Pentachlorophenol	ND	1780	1300	73	1770	1360	77	5	10-130/30
108-95-2	Phenol	ND	1780	1330	75	1770	1390	78	4	21-130/30
95-95-4	2,4,5-Trichlorophenol	ND	1780	1520	85	1770	1600	90	5	25-130/30
88-06-2	2,4,6-Trichlorophenol	ND	1780	1350	76	1770	1380	78	2	22-130/30
83-32-9	Acenaphthene	ND	1780	1340	75	1770	1360	77	1	36-130/30
208-96-8	Acenaphthylene	ND	1780	1390	78	1770	1450	82	4	10-150/30
120-12-7	Anthracene	ND	1780	1430	80	1770	1460	82	2	50-130/30
56-55-3	Benzo(a)anthracene	ND	1780	1480	83	1770	1510	85	2	41-130/30
50-32-8	Benzo(a)pyrene	ND	1780	1500	84	1770	1540	87	3	27-151/30
205-99-2	Benzo(b)fluoranthene	ND	1780	1440	81	1770	1470	83	2	29-152/30
191-24-2	Benzo(g,h,i)perylene	ND	1780	1400	79	1770	1530	86	9	15-164/30
207-08-9	Benzo(k)fluoranthene	ND	1780	1520	85	1770	1500	85	1	14-175/30
101-55-3	4-Bromophenyl phenyl ether	ND	1780	1470	83	1770	1520	86	3	44-130/30
85-68-7	Butyl benzyl phthalate	ND	1780	1470	83	1770	1520	86	3	46-130/30
100-51-6	Benzyl Alcohol	ND	1780	1410	79	1770	1480	83	5	21-130/30
91-58-7	2-Chloronaphthalene	ND	1780	1350	76	1770	1400	79	4	11-140/30
106-47-8	4-Chloroaniline	ND	1780	865	49	1770	845	48	2	10-130/30
218-01-9	Chrysene	ND	1780	1460	82	1770	1500	85	3	46-130/30
111-91-1	bis(2-Chloroethoxy)methane	ND	1780	1400	79	1770	1450	82	4	24-130/30
111-44-4	bis(2-Chloroethyl)ether	ND	1780	1430	80	1770	1480	83	3	32-130/30
108-60-1	bis(2-Chloroisopropyl)ether	ND	1780	1240	70	1770	1300	73	5	28-130/30
7005-72-3	4-Chlorophenyl phenyl ether	ND	1780	1490	84	1770	1570	88	5	19-142/30
95-50-1	1,2-Dichlorobenzene	ND	1780	1280	72	1770	1340	76	5	30-130/30
541-73-1	1,3-Dichlorobenzene	ND	1780	1270	71	1770	1320	74	4	30-130/30
106-46-7	1,4-Dichlorobenzene	ND	1780	1250	70	1770	1310	74	5	29-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MS ^a	Z8218.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
OP11094-MSD ^a	Z8219.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
D63617-3	Z8220.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Compound	D63617-3 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
121-14-2	2,4-Dinitrotoluene	ND	1780	1550	87	1770	1610	91	4	16-148/30
606-20-2	2,6-Dinitrotoluene	ND	1780	1510	85	1770	1560	88	3	23-139/30
91-94-1	3,3'-Dichlorobenzidine	ND	1780	1720	97	1770	1760	99	2	10-180/30
53-70-3	Dibenzo(a,h)anthracene	ND	1780	1420	80	1770	1550	87	9	31-152/30
132-64-9	Dibenzofuran	ND	1780	1410	79	1770	1450	82	3	10-163/30
84-74-2	Di-n-butyl phthalate	ND	1780	1520	85	1770	1580	89	4	50-130/30
117-84-0	Di-n-octyl phthalate	ND	1780	1450	81	1770	1410	79	3	10-190/30
84-66-2	Diethyl phthalate	ND	1780	1450	81	1770	1520	86	5	20-143/30
131-11-3	Dimethyl phthalate	ND	1780	1430	80	1770	1480	83	3	16-143/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1780	1410	79	1770	1460	82	3	37-131/30
206-44-0	Fluoranthene	ND	1780	1490	84	1770	1540	87	3	53-130/30
86-73-7	Fluorene	ND	1780	1460	82	1770	1550	87	6	24-134/30
118-74-1	Hexachlorobenzene	ND	1780	1460	82	1770	1490	84	2	46-130/30
87-68-3	Hexachlorobutadiene	ND	1780	1250	70	1770	1270	72	2	26-130/30
77-47-4	Hexachlorocyclopentadiene	ND	1780	1730	97	1770	1780	100	3	10-130/30
67-72-1	Hexachloroethane	ND	1780	1370	77	1770	1430	81	4	10-167/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1780	1530	86	1770	1630	92	6	26-153/30
78-59-1	Isophorone	ND	1780	1450	81	1770	1500	85	3	32-130/30
91-57-6	2-Methylnaphthalene	ND	1780	1340	75	1770	1380	78	3	10-148/30
88-74-4	2-Nitroaniline	ND	1780	1480	83	1770	1560	88	5	10-146/30
99-09-2	3-Nitroaniline	ND	1780	1370	77	1770	1390	78	1	15-131/30
100-01-6	4-Nitroaniline	ND	1780	1590	89	1770	1670	94	5	13-130/30
91-20-3	Naphthalene	ND	1780	1320	74	1770	1380	78	4	27-130/30
98-95-3	Nitrobenzene	ND	1780	1450	81	1770	1500	85	3	33-130/30
621-64-7	N-Nitroso-di-n-propylamine	ND	1780	1380	78	1770	1430	81	4	30-130/30
86-30-6	N-Nitrosodiphenylamine	ND	1780	1370	77	1770	1420	80	4	17-155/30
85-01-8	Phenanthrene	ND	1780	1490	84	1770	1540	87	3	38-130/30
129-00-0	Pyrene	ND	1780	1400	79	1770	1430	81	2	53-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	1780	1290	72	1770	1320	74	2	30-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D63617-3	Limits
367-12-4	2-Fluorophenol	75%	79%	54%	16-130%
4165-62-2	Phenol-d5	68%	71%	57%	18-130%
118-79-6	2,4,6-Tribromophenol	83%	86%	54%	17-130%

* = Outside of Control Limits.

7.3.1
7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D63507
Account: ALMS Accutest Mountain States
Project: WESTCOL: Stone Castle

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP11094-MS ^a	Z8218.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
OP11094-MSD ^a	Z8219.D	1	10/31/14	MT	10/21/14	OP11094	EZ400
D63617-3	Z8220.D	1	10/31/14	MT	10/21/14	OP11094	EZ400

The QC reported here applies to the following samples:

Method: SW846 8270C

D63507-9, D63507-10, D63507-11, D63507-12

CAS No.	Surrogate Recoveries	MS	MSD	D63617-3	Limits
4165-60-0	Nitrobenzene-d5	78%	82%	85%	19-130%
321-60-8	2-Fluorobiphenyl	76%	81%	85%	30-130%
1718-51-0	Terphenyl-d14	75%	76%	84%	40-130%

(a) CO#original OP10846

* = Outside of Control Limits.

7.3.1
 7

Technical Report for

Weston Solutions, Inc.

Stone Castle

20408.016.001.0183.00

Accutest Job Number: D63507X

Sampling Date: 10/14/14

Report to:

Weston Solutions, Inc.
1435 Garrison Street Suite 100
Lakewood, CO 80215
jeff.bryniarski@westonsolutions.com

ATTN: Jeff Bryniarski

Total number of pages in report: **15**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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3.1: Chain of Custody	13



Sample Summary

Weston Solutions, Inc.

Job No: D63507X

Stone Castle

Project No: 20408.016.001.0183.00

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D63507-9X	10/14/14	12:50 ES	10/15/14	SO	Soil	SCOU1W01
D63507-10X	10/14/14	13:00 ES	10/15/14	SO	Soil	SCOU1W02
D63507-11X	10/14/14	12:45 ES	10/15/14	SO	Soil	SCOU1W03
D63507-12X	10/14/14	13:30 ES	10/15/14	SO	Soil	SCOU1W04
D63507-13X	10/14/14	13:10 ES	10/15/14	SO	Soil	SCOU1S11
D63507-14X	10/14/14	13:20 ES	10/15/14	SO	Soil	SCOU1S12

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Subcontract Lab Data

Report of Analysis



Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: <http://www.settek.com>

November 05, 2014

Scott Heideman
Accutest Mountain States (AMS)
4036 Youngfield St.
Wheat Ridge, CO 80033
TEL: 303-425-6021
FAX: 303-425-6854

RE: D63507X

Order No.: 14101971

Dear Scott Heideman:

Summit Environmental Technologies, Inc. received 2 sample(s) on 10/17/2014 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except where noted.

If you have any questions regarding these tests results, please feel free to call the laboratory.

