

---

## **2019 Monitoring Report**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane  
Brandeis, California

---

**Issued:** 25 November 2019  
GSI Job No. 5182

**Prepared for:** American Jewish University – Brandeis-Bardin Campus  
1101 Peppertree Lane  
Brandeis, CA 93064



**GSI Environmental Inc.**

155 Grand, Ste 704, Oakland, CA 94612 ■ tel. 510.463.8484

25 November 2019  
Job No. 5182

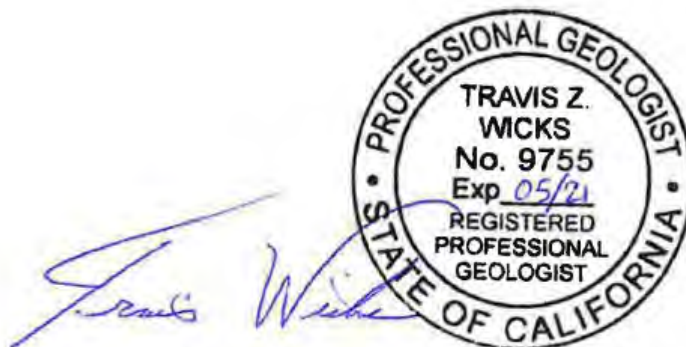
This 2019 Monitoring Report was prepared by the staff of GSI Environmental Inc., under the supervision of the individuals whose signatures appear hereon.

The findings, recommendations, specifications, or professional opinions were prepared in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.



---

Susan Gallardo, PE #C038154



---

Travis Wicks, PG #9755

## TABLE OF CONTENTS

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Sampling Plan and Field Methods</b>	<b>2</b>
2.1	High-Use Areas	2
2.2	Drainage Sampling	3
2.3	Additional Drainage Sampling	3
2.4	Fruit Sampling	4
2.5	Sampling Methods	4
<b>3</b>	<b>Results</b>	<b>4</b>
3.1	Data Validation	4
3.2	Screening Levels	5
3.2.1	Soil and Sediment Screening Levels	5
3.2.2	Spring Water Screening Levels	6
3.2.3	Fruit Screening Levels	6
3.3	High-Use Area Sample Results	6
3.3.1	Metals and Perchlorate Results	6
3.3.2	Radionuclide Results	6
3.4	Upgradient Drainage Sample Results	7
3.4.1	Metals and Perchlorate Results	7
3.4.2	Radionuclide Results	7
3.5	Fruit Sample Results	8
<b>4</b>	<b>Conclusions</b>	<b>8</b>
<b>5</b>	<b>References</b>	<b>9</b>

### Tables

Table 1	Sampling and Analysis Summary
Table 2	Soil and Sediment Results – Metals and Perchlorate
Table 3	Soil and Sediment Results – Radionuclides
Table 4	Spring Water Results – Metals and Perchlorate
Table 5	Spring Water Results - Radionuclides
Table 6	Fruit Analytical Results

### Figures

Figure 1	Site Location Map
Figure 2	Site Map and Features
Figure 3	Main Campus Area Map and Sampling Locations
Figure 4	Hidden Valley Camp Sampling Locations
Figure 5	Burn Pit Runoff Drainage Sampling Locations
Figure 6	Reactor and RMDF Runoff Drainage Sampling Location
Figure 7	SRE Runoff Drainage Sampling Locations
Figure 8	OS1 Drainage Sampling Location
Figure 9	OS8 Drainage Sampling Location

- Figure 10 Old Well Camp Sampling Location
- Figure 11 Fruit Orchard Sampling Locations
- Figure 12 Avocado Grove Sampling Location

**Appendices**

- Appendix A. Analytical Laboratory Reports – April 2019 Event
- Appendix B. Analytical Laboratory Reports – June 2019 Event
- Appendix C. Analytical Laboratory Reports – August 2019 Event
- Appendix D. Preliminary Remediation Goal Calculation Methodology and Inputs
- Appendix E. Background Threshold Value ProUCL Output Files

## 1 INTRODUCTION

GSI Environmental Inc. (GSI) has prepared this report to document the surface soil, sediment, spring water, and fruit sampling conducted on behalf of American Jewish University (AJU) at the Brandeis-Bardin Campus of the American Jewish University located at 1101 Peppertree Lane in Brandeis, California (the Site, Figures 1 and 2). The purpose of the sampling was to investigate whether any significant chemical and radiological impacts exist from the nearby Santa Susana Field Laboratory at selected areas at the Site and to monitor upgradient locations near the Site boundary with the Northern Buffer Zone (NBZ), which separates the Site from the Santa Susana Field Laboratory (SSFL).

The Site consists of the 2,878-acre Brandeis-Bardin campus of AJU situated along the northern edge of the Simi Hills in Brandeis, California. The Site is accessed through the main valley that runs northwest-southeast from the northern portion of the Site. Most development and activities occur within the Main Campus Area, a relatively small portion of the Site that is situated along the floor of this main valley approximately one to two miles north of the Site's southern border (see Figures 2 and 3). The majority of the Site, including the land between the Main Campus Area and the southern border, is undeveloped hillsides and drainages.

The Site is located to the north of the SSFL, a former nuclear and rocket science research and testing facility currently co-owned by the Department of Energy, Boeing, and the National Aeronautics and Space Administration (NASA). The SSFL has been the subject of multiple environmental investigations and remedial actions related to chemical impacts to surface and subsurface environmental media. Because the Site is located hydrologically downgradient from the SSFL, multiple investigations of the Brandeis-Bardin campus have been conducted for potential runoff of chemicals of concern onto the Site. In addition, periodic sampling of various media at the Site has been conducted since 1991. Analytical results from this sampling have not indicated significant, if any, migration of contaminants of concern (COCs) or other impacts to the Site from the SSFL operations (DTSC 2017).

The following sections describe the collection and analysis of samples from the following sources to evaluate potential migration of COCs from the SSFL:

- Soil from high-use areas within the Main Campus Area;
- Soil and sediment from campsite areas outside the Main Campus Area;
- Sediment from upgradient drainage channels near the Site's southern border;
- Water from springs located near the Site's southern border; and
- Fruit (avocado, apple, grapefruit and lemon) grown on trees within the Main Campus Area.

## 2 SAMPLING PLAN AND FIELD METHODS

On 22 April 2019, prior to conducting field work, GSI performed a site walk and met with representatives of AJU to identify access points and sampling locations. Sampling locations ultimately selected from this meeting and subsequent conversations fall into three categories:

- Areas of high use by campus guests; sampled on 22 April 2019
- Drainages abutting the NBZ at the southern edge of the Site; sampled on 13 June, 29 August, and 30 August 2019
- Fruit-bearing trees; sampled on 30 August 2019

Analytical results from the three types of samples were used to provide an assessment of current and future potential exposure experienced by guests to the campus.

A sampling and analysis summary for the 2019 monitoring events is available in Table 1.

### 2.1 High-Use Areas

The following high-use areas were identified with representatives of AJU and are shown on Figures 2 and 3:

- Hidden Valley Camp
- Terry Field
- Kids' Cabins
- Gan Field
- CIT Cabins
- Alpine Tower

At least one surface soil sample was collected from each location. When surface water was present, a sample of moist or saturated sediment was collected. All samples were analyzed for the following:

- Title 22 Metals by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471
- Perchlorate by USEPA Method 314.0
- Tritium by USEPA Method 906.0
- Strontium-90 by USEPA Method 905.0
- Cesium-137 by USEPA Method 901.1

All samples for metals and perchlorate analysis were submitted to Eurofins TestAmerica of Pleasanton, California, while samples for radionuclide analysis were submitted to Eurofins TestAmerica of St. Louis, Missouri. Both laboratories are California Environmental Laboratory Accreditation Program-certified analytical laboratories, and all samples were submitted under standard chain-of-custody procedures.

## 2.2 Drainage Sampling

Historical documents were reviewed to identify springs and drainage channels near the Site's southern boundary. Particular attention was given to areas sampled previously, such as those sampled by Joel Cehn (*e.g.*, Cehn, 2017<sup>1</sup>). The areas identified for sampling are shown on Figures 2 and 5 through 10.<sup>2</sup> One sample was also collected from the drainage channel near Old Well Camp to serve as an indication of background conditions.

A sediment sample was collected from the bottom of the drainage channel at each location. At springs, water was also sampled, if present. All samples collected were analyzed for the following:

- Title 22 Metals<sup>3</sup> (metals) by United States Environmental Protection Agency (USEPA) Methods 6010 and 7471
- Perchlorate by USEPA Method 314.0
- Tritium by USEPA Method 906.0
- Strontium-90 by USEPA Method 905.0
- Cesium-137 by USEPA Method 901.1

All samples for metals and perchlorate analysis were submitted to Eurofins TestAmerica of Pleasanton, California, while samples for radionuclide analysis were submitted to ALS Environmental of Fort Collins, Colorado. Both laboratories are California Environmental Laboratory Accreditation Program-certified analytical laboratories, and all samples were submitted under standard chain-of-custody procedure.

## 2.3 Additional Drainage Sampling

A second round of sampling was conducted at select upstream locations on 29 and 30 August 2019 to provide higher resolution data for strontium in sediment in select drainages:

During this sampling event, the 13 June 2019 sampling locations were resampled, and additional samples were collected towards either bank of the select drainage and 10 to 20 feet downstream of the original sampling location. Additionally, prior to arriving on Site, a second drainage was identified near the southern Site boundary that converged with a previously identified drainage. A sediment sample was collected where the two drainages converge (Figure 7). All samples were analyzed for strontium-90 by USEPA Method 905.0.

All samples were submitted under standard chain-of-custody procedures to GEL Laboratories of Charleston, South Carolina, a California Environmental Laboratory Accreditation Program-certified analytical laboratory.

---

<sup>1</sup> These reports can be found online through AJU at <https://www.aju.edu/about-aju/our-campus/brandeis-bardin-safety-data>

<sup>2</sup> Note that upon research, Spring OS1, which is located near the central southern boundary, was found to be the same as artesian monitoring wells RD-68A and 68B, which are monitored regularly by NASA. Monitoring well RD 68A was sampled during this event.

<sup>3</sup> California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 3, Section 66261.24.

## 2.4 Fruit Sampling

Fruit-bearing trees in a small fruit orchard and avocado grove, both located in the Main Campus Area (see Figure 3, 11, and 12), were sampled in August 2019 for analysis of strontium-90 by USEPA Method 905.0. The following fruits were sampled:

- Avocados
- Apples
- Grapefruit
- Lemons

Only fruit that was ripe during the sampling event were selected. Samples of fruit were also collected from a nearby grocery store as a point of comparison. All samples were submitted under standard chain-of-custody procedures to GEL Laboratories in Charleston, South Carolina, a California Environmental Laboratory Accreditation Program-certified analytical laboratory.

## 2.5 Sampling Methods

Soil and sediment samples were collected as grab samples from the top 6 inches of material using a decontaminated metal garden trowel. Leaf litter and other organics on top of the sampling location were excluded from the sample as much as possible. Samples to be analyzed for metals and perchlorate were collected into new, unused glass jars. Additional soil and sediment sample volume was collected into a 16-ounce plastic jar for analysis of radionuclides. Between samples, the sampling trowel was decontaminated using a solution of Liquinox and water followed by rinsing with distilled water. All samples were stored in an ice-chilled cooler before transfer to the analytical laboratory, following standard chain-of-custody procedures.

Each fruit sample consisted of two to four individual fruits collected from the same tree. Fruit were wiped with an unused paper towel moistened with distilled water before placement into a food-grade resealable plastic bag. All samples were stored in an ice-chilled cooler prior to transfer to the analytical laboratory, following standard chain-of-custody procedures. Fruit were processed by the laboratory before analysis such that only the commonly consumed portions of each fruit were included. For grapefruit, avocado, and lemon samples, only the fruit flesh were included, while both the flesh and skin of the apple samples were included for analysis.

## 3 RESULTS

Laboratory analytical results for each sample area are presented below and are also summarized in Tables 2 through 6. Laboratory reports are included in Appendix A through C.

### 3.1 Data Validation

Analytical results were reviewed in accordance with the following documents:

- 2017 National Functional Guidelines for Inorganic Superfund Methods Data Review published by the USEPA.
- 2004 Multi-Agency Radiological Laboratory Analytical Protocols Manual published by the USEPA et al.



Results between the reporting limit and detection limit for a compound were flagged with a “J”. Additionally, all antimony results below the detection limit for sediment and soil were flagged with a “UJ” because of low recovery of antimony in the matrix spike. Overall, 5% of the total data were qualified. All sample results are considered usable, and data quality is judged to be adequate for the intended purpose.

### 3.2 Screening Levels

Analytical results are evaluated by comparison to health-based screening levels and, when available, background values of compounds observed at the nearby SSFL. Screening levels for each medium are described in the following sections.

#### 3.2.1 Soil and Sediment Screening Levels

Risk-based levels for metals and perchlorate in soil/sediment were drawn from Regional Screening Levels (RSLs) for soil under residential land use as published by the USEPA (2019) and modified by the Department of Toxic Substances Control of the California Environmental Protection Agency (DTSC, 2019). Background values for metals are drawn from those published by the DTSC for the SSFL (DTSC, 2013). Notably, naturally occurring background concentrations of certain metals exceed risk-based screening levels.

Health risk-based screening levels for radionuclides were generated using the Preliminary Remediation Goal (PRG) calculator for radionuclides published by the USEPA (2019). Default parameters for residential land-use were assumed for all input variables to provide a conservative risk threshold; for example, the parameters selected for exposure durations (26 years) and frequency (350 days per year) significantly exceed those of a typical camper, employee or other user of the Site. Exposure pathways were assumed to include incidental ingestion, dermal contact, external exposure and inhalation of resuspended soil. Because the Site is primarily used recreationally, the growth of produce for consumption was excluded from these calculations with respect to the soil and sediment but was included for purposes of calculating the PRG with respect to the fruit samples. Input values and further details regarding this calculation are included in Appendix D.

Background levels for radionuclides were drawn from values published by HydroGeoLogic, Inc. in 2012 for the SSFL and generated from background sample datasets from McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) in 1993 and 1995, and Ogden Environmental and Energy Services Co., Inc. (Ogden), in 1998. Background values generated for this report are the mean plus twice the standard deviation as calculated using the Kaplan Meier Method in ProUCL 5.1 (USEPA, 2015). The same method was previously employed by Tetra Tech to generate background radionuclide concentrations (Tetra Tech, 2016<sup>4</sup>).<sup>5</sup> ProUCL 5.1 output files are included in Appendix E.

Additionally, the Old Well Camp drainage does not drain any portion of the SSFL site, and therefore is unlikely to be influenced by potential runoff from the SSFL. Sediment samples collected from this drainage are used as an indication of background conditions in sediment.

---

<sup>4</sup> Available through AJU at [https://www.aju.edu/sites/default/files/docs/Tetra\\_Tech-Technical\\_Report\\_April\\_2016r.pdf](https://www.aju.edu/sites/default/files/docs/Tetra_Tech-Technical_Report_April_2016r.pdf)

<sup>5</sup> Note that only the higher concentration from duplicate samples was included in the calculation. Additionally, the most recent data was used from locations where multiple samples previously were collected.

### **3.2.2 Spring Water Screening Levels**

Title 22 metals and perchlorate results in spring water were compared to California maximum contaminant levels (MCLs), as established in Title 22 of the California Code of Regulations (CCR) § 64431, and background groundwater levels generated for the SSFL (MWH Americas Inc., 2014). This is a conservative approach as drinking water at the Site is municipally sourced.

Radionuclide results in spring water were compared to MCLs as established in Title 22 CCR § 64443, as well as groundwater comparison concentrations for the SSFL based on MCLs or effective dose equivalents of 4 millirems per year (Stantec Consulting Services, 2019).

### **3.2.3 Fruit Screening Levels**

Results for strontium-90 were compared to health risk-based screening levels calculated using the PRG calculator (USEPA, 2019). Inputs and details regarding the method for calculating these screening levels are included in Appendix D.

## **3.3 High-Use Area Sample Results**

This section summarizes analytical results for the samples collected in areas of high guest activity.

### **3.3.1 Metals and Perchlorate Results**

All compounds were either not detected above their respective reporting limits or detected at concentrations below both the risk-based screening levels and regional background levels, with the exception of arsenic and silver. Arsenic was detected in all but one sample at concentrations ranging from 3.8 to 6.9 milligrams per kilogram (mg/kg), above the risk-based screening level of 0.11 mg/kg, but well below the regional background level of 39.7 mg/kg. This indicates that on-Site concentrations of arsenic are consistent with natural conditions and are not the result of anthropogenic chemical impacts.

Silver was detected in sample HV-2 collected from Hidden Valley Camp at a concentration of 1.8 mg/kg and was not detected above the reporting limit in any other samples. The singular detection is above the regional background concentration of 0.138 mg/kg, but well below the risk-based screening level of 390 mg/kg. Regional background data generated by McLaren/Hart in 1993 indicated the presence of silver at concentrations ranging from 0.5 to 1.6 mg/kg. Though the single detection of silver in the sample collected from HV-2 is slightly outside this background range, the detection is judged to be indicative of natural conditions, rather than anthropogenic chemical impacts, based upon comparison to the McLaren/Hart dataset.

Overall, metals and perchlorate concentrations measured in soil and sediment samples collected from high-use areas do not indicate the presence of on-Site chemical impacts.

### **3.3.2 Radionuclide Results**

Radionuclides were not detected above their respective minimum detectable concentrations in any of the samples collected from the High-Use Areas.

### 3.4 Upgradient Drainage Sample Results

This section summarizes analytical results for the sediment and spring water samples collected from upgradient drainages near the property boundary shared with the SSFL.

#### 3.4.1 Metals and Perchlorate Results

In sediment, all compounds were either not detected above their respective reporting limits or detected at concentrations below both the risk-based screening levels and regional background levels, with the exception of arsenic. Arsenic was detected in all but one sample at concentrations ranging from 3.8 to 11 mg/kg. These concentrations are above the risk-based screening level of 0.11 mg/kg but are well below the regional background level of 39.7 mg/kg. This indicates that on-Site concentrations of arsenic are consistent with natural conditions and are not the result of anthropogenic chemical impacts.

In spring water, all compounds were either not detected above their respective reporting limits or detected at concentrations below both the MCL and SSFL background levels, with the exception of copper. Copper was measured in spring water samples collected from OS1 and OS3 at concentrations of 0.047 milligrams per liter (mg/L) and 0.0083 mg/L, respectively. These concentrations are above the background level of 0.0047 mg/L but well below the MCL of 1.3 mg/L. Spring OS1 is an artesian well equipped with metal casing and a spigot; Spring OS3 also is an artesian well equipped with metal casing. In both cases, the measured concentrations of copper likely are due to the well material rather than the water itself.

Overall, metals and perchlorate concentrations in sediment and spring water do not indicate the presence of on-Site chemical impacts.

#### 3.4.2 Radionuclide Results

In sediment, tritium was not detected above its reporting limits, and cesium-137 was not detected at concentrations above background levels and PRGs. Strontium-90 was detected at concentrations ranging from 0.232 to 0.48 picocuries per gram (pCi/g) in sediment samples from the drainage channels near the NBZ during the June 2019 sampling event. Although these values exceed the strontium-90 background value of 0.130 pCi/g, they are an order of magnitude below the PRG of 13.4 pCi/g.

Additional sediment sampling was conducted in August 2019 to obtain higher resolution data where strontium-90 was initially measured above background levels. At each drainage, a second sample was obtained from the same location as the June 2019 sampling event, as well as an additional three to four samples near and downgradient of the initial sampling location. Strontium-90 was not detected above its minimum detectable concentration in any sample collected during the August 2019 event. Combined with the June 2019 sediment samples, it appears that there is no widespread distribution of strontium-90 in these drainages. There is no indication of significant, if any, impact from SSFL operations.

In spring water, no radionuclides were detected above their respective minimum detectable concentrations. The lack of detectable concentrations of radionuclides in spring water suggests the absence of on-Site chemical impacts.

### 3.5 Fruit Sample Results

Strontium-90 was not detected in any fruit sample above its minimum detectable concentration. All minimum detectable concentrations were below the PRG of 0.571 pCi/g.

## 4 CONCLUSIONS

Samples taken in High-Use Areas uniformly indicate that there are no chemical impacts from the SSFL. These results are consistent with analytical testing of media that has occurred since 1991.

In drainage channels located more than a mile away from the Main Campus Area, strontium-90 was detected in initial sediment samples at concentrations greater than the derived background concentration. However, these concentrations were approximately 27 times lower than PRGs developed by the United States Environmental Protection Agency, and follow-up, higher-resolution sampling conducted in and around the same portion of the drainages did not yield concentrations of strontium-90 above the minimum detection limit. Taken as a whole, the data from the drainage areas do not suggest significant, if any, impacts to drainage areas near the NBZ.

## 5 REFERENCES

Cehn, Joel I., 2017, Memorandum: 2017 Testing Results, 27 March.

Department of Toxic Substances Control (DTSC), 2013, Chemical Look-Up Table Technical Memorandum, Santa Susana Field Laboratory, Ventura County, California, June 11.

DTSC, 2017, Review of Radiological and Chemical Data from Investigations Conducted at and Near the Santa Susana Field laboratory and the American Jewish University – Brandeis Bardin Campus, 2 May.

DTSC, 2019, Human and Ecological Risk Office (HERO) Human Health Risk Assessment Note Number 3, April.

HydroGeoLogic, Inc., 2012, Final Technical Memorandum, Look-Up Table Recommendations, Santa Susana Field Laboratory, Area IV Radiological Study, 27 November.

McLaren/Hart Environmental Engineering Corporation (McLaren/Hart), 1993, Multi-Media Sampling Report for the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy, Volume I, March 10.

McLaren/Hart, 1995, Additional Soil and Water Sampling, The Brandeis-Bardin Institute and Santa Monica Mountains Conservancy, 19 January.

MWH Americas, Inc., 2014, Final Standardized Risk Assessment Methodology Revision 2 Addendum, Santa Susana Field Laboratory, Ventura County, California, August.

Ogden Environmental and Energy Services Co., Inc., 1998, Bell Canyon Area, Soil Sampling Report, Ventura County, California, Volume I, October.

Stantec Consulting Services, 2019, Boeing Report on Annual Groundwater Monitoring, 2018, Santa Susana Field Laboratory, Ventura County, California, Stantec PN: 185865105, 22 February.

Tetra Tech, Inc., 2016, Environmental and Radiological Data Summary and Health Risk Evaluation for the American Jewish University Brandeis-Bardin Campus at Simi Valley, California, Technical Memorandum, April.

United States Environmental Protection Agency (USEPA), United States Department of Defense, United States Department of Energy, United States Department of Homeland Security, United States Nuclear Regulatory Commission, United States Food and Drug Administration, United States Geological Survey, and National Institute of Standards and Technology, 2004, Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP), NUREG-1576, EPA 402-B-04-001A, NTIS PB2004-105421, July.

USEPA, 2015, Statistical Software ProUCL 5.1.00 for Environmental Applications for Data Sets with and without Nondetect Observations, October.

USEPA, 2017, National Functional Guidelines for Inorganic Superfund Methods Data Review, January.

USEPA, 2019, Preliminary Remediation Goals for Radionuclides (PRG), January.

USEPA, 2019, Regional Screening Levels, May.

**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Tables**

Table 1.	Sampling and Analysis Summary
Table 2.	Soil and Sediment Results – Metals and Perchlorate
Table 3.	Soil and Sediment Results – Radionuclides
Table 4.	Spring Water Results – Metals and Perchlorate
Table 5.	Spring Water Results - Radionuclides
Table 6.	Fruit Analytical Results

**TABLE 1**  
**SAMPLING AND ANALYSIS SUMMARY**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sampling Location	Sampling Rationale	Sample Name	Sample Type	Date Collected	Analyses <sup>1</sup>				
					Metals	Perchlorate	Strontium-90	Tritium	Cesium-137
					6010B and 7471A	314.0	905	906.0	901.1
<b>High Use Areas</b>									
HV-1	Monitor soil and sediment conditions in and around Hidden Valley Camp	HV-1-190422	Soil	4/22/2019	X	X	X	X	X
HV-2		HV-2-190422	Soil	4/22/2019	X	X	X	X	X
HV-SED-1		HV-SED-1-190422	Sediment <sup>2</sup>	4/22/2019	X	X	X	X	X
TF-1	Monitor soil conditions at Terry Field	TF-1-190422	Soil	4/22/2019	X	X	X	X	X
KC-1	Monitor soil conditions in the Kids' Cabins	KC-1-190422	Soil	4/22/2019	X	X	X	X	X
GF-1	Monitor soil conditions at Gan Field	GF-1-190422	Soil	4/22/2019	X	X	X	X	X
CIT-1	Monitor soil conditions at the CIT Cabins	CIT-1-190422	Soil	4/22/2019	X	X	X	X	X
AT-1	Monitor soil conditions at Alpine Tower	AT-1-190422	Soil	4/22/2019	X	X	X	X	X
<b>Upgradient Samples</b>									
OS1-W	Monitor Spring OS1 for potential impacts	OS1-W-190613	Water	6/13/2019	X	X	X	X	X
OS3-W	Monitor Spring OS3 for potential impacts	OS3-W-190613	Water	6/13/2019	X	X	X	X	X
OS8-SED-1	Monitor sediment downstream of Spring OS8 for potential impacts	OS8-SED-1-190613	Sediment <sup>2</sup>	6/13/2019	X	X	X	X	X
		OS8-SED-1-190830	Sediment <sup>2</sup>	8/30/2019	-	-	X	-	-
		OS8-SED-1A-190830	Sediment <sup>2</sup>	8/30/2019	-	-	X	-	-
		OS8-SED-1B-190830	Sediment <sup>2</sup>	8/30/2019	-	-	X	-	-
		OS8-SED-1C-190830	Sediment <sup>2</sup>	8/30/2019	-	-	X	-	-
BP-SED-1	Monitor sediment for potential runoff from the burn pit portion of the SSFL	BP-SED-1-190613	Sediment <sup>2</sup>	6/13/2019	X	X	X	X	X
		BP-SED-1-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		BP-SED-1A-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		BP-SED-1B-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		BP-SED-1C-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
RRMDF-SED-1	Monitor sediment for potential runoff from the reactor and RMDf portions of the SSFL	RRMDF-SED-1-190613	Sediment <sup>2</sup>	6/13/2019	X	X	X	X	X
		RRMDF-SED-1-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		RRMDF-SED-1A-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		RRMDF-SED-1B-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		RRMDF-SED-1C-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
SRE-SED-1	Monitor sediment for potential runoff from the sodium reactor (SRE) portion of the SSFL	SRE-SED-1-190613	Sediment <sup>2</sup>	6/13/2019	X	X	X	X	X
		SRE-SED-1-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		SRE-SED-1A-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		SRE-SED-1B-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
		SRE-SED-1C-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
SRE-SED-2		SRE-SED-2-190829	Sediment <sup>2</sup>	8/29/2019	-	-	X	-	-
OW-SED-1	Generate background sediment data from the Old Well Camp area	OW-SED-1-190613	Sediment <sup>2</sup>	6/13/2019	X	X	X	X	X
<b>Vegetation Samples</b>									
AV-1	Monitor fruit grown on-Site for potential impacts	AV-1-190830	Avocado	8/30/2019	-	-	X	-	-
A-1		A-1-190830	Apple	8/30/2019	-	-	X	-	-
G-1		G-1-190830	Grapefruit	8/30/2019	-	-	X	-	-
L-1		L-1-190830	Lemon	8/30/2019	-	-	X	-	-