Sincerely,

Dr. Mo Osman
Project Manager
3310 Win St.
Cuyahoga Falls, Ohio 44223

A2LA 0724.01, Alabama 41600, Arizona AZ0788, Arkansas 88-0735, California 07256CA, Colorado, Connecticut PH-0105, Delaware, Florida NELAC E87688, Georgia E87688 and 943, Idaho OH00923, Illinois 200061 and Reg.5, Indiana C-OH-13, Kansas E-10347, Kentucky (Underground Storage Tank) 3, Kentucky 90146, Louisiana 04061 and LA12004, Maine 2012015, Maryland 339, Massachusetts M-OPH923, Minnesota 409711, Montana CERT0099, New Hampshire 2996, New Jersey OH006, New York 11777, North Carolina 39705 and 631, Ohio Drinking Water 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas T104704466-11-5, Region 8 8TMS-L, USDA/APHIS P330-11-00244, Utah OH009232011-1, Vermont VT-87688, Virginia 00440 and 1581, Washington C891, West Virginia 248 and 9957C and E87688, Wisconsin 399013010



SUMMIT
 ENVIRONMENTAL TECHNOLOGIES, INC
 Analytical Laboratories

Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

Workorder Sample Summary

WO#: 14101971
 05-Nov-14

CLIENT: Accutest Mountain States (AMS)
Project: D63507X

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
14101971-001	D63507X-13		10/14/2014 1:10:00 PM	10/17/2014 10:00:00 AM	Solid
14101971-002	D63507X-14		10/14/2014 1:20:00 PM	10/17/2014 10:00:00 AM	Solid



Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: <http://www.settek.com>

Case Narrative

WO#: 14101971
Date: 11/5/2014

CLIENT: Accutest Mountain States (AMS)
Project: D63507X

This report in its entirety consists of the documents listed below. All documents contain the Summit Environmental Technologies, Inc. Work Order Number assigned to this report.

Paginated Report including: Cover Letter, Case Narrative, Analytical Results, Applicable Quality Control Summary Reports and copies of the Chain of Custody Documents supplied with this sample set.

Concentrations reported with a J-Flag in the Qualifier Field are values below the Limit of Quantitation (LOQ) but greater than the established Method Detection Limit (MDL).

Method numbers, unless specified as SM (Standard Methods) or ASTM, are EPA methods.

Estimated uncertainty values are available upon request.

Any comments or problems with the analytical events associated with this report are noted below.

Original
Page 3 of 5

Page 3 of 7



Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

WO#: 14101971
 Date Reported: 11/5/2014
 Company: Accutest Mountain States (AMS)
 Address: 4036 Youngfield St.
 Wheat Ridge CO 80033
 Received: 10/17/2014
 Project#: D63507X

2

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
D63507X-13	001	10/14/2014 2378-TCDF	< 0.86	ng/Kg-dry	Solid	EPA 1613 B	1	0.86	11/4/2014	CM
D63507X-13	001	10/14/2014 12378-PeCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 23478-PeCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123478-HxCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123678-HxCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 234678-HxCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123789-HxCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 1234678-HpCDF	15	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 1234789-HpCDF	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 OCDF	70	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 2378-TCDD	< 0.86	ng/Kg-dry	Solid	EPA 1613 B	1	0.86	11/4/2014	CM
D63507X-13	001	10/14/2014 12378-PeCDD	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123478-HxCDD	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123678-HxCDD	2.9	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 123789HxCDD	< 2.1	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 1234678-HpCDD	69	ng/Kg-dry	Solid	EPA 1613 B	1	2.1	11/4/2014	CM
D63507X-13	001	10/14/2014 OCDD	1000	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Tetrafurans	< 4.3	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Tetradiioxins	< 4.3	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Pentafurans	15	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Pentadiioxins	< 4.3	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Hexafurans	26	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Hexadiioxins	13	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Heptafurans	63	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 Totals-Heptadiioxins	130	ng/Kg-dry	Solid	EPA 1613 B	1	4.3	11/4/2014	CM
D63507X-13	001	10/14/2014 TEQ	1.47	ng/Kg-dry	Solid	EPA 1613 B	1	0	11/4/2014	CM
D63507X-13	001	10/14/2014 Percent Solids	92	%	Solid	SM 2540 B	1		10/23/2014	AYS



Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

WO#: 14101971
 Date Reported: 11/5/2014
 Company: Accutest Mountain States (AMS)
 Address: 4036 Youngfield St.
 Wheat Ridge CO 80033
 Received: 10/17/2014
 Project#: D63507X

2

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
D63507X-14	002	10/14/2014 2378-TCDF	< 0.88	ng/Kg-dry	Solid	EPA 1613 B	1	0.88	11/4/2014	CM
D63507X-14	002	10/14/2014 12378-PeCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 23478-PeCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123478-HxCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123678-HxCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 234678-HxCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123789-HxCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 1234678-HpCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 1234789-HpCDF	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 OCDF	4.6	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 2378-TCDD	< 0.88	ng/Kg-dry	Solid	EPA 1613 B	1	0.88	11/4/2014	CM
D63507X-14	002	10/14/2014 12378-PeCDD	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123478-HxCDD	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123678-HxCDD	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 123789HxCDD	< 2.2	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 1234678-HpCDD	9.3	ng/Kg-dry	Solid	EPA 1613 B	1	2.2	11/4/2014	CM
D63507X-14	002	10/14/2014 OCDD	90	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Tetrafurans	6.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Tetradiioxins	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Pentafurans	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Pentadiioxins	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Hexafurans	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Hexadiioxins	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Heptafurans	< 4.4	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 Totals-Heptadiioxins	17	ng/Kg-dry	Solid	EPA 1613 B	1	4.4	11/4/2014	CM
D63507X-14	002	10/14/2014 TEQ	0.12	ng/Kg-dry	Solid	EPA 1613 B	1	0	11/4/2014	CM
D63507X-14	002	10/14/2014 Percent Solids	89	%	Solid	SM 2540 B	1		10/23/2014	AYS



4036 Youngfield St., Wheat Ridge, CO 80033
 303-425-6021 FAX: 303-425-6854

Accutest Job #: **D63507X**
 Accutest Quote #: **0**
 AMS P.O. #:
 Project No.:

Client Information		Subcontract Laboratory Information				Analytical Information	
Name	Address	Name	Summit Lab				
City	State	City	State	Zip			
Send Report to:	Contact:	Contact:	Sample Management				
Phone/Fax #:	Phone:	Phone:	0				
Field ID / Point of Collection	Date	Time	Matrix	# of bottles	Preservation		Comments
D63507X -13	10/14/14	1:10 PM	Soil	1	HCL		
-14		1:20 PM	Soil	1	HNO3		
					H2SO4		
					None		
<p>1410 1971-001-0025</p> <p>1613</p> <p>Dioxins + furans</p> <p>X</p> <p>X</p>							
Turnaround Information		Data Deliverable Information					
<input checked="" type="checkbox"/> 10 Business Day Standard	Approved By:	<input type="checkbox"/> Commercial "A"	<input type="checkbox"/> PDF	Please use Colorado regulations and RLs.			
<input type="checkbox"/> Other (Days)		<input type="checkbox"/> Commercial "B"	<input type="checkbox"/> Compact Disk Deliverable				
		<input type="checkbox"/> Commercial "BN"	<input type="checkbox"/> Electronic Delivery:				
		<input type="checkbox"/> Reduced Tier 1	<input type="checkbox"/> State Forms				
		<input type="checkbox"/> Full Tier 1	<input type="checkbox"/> Other (Specify)				
<p>10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.</p>							
Relinquished by:	Date & Time:	Received By:	Date & Time:	Seal #:	Only For Subcontract Laboratory Use Only		
1	10/16/14	1	10/14/14	1000	Yes	No	NA
2		2			Preserved where applicable:		
3		3			Temperature °C		

Rev. 12
Date: 07/27/13

Summit Environmental Technologies, Inc. Cooler Receipt Form

Client: AMS Initials of person inspecting cooler and samples: SC
Order Number: _____
Date Received: 10-17-14 Time Received: 1000 Date cooler(s) opened and samples inspected: 10-17-14

Number of Coolers/Boxes: 1 N/A
Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other: _____

Packaging: Peanuts Bubble Wrap Paper Foam None Other: _____

Tape on cooler/box: Y N N/A

Custody Seals intact Y N N/A

C-O-C in plastic Y N N/A

Ice ✓ Blue ice _____ present / absent / melted N/A

Sample Temperature IR Gun #16020459 CF 0.0 °C 1.7 °C N/A

Radiological Testing Instrument serial #35127 Y N N/A
(see page 2 for scan results)

****Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.**

C-O-C filled out properly Y N N/A

Samples in separate bags Y N N/A

Sample containers intact* Y N N/A

*If no, list broken sample(s): _____

Sample label(s) complete (ID, date, etc.) Y N N/A

Label(s) agree with C-O-C Y N N/A

Correct containers used Y N N/A

Sufficient sample received Y N N/A

Bubbles absent from 40 mL vials** Y N N/A

** Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm. _____

Was client contacted about samples Y N

Will client send new samples Y N

Client contact: _____

Date/Time: _____

Logged in by: _____

Comments: _____

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States
4036 Youngfield Street, Wheat Ridge, Co 80033
TEL 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking # _____
Accutest Quote # _____
Some Order Control # _____
Accutest Job # D63507

Client / Reporting Information		Project Information				Requested Analysis (see TEST CODE sheet)										Matrix Codes
Company Name <u>Western Solutions</u>		Project Name <u>Stone Castle</u>														DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address <u>1435 Garrison St, Suite 100</u>		Street <u>Parowan, UT</u>														
City, State, Zip <u>Lakewood CO 80115</u>		Billing Information (If different from Report to)														LAB USE ONLY G1 G2 EB-02 H G3 G4 G5 G6 G7 G8 G9 H0 H1
Project Contact <u>Jeff Bryniarski</u>		Company Name <u>Western Solutions</u>														
E-mail <u>jeff.bryniarski@western.com</u>		Street Address <u>Western Solutions</u>														
Phone # <u>708-284-2490</u>		City, State, Zip <u>Parowan, UT</u>														
Fax # <u>708-284-2490</u>		Client PO# <u>20418, 016, 001, 0183, 00</u>														
Sample(s) Name(s) <u>Eric Sandusky</u>		Project Manager <u>Dave Robinson</u>														
Phone #		Adaptor <u>Tara Jones</u>														
Field ID / Point of Collection		Collection				Number of preserved Bottles										
MEOH/DI Vol #		Date, Time, Sampled by, Matrix, # of bottles				HCl, HNO3, H2O2, H2SO4, HNO2, HNO, DI Water, MECH, EMG, CDE, Blankfill										
<u>SC011501</u>		<u>10/14/11 0855 EGS SO 1</u>				<u>TEEP Metals TAL Metals TCEP Metals SMOCS</u>										
<u>SC011503</u>		<u>0925 LDK SO 1</u>														
<u>SC011505</u>		<u>0915 EGS SO 1</u>														
<u>SC011506</u>		<u>0925 LDK SO 1</u>														
<u>SC011507</u>		<u>0930 EGS SO 1</u>														
<u>SC011508</u>		<u>0940 EGS SO 1</u>														
<u>SC011509</u>		<u>0945 EGS SO 1</u>														
<u>SC011510</u>		<u>1000 EGS SO 1</u>														
<u>SC011511</u>		<u>1015 EGS SO 1</u>														
<u>SC011512</u>		<u>0935 EGS SO 1</u>														
<u>SC011W01</u>		<u>1250 EGS SOL 1</u>														
<u>SC011W02</u>		<u>1300 EGS SOL 1</u>														

Turnaround Time (Business days)
 Std. 10 Business Days
 Std. 5 Business Days (By Contract only)
 5 Day /W/ SH
 3 Day EMERGENCY
 2 Day EMERGENCY
 1 Day EMERGENCY

Approved By (Accutest PM): _____ Date: _____

Commercial "A" (Level 1)
 Commercial "B" (Level 2)
 Commercial "B" -Narrative
 FULLT1 (Level 3+4)

State Forms
 EDD Format scribble
 PDF

Commercial "A" = Results Only
 Commercial "B" = Results + QC Summary

Comments / Special Instructions
SC011W01 -> SC011W02 REQUIRE GRINDING PRIOR TO TESTING & MAY REQUIRE DILUTION / EXPECT HIGH METALS LEVELS

Emergency & Rush T/A data available VIA Lablink

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: <u>1 Eric Sandusky</u>	Date Time: <u>10/14/11 16:30</u>	Received By: <u>[Signature]</u>	Date Time: <u>10/15/11 16:35</u>	Relinquished By: <u>2</u>	Date Time:	Received By: <u>2</u>
Relinquished by Sampler: <u>3</u>	Date Time:	Received By: <u>3</u>	Date Time:	Relinquished By: <u>4</u>	Date Time:	Received By: <u>4</u>
Relinquished by: <u>5</u>	Date Time:	Received By: <u>5</u>	Date Time:	Custody Seal #: <u>FHD</u>	<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. <u>4.3</u>



ALS Environmental
Field Chain-of-Custody Record

CoC #:

D63507

Page 2 of 2

Client Name & Address: Jeff Bryniarski Western Solutions 1435 Garrison St., Suite 100 Lakewood, CO 80245		Project Name & No.: Stone Castle Out 20408-016-001-0183-00		No. of Containers Sample for Matrix OC	Analyses Requested						Preservation Code Sample Matrix Code	Matrix Codes: W: Water B: Bulk L: Liquid F: Filter S: Soil G: Wipe C: Solid M: Metals				
ALS Quote No:		Report to: Jeff			TICP Metals	SIOC	Pbex115							Preservation Codes: 1) Cool to 4°C 2) HCl to pH=2, 4°C 3) H ₂ SO ₄ to pH=2, 4°C 4) HNO ₃ to pH=2, 4°C 5) NaOH to pH=12, 4°C 6) 2HNO ₃ /NaOH to pH=8, 4°C		
Report to e-mail:		Bill to: Tonia Jones												Remarks		
Phone: 703-284-2490		e-mail: jeff.bryniarski@westernsolutions.com														
Field Sample Number	Date	Time	Depth	ALS Sample Number												
SC011W03	10/14/14	1245			8	✓	✓				1	C	1311			
SC011W04	10/14/14	1330			10	✓	✓				1	C	1412			
SC011S011 SC011S12	10/14/14	1310					✓				1	S	1513			
SC011S011 SC011S12	10/14/14	1320					✓				1	S	1614			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Rad <input type="checkbox"/> Flammable <input type="checkbox"/> Poison <input type="checkbox"/> Unknown				Sample Disposal <input type="checkbox"/> Return to Client <input type="checkbox"/> Archive ___ Months <input checked="" type="checkbox"/> Disposal by Lab (fees assessed for samples retained > 3 months)		Data Deliverable: <input type="checkbox"/> Level 1 <input type="checkbox"/> Level 3 <input checked="" type="checkbox"/> Level 2 <input type="checkbox"/> Level 4 EDD Type: <u>scribe</u>		Requested Turn Around Time: <u>10 days</u> <input type="checkbox"/> 2 Days (Rush) <input type="checkbox"/> 7 Days (Rush) <input type="checkbox"/> 3 Days (Rush) <input type="checkbox"/> 14 Days (Rush = email data by COB on day due. Surcharges assessed.)								
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by: (Signature)		Date	Time	Shipped to: ALS Environmental 800 West LeVoy Drive Salt Lake City, UT 84123 Phone: (801) 558-9135 Phone: (801) 268-7700 FAX: (801) 268-9992 WZB: www.alsglobal.com								
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time									
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time									

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3

*Aug 15/14
12/15/14*

White - Laboratory Copy Yellow - Client Copy

4.3

12/12/2013

Accutest Job Number: D63507 **Client:** WESTON **Project:** _____
Date / Time Received: 10/15/2014 4:35:00 PM **Delivery Method:** _____ **Airbill #'s:** HD
Cooler Temps (Initial/Adjusted): 0

Cooler Security Y or N Y or N
 1. Custody Seals Present: 3. COC Present:
 2. Custody Seals Intact: 4. Smpl Dates/Time OK

Cooler Temperature Y or N
 1. Temp criteria achieved:
 2. Cooler temp verification: _____ ; _____
 3. Cooler media: _____ Ice (Bag) _____
 4. No. Coolers: _____ 1 _____

Quality Control Preservation Y or N N/A
 1. Trip Blank present / cooler:
 2. Trip Blank listed on COC:
 3. Samples preserved properly:
 4. VOCs headspace free:

Comments

Sample Integrity - Documentation Y or N
 1. Sample labels present on bottles:
 2. Container labeling complete:
 3. Sample container label / COC agree:

Sample Integrity - Condition Y or N
 1. Sample recvd within HT:
 2. All containers accounted for:
 3. Condition of sample: _____ Intact _____

Sample Integrity - Instructions Y or N N/A
 1. Analysis requested is clear:
 2. Bottles received for unspecified tests:
 3. Sufficient volume recvd for analysis:
 4. Compositing instructions clear:
 5. Filtering instructions clear:



11/05/14

Technical Report for

Weston Solutions, Inc.

Stone Castle

Accutest Job Number: D63969

Sampling Date: 10/29/14

Report to:

Weston Solutions, Inc.
1435 Garrison Street Suite 100
Lakewood, CO 80215
jeff.bryniarski@westonsolutions.com

ATTN: Jeff Bryniarski

Total number of pages in report: **31**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

Weston Solutions, Inc.