**TABLE 1**  
**SAMPLING AND ANALYSIS SUMMARY**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sampling Location	Sampling Rationale	Sample Name	Sample Type	Date Collected	Analyses <sup>1</sup>				
					Metals	Perchlorate	Strontium-90	Tritium	Cesium-137
					6010B and 7471A	314.0	905	906.0	901.1
AV-2	Generate background data from commercially-available fruit	AV-2-190830	Avocado	8/30/2019	-	-	X	-	-
A-2		A-2-190830	Apple	8/30/2019	-	-	X	-	-
G-2		G-2-190830	Grapefruit	8/30/2019	-	-	X	-	-
L-2		L-2-190830	Lemon	8/30/2019	-	-	X	-	-

Notes:

1. Methods shown are U.S. Environmental Protection Agency methods.
2. Sediment describes soil samples collected from seasonal streams/drainage areas.

Abbreviations:

X = analysis performed on sample indicated  
 - = analysis not performed on sample indicated  
 CIT = counselor-in-training  
 SSFL = Santa Susana Field Laboratory

**TABLE 2**  
**SOIL AND SEDIMENT RESULTS - METALS AND PERCHLORATE**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sample Location Name	Sample Name	Matrix	Date Collected	Title 22 Metals <sup>1</sup>																	Per-chlorate <sup>3</sup>
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury <sup>2</sup>	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
mg/kg																					
<b>High Use Area Samples</b>																					
HV-1	HV-1-190422	Soil	4/22/2019	<1.8 UJ	6.9	100	0.54	<0.44	15	5.9	<5.3	5	<0.014	<1.8	9.4	<3.5	<0.88	<1.8	29	62	<0.039
HV-2	HV-2-190422	Soil	4/22/2019	<1.9 UJ	5.5	77	0.37	<0.47	18	5.7	<5.6	12	0.017	<1.9	11	<3.7	1.8	<1.9	30	64	<0.040
HV-SED-1	HV-SED-1-190422	Sediment	4/22/2019	<1.4 UJ	3.8	53	<0.29	<0.36	11	3.8	<4.3	7.5	<0.016	<1.4	6.7	<2.9	<0.71	<1.4	21	42	<0.040
TF-1	TF-1-190422	Soil	4/22/2019	<1.1 UJ	4.6	110	0.34	<0.27	16	7.1	13	9.7	<0.015	<1.1	10	<2.1	<0.53	<1.1	35	50	<0.040
KC-1	KC-1-190422	Soil	4/22/2019	<1.8 UJ	5.6	75	0.44	<0.45	18	6.8	8.6	9.6	<0.016	<1.8	12	<3.6	<0.89	<1.8	36	64	<0.040
GF-1	GF-1-190422	Soil	4/22/2019	<1.8 UJ	4	64	0.37	<0.45	15	5.6	6	8.6	0.015	<1.8	9.7	<3.6	<0.91	<1.8	31	80	<0.040
CIT-1	CIT-1-190422	Soil	4/22/2019	<1.7 UJ	<3.3	38	<0.33	<0.41	9	2.9	5.1	5.5	<0.016	<1.7	5.5	<3.3	<0.83	<1.7	15	45	<0.040
AT-1	AT-1-190422	Soil	4/22/2019	<1.2 UJ	4.4	110	0.5	0.31	19	7.8	9.8	9	<0.016	<1.2	14	<2.5	<0.62	<1.2	38	44	<0.039
<b>Upgradient Samples</b>																					
BP-SED-1	BP-SED-1-190613	Sediment	6/13/2019	<9.9 UJ	11	52	<0.5	<0.5	11	2.3	4.5	5.7	0.032	<2	6.2	<3	<1.5	<9.9	21	42	<0.040
OS8-SED-1	OS8-SED-1-190613	Sediment	6/13/2019	<9.9 UJ	3.8	34	<0.49	<0.49	12	1.4	4.8	5.4	<0.02	<2	6.1	<3	<1.5	<9.9	21	32	<0.040
RRMDF-SED-1	RRMDF-SED-1-190613	Sediment	6/13/2019	<10 UJ	4.2	63	0.54	<0.5	10	2.1	5.2	6.4	0.018 J	<2	5.7	<3	<1.5	<10	21	53	<0.040
SRE-SED-1	SRE-SED-1-190613	Sediment	6/13/2019	<10 UJ	4.3	51	0.51	<0.5	7.9	2.1	3.2	6.8	<0.02	<2	4.1	<3	<1.5	<10	20	47	<0.040
OW-SED-1	OW-SED-1-190613	Sediment	6/13/2019	<10 UJ	<3	39	<0.5	<0.5	7.3	1.2	2	4	<0.02	<2	3.8	<3	<1.5	<10	15	29	<0.040
<b>Screening Criteria</b>																					
Residential Risk-Based Screening Levels <sup>4</sup>				31	0.11	15000	16	71	120000	23	3100	80	1	390	820	390	390	0.78	390	23000	55
Regional Background Levels <sup>5</sup>				0.86	39.7	319	1.87	0.58	81	38	102	42	0.13	3.2	113	0.896	0.138	0.991	151	215	0.00163

**Notes:**

1. Samples analyzed by Eurofins TestAmerica for metals using U.S. Environmental Protection Agency (USEPA) Method 6010B unless otherwise indicated.
2. Samples analyzed by Eurofins TestAmerica for mercury using USEPA Method 7471A.
3. Samples analyzed by Eurofins TestAmerica for perchlorate using USEPA Method 314.0.
4. Regional screening levels for residential soil published by the USEPA (2019), modified by the California Department of Toxic Substances Control (DTSC, 2019).
5. Background threshold values as calculated by the DTSC for the Santa Susana Field Laboratory (2013).

**Abbreviations:**

mg/kg = milligrams per kilogram  
 < = analyte was not detected above the reporting limit shown  
 UJ = The sample was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise  
 J = Analyte was detected below the reporting limit and above the detection limit. Value is estimated.

**References:**

Department of Toxic Substances Control (DTSC), 2013, Chemical Look-Up Table Technical Memorandum, Santa Susana Field Laboratory, Ventura County, California, June 11.  
 DTSC, 2019, Human and Ecological Risk Office (HERO) Human Health Risk Assessment Note Number 3, April.  
 U. S. Environmental Protection Agency USEPA, 2019, Regional Screening Levels, November.

**TABLE 3**  
**SOIL AND SEDIMENT RESULTS - RADIONUCLIDES**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sample Location	Sample Name	Matrix	Date Collected	Tritium <sup>1</sup>	Strontium-90 <sup>2</sup>	Cesium-137 <sup>3</sup>
				pCi/g		
<b>Main Campus Sampling Locations</b>						
HV-1	HV-1-190422	Soil	4/22/2019	<0.359	<0.273	<0.187
HV-2	HV-2-190422	Soil	4/22/2019	<0.362	<0.242	<0.125
HV-SED-1	HV-SED-190422	Sediment	4/22/2019	<0.363	<0.284	<0.161
TF-1	TF-1-190422	Soil	4/22/2019	<0.355	<0.495	<0.158
KC-1	KC-1-190422	Soil	4/22/2019	<0.332	<0.266	<0.192
GF-1	GF-1-190422	Soil	4/22/2019	<0.393	<0.281	<0.165
CIT-1	CIT-1-190422	Soil	4/22/2019	<0.348	<0.246	<0.162
AT-1	AT-1-190422	Soil	4/22/2019	<0.356	<0.267	<0.207
<b>Upgradient Sampling Locations</b>						
BP-SED-1	BP-SED-1-190613	Sediment	6/13/2019	<0.061	0.32	0.055
	BP-SED-1-190829	Sediment	8/29/2019	–	<0.0506	–
BP-SED-1A	BP-SED-1A-190829	Sediment	8/29/2019	–	<0.0968	–
BP-SED-1B	BP-SED-1B-190829	Sediment	8/29/2019	–	<0.0474	–
BP-SED-1C	BP-SED-1C-190829	Sediment	8/29/2019	–	<0.0976	–
RRMDF-SED-1	RRMDF-SED-1-190613	Sediment	6/13/2019	<0.068	0.48	0.111
	RRMDF-SED-1-190829	Sediment	8/29/2019	–	<0.0667	–
RRMDF-SED-1A	RRMDF-SED-1A-190829	Sediment	8/29/2019	–	<0.0984	–
RRMDF-SED-1B	RRMDF-SED-1B-190829	Sediment	8/29/2019	–	<0.0661	–
RRMDF-SED-1C	RRMDF-SED-1C-190829	Sediment	8/29/2019	–	<0.0582	–
SRE-SED-1	SRE-SED-1-190613	Sediment	6/13/2019	<0.066	0.232	<0.037
	SRE-SED-1-190829	Sediment	8/29/2019	–	<0.0982	–
SRE-SED-1A	SRE-SED-1A-190829	Sediment	8/29/2019	–	<0.053	–
SRE-SED-1B	SRE-SED-1B-190829	Sediment	8/29/2019	–	<0.0977	–
SRE-SED-1C	SRE-SED-1C-190829	Sediment	8/29/2019	–	<0.0435	–
SRE-SED-2	SRE-SED-2-190829	Sediment	8/29/2019	–	<0.0443	–
OS8-SED-1	OS8-SED-1-190613	Sediment	6/13/2019	<0.161	0.36	0.036
	OS8-SED-1-190830	Sediment	8/30/2019	–	<0.0644	–
OS8-SED-1A	OS8-SED-1A-190830	Sediment	8/30/2019	–	<0.0821	–
OS8-SED-1B	OS8-SED-1B-190830	Sediment	8/30/2019	–	<0.0991	–
OS8-SED-1C	OS8-SED-1C-190830	Sediment	8/30/2019	–	<0.0462	–
OW-SED-1	OW-SED-1-190613	Sediment	6/13/2019	<0.101	<0.128	0.031
<b>Background Levels</b>						
McLaren/Hart (1993; 1995) <sup>4</sup>				None	0.130	0.275
Ogden Environmental and Energy Services Co., Inc. (1998) <sup>4</sup>				0.226	None	0.167
HydroGeoLogic, Inc. (2012) <sup>5</sup>				7.38	0.075	0.193
<b>Health-Based Screening Criteria</b>						
Preliminary Remediation Goals <sup>6</sup>				0.237	13.4	25.3

**Notes:**

1. Samples analyzed for tritium using U.S. Environmental Protection Agency (USEPA) Method 906.0 or equivalent.
2. Samples analyzed for strontium-90 using USEPA Method 905.0 or equivalent.
3. Samples analyzed for cesium-137 using USEPA Method 901.1 or equivalent.
4. Background values were calculated as the mean plus twice the standard deviation of the data in the reports shown. Process further described in Section 3.2.1.
5. Background values are drawn from the look-up tables published by HydroGeoLogic, Inc. (2012) and approved by the USEPA.
6. Preliminary remediation goals were generated using the 2019 USEPA calculator. Further details regarding methodology are available in Appendix D.

**TABLE 3**  
**SOIL AND SEDIMENT RESULTS - RADIONUCLIDES**  
AJU Brandeis-Bardin Campus  
Brandeis, CA



Abbreviations:

pCi/g = picocuries per gram

< = Analyte was not detected above the reporting limit shown. For radionuclides, the minimum detectable concentration is displayed.

- = Sample not analyzed for analyte indicated.

References:

HydroGeoLogic, Inc., 2012, Final Technical Memorandum, Look-Up Table Recommendations, Santa Susana Field Laboratory, Area IV Radiological Study, 27 November.

McLaren/Hart Environmental Engineering Corporation, 1993, Multi-Media Sampling Report for the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy, Volume I, 10 March.

McLaren/Hart Environmental Engineering Corporation, 1995, Additional Soil and Water Sampling, The Brandeis-Bardin Institute and Santa Monica Mountains Conservancy, 19 January.

Ogden Environmental and Energy Services Co., Inc., 1998, Bell Canyon Area, Soil Sampling Report, Ventura County, California, Volume I, October.

U.S. Environmental Protection Agency (USEPA), 2019, Preliminary Remediation Goals for Radionuclides (PRG), January.