Job No: D63969

Stone Castle

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D63969-1	10/29/14	08:50 JB	10/29/14	SO	Solid	SCOU1T01
D63969-2	10/29/14	09:00 JB	10/29/14	SO	Solid	SCOU1T02
D63969-3	10/29/14	09:10 JB	10/29/14	SO	Solid	SCOU1T03
D63969-4	10/29/14	09:20 JB	10/29/14	SO	Solid	SCOU1T04
D63969-5	10/29/14	09:40 JB	10/29/14	SO	Solid	SCOU1T05
D63969-6	10/29/14	09:50 JB	10/29/14	SO	Solid	SCOU1T06
D63969-7	10/29/14	10:00 JB	10/29/14	SO	Solid	SCOU1T07

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D63969

Site: Stone Castle

Report Date 11/5/2014 2:42:41 PM

On 10/29/2014, 7 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D63969 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals By Method SW846 6010C

Matrix: LEACHATE

Batch ID: MP14439

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63969-1MS, D63969-1MSD, D63969-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic, Chromium, Selenium are outside control limits for sample MP14439-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7470A

Matrix: LEACHATE

Batch ID: MP14441

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D63969-3MS, D63969-3MSD were used as the QC samples for the metals analysis.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D63969
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 10/29/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D63969-1	SCOU1T01					
Barium		1.9	1.0		mg/l	SW846 6010C
Cadmium		0.040	0.010		mg/l	SW846 6010C
Lead		3.9	0.050		mg/l	SW846 6010C
D63969-2	SCOU1T02					
Barium		2.5	1.0		mg/l	SW846 6010C
Cadmium		0.080	0.010		mg/l	SW846 6010C
Lead		8.5	0.050		mg/l	SW846 6010C
D63969-3	SCOU1T03					
Arsenic		0.027	0.025		mg/l	SW846 6010C
Barium		1.0	1.0		mg/l	SW846 6010C
Cadmium		0.17	0.010		mg/l	SW846 6010C
Chromium		0.034	0.010		mg/l	SW846 6010C
Lead		3.2	0.050		mg/l	SW846 6010C
D63969-4	SCOU1T04					
Cadmium		0.089	0.010		mg/l	SW846 6010C
Lead		1.8	0.050		mg/l	SW846 6010C
D63969-5	SCOU1T05					
Barium		2.0	1.0		mg/l	SW846 6010C
Cadmium		0.053	0.010		mg/l	SW846 6010C
Lead		8.1	0.050		mg/l	SW846 6010C
D63969-6	SCOU1T06					
Arsenic		0.025	0.025		mg/l	SW846 6010C
Cadmium		0.077	0.010		mg/l	SW846 6010C
Lead		0.60	0.050		mg/l	SW846 6010C
D63969-7	SCOU1T07					
Arsenic		0.032	0.025		mg/l	SW846 6010C
Cadmium		0.10	0.010		mg/l	SW846 6010C
Lead		0.69	0.050		mg/l	SW846 6010C



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: SCOU1T01 Lab Sample ID: D63969-1 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 10/29/14 Date Received: 10/29/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	1.9	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.040	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	3.9	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.1
4

Report of Analysis

Client Sample ID: SCOU1T02 Lab Sample ID: D63969-2 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 10/29/14 Date Received: 10/29/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	2.5	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.080	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	8.5	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.2
4

Report of Analysis

Client Sample ID: SCOU1T03	Date Sampled: 10/29/14
Lab Sample ID: D63969-3	Date Received: 10/29/14
Matrix: SO - Solid	Percent Solids: n/a
Project: Stone Castle	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.027	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	1.0	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.17	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	0.034	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	3.2	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.3
4

Report of Analysis

Client Sample ID: SCOU1T04	Date Sampled: 10/29/14
Lab Sample ID: D63969-4	Date Received: 10/29/14
Matrix: SO - Solid	Percent Solids: n/a
Project: Stone Castle	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.089	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	1.8	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.4
4

Report of Analysis

Client Sample ID: SCOU1T05 Lab Sample ID: D63969-5 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 10/29/14 Date Received: 10/29/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	2.0	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.053	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	8.1	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.5
4

Report of Analysis

Client Sample ID: SCOU1T06 Lab Sample ID: D63969-6 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 10/29/14 Date Received: 10/29/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.025	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.077	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	0.60	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
 MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.6
4

Report of Analysis

Client Sample ID: SCOU1T07 Lab Sample ID: D63969-7 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 10/29/14 Date Received: 10/29/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.032	D004	5.0	0.025	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.10	D006	1.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Lead	0.69	D008	5.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/04/14	11/04/14 JB	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	10/31/14	11/01/14 JB	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5446
- (2) Instrument QC Batch: MA5453
- (3) Prep QC Batch: MP14439
- (4) Prep QC Batch: MP14441

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.7
4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

D63969

Company Name/Address: WESTON SOLUTIONS
1455 GARRISON ST
SUITE 100
LAKEWOOD, CO 80215

Billing Information:

Analysis / Container / Preservative

Chain of Custody Page of

Report to: JEFF BRYNIARSKI Email To: JEFF.BRYNIARSKI@WESTON.SOLUTIONS.COM

Project: STONE CASTLE City/State: Collected:

Phone: Client Project # Lab Project #

Collected by (print): J. Bryniarski Site/Facility ID # P.O. #

Rush? (Lab MUST be Notified) 3-DAY

Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Date Results Needed: Email? No Yes K Yes
FAX? No Yes K Yes

Sample ID Comp/Grab Matrix * Depth Date Time No. of Cntrs

SCOUT01	C	W	-	10/29/14	08:50	1
SCOUT02	C	W	-		09:00	
SCOUT03	C	W	-		09:10	
SCOUT04	C	W	-		09:20	
SCOUT05	C	W	-		09:40	
SCOUT06	C	W	-		09:50	
SCOUT07	C	W	-		10:00	

NO ADDITIONAL SAMPLES

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks: W = WASTE Samples are solid. (DP)

Relinquished by: (Signature) Date: 10/29/14 Time: 13:05 Received by: (Signature)

Temp: 3.9 °C Bottles Received: 140

CO2 Seal Intact: Y N NA



5.1
5

H.D

Accutest Job Number: D63969 **Client:** WESTON **Project:** _____
Date / Time Received: 10/29/2014 1:05:00 PM **Delivery Method:** _____ **Airbill #'s:** HD
Cooler Temps (Initial/Adjusted): 0

Cooler Security

	<u>Y or N</u>			<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler Temperature

	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	_____ ; _____	
3. Cooler media:	_____ Ice (Bag) _____	
4. No. Coolers:	_____ 1 _____	

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	_____ Intact _____		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.1
5

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/31/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	0.10	.011	.041		
Antimony	0.030	.0021	.019		
Arsenic	0.025	.0038	.0085	0.0054	<0.025
Barium	1.0	.0002	.0014	0.016	<1.0
Beryllium	0.010	.0009	.0011		
Boron	0.050	.0008	.0066		
Cadmium	0.010	.0002	.00036	0.0024	<0.010
Calcium	0.40	.0024	.041		
Chromium	0.010	.0003	.0004	0.00080	<0.010
Cobalt	0.0050	.0005	.00057		
Copper	0.010	.0008	.0019		
Iron	0.070	.0015	.0095		
Lead	0.050	.0021	.02	0.00070	<0.050
Lithium	0.0050	.0004	.0027		
Magnesium	0.20	.0068	.019		
Manganese	0.0050	.0005	.00046		
Molybdenum	2000	.0004	.00084		
Nickel	0.030	.0005	.00087		
Phosphorus	0.10	.015	.02		
Potassium	1.0	.099	.27		
Selenium	0.050	.0071	.012	0.012	<0.050
Silicon	0.050	.0047	.0052		
Silver	0.030	.0003	.0006	-0.00020	<0.030
Sodium	0.40	.0073	.17		
Strontium	0.050	.00001	.00012		
Thallium	0.010	.0018	.004		
Tin	0.050	.012	.016		
Titanium	0.010	.0001	.0021		
Uranium	0.050	.0029	.0055		
Vanadium	0.010	.0004	.0004		
Zinc	0.030	.0004	.0032		

Associated samples MP14439: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

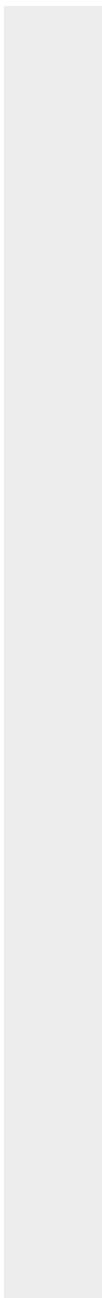
QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/31/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14439
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/31/14

Metal	D63969-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.019	1.1	1.0	108.1	75-125
Barium	1.9	4.0	2.0	105.0	75-125
Beryllium					
Boron					
Cadmium	0.040	0.53	0.50	98.0	75-125
Calcium					
Chromium	0.0091	0.47	0.50	92.2	75-125
Cobalt					
Copper					
Iron					
Lead	3.9	4.7	1.0	80.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	0.016	1.1	1.0	108.4	75-125
Silicon					
Silver	0.0	0.22	0.20	110.0	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP14439: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

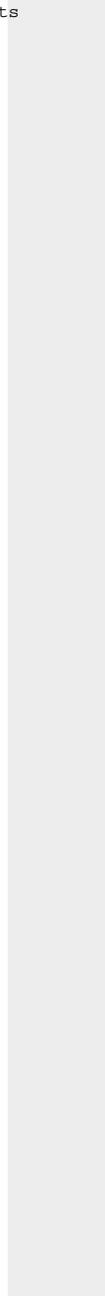
QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/31/14

Metal	D63969-1 Original MS	SpikeLot ICPAL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested



6.1.2
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14439
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/31/14

Metal	D63969-1 Original	MSD	SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.019	1.1	1.0	108.1	0.0	20
Barium	1.9	4.0	2.0	105.0	0.0	20
Beryllium						
Boron						
Cadmium	0.040	0.54	0.50	100.0	1.9	20
Calcium						
Chromium	0.0091	0.48	0.50	94.2	2.1	20
Cobalt						
Copper						
Iron						
Lead	3.9	4.7	1.0	80.0	0.0	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	0.016	1.2	1.0	118.4	8.7	20
Silicon						
Silver	0.0	0.22	0.20	110.0	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP14439: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