**TABLE 4**  
**SPRING WATER RESULTS - METALS AND PERCHLORATE**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sample Location Name	Sample Name	Date Collected	Title 22 Metals <sup>1</sup>																	Per-chlorate <sup>3</sup>
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury <sup>2</sup>	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
mg/L																				
OS1-W	OS1-W-190613	6/13/2019	<0.010	<0.010	0.040	<0.0020	<0.0050	<0.0050	<0.010	0.047	0.0063	<0.00020	<0.020	0.0078 J	<0.010	<0.010	<0.010	<0.010	0.630	<0.004
OS3-W	OS3-W-190613	6/13/2019	<0.010	<0.010	0.039	<0.0020	<0.0050	<0.0050	<0.010	0.0083 J	<0.0050	<0.00020	<0.020	0.0055 J	<0.010	<0.010	<0.010	<0.010	<0.020	<0.004
<b>Screening Criteria</b>																				
Maximum Contaminant Level <sup>4</sup>			0.006	0.010	1	0.004	0.005	0.05	None	1.3	0.015	0.002	None	0.1	0.05	None	0.002	None	None	0.006
SSFL Groundwater Comparison Concentrations <sup>5</sup>			0.0025	0.0077	0.15	0.00014	0.0002	0.014	0.0019	0.0047	0.011	0.000063	0.0022	0.017	0.0016	0.00017	0.00013	0.0026	6.3	None

**Notes:**

1. Samples analyzed by Eurofins TestAmerica for metals using U.S. Environmental Protection Agency (USEPA) Method 6010B unless otherwise indicated.
2. Samples analyzed by Eurofins TestAmerica for mercury using USEPA Method 7471A.
3. Samples analyzed by Eurofins TestAmerica for perchlorate using USEPA Method 314.0.
4. California maximum contaminant levels as established in Title 22 of the California Code of Regulations.
5. Background concentrations in groundwater determined for the Santa Susana Field Lab (SSFL; MWH Americas, Inc., 2014).

**Abbreviations:**

mg/kg = milligrams per kilogram      < = analyte was not detected above the reporting limit shown  
 J = Analyte was detected below the reporting limit and above the detection limit. Value is estimated.

**References:**

MWH Americas, Inc., 2014, Final Standardized Risk Assessment Methodology Revision 2 Addendum, Santa Susana Field Laboratory, Ventura County, California, August.

**TABLE 5**  
**SPRING WATER RESULTS - RADIONUCLIDES**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sample Location Name	Sample Name	Date Collected	Tritium <sup>1</sup>	Strontium-90 <sup>2</sup>	Cesium-137 <sup>3</sup>
			<i>pCi/L</i>		
OS1-W	OS1-W-190613	6/13/2019	<310	<0.66	<7.1
OS3-W	OS3-W-190613	6/13/2019	<310	<0.65	<5.1
<b>Screening Criteria</b>					
Maximum Contaminant Level <sup>4</sup>			20,000	8.0	None
SSFL Groundwater Comparison Concentrations <sup>5</sup>			20,000	8.0	200

Notes:

1. Samples analyzed for tritium using U.S. Environmental Protection Agency (USEPA) Method 906.0 or eq
2. Samples analyzed for strontium-90 using USEPA Method 905.0 or equivalent.
3. Samples analyzed for cesium-137 using USEPA Method 901.1 or equivalent.
4. California maximum contaminant levels as established in Title 22 of the California Code of Regulations.
5. Concentrations are based on the maximum contaminant level or are based on the effective dose

Abbreviations:

pCi/L = picocuries per liter

< = Analyte was not detected above the reporting limit shown. For radionuclides, the minimum detectable concentration is displayed.

References:

Stantec Consulting Services, 2019, Boeing Report on Annual Groundwater Monitoring, 2018, Santa Susana Field Laboratory, Ventura County, California, Stantec PN: 185865105, 22 February.

**TABLE 6**  
**FRUIT ANALYTICAL RESULTS**  
 AJU Brandeis-Bardin Campus  
 Brandeis, CA



Sample Location Name	Sample Name	Sample Type	Date Collected	Strontium-90 <sup>1</sup>
				pCi/g
<b>On-Site Samples</b>				
AV-1	AV-1-190830	Avocado	8/30/2019	<0.227
A-1	A-1-190830	Apple	8/30/2019	<0.187
G-1	G-1-190830	Grapefruit	8/30/2019	<0.212
L-1	L-1-190830	Lemon	8/30/2019	<0.117
<b>Off-Site Reference Samples</b>				
AV-1	AV-1-190830	Avocado	8/30/2019	<0.225
A-1	A-1-190830	Apple	8/30/2019	<0.151
G-1	G-1-190830	Grapefruit	8/30/2019	<0.150
L-1	L-1-190830	Lemon	8/30/2019	<0.126
<b>Health-Based Screening Criteria</b>				
Preliminary Remediation Goal <sup>2</sup>				0.571

Notes:

1. Samples analyzed for strontium-90 using U.S. Environmental Protection Agency (USEPA) Method 905.0.
2. Preliminary remediation goals were calculated using the 2019 USEPA calculator. Further details regarding methodology are available in Appendix D.

Abbreviations:

pCi/g = picocuries per gram  
 < = analyte was not detected above the minimum detectable concentration shown

References:

U.S. Environmental Protection Agency (USEPA), 2019, Preliminary Remediation Goals for Radionuclides (PRG), January.

**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Figures**

- Figure 1. Site Location Map
- Figure 2. Site Map and Features
- Figure 3. Main Campus Area Map and Sampling Locations
- Figure 4. Hidden Valley Camp Sampling Locations
- Figure 5. Burn Pit Runoff Drainage Sampling Locations
- Figure 6. Reactor and RMDF Runoff Drainage Sampling Location
- Figure 7. SRE Runoff Drainage Sampling Locations
- Figure 8. OS1 Drainage Sampling Location
- Figure 9. OS8 Drainage Sampling Location
- Figure 10. Old Well Camp Sampling Location
- Figure 11. Fruit Orchard Sampling Locations
- Figure 12. Avocado Grove Sampling Location

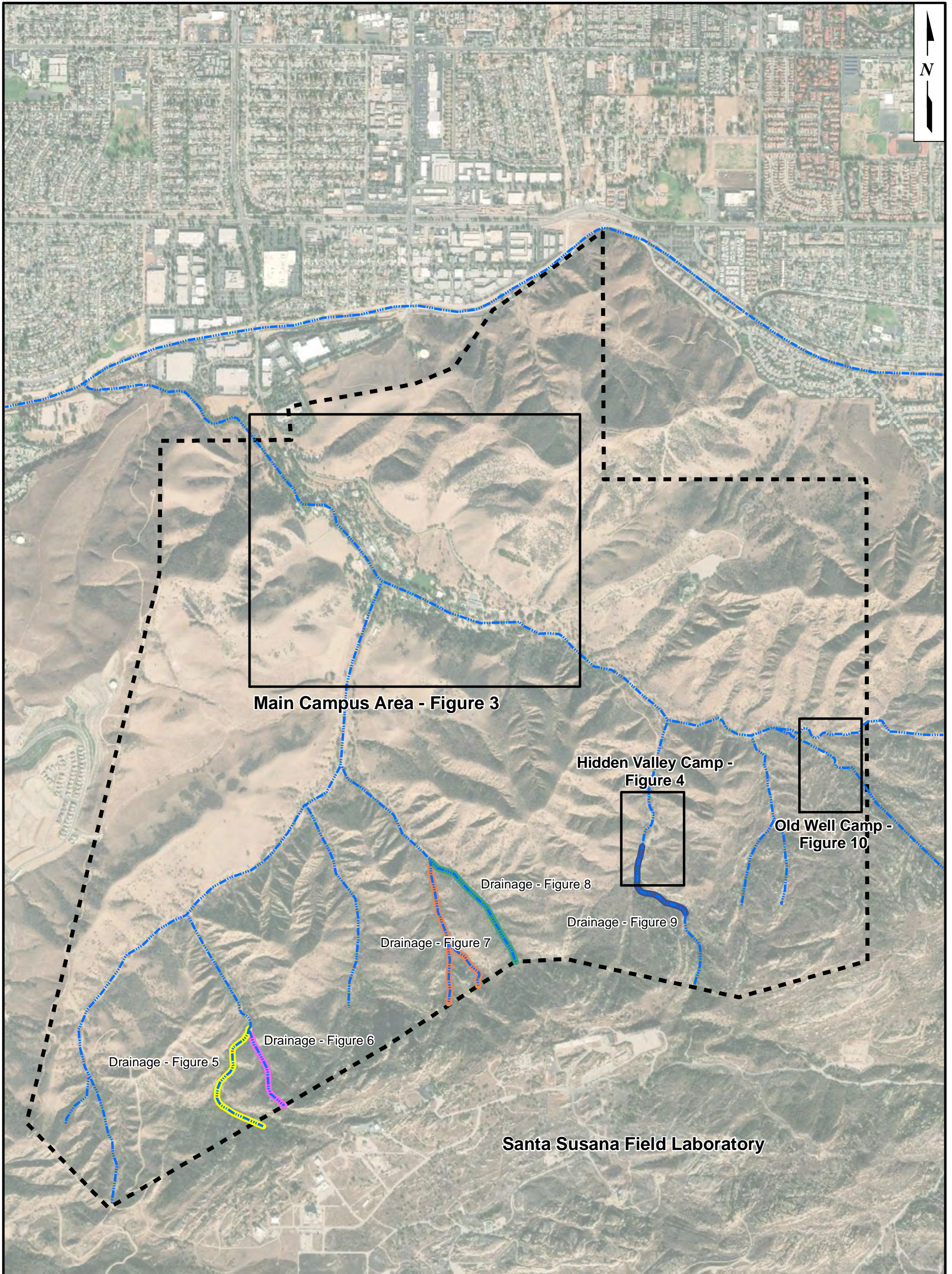




GSI Job No.	5182	Drawn by:	AV
Issued:	23-May-2019	Chk'd by:	TZW
Revised:		Apr'd by:	SMG
Map ID:	AJU_SiteLocMap	<b>FIGURE 1</b>	



**SITE LOCATION MAP**

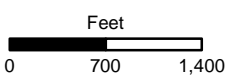
American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



**Note:**  
 Imagery downloaded from Esri ArcGIS Online, 2017.

**LEGEND**

-  Approximate Site Boundary
-  Intermittent Stream



GSI Job No.	5182	Map ID:	AJU_SiteMapDrainages
Issued:	20-Nov-2019	Drawn By:	AV
		Chk'd By:	TZW
		Apr'd By:	SMG

**SITE MAP AND FEATURES**

American Jewish University, Brandeis-Bardin Campus  
 1101 Peppertree Lane, Brandeis, California

**FIGURE 2**



**LEGEND**

- Soil Sampling Location
- Approximate Site Boundary
- Site Feature
- Intermittent Stream

**Note**  
Imagery downloaded from Esri ArcGIS Online, 2017.

<p>Scale (Feet)</p>	<p>Projected Coordinate System Datum: NAD 1983 State Plane California Zone V Units: Feet</p>
---------------------	--

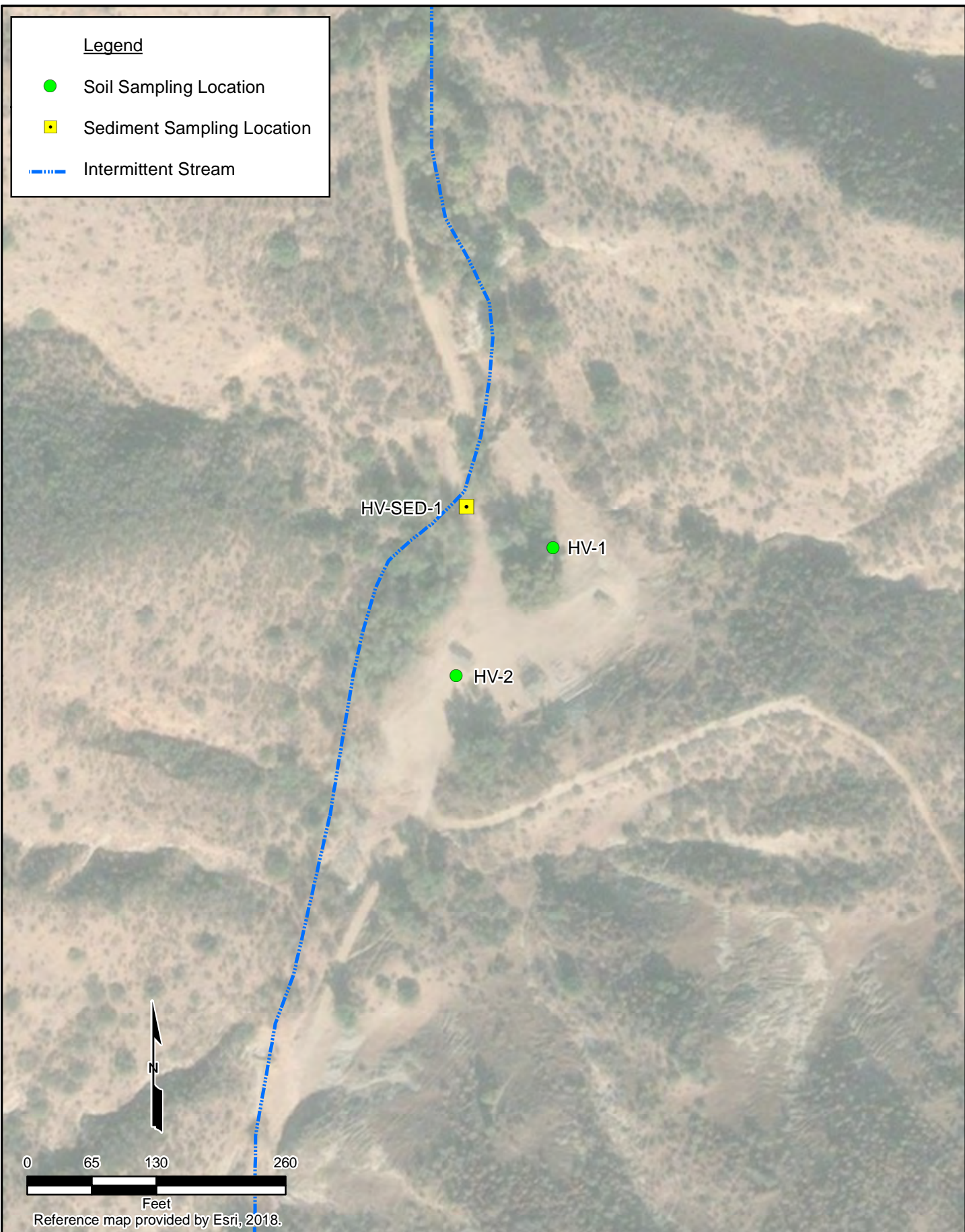


**MAIN CAMPUS AREA MAP AND SAMPLING LOCATIONS**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California

GSI Job No.	5182	Drawn By:	AV
Issued:	20-Sep-2019	Chk'd By:	TZW
Map ID:	AJU_MainCampusLand	Appv'd By:	SMG