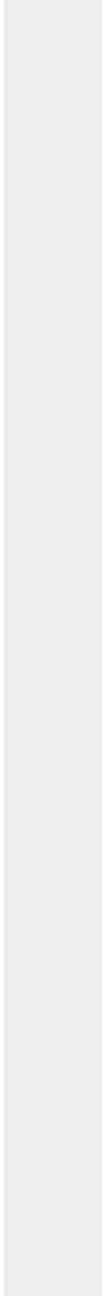
QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/31/14

Metal	D63969-1 Original MSD	Spike/lot ICPALL2 % Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested



6.1.2
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14439
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 10/31/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.1	1.0	110.0	80-120
Barium	2.0	2.0	100.0	80-120
Beryllium				
Boron				
Cadmium	0.50	0.50	100.0	80-120
Calcium				
Chromium	0.48	0.50	96.0	80-120
Cobalt				
Copper				
Iron				
Lead	0.98	1.0	98.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	1.2	1.0	120.0	80-120
Silicon				
Silver	0.22	0.20	110.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14439: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

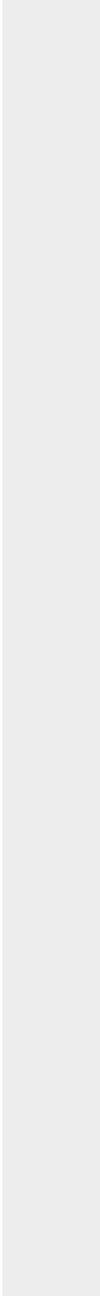
QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 10/31/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



6.1.3

6

SERIAL DILUTION RESULTS SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14439
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: ug/l

Prep Date: 10/31/14

Metal	D63969-1 Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	19.4	32.5	67.5 (a)	0-10
Barium	1890	1780	6.1	0-10
Beryllium				
Boron				
Cadmium	39.9	36.5	8.5	0-10
Calcium				
Chromium	9.10	5.50	39.6 (a)	0-10
Cobalt				
Copper				
Iron				
Lead	3920	3810	2.8	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	15.6	0.00	100.0 (a)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14439: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14439
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/31/14

Metal	D63969-1	QC
	Original SDL 1:5 %DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

6.1.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14441
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 11/04/14

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.00010	.000011	.000009	-0.000017	<0.00010

Associated samples MP14441: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.2.1

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14441
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/04/14

Metal	D63969-3 Original MS	Spike HGWSR1	lot % Rec	QC Limits
-------	-------------------------	-----------------	--------------	--------------

Mercury 0.0 0.0031 0.0031 99.2 75-125

Associated samples MP14441: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D63969
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14441
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/04/14

Metal	D63969-3 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.0	0.0030	0.0031	96.0	3.3 20

Associated samples MP14441: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D63969
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14441
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 11/04/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
-------	---------------	--------------------	-------	--------------

Mercury 0.0030 0.0031 96.0 80-120

Associated samples MP14441: D63969-1, D63969-2, D63969-3, D63969-4, D63969-5, D63969-6, D63969-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.2.3

6



11/14/14

Technical Report for

Weston Solutions, Inc.

Stone Castle

OU1

Accutest Job Number: D64374

Sampling Date: 11/07/14

Report to:

Weston Solutions, Inc.
1435 Garrison Street Suite 100
Lakewood, CO 80215
jeff.bryniarski@westonsolutions.com

ATTN: Jeff Bryniarski

Total number of pages in report: **44**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Sample Summary

Weston Solutions, Inc.

Job No: D64374

Stone Castle
Project No: OU1

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D64374-1	11/07/14	11:45 JB	11/09/14	SO	Solid	SCOU1T08
D64374-2	11/07/14	12:00 JB	11/09/14	SO	Solid	SCOU1T09
D64374-3	11/07/14	11:55 JB	11/09/14	SO	Solid	SCOU1T10
D64374-4	11/07/14	12:10 JB	11/09/14	SO	Solid	SCOU1T11
D64374-5	11/07/14	12:15 JB	11/09/14	SO	Solid	SCOU1T12

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Weston Solutions, Inc.

Job No D64374

Site: Stone Castle

Report Date 11/14/2014 4:43:48 P

On 11/09/2014, 5 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D64374 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals By Method SW846 6010C

Matrix: LEACHATE

Batch ID: MP14515

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D64374-1MS, D64374-1MSD, D64374-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Lead are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Arsenic, Cadmium, Chromium, Selenium, Silver are outside control limits for sample MP14515-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Matrix: LEACHATE

Batch ID: MP14541

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D64420-1MS, D64420-1MSD, D64420-1SDL were used as the QC samples for the metals analysis.
- The blank spike (BS) recovery(s) of Selenium are outside control limits.
- The matrix spike (MS) recovery(s) of Arsenic, Selenium, Silver are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Arsenic, Selenium, Silver are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Cadmium, Chromium, Selenium, Lead are outside control limits for sample MP14541-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP14541-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP14541-MB1 for Selenium: All sample results < RL
- MP14541-B1 for Selenium: All sample results < RL

Metals By Method SW846 7470A

Matrix: LEACHATE **Batch ID:** MP14516

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D64374-1MS, D64374-1MSD were used as the QC samples for the metals analysis.

Matrix: LEACHATE **Batch ID:** MP14542

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D64420-1MS, D64420-1MSD were used as the QC samples for the metals analysis.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D64374
Account: Weston Solutions, Inc.
Project: Stone Castle
Collected: 11/07/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D64374-1	SCOU1T08					
Barium		3.6	1.0		mg/l	SW846 6010C
Lead		16.8	0.050		mg/l	SW846 6010C
D64374-2	SCOU1T09					
Barium		2.6	1.0		mg/l	SW846 6010C
Chromium		0.048	0.010		mg/l	SW846 6010C
Lead		6.4	0.050		mg/l	SW846 6010C
D64374-3	SCOU1T10					
Barium		2.3	1.0		mg/l	SW846 6010C
Chromium		0.070	0.010		mg/l	SW846 6010C
Lead		1.7	0.050		mg/l	SW846 6010C
D64374-4	SCOU1T11					
Arsenic		0.058	0.025		mg/l	SW846 6010C
Cadmium		0.025	0.010		mg/l	SW846 6010C
Chromium		0.019	0.010		mg/l	SW846 6010C
Lead		0.10	0.050		mg/l	SW846 6010C
Mercury		0.0014	0.00010		mg/l	SW846 7470A
D64374-5	SCOU1T12					
Arsenic		0.048	0.025		mg/l	SW846 6010C
Cadmium		0.024	0.010		mg/l	SW846 6010C
Lead		10.9	0.050		mg/l	SW846 6010C



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: SCOU1T08	Date Sampled: 11/07/14
Lab Sample ID: D64374-1	Date Received: 11/09/14
Matrix: SO - Solid	Percent Solids: n/a
Project: Stone Castle	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Barium	3.6	D005	100	1.0	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	16.8	D008	5.0	0.050	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/11/14	11/11/14 KV	SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5478
- (2) Instrument QC Batch: MA5482
- (3) Prep QC Batch: MP14515
- (4) Prep QC Batch: MP14516

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.1
4

Report of Analysis

Client Sample ID: SCOU1T09 Lab Sample ID: D64374-2 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 11/07/14 Date Received: 11/09/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Barium	2.6	D005	100	1.0	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Chromium	0.048	D007	5.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	6.4	D008	5.0	0.050	mg/l	1	11/11/14	11/13/14 KV	SW846 6010C ²	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/11/14	11/11/14 KV	SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5478
- (2) Instrument QC Batch: MA5482
- (3) Prep QC Batch: MP14515
- (4) Prep QC Batch: MP14516

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.2
4

Report of Analysis

Client Sample ID: SCOU1T10 Lab Sample ID: D64374-3 Matrix: SO - Solid Project: Stone Castle	Date Sampled: 11/07/14 Date Received: 11/09/14 Percent Solids: n/a
--	---

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 0.025	D004	5.0	0.025	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Barium	2.3	D005	100	1.0	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Cadmium	< 0.010	D006	1.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Chromium	0.070	D007	5.0	0.010	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	1.7	D008	5.0	0.050	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/11/14	11/11/14 KV	SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	11/11/14	11/12/14 KV	SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5478
- (2) Instrument QC Batch: MA5482
- (3) Prep QC Batch: MP14515
- (4) Prep QC Batch: MP14516

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.3
4

Report of Analysis

Client Sample ID: SCOU1T11	Date Sampled: 11/07/14
Lab Sample ID: D64374-4	Date Received: 11/09/14
Matrix: SO - Solid	Percent Solids: n/a
Project: Stone Castle	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.058	D004	5.0	0.025	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Cadmium	0.025	D006	1.0	0.010	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Chromium	0.019	D007	5.0	0.010	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Lead	0.10	D008	5.0	0.050	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Mercury	0.0014	D009	0.20	0.00010	mg/l	1	11/11/14	11/11/14	KV SW846 7470A ¹	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	11/11/14	11/13/14	KV SW846 6010C ²	SW846 3010A ³

- (1) Instrument QC Batch: MA5478
- (2) Instrument QC Batch: MA5482
- (3) Prep QC Batch: MP14515
- (4) Prep QC Batch: MP14516

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.4
4

Report of Analysis

Client Sample ID: SCOU1T12	Date Sampled: 11/07/14
Lab Sample ID: D64374-5	Date Received: 11/09/14
Matrix: SO - Solid	Percent Solids: n/a
Project: Stone Castle	

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.048	D004	5.0	0.025	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Barium	< 1.0	D005	100	1.0	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Cadmium	0.024	D006	1.0	0.010	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Chromium	< 0.010	D007	5.0	0.010	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Lead	10.9	D008	5.0	0.050	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Mercury	< 0.00010	D009	0.20	0.00010	mg/l	1	11/14/14	11/14/14 KV	SW846 7470A ²	SW846 7470A ⁴
Selenium	< 0.050	D010	1.0	0.050	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³
Silver	< 0.030	D011	5.0	0.030	mg/l	1	11/13/14	11/14/14 KV	SW846 6010C ¹	SW846 3010A ³

- (1) Instrument QC Batch: MA5488
- (2) Instrument QC Batch: MA5489
- (3) Prep QC Batch: MP14541
- (4) Prep QC Batch: MP14542

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

4.5
4

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Job Number: D64374 **Client:** WESTON SOLUTIONS **Project:** STONE CASTE OV1
Date / Time Received: 11/9/2014 10:55:00 AM **Delivery Method:** _____ **Airbill #'s:** HD
Cooler Temps (Initial/Adjusted): 0

<u>Cooler Security</u>		<u>Y or N</u>			<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Cooler Temperature</u>		<u>Y or N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	_____ ; _____	
3. Cooler media:	_____ Ice (Bag) _____	
4. No. Coolers:	_____ 1 _____	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Comments

<u>Sample Integrity - Documentation</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	

<u>Sample Integrity - Condition</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Condition of sample:	_____ Intact _____			

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14515
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/11/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	0.10	.011	.041		
Antimony	0.030	.0021	.019		
Arsenic	0.025	.0038	.0085	0.0072	<0.025
Barium	1.0	.0002	.0014	0.0039	<1.0
Beryllium	0.010	.0009	.0011		
Boron	0.050	.0008	.0066		
Cadmium	0.010	.0002	.00036	0.00010	<0.010
Calcium	0.40	.0024	.041		
Chromium	0.010	.0003	.0004	0.00060	<0.010
Cobalt	0.0050	.0005	.00057		
Copper	0.010	.0008	.0019		
Iron	0.070	.0015	.0095		
Lead	0.050	.0021	.02	0.00030	<0.050
Lithium	0.0050	.0004	.0027		
Magnesium	0.20	.0068	.019		
Manganese	0.0050	.0005	.00046		
Molybdenum	2000	.0004	.00084		
Nickel	0.030	.0005	.00087		
Phosphorus	0.10	.015	.02		
Potassium	1.0	.099	.27		
Selenium	0.050	.0071	.012	0.017	<0.050
Silicon	0.050	.0047	.0052		
Silver	0.030	.0003	.0006	0.00010	<0.030
Sodium	0.40	.0073	.17		
Strontium	0.050	.00001	.00012		
Thallium	0.010	.0018	.004		
Tin	0.050	.012	.016		
Titanium	0.010	.0001	.0021		
Uranium	0.050	.0029	.0055		
Vanadium	0.010	.0004	.0004		
Zinc	0.030	.0004	.0032		

Associated samples MP14515: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

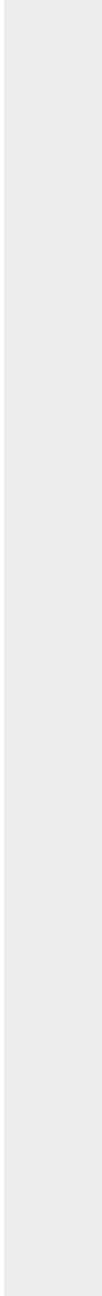
QC Batch ID: MP14515
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/11/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14515
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0095	1.1	1.0	109.1	75-125
Barium	3.6	5.5	2.0	95.0	75-125
Beryllium					
Boron					
Cadmium	0.0012	0.48	0.50	95.8	75-125
Calcium					
Chromium	0.0021	0.47	0.50	93.6	75-125
Cobalt					
Copper					
Iron					
Lead	16.8	17.1	1.00	30.0 (a)	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	0.020	1.2	1.0	118.0	75-125
Silicon					
Silver	0.00050	0.20	0.20	99.8	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP14515: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14515
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MS	SpikeLot ICPALL2	% Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

6.1.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14515
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MSD		SpikeLot ICPAL2 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0095	1.0	1.0	99.1	9.5	20
Barium	3.6	5.4	2.0	90.0	1.8	20
Beryllium						
Boron						
Cadmium	0.0012	0.48	0.50	95.8	0.0	20
Calcium						
Chromium	0.0021	0.47	0.50	93.6	0.0	20
Cobalt						
Copper						
Iron						
Lead	16.8	17.0	1.00	20.0 (a)	0.6	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	0.020	1.2	1.0	118.0	0.0	20
Silicon						
Silver	0.00050	0.20	0.20	99.8	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP14515: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14515
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
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- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14515
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.1	1.0	110.0	80-120
Barium	1.9	2.0	95.0	80-120
Beryllium				
Boron				
Cadmium	0.49	0.50	98.0	80-120
Calcium				
Chromium	0.48	0.50	96.0	80-120
Cobalt				
Copper				
Iron				
Lead	1.0	1.0	100.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	1.2	1.0	120.0	80-120
Silicon				
Silver	0.21	0.20	105.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14515: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

6.1.3
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

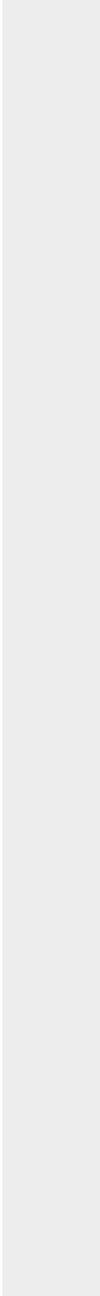
QC Batch ID: MP14515
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



SERIAL DILUTION RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14515
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: ug/l

Prep Date: 11/11/14

Metal	D64374-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	9.50	26.0	173.7(a)	0-10
Barium	3600	3420	4.9	0-10
Beryllium				
Boron				
Cadmium	1.20	0.00	100.0(a)	0-10
Calcium				
Chromium	2.10	0.00	100.0(a)	0-10
Cobalt				
Copper				
Iron				
Lead	16800	16400	2.4	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	19.7	0.00	100.0(a)	0-10
Silicon				
Silver	0.500	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14515: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

6.1.4
6

SERIAL DILUTION RESULTS SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14515
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/11/14

	D64374-1		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

6.1.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14516
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 11/11/14

Metal	RL	IDL	MDL	MB raw	final
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Mercury 0.00010 .000011 .000009 0.0000015<0.00010

Associated samples MP14516: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.2.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14516
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MS	Spike HGWSR1	lot % Rec	QC Limits
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Mercury 0.000017 0.0030 0.0031 95.5 75-125

Associated samples MP14516: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14516
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/11/14

Metal	D64374-1 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.000017 0.0029	0.0031	92.3	3.4	20

Associated samples MP14516: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.2.2
 6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14516
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/11/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
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Mercury 0.0030 0.0031 96.0 80-120

Associated samples MP14516: D64374-1, D64374-2, D64374-3, D64374-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.2.3

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14541
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/13/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	0.10	.0086	.041		
Antimony	0.030	.0032	.019		
Arsenic	0.025	.0052	.0085	0.0069	<0.025
Barium	1.0	.0014	.0014	0.025	<1.0
Beryllium	0.010	.0008	.0011		
Boron	0.050	.0067	.0066		
Cadmium	0.010	.0004	.00036	0.00030	<0.010
Calcium	0.40	.0022	.041		
Chromium	0.010	.0004	.0004	0.00060	<0.010
Cobalt	0.0050	.0004	.00057		
Copper	0.010	.0012	.0019		
Iron	0.070	.0022	.0095		
Lead	0.050	.0036	.02	-0.00050	<0.050
Lithium	0.0050	.0019	.0027		
Magnesium	0.20	.014	.019		
Manganese	0.0050	.00001	.00046		
Molybdenum	2000	.0008	.00084		
Nickel	0.030	.0009	.00087		
Phosphorus	0.10	.015	.02		
Potassium	1.0	.13	.27		
Selenium	0.050	.0088	.012	0.044	* (a)
Silicon	0.050	.0052	.0052		
Silver	0.030	.0004	.0006	-0.00010	<0.030
Sodium	0.40	.0049	.17		
Strontium	0.050	.00001	.00012		
Thallium	0.010	.0029	.004		
Tin	0.050	.013	.016		
Titanium	0.010	.00015	.0021		
Uranium	0.050	.0037	.0055		
Vanadium	0.010	.0004	.0004		
Zinc	0.030	.0006	.0032		

Associated samples MP14541: D64374-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

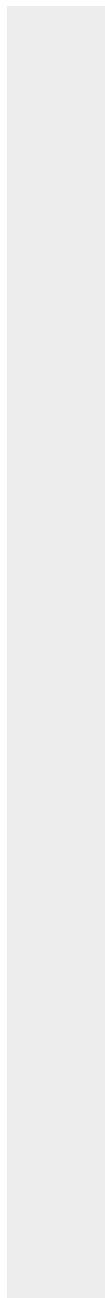
QC Batch ID: MP14541
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/13/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested
(a) All sample results < RL



6.3.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14541
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/13/14

Metal	D64420-1 Original MS		SpikeLot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0	1.3	1.0	130.0N(a)	75-125
Barium	0.53	2.4	2.0	93.5	75-125
Beryllium					
Boron					
Cadmium	0.0030	0.60	0.50	119.4	75-125
Calcium					
Chromium	0.0026	0.49	0.50	97.5	75-125
Cobalt					
Copper					
Iron					
Lead	0.22	1.2	1.0	98.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	0.039	1.4	1.0	136.1N(a)	75-125
Silicon					
Silver	0.0	0.26	0.20	130.0N(a)	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP14541: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14541
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/13/14

Metal	D64420-1 Original MS	Spike ICPAL2	QC % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike recovery indicates possible matrix interference.