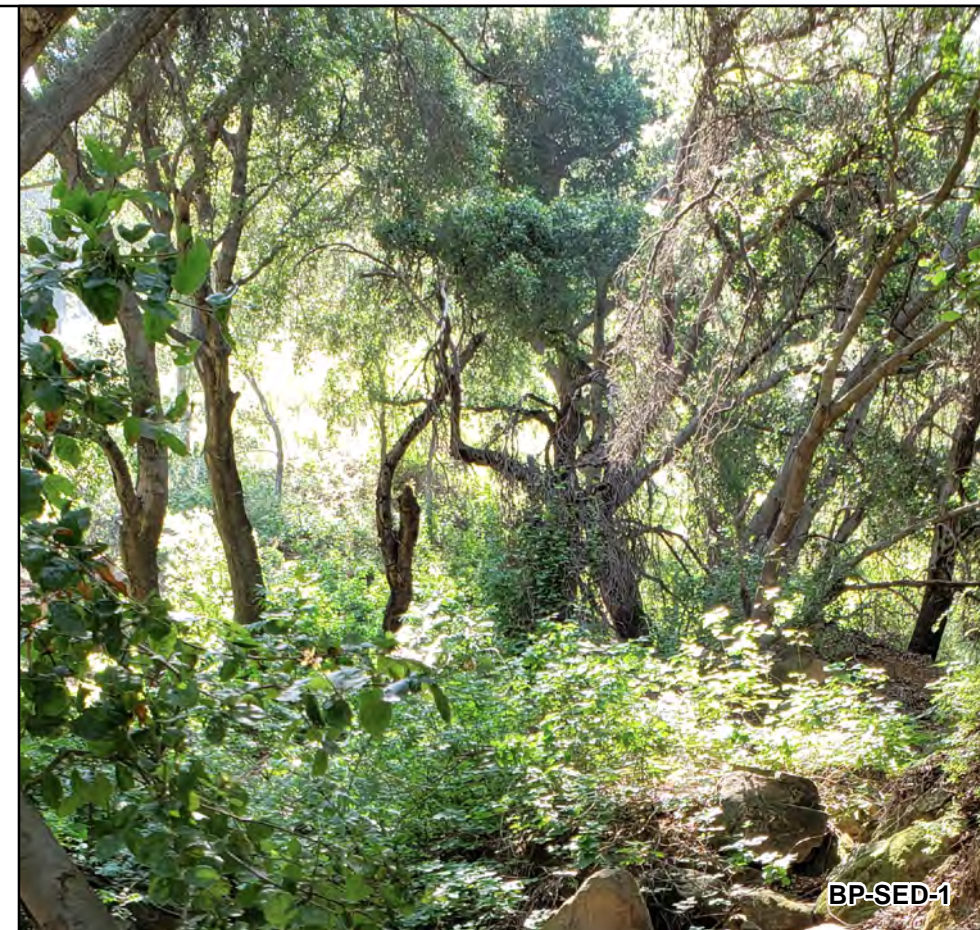
**FIGURE 3**



GSI Job No.	5182	Drawn by:	AV
Issued:	20-Sep-2019	Chk'd by:	TZW
Revised:		Aprv'd by:	SMG
Map ID:	AJU_HVC_8x11	<b>FIGURE 4</b>	

**HIDDEN VALLEY CAMP  
SAMPLING LOCATIONS**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California

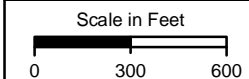


**LEGEND**

- Spring Water Sampling Location
- - - - - Intermittent Stream
- Sediment Sampling Location
- Approximate Site Boundary

**SAMPLING LOCATIONS  
OS3-W AND BP-SED-1**

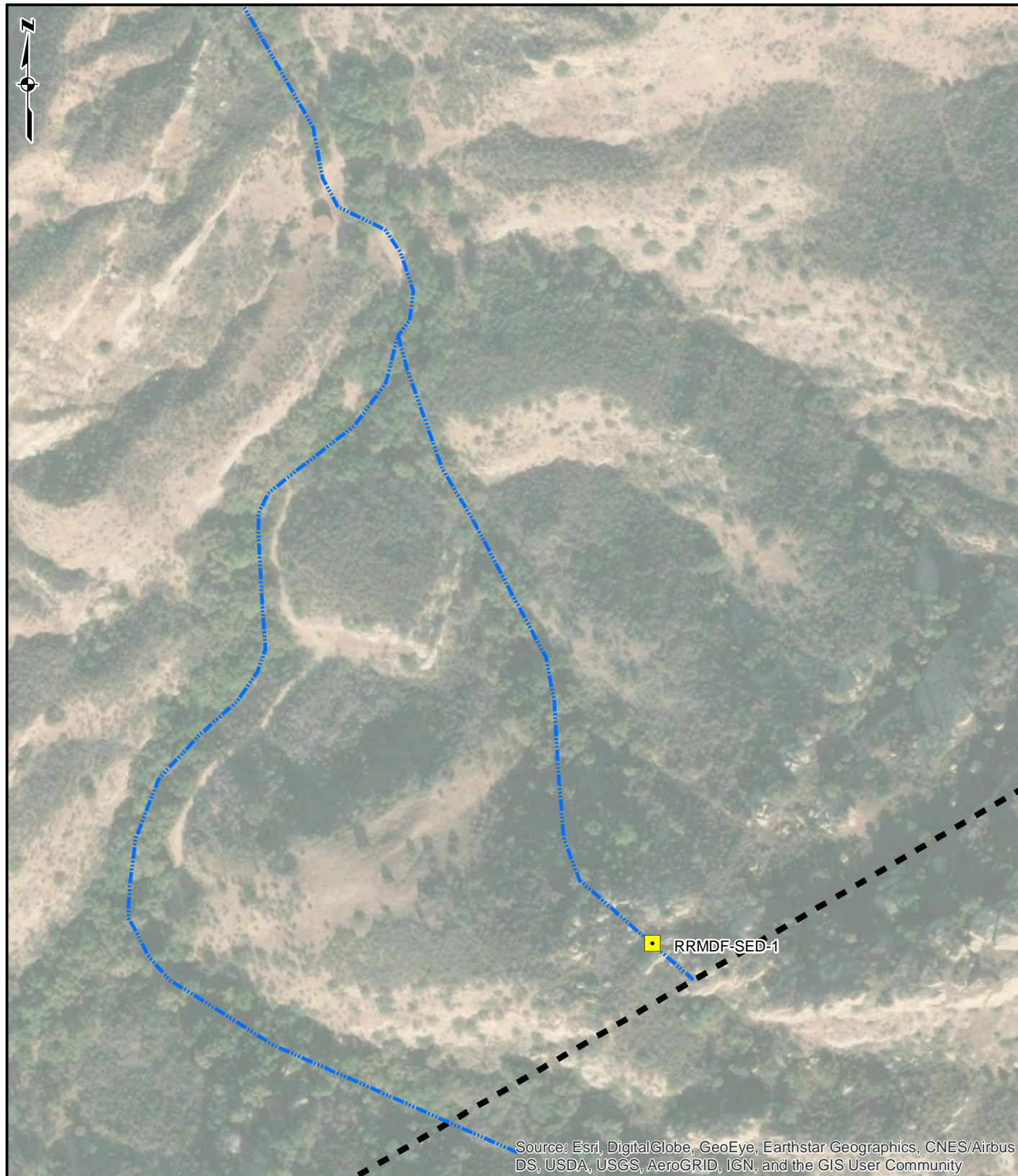
American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



SP TX S. Central  
Datum: NAD 83

GSI Job No.	5182	Drawn By:	AV
Issued:	19-Nov-2019	Chk'd By:	TZW
Map ID:		Appv'd By:	SMG

**FIGURE 5**

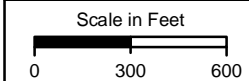


**LEGEND**

- Sediment Sampling Location
- Approximate Site Boundary
- Intermittent Stream

**SAMPLING LOCATION RRMDF-SED-1**

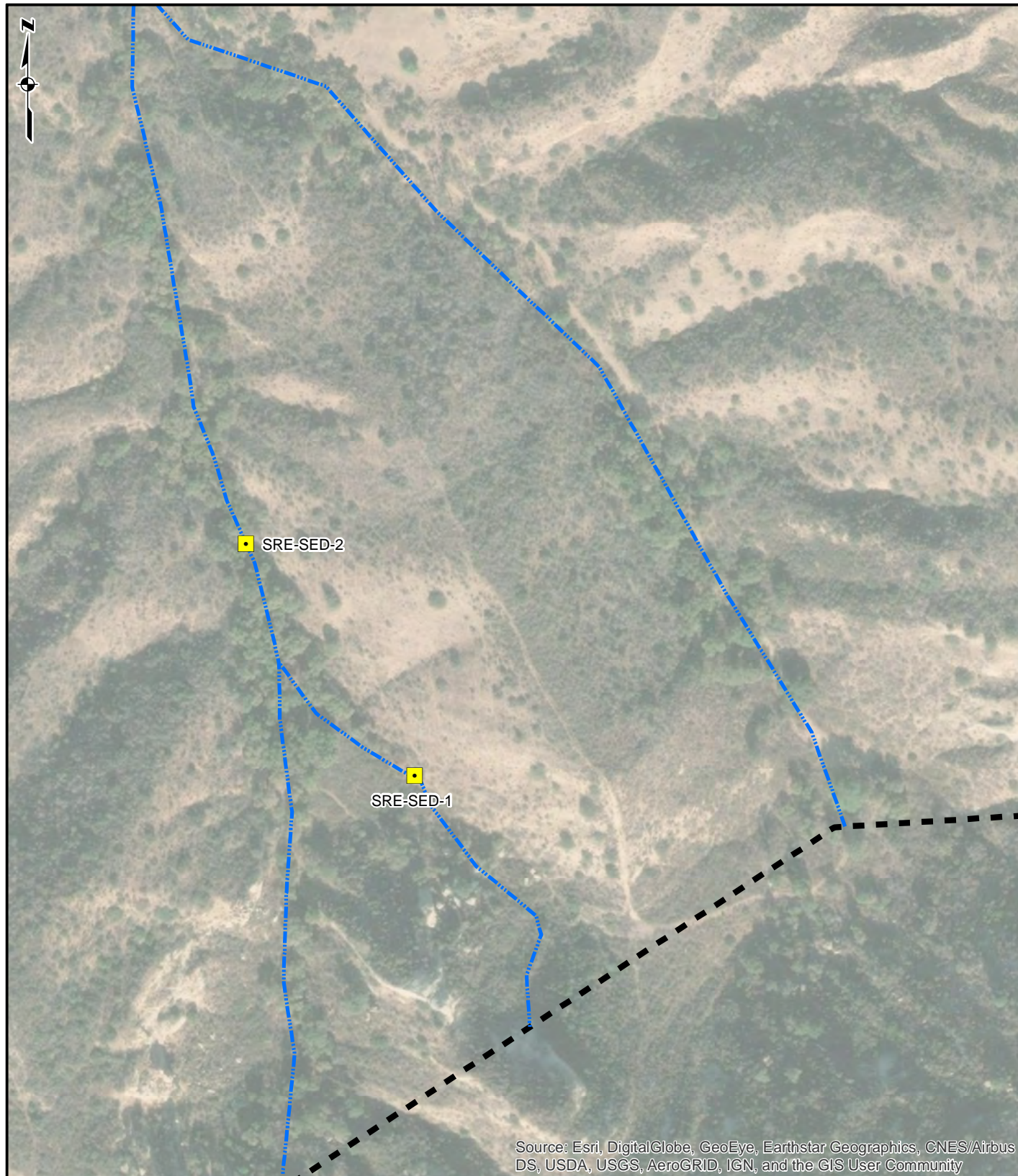
American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