6.3.2

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14541
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/13/14

Metal	D64420-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	1.3	1.0	130.0N(a)	0.0	20
Barium	0.53	2.4	2.0	93.5	0.0	20
Beryllium						
Boron						
Cadmium	0.0030	0.61	0.50	121.4	1.7	20
Calcium						
Chromium	0.0026	0.49	0.50	97.5	0.0	20
Cobalt						
Copper						
Iron						
Lead	0.22	1.2	1.0	98.0	0.0	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	0.039	1.5	1.0	146.1N(a)	6.9	20
Silicon						
Silver	0.0	0.26	0.20	130.0N(a)	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP14541: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

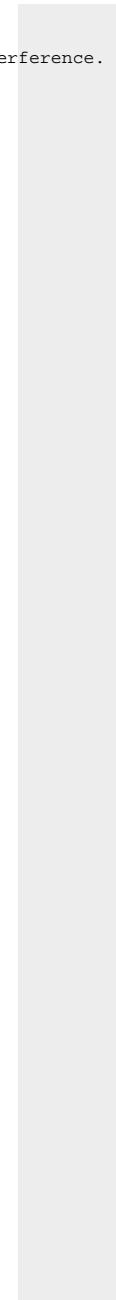
QC Batch ID: MP14541
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/13/14

Metal	D64420-1 Original MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Spike recovery indicates possible matrix interference.



6.3.2
 6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14541
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: mg/l

Prep Date: 11/13/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.2	1.0	120.0	80-120
Barium	1.8	2.0	90.0	80-120
Beryllium				
Boron				
Cadmium	0.57	0.50	114.0	80-120
Calcium				
Chromium	0.49	0.50	98.0	80-120
Cobalt				
Copper				
Iron				
Lead	0.92	1.0	92.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	1.3	1.0	130.0*(a)	80-120
Silicon				
Silver	0.24	0.20	120.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14541: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14541
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: mg/l

Prep Date: 11/13/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested
(a) All sample results < RL



6.3.3

6

SERIAL DILUTION RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14541
 Matrix Type: LEACHATE

Methods: SW846 6010C
 Units: ug/l

Prep Date: 11/13/14

Metal	D64420-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	531	581	9.4	0-10
Beryllium				
Boron				
Cadmium	3.00	0.00	100.0(a)	0-10
Calcium				
Chromium	2.60	12.0	361.5(a)	0-10
Cobalt				
Copper				
Iron				
Lead	218	324	48.5*(b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	39.2	0.00	100.0(a)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP14541: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

6.3.4
6

SERIAL DILUTION RESULTS SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14541
Matrix Type: LEACHATE

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/13/14

Metal	D64420-1	QC
	Original SDL 1:5 %DIF	Limits

- (anr) Analyte not requested
- (a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- (b) Serial dilution indicates possible matrix interference.

6.3.4

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14542
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 11/14/14

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.00010	.000011	.000009	0.000027	<0.00010

Associated samples MP14542: D64374-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.4.1

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14542
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/14/14

Metal	D64420-1 Original MS	Spike HGWSR1	lot % Rec	QC Limits
Mercury	0.000013 0.0033	0.0031	105.2	75-125

Associated samples MP14542: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.4.2
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D64374
 Account: WESTCOL - Weston Solutions, Inc.
 Project: Stone Castle

QC Batch ID: MP14542
 Matrix Type: LEACHATE

Methods: SW846 7470A
 Units: mg/l

Prep Date: 11/14/14

Metal	D64420-1 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
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Mercury	0.000013 0.0034	0.0031	108.4	3.0	20
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Associated samples MP14542: D64374-5

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.4.2

6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D64374
Account: WESTCOL - Weston Solutions, Inc.
Project: Stone Castle

QC Batch ID: MP14542
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 11/14/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.0036	0.0031	115.2	80-120

Associated samples MP14542: D64374-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.4.3

6

Attachment G

10/14/14

STONE CASTLE RECYCLING

CS

0715 - START (Jeff Bynarski, Ellie Kastner, Eric Sandusky) depart cedar city for Paramar, NJ.

0730 - START Arrives on site. H₂S, CO₂, Pb, broken glass, XRF, dust, slips trips & falls site security, gpe, site visitors, hospital route. Wx. 33°F - 62°F Sunny calm winds.

Jeff Bynarski

Jeff Bynarski 10/14/14

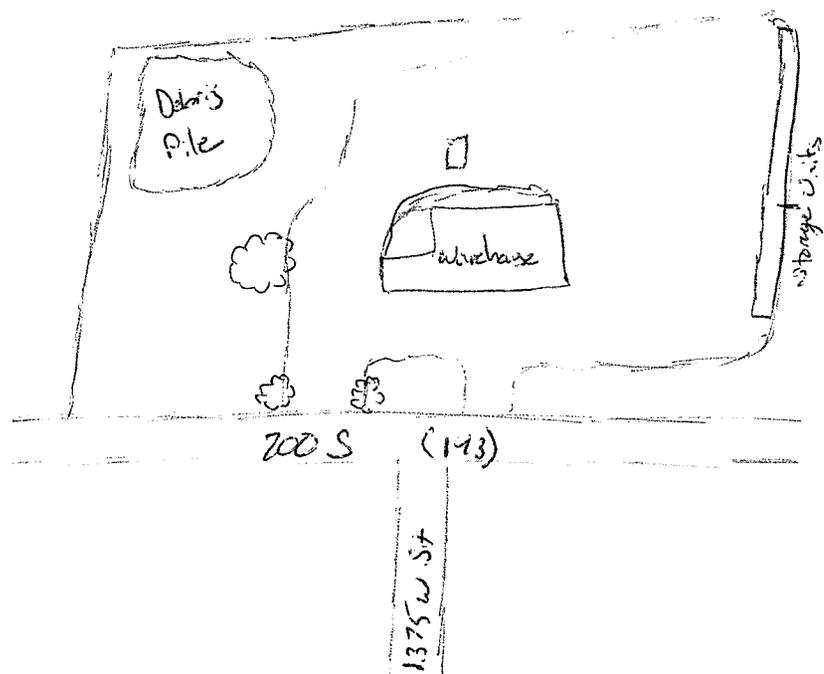
Ellie Kastner

Ellie Kastner 10/14/14

Eric Sandusky

Eric Sandusky 10/14/14

0745 - START does site walk to evaluate approach to sample and rough estimates of burn debris, intact ³TVs, & broken TVs/misc. debris.



STONE CASTLE RECYCLING (OU1) 10/14/14

0845 - START begins to start collecting samples.

0855 - Sample SCOU1S01 was collected.

All samples are collected using a hand auger which is decontaminated with DI water, Alconox and Nitric Acid between samples.

0905 - Sample SCOU1S02 collected

0915 - Sample SCOU1S03 collected

0925 - Sample SCOU1S04 collected

0930 - Sample SCOU1S05 + Duplicate SCOU1S10 collected

0940 - Sample SCOU1S06 collected

0945 - Sample SCOU1S07 collected

1000 - Sample SCOU1S08 collected

1015 - Sample SCOU1S09 collected

1100 - START off site

1200 - START on site to continue collecting waste samples

1245 - Sample SCOU1W03 collected (glass)

1250 - Sample SCOU1W01 collected (burn debris)

1300 - Sample SCOU1W02 collected (burn debris)

1330 - Sample SCOU1W04 collected (full TV components)

All waste samples are composites of debris collected in 5 gallon buckets.

1340 - Sample SCOU1S11 is a composite of S01 & S02 for Dioxine analysis only.

10/14/14 Stone Castle Recycling (OU1)
1320 - Septe SCOW1312 collected from soil
under burned debris pile for Dioxane analysis only.