State Plane  
California Zone V  
Datum: NAD 83

GSI Job No.	5182	Drawn By:	AV
Issued:	19-Nov-2019	Chk'd By:	TZW
		Appv'd By:	SMG

**FIGURE 6**

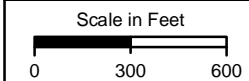


**LEGEND**

- Sediment Sampling Location
- Approximate Site Boundary
- Intermittent Stream

**SAMPLING LOCATIONS  
SRE-SED-1 AND SRE-SED-2**

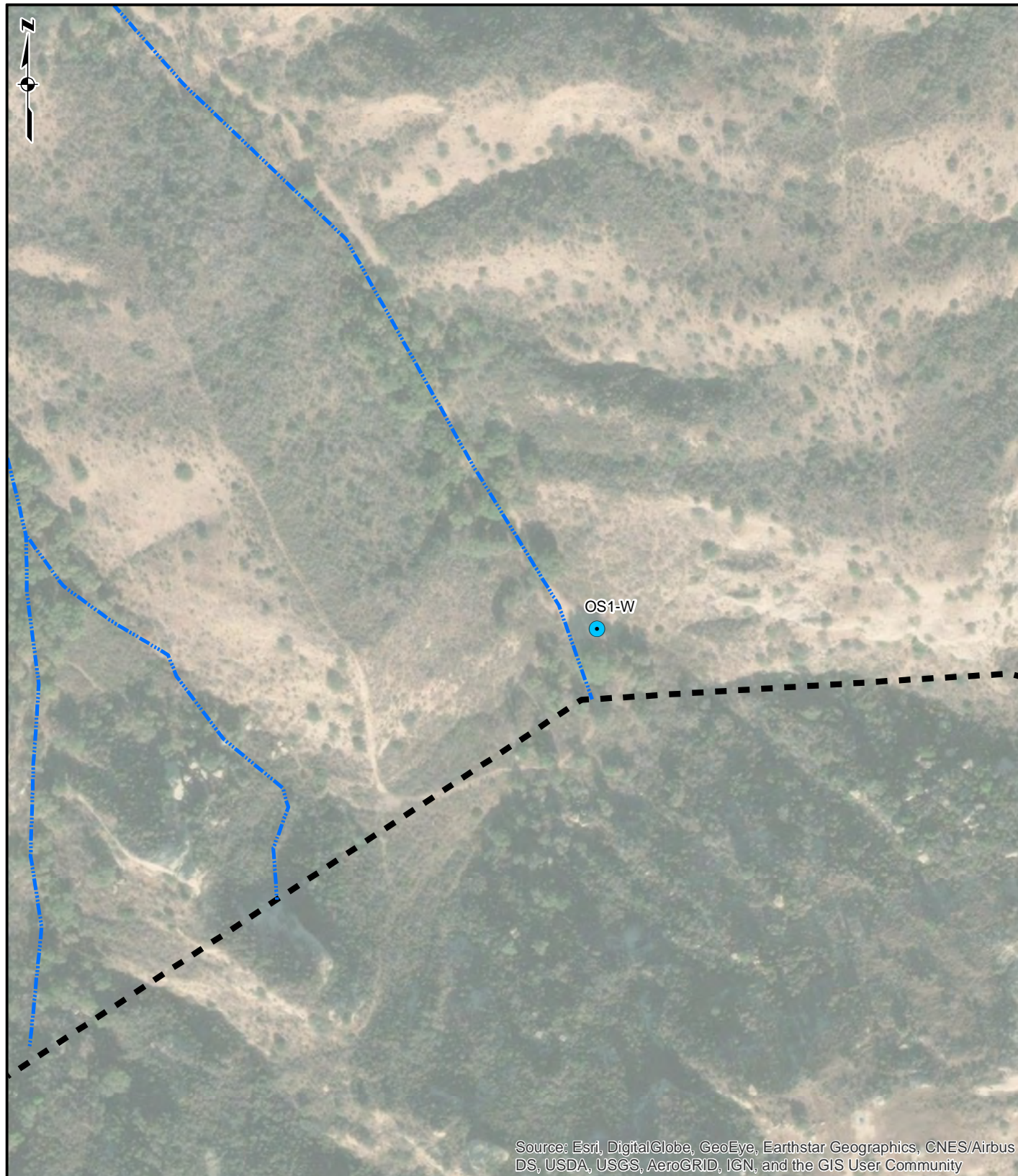
American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



State Plane  
California Zone V  
Datum: NAD 83

GSI Job No.	5182	Drawn By:	AV
Issued:	19-Nov-2019	Chk'd By:	TZW
Map ID:		Appv'd By:	SMG

**FIGURE 7**

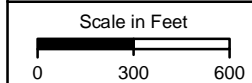


**LEGEND**

- Spring Water Sampling Location
- Approximate Site Boundary
- - - - - Intermittent Stream

**SAMPLING LOCATION OS1-W**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



State Plane  
California Zone V  
Datum: NAD 83

GSI Job No.	5182	Drawn By:	AV
Issued:	19-Nov-2019	Chk'd By:	TZW
Map ID:	AJU_OS1	Appv'd By:	SMG

**FIGURE 8**





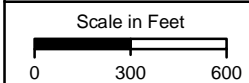
OS8-SED-1

**LEGEND**

- Sediment Sampling Location
- Approximate Site Boundary
- Intermittent Stream

**SAMPLING LOCATION OS8-SED-1**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California



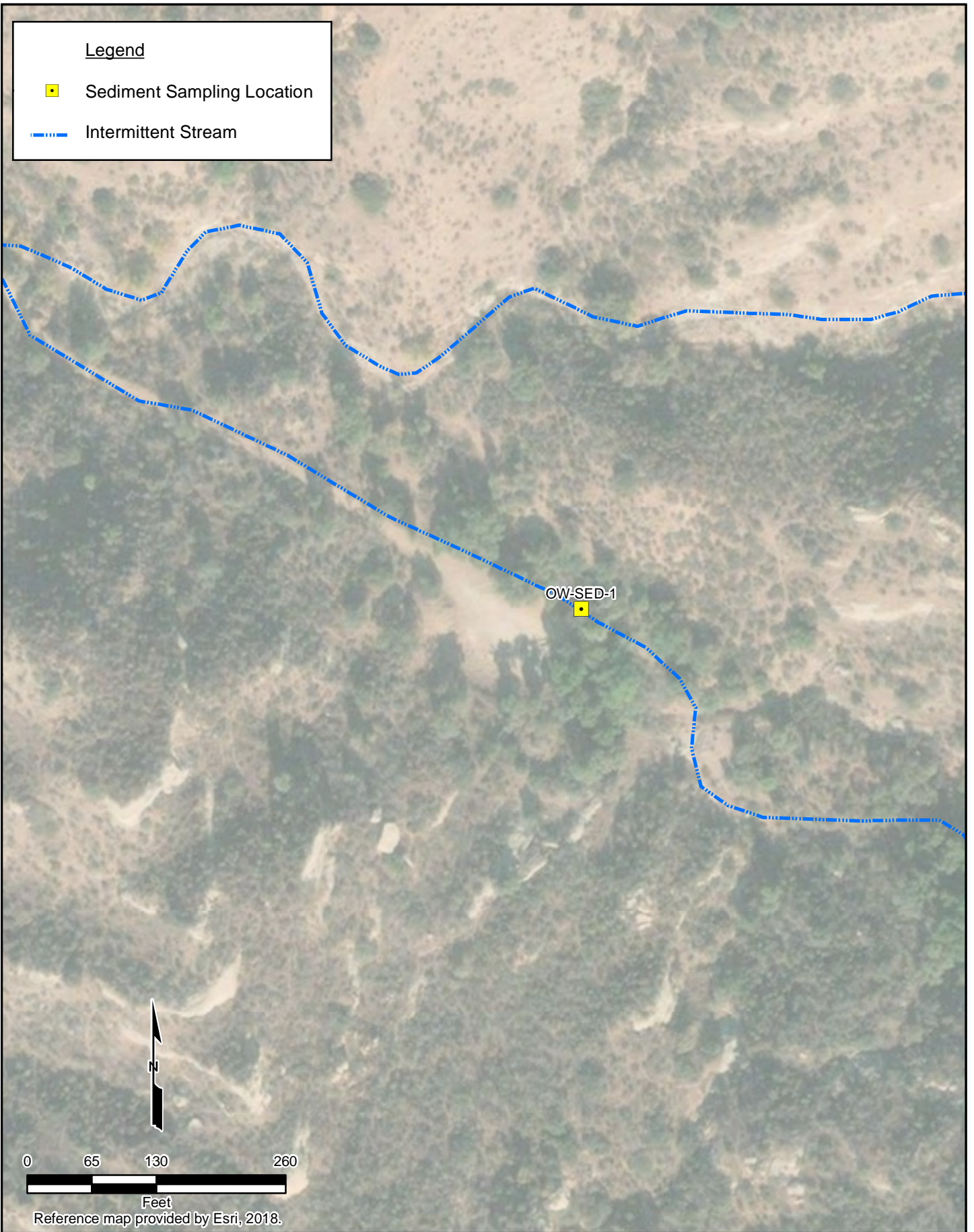
State Plane  
California Zone V  
Datum: NAD 83

GSI Job No.	5182	Drawn By:	AV
Issued:	19-Nov-2019	Chk'd By:	TZW
Map ID:	AJU_OS8	Appv'd By:	SMG

**FIGURE 9**

Legend

- Sediment Sampling Location
- Intermittent Stream



Reference map provided by Esri, 2018.





GSI Job No.	5182	Drawn by:	AV
Issued:	23-Sep-2019	Chk'd by:	TZW
Revised:		Aprv'd by:	SMG
Map ID:	AJU_OWC	<b>FIGURE 10</b>	

**OLD WELL CAMP  
SAMPLING LOCATIONS**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California

Legend

-  Fruit Sampling Location
-  Intermittent Stream



Reference map provided by Esri, 2018.



GSI Job No.	5182	Drawn by:	AV
Issued:	24-Sep-2019	Chk'd by:	TZW
Revised:		Aprv'd by:	SMG
Map ID:	AJU_FruitOrchard	<b>FIGURE 11</b>	

**FRUIT ORCHARD  
SAMPLING LOCATIONS**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California

Legend



Fruit Sampling Location

AV-1



Reference map provided by Esri, 2018.



GSI Job No.	5182	Drawn by:	AV
Issued:	24-Sep-2019	Chk'd by:	TZW
Revised:		Aprv'd by:	SMG
Map ID:	AJU_AvocadoGrove	<b>FIGURE 12</b>	

**AVOCADO GROVE  
SAMPLING LOCATIONS**

American Jewish University, Brandeis-Bardin Campus  
1101 Peppertree Lane, Brandeis, California

**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendices**

- Appendix A. Analytical Laboratory Reports – April 2019 Event
- Appendix B. Analytical Laboratory Reports – June 2019 Event
- Appendix C. Analytical Laboratory Reports – August 2019 Event
- Appendix D. Preliminary Remediation Goal Calculation Methodology and Inputs
- Appendix E. Background Threshold Value ProUCL Output Files

**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendix A**

Appendix A. Analytical Laboratory Reports – April 2019 Event

## ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton  
1220 Quarry Lane  
Pleasanton, CA 94566  
Tel: (925)484-1919

Laboratory Job ID: 720-92642-1  
Client Project/Site: AJU-BB

For:  
GSI Environmental, Inc  
155 Grand Avenue  
Suite 704  
Oakland, California 94612

Attn: Susan Gallardo



---

Authorized for release by:  
5/3/2019 2:14:35 PM

Afsaneh Salimpour, Senior Project Manager  
(925)484-1919  
[afsaneh.salimpour@testamericainc.com](mailto:afsaneh.salimpour@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Definitions/Glossary . . . . .	3
Case Narrative . . . . .	4
Detection Summary . . . . .	5
Client Sample Results . . . . .	7
QC Sample Results . . . . .	15
QC Association Summary . . . . .	18
Lab Chronicle . . . . .	20
Certification Summary . . . . .	23
Method Summary . . . . .	24
Sample Summary . . . . .	25
Chain of Custody . . . . .	26
Field Data Sheets . . . . .	28
Receipt Checklists . . . . .	29



# Definitions/Glossary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

---

**Job ID: 720-92642-1**

---

**Laboratory: Eurofins TestAmerica, Pleasanton**

---

**Narrative**

**Job Narrative  
720-92642-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 4/24/2019 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.3° C and 2.0° C.

**Metals**

Method(s) 6010B: The serial dilution performed for the following sample associated with batch 720-264698 was outside control limits: Barium-22%, Chromium-19% and Vanadium-19% (720-92642-A-1-C SD)

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 720-264496 and analytical batch 720-264698 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Detection Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Client Sample ID: HV-1-190422

## Lab Sample ID: 720-92642-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.9		3.5		mg/Kg	4		6010B	Total/NA
Barium	100	F1	1.8		mg/Kg	4		6010B	Total/NA
Beryllium	0.54		0.35		mg/Kg	4		6010B	Total/NA
Chromium	15		1.8		mg/Kg	4		6010B	Total/NA
Cobalt	5.9		0.70		mg/Kg	4		6010B	Total/NA
Lead	5.0		1.8		mg/Kg	4		6010B	Total/NA
Nickel	9.4		1.8		mg/Kg	4		6010B	Total/NA
Vanadium	29	F1	1.8		mg/Kg	4		6010B	Total/NA
Zinc	62	F1	5.3		mg/Kg	4		6010B	Total/NA

## Client Sample ID: HV-2-190422

## Lab Sample ID: 720-92642-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.5		3.7		mg/Kg	4		6010B	Total/NA
Barium	77		1.9		mg/Kg	4		6010B	Total/NA
Beryllium	0.37		0.37		mg/Kg	4		6010B	Total/NA
Chromium	18		1.9		mg/Kg	4		6010B	Total/NA
Cobalt	5.7		0.75		mg/Kg	4		6010B	Total/NA
Lead	12		1.9		mg/Kg	4		6010B	Total/NA
Nickel	11		1.9		mg/Kg	4		6010B	Total/NA
Silver	1.8		0.93		mg/Kg	4		6010B	Total/NA
Vanadium	30		1.9		mg/Kg	4		6010B	Total/NA
Zinc	64		5.6		mg/Kg	4		6010B	Total/NA
Mercury	0.017		0.017		mg/Kg	1		7471A	Total/NA

## Client Sample ID: HV-SED-190422

## Lab Sample ID: 720-92642-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.8		2.9		mg/Kg	4		6010B	Total/NA
Barium	53		1.4		mg/Kg	4		6010B	Total/NA
Chromium	11		1.4		mg/Kg	4		6010B	Total/NA
Cobalt	3.8		0.57		mg/Kg	4		6010B	Total/NA
Lead	7.5		1.4		mg/Kg	4		6010B	Total/NA
Nickel	6.7		1.4		mg/Kg	4		6010B	Total/NA
Vanadium	21		1.4		mg/Kg	4		6010B	Total/NA
Zinc	42		4.3		mg/Kg	4		6010B	Total/NA

## Client Sample ID: TF-1-190422

## Lab Sample ID: 720-92642-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.6		2.1		mg/Kg	4		6010B	Total/NA
Barium	110		1.1		mg/Kg	4		6010B	Total/NA
Beryllium	0.34		0.21		mg/Kg	4		6010B	Total/NA
Chromium	16		1.1		mg/Kg	4		6010B	Total/NA
Cobalt	7.1		0.43		mg/Kg	4		6010B	Total/NA
Copper	13		3.2		mg/Kg	4		6010B	Total/NA
Lead	9.7		1.1		mg/Kg	4		6010B	Total/NA
Nickel	10		1.1		mg/Kg	4		6010B	Total/NA
Vanadium	35		1.1		mg/Kg	4		6010B	Total/NA
Zinc	50		3.2		mg/Kg	4		6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Pleasanton

# Detection Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Client Sample ID: KC-1-190422

## Lab Sample ID: 720-92642-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.6		3.6		mg/Kg	4		6010B	Total/NA
Barium	75		1.8		mg/Kg	4		6010B	Total/NA
Beryllium	0.44		0.36		mg/Kg	4		6010B	Total/NA
Chromium	18		1.8		mg/Kg	4		6010B	Total/NA
Cobalt	6.8		0.71		mg/Kg	4		6010B	Total/NA
Copper	8.6		5.4		mg/Kg	4		6010B	Total/NA
Lead	9.6		1.8		mg/Kg	4		6010B	Total/NA
Nickel	12		1.8		mg/Kg	4		6010B	Total/NA
Vanadium	36		1.8		mg/Kg	4		6010B	Total/NA
Zinc	64		5.4		mg/Kg	4		6010B	Total/NA

## Client Sample ID: GF-1-190422

## Lab Sample ID: 720-92642-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.0		3.6		mg/Kg	4		6010B	Total/NA
Barium	64		1.8		mg/Kg	4		6010B	Total/NA
Beryllium	0.37		0.36		mg/Kg	4		6010B	Total/NA
Chromium	15		1.8		mg/Kg	4		6010B	Total/NA
Cobalt	5.6		0.73		mg/Kg	4		6010B	Total/NA
Copper	6.0		5.5		mg/Kg	4		6010B	Total/NA
Lead	8.6		1.8		mg/Kg	4		6010B	Total/NA
Nickel	9.7		1.8		mg/Kg	4		6010B	Total/NA
Vanadium	31		1.8		mg/Kg	4		6010B	Total/NA
Zinc	80		5.5		mg/Kg	4		6010B	Total/NA
Mercury	0.015		0.015		mg/Kg	1		7471A	Total/NA

## Client Sample ID: CIT-1-190422

## Lab Sample ID: 720-92642-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	38		1.7		mg/Kg	4		6010B	Total/NA
Chromium	9.0		1.7		mg/Kg	4		6010B	Total/NA
Cobalt	2.9		0.66		mg/Kg	4		6010B	Total/NA
Copper	5.1		5.0		mg/Kg	4		6010B	Total/NA
Lead	5.5		1.7		mg/Kg	4		6010B	Total/NA
Nickel	5.5		1.7		mg/Kg	4		6010B	Total/NA
Vanadium	15		1.7		mg/Kg	4		6010B	Total/NA
Zinc	45		5.0		mg/Kg	4		6010B	Total/NA

## Client Sample ID: AT-1-190422

## Lab Sample ID: 720-92642-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.4		2.5		mg/Kg	4		6010B	Total/NA
Barium	110		1.2		mg/Kg	4		6010B	Total/NA
Beryllium	0.50		0.25		mg/Kg	4		6010B	Total/NA
Cadmium	0.31		0.31		mg/Kg	4		6010B	Total/NA
Chromium	19		1.2		mg/Kg	4		6010B	Total/NA
Cobalt	7.8		0.50		mg/Kg	4		6010B	Total/NA
Copper	9.8		3.7		mg/Kg	4		6010B	Total/NA
Lead	9.0		1.2		mg/Kg	4		6010B	Total/NA
Nickel	14		1.2		mg/Kg	4		6010B	Total/NA
Vanadium	38		1.2		mg/Kg	4		6010B	Total/NA
Zinc	44		3.7		mg/Kg	4		6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Pleasanton

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: HV-1-190422**

**Lab Sample ID: 720-92642-1**

Date Collected: 04/22/19 14:55

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		39		ug/Kg			05/01/19 00:24	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	F1	1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Arsenic</b>	<b>6.9</b>		3.5		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Barium</b>	<b>100</b>	<b>F1</b>	1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Beryllium</b>	<b>0.54</b>		0.35		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Cadmium	ND		0.44		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Chromium</b>	<b>15</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Cobalt</b>	<b>5.9</b>		0.70		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Copper	ND		5.3		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Lead</b>	<b>5.0</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Molybdenum	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Nickel</b>	<b>9.4</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Selenium	ND		3.5		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Silver	ND		0.88		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
Thallium	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Vanadium</b>	<b>29</b>	<b>F1</b>	1.8		mg/Kg		04/29/19 09:16	04/29/19 20:17	4
<b>Zinc</b>	<b>62</b>	<b>F1</b>	5.3		mg/Kg		04/29/19 09:16	04/29/19 20:17	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.014		mg/Kg		04/30/19 14:05	04/30/19 16:09	1

# Client Sample Results

Client: GSI Environmental, Inc  
 Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: HV-2-190422**

**Lab Sample ID: 720-92642-2**

Date Collected: 04/22/19 15:10

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 01:22	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Arsenic</b>	<b>5.5</b>		3.7		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Barium</b>	<b>77</b>		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Beryllium</b>	<b>0.37</b>		0.37		mg/Kg		04/29/19 09:16	04/30/19 13:59	4
Cadmium	ND		0.47		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Chromium</b>	<b>18</b>		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Cobalt</b>	<b>5.7</b>		0.75		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
Copper	ND		5.6		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Lead</b>	<b>12</b>		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
Molybdenum	ND		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Nickel</b>	<b>11</b>		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
Selenium	ND		3.7		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Silver</b>	<b>1.8</b>		0.93		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
Thallium	ND		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Vanadium</b>	<b>30</b>		1.9		mg/Kg		04/29/19 09:16	04/29/19 20:31	4
<b>Zinc</b>	<b>64</b>		5.6		mg/Kg		04/29/19 09:16	04/29/19 20:31	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.017</b>		0.017		mg/Kg		04/30/19 14:05	04/30/19 16:11	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: HV-SED-190422**

**Lab Sample ID: 720-92642-3**

Date Collected: 04/22/19 15:20

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 01:42	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Arsenic</b>	<b>3.8</b>		2.9		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Barium</b>	<b>53</b>		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Beryllium	ND		0.29		mg/Kg		04/29/19 09:16	04/30/19 14:03	4
Cadmium	ND		0.36		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Chromium</b>	<b>11</b>		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Cobalt</b>	<b>3.8</b>		0.57		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Copper	ND		4.3		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Lead</b>	<b>7.5</b>		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Molybdenum	ND		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Nickel</b>	<b>6.7</b>		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Selenium	ND		2.9		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Silver	ND		0.71		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
Thallium	ND		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Vanadium</b>	<b>21</b>		1.4		mg/Kg		04/29/19 09:16	04/29/19 20:36	4
<b>Zinc</b>	<b>42</b>		4.3		mg/Kg		04/29/19 09:16	04/29/19 20:36	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg		04/30/19 14:05	04/30/19 16:13	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: TF-1-190422**

**Lab Sample ID: 720-92642-4**

Date Collected: 04/22/19 16:10

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 02:01	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Arsenic</b>	<b>4.6</b>		2.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Barium</b>	<b>110</b>		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Beryllium</b>	<b>0.34</b>		0.21		mg/Kg		04/29/19 09:16	04/30/19 14:08	4
Cadmium	ND		0.27		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Chromium</b>	<b>16</b>		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Cobalt</b>	<b>7.1</b>		0.43		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Copper</b>	<b>13</b>		3.2		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Lead</b>	<b>9.7</b>		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
Molybdenum	ND		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Nickel</b>	<b>10</b>		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
Selenium	ND		2.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
Silver	ND		0.53		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
Thallium	ND		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Vanadium</b>	<b>35</b>		1.1		mg/Kg		04/29/19 09:16	04/29/19 20:41	4
<b>Zinc</b>	<b>50</b>		3.2		mg/Kg		04/29/19 09:16	04/29/19 20:41	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.015		mg/Kg		04/30/19 14:05	04/30/19 16:15	1



# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: KC-1-190422**

**Lab Sample ID: 720-92642-5**

Date Collected: 04/22/19 16:30

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 02:20	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Arsenic</b>	<b>5.6</b>		3.6		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Barium</b>	<b>75</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Beryllium</b>	<b>0.44</b>		0.36		mg/Kg		04/29/19 09:16	04/30/19 14:13	4
Cadmium	ND		0.45		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Chromium</b>	<b>18</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Cobalt</b>	<b>6.8</b>		0.71		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Copper</b>	<b>8.6</b>		5.4		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Lead</b>	<b>9.6</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
Molybdenum	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Nickel</b>	<b>12</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
Selenium	ND		3.6		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
Silver	ND		0.89		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
Thallium	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Vanadium</b>	<b>36</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:46	4
<b>Zinc</b>	<b>64</b>		5.4		mg/Kg		04/29/19 09:16	04/29/19 20:46	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg		04/30/19 14:05	04/30/19 16:18	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: GF-1-190422**

**Lab Sample ID: 720-92642-6**

Date Collected: 04/22/19 16:40

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 02:40	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Arsenic</b>	<b>4.0</b>		3.6		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Barium</b>	<b>64</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Beryllium</b>	<b>0.37</b>		0.36		mg/Kg		04/29/19 09:16	04/30/19 14:18	4
Cadmium	ND		0.45		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Chromium</b>	<b>15</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Cobalt</b>	<b>5.6</b>		0.73		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Copper</b>	<b>6.0</b>		5.5		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Lead</b>	<b>8.6</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
Molybdenum	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Nickel</b>	<b>9.7</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
Selenium	ND		3.6		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
Silver	ND		0.91		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
Thallium	ND		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Vanadium</b>	<b>31</b>		1.8		mg/Kg		04/29/19 09:16	04/29/19 20:51	4
<b>Zinc</b>	<b>80</b>		5.5		mg/Kg		04/29/19 09:16	04/29/19 20:51	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.015</b>		0.015		mg/Kg		04/30/19 14:05	04/30/19 16:20	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

Date Collected: 04/22/19 17:00

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			05/01/19 03:38	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Arsenic	ND		3.3		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Barium</b>	<b>38</b>		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Beryllium	ND		0.33		mg/Kg		04/29/19 09:16	04/30/19 14:22	4
Cadmium	ND		0.41		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Chromium</b>	<b>9.0</b>		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Cobalt</b>	<b>2.9</b>		0.66		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Copper</b>	<b>5.1</b>		5.0		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Lead</b>	<b>5.5</b>		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Molybdenum	ND		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Nickel</b>	<b>5.5</b>		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Selenium	ND		3.3		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Silver	ND		0.83		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
Thallium	ND		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Vanadium</b>	<b>15</b>		1.7		mg/Kg		04/29/19 09:16	04/29/19 20:55	4
<b>Zinc</b>	<b>45</b>		5.0		mg/Kg		04/29/19 09:16	04/29/19 20:55	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg		04/30/19 14:05	04/30/19 16:27	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: AT-1-190422**