1345 Start Sandusky is filmed
disassembling 2 TVs - STATE OF
UTAH DEQ Pat Sheehan on site -
Start provides an update on sample
collection

1415 Start conducts site walk &
counts 168 cubic yard boxes of
intact TVs - each box holds
~ 7 TVs - Start weighs an average
TV: total 36 lbs. → 33 lbs glass
1 lbs. plastic & 2 lbs. electronics

Backnote Start Brynarski times Start
Sandusky - small TV 3:20 & average
size TV 5:30 disassemble

Backnote: screen glass. ~ 1/2 total
glass weight

4:30 Start updates GIS figure to
denote different waste piles/streams
(burned material, intact TVs &
broken TVs/debris)

15:00 starts depart site after packing up

all equipment
15:20 start at IFA Ag. Supply (cedar

Stone Castle Recycling (OU1) 10/14/14
City, UT) to purchase 1 bag (~50 lbs.)
of Mono Ammonium Phosphate (MAP)
for bench testing of site waste
16:00 Start at hotel to draft the
treatability study document
- Brandon Hood start estimates depth of
each waste (pile): 10³ box (intact) - 3 ft,
burned debris - 2 ft & misc. + e-waste -
6 ft (ave) depth/height of each pile

Start
10/14/14

10/27/14 STONE CASTLE RECYCLING (OU1)
12:30 START BRUNIARSKI AT EPA WAREHOUSE
(DENVER, CO) - START INQUIRES ABOUT A
SCALE/BALANCE TO MEASURE OUT 2-5 kg
OF MATERIAL AT A TIME - EPA WAREHOUSE
CONTRACTOR (GZ) INFORMS START THAT THE
ONLY BALANCE THEY HAVE CAN MEASURE
UP TO 50g
13:30 START PURCHASES A SCALE/BALANCE
FOR MEASURING WASTE DURING THE TREATABILITY
STUDY (OFFICE MAX)


10/27/14

STONE CASTLE RECYCLING (OU1) 10/28/14
08:15 START BRUNIARSKI & ROBINSON AT EPA
WAREHOUSE TO BEGIN THE TREATABILITY
STUDY - START HAS OUTLINED THE PROCEDURE
IN A DOCUMENT BASED ON EPA GUIDANCE
08:30 STARTS MEASURE OUT WASTE &
FERTILIZER & DI WATER FOR THE STUDY:

SAMPLE ID:	TIME:	WASTE TYPE:	FERTILIZER (%)
SCOU1TØ1	08:50	GLASS	1
SCOU1TØ2	09:00	GLASS	3
SCOU1TØ3	09:10	BURNED DEBRIS	1
SCOU1TØ4	09:20	BURNED DEBRIS	3
SCOU1TØ5	09:40	MIXED	1
SCOU1TØ6	09:50	MIXED	3
SCOU1TØ7	10:00	MIXED	3

- ALL WASTE WASTE 1kg WAS USED &
10% (100g) OF DI WATER USED IN EACH
BATCH - FOR THE MIXED WASTE, THE
FOLLOWING MIXTURE WAS USED BASED ON
QUANTITIES ESTIMATED AT THE SITE (OU1):
30% (300g) WHOLE/BROKEN TV PARTS (ALL
PARTS); 30% (300g) BROKEN (LEADED) TV
GLASS; 30% (300g) BURNED DEBRIS; & 10%
(100g) SAND/SOIL FROM ~~FB~~ UNDER THE
BURNED DEBRIS (FROM THE SITE - OU1)
10:15 STARTS HAVE ALL THE TEST STUDY

10/28/14 STONE CASTLE RECYCLING (OU1)
MIXTURES/SAMPLES MIXED BY HAND IN LABELED
5-GAL BUCKETS (SEALED) ————— JB
-BACKNOTE: FOR SAMPLES T01 → T06 THE TREATMENT
AGENT/FERTILIZER WAS CRUSHED BY HAND
& THE ~~JB~~ WATER MIXED IN TO CREATE A
SLURRY MIXTURE BEFORE ADDING IT TO THE
WASTE — FOR T07 THE FERTILIZER WAS
NOT CRUSHED PRIOR TO MIXING ————— JB

JL
10/28/14

STONE CASTLE RECYCLING (OU1) 10/29/14
08:30 START BRINIARSKI AT EPA WAREHOUSE
TO PACKAGE SAMPLES ————— JB
08:50 START BEGINS PACKAGING SAMPLES/
STUDY MIXTURES INTO LABELED JARS
FOR LABORATORY ANALYSIS AFTER ONE
FINAL MIXING ————— JB
10:15 START COMPLETES SAMPLE PACKAGING &
PLACES ALL SAMPLES ON ICE ————— JB
10:20 START ROBINSON REQUESTS THAT START
BRINIARSKI TAKE ALL REMAINING SITE WASTE
TO WESTON STORAGE UNIT (LAKEWOOD, CO)
12:30 START SECURES ALL REMAINING SITE
WASTE IN WESTON STORAGE UNIT (9 5-GAL
BUCKETS & 1 BAG OF FERTILIZER) ————— JB
13:05 START DELIVERS SAMPLES TO
ACCUTES LAB FOR TCLP METALS ANALYSIS
& REQUESTS 5-DAY TURN ON RESULTS

JL
10/29/14

11/7/14 SC SA OU 1

11:00 START BRINIARSKI, ROBINSON &
DANDUSKY AT THE EPA R8 WAREHOUSE
TO CONDUCT TREATABILITY STUDY #2

11:20 STARTS BEGIN TO PREP SAMPLES
FOR TREATMENT (SEE BELOW) ————— JB

SAMPLE ID:	T08	T09	T10	T11	T12
SIZE	3/8"	3/8"	3/8"	3/8"	3"
PORTLAND (%)	0	3	10	3	0
PO ₄ ³⁻ (%)	0	0	0	3	3
MATRIX	GLASS	GLASS	GLASS	GLASS	GLASS

11:45 START COLLECTS SCOUT T08 ————— JB

12:00 START COLLECTS SCOUT T09 ————— JB

11:55 START COLLECTS SCOUT T10 ————— JB

12:10 START COLLECTS SCOUT T11 ————— JB

12:15 START COLLECTS SCOUT T12 ————— JB

— ALL SAMPLES JB WILL BE DELIVERED TO
ACCUTEST JB LAB (WHEAT RIDGE, CO) TOMORROW
AFTER 24 HOURS OF SET TIME

13:00 STARTS DEPART EPA WAREHOUSE

[Signature]
11/7/14

Attachment H

WORK PLAN FOR
Stone Castle Recycling – Removal Assessment

U.S. EPA CONTRACT NO. EP-S8-13-01

TDD 0001/1410-01

October 6, 2014

Prepared By:  _____
Jeff Bryniarski
Project Team Lead

Date: October 6, 2014

Approved By:  _____
David Robinson
Project Manager

Date: October 6, 2014

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1. INTRODUCTION

Under Contract Number EP-S8-13-01, the US Environmental Protection Agency (EPA) issued Technical Direction Document (TDD) 0001/1410-01 for removal assessment activities at the Stone Creek Recycling site(s) in Utah, primarily at the Parowan, UT site in Iron County. Weston Solutions, Inc. (Weston) has prepared this scoping plan to complete the assigned activities.

This Work Plan has been prepared in accordance with the requirements of the TDD and consists of the following:

- A. Cover sheet
- B. Staffing plan
- C. Written cost assumptions, including schedule of deliverables
- D. Cost estimate table

2. STAFFING PLAN

The following personnel have been identified to support this TDD:

Staff	Assignment
Dave Robinson	Project Manager
Jeff Bryniarski	Project Team Lead
Ellie Kastner	Project Scientist
Megan Adamczyk	Project Scientist / Data, XRF
Eric Sandusky	Project Scientist
John Lucotch	GIS Management
Jen Patureau	Project Scientist – Treatability Study Support

3. TASK STRUCTURE

The task structure was identified in the Statement of Work (SOW) and consists of the following assessment work:

Treatability Study

- Assemble available documentation on field-appropriate techniques that might be used; determine metrics, treatability approaches and parameters. Significant questions at this time include:
 - The phosphate source giving the best performance,
 - the transferability of phosphate treatment technology from soil studies to glass waste,
 - and timing – optimum reaction time for the phosphate given the proposed schedule for the work.
 - Potential use of waste glass as a concrete admix.
 - Other technologies that might be appropriate for this project scope

Revision 0

1

This document was prepared in accordance with U.S. EPA Contract No. EP-S8-13-01, WESTON Region 8 START and contains confidential business information.

- Collect representative composite samples of waste glass, debris and soil at the site.
- Treat aliquots of site wastes and analyze results against metrics.
- Estimate labor/effort to segregate the glass CRT from the rest of the components to minimize the quantity of hazardous waste. Truth this estimate with discussions with e-waste recyclers.
- Refine treatability parameters if necessary and generate final data.
- Develop recommendations for removal action – handling waste, segregating components, soil contamination extent.

Assessment of Site(s)

- Collect geo-referenced data on locations/extent of wastes, locations of sample aliquots for compositing, XRF sample locations, etc.
- Multi-Media Sampling:
 - Representative site wastes – glass, debris, fire-damaged materials.
 - TCLP for metals (coordinate with treatability lab work)
- Soil Sampling
 - XRF analysis of surface and shallow soil aliquots for metals to determine the magnitude and extent of contamination from the site wastes.
 - QC analysis (lab) of representative samples to confirm XRF results and develop correlation.
 - Collect a limited number of samples for other hazardous waste parameters.

Reporting

- Prepare a report documenting the results of the treatability study.
- Prepare a removal assessment report documenting the extent of contamination at the site.