**Lab Sample ID: 720-92642-8**

Date Collected: 04/22/19 17:20

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		39		ug/Kg			05/01/19 03:57	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Arsenic</b>	<b>4.4</b>		2.5		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Barium</b>	<b>110</b>		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Beryllium</b>	<b>0.50</b>		0.25		mg/Kg		04/29/19 09:16	04/30/19 14:27	4
<b>Cadmium</b>	<b>0.31</b>		0.31		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Chromium</b>	<b>19</b>		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Cobalt</b>	<b>7.8</b>		0.50		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Copper</b>	<b>9.8</b>		3.7		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Lead</b>	<b>9.0</b>		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
Molybdenum	ND		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Nickel</b>	<b>14</b>		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
Selenium	ND		2.5		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
Silver	ND		0.62		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
Thallium	ND		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Vanadium</b>	<b>38</b>		1.2		mg/Kg		04/29/19 09:16	04/29/19 21:00	4
<b>Zinc</b>	<b>44</b>		3.7		mg/Kg		04/29/19 09:16	04/29/19 21:00	4

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg		04/30/19 14:05	04/30/19 16:29	1

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MRL 320-291655/12  
Matrix: Solid  
Analysis Batch: 291655

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	ND		ug/L		96	75 - 125

Lab Sample ID: MB 320-291248/1-A  
Matrix: Solid  
Analysis Batch: 291655

Client Sample ID: Method Blank  
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		40		ug/Kg			04/30/19 23:45	1

Lab Sample ID: LCS 320-291248/2-A  
Matrix: Solid  
Analysis Batch: 291655

Client Sample ID: Lab Control Sample  
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	500	514		ug/Kg		103	75 - 125

Lab Sample ID: 720-92642-1 MS  
Matrix: Solid  
Analysis Batch: 291655

Client Sample ID: HV-1-190422  
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		494	511		ug/Kg		104	75 - 125

Lab Sample ID: 720-92642-1 MSD  
Matrix: Solid  
Analysis Batch: 291655

Client Sample ID: HV-1-190422  
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		496	543		ug/Kg		109	75 - 125	6	20

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-264496/1-A  
Matrix: Solid  
Analysis Batch: 264698

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 264496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Arsenic	ND		4.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Barium	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Beryllium	ND		0.40		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Cadmium	ND		0.50		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Chromium	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Cobalt	ND		0.80		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Copper	ND		6.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Lead	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Molybdenum	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Nickel	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Selenium	ND		4.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Silver	ND		1.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4

Eurofins TestAmerica, Pleasanton

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 720-264496/1-A

Matrix: Solid

Analysis Batch: 264698

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 264496

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Thallium	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Vanadium	ND		2.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4
Zinc	ND		6.0		mg/Kg		04/29/19 09:16	04/29/19 19:49	4

Lab Sample ID: LCS 720-264496/2-A

Matrix: Solid

Analysis Batch: 264698

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 264496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	50.0	46.5		mg/Kg		93	80 - 120
Barium	50.0	46.5		mg/Kg		93	80 - 120
Beryllium	50.0	44.3		mg/Kg		89	80 - 120
Cadmium	50.0	46.5		mg/Kg		93	80 - 120
Chromium	50.0	47.0		mg/Kg		94	80 - 120
Cobalt	50.0	47.5		mg/Kg		95	80 - 120
Copper	50.0	47.5		mg/Kg		95	80 - 120
Lead	50.0	47.7		mg/Kg		95	80 - 120
Molybdenum	50.0	48.3		mg/Kg		97	80 - 120
Nickel	50.0	47.2		mg/Kg		94	80 - 120
Selenium	50.0	46.1		mg/Kg		92	80 - 120
Silver	25.0	22.8		mg/Kg		91	80 - 120
Thallium	50.0	47.9		mg/Kg		96	80 - 120
Vanadium	50.0	46.9		mg/Kg		94	80 - 120
Zinc	50.0	47.1		mg/Kg		94	80 - 120

Lab Sample ID: 720-92642-1 MS

Matrix: Solid

Analysis Batch: 264698

Client Sample ID: HV-1-190422

Prep Type: Total/NA

Prep Batch: 264496

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Antimony	ND	F1	43.9	18.2	F1	mg/Kg		40	75 - 125
Arsenic	6.9		43.9	58.0		mg/Kg		116	75 - 125
Barium	100	F1	43.9	164	F1	mg/Kg		143	75 - 125
Beryllium	0.54		43.9	53.9		mg/Kg		122	75 - 125
Cadmium	ND		43.9	51.0		mg/Kg		116	75 - 125
Chromium	15		43.9	69.2		mg/Kg		123	75 - 125
Cobalt	5.9		43.9	58.0		mg/Kg		119	75 - 125
Copper	ND		43.9	52.6		mg/Kg		120	75 - 125
Lead	5.0		43.9	55.7		mg/Kg		116	75 - 125
Molybdenum	ND		43.9	50.1		mg/Kg		114	75 - 125
Nickel	9.4		43.9	61.1		mg/Kg		118	75 - 125
Selenium	ND		43.9	50.2		mg/Kg		113	75 - 125
Silver	ND		21.9	26.0		mg/Kg		118	75 - 125
Thallium	ND		43.9	50.4		mg/Kg		115	75 - 125
Vanadium	29	F1	43.9	84.8	F1	mg/Kg		127	75 - 125
Zinc	62	F1	43.9	117	F1	mg/Kg		126	75 - 125

Eurofins TestAmerica, Pleasanton

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 720-92642-1 MSD

Matrix: Solid

Analysis Batch: 264698

Client Sample ID: HV-1-190422

Prep Type: Total/NA

Prep Batch: 264496

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Antimony	ND	F1	43.1	16.5	F1	mg/Kg		37	75 - 125	10	20
Arsenic	6.9		43.1	52.4		mg/Kg		106	75 - 125	10	20
Barium	100	F1	43.1	145		mg/Kg		101	75 - 125	12	20
Beryllium	0.54		43.1	49.3		mg/Kg		113	75 - 125	9	20
Cadmium	ND		43.1	46.1		mg/Kg		106	75 - 125	10	20
Chromium	15		43.1	64.7		mg/Kg		114	75 - 125	7	20
Cobalt	5.9		43.1	52.6		mg/Kg		108	75 - 125	10	20
Copper	ND		43.1	51.0		mg/Kg		118	75 - 125	3	20
Lead	5.0		43.1	50.9		mg/Kg		107	75 - 125	9	20
Molybdenum	ND		43.1	45.7		mg/Kg		106	75 - 125	9	20
Nickel	9.4		43.1	55.6		mg/Kg		107	75 - 125	9	20
Selenium	ND		43.1	45.1		mg/Kg		103	75 - 125	11	20
Silver	ND		21.6	23.8		mg/Kg		110	75 - 125	9	20
Thallium	ND		43.1	45.4		mg/Kg		105	75 - 125	11	20
Vanadium	29	F1	43.1	76.5		mg/Kg		110	75 - 125	10	20
Zinc	62	F1	43.1	104		mg/Kg		97	75 - 125	12	20

## Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 720-264498/1-A

Matrix: Solid

Analysis Batch: 264796

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 264498

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.017		mg/Kg		04/30/19 14:05	04/30/19 15:59	1

Lab Sample ID: LCS 720-264498/2-A

Matrix: Solid

Analysis Batch: 264796

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 264498

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Mercury	0.833	0.890		mg/Kg		107	80 - 120

Lab Sample ID: 720-92642-1 MS

Matrix: Solid

Analysis Batch: 264796

Client Sample ID: HV-1-190422

Prep Type: Total/NA

Prep Batch: 264498

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				Limits
Mercury	ND		0.704	0.807		mg/Kg		114	75 - 125

Lab Sample ID: 720-92642-1 MSD

Matrix: Solid

Analysis Batch: 264796

Client Sample ID: HV-1-190422

Prep Type: Total/NA

Prep Batch: 264498

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Mercury	ND		0.714	0.807		mg/Kg		112	75 - 125	0	20

# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## HPLC/IC

### Leach Batch: 291248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Soluble	Solid	DI Leach	
720-92642-2	HV-2-190422	Soluble	Solid	DI Leach	
720-92642-3	HV-SED-190422	Soluble	Solid	DI Leach	
720-92642-4	TF-1-190422	Soluble	Solid	DI Leach	
720-92642-5	KC-1-190422	Soluble	Solid	DI Leach	
720-92642-6	GF-1-190422	Soluble	Solid	DI Leach	
720-92642-7	CIT-1-190422	Soluble	Solid	DI Leach	
720-92642-8	AT-1-190422	Soluble	Solid	DI Leach	
MB 320-291248/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 320-291248/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
720-92642-1 MS	HV-1-190422	Soluble	Solid	DI Leach	
720-92642-1 MSD	HV-1-190422	Soluble	Solid	DI Leach	

### Analysis Batch: 291655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Soluble	Solid	314.0	291248
720-92642-2	HV-2-190422	Soluble	Solid	314.0	291248
720-92642-3	HV-SED-190422	Soluble	Solid	314.0	291248
720-92642-4	TF-1-190422	Soluble	Solid	314.0	291248
720-92642-5	KC-1-190422	Soluble	Solid	314.0	291248
720-92642-6	GF-1-190422	Soluble	Solid	314.0	291248
720-92642-7	CIT-1-190422	Soluble	Solid	314.0	291248
720-92642-8	AT-1-190422	Soluble	Solid	314.0	291248
MB 320-291248/1-A	Method Blank	Soluble	Solid	314.0	291248
LCS 320-291248/2-A	Lab Control Sample	Soluble	Solid	314.0	291248
MRL 320-291655/12	Lab Control Sample	Total/NA	Solid	314.0	
720-92642-1 MS	HV-1-190422	Soluble	Solid	314.0	291248
720-92642-1 MSD	HV-1-190422	Soluble	Solid	314.0	291248

## Metals

### Prep Batch: 264496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	3050B	
720-92642-2	HV-2-190422	Total/NA	Solid	3050B	
720-92642-3	HV-SED-190422	Total/NA	Solid	3050B	
720-92642-4	TF-1-190422	Total/NA	Solid	3050B	
720-92642-5	KC-1-190422	Total/NA	Solid	3050B	
720-92642-6	GF-1-190422	Total/NA	Solid	3050B	
720-92642-7	CIT-1-190422	Total/NA	Solid	3050B	
720-92642-8	AT-1-190422	Total/NA	Solid	3050B	
MB 720-264496/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 720-264496/2-A	Lab Control Sample	Total/NA	Solid	3050B	
720-92642-1 MS	HV-1-190422	Total/NA	Solid	3050B	
720-92642-1 MSD	HV-1-190422	Total/NA	Solid	3050B	

### Prep Batch: 264498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	7471A	
720-92642-2	HV-2-190422	Total/NA	Solid	7471A	
720-92642-3	HV-SED-190422	Total/NA	Solid	7471A	

Eurofins TestAmerica, Pleasanton



# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Metals (Continued)

### Prep Batch: 264498 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-4	TF-1-190422	Total/NA	Solid	7471A	
720-92642-5	KC-1-190422	Total/NA	Solid	7471A	
720-92642-6	GF-1-190422	Total/NA	Solid	7471A	
720-92642-7	CIT-1-190422	Total/NA	Solid	7471A	
720-92642-8	AT-1-190422	Total/NA	Solid	7471A	
MB 720-264498/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 720-264498/2-A	Lab Control Sample	Total/NA	Solid	7471A	
720-92642-1 MS	HV-1-190422	Total/NA	Solid	7471A	
720-92642-1 MSD	HV-1-190422	Total/NA	Solid	7471A	

### Analysis Batch: 264698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	6010B	264496
720-92642-2	HV-2-190422	Total/NA	Solid	6010B	264496
720-92642-3	HV-SED-190422	Total/NA	Solid	6010B	264496
720-92642-4	TF-1-190422	Total/NA	Solid	6010B	264496
720-92642-5	KC-1-190422	Total/NA	Solid	6010B	264496
720-92642-6	GF-1-190422	Total/NA	Solid	6010B	264496
720-92642-7	CIT-1-190422	Total/NA	Solid	6010B	264496
720-92642-8	AT-1-190422	Total/NA	Solid	6010B	264496
MB 720-264496/1-A	Method Blank	Total/NA	Solid	6010B	264496
LCS 720-264496/2-A	Lab Control Sample	Total/NA	Solid	6010B	264496
720-92642-1 MS	HV-1-190422	Total/NA	Solid	6010B	264496
720-92642-1 MSD	HV-1-190422	Total/NA	Solid	6010B	264496

### Analysis Batch: 264751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-2	HV-2-190422	Total/NA	Solid	6010B	264496
720-92642-3	HV-SED-190422	Total/NA	Solid	6010B	264496
720-92642-4	TF-1-190422	Total/NA	Solid	6010B	264496
720-92642-5	KC-1-190422	Total/NA	Solid	6010B	264496
720-92642-6	GF-1-190422	Total/NA	Solid	6010B	264496
720-92642-7	CIT-1-190422	Total/NA	Solid	6010B	264496
720-92642-8	AT-1-190422	Total/NA	Solid	6010B	264496

### Analysis Batch: 264796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	7471A	264498
720-92642-2	HV-2-190422	Total/NA	Solid	7471A	264498
720-92642-3	HV-SED-190422	Total/NA	Solid	7471A	264498
720-92642-4	TF-1-190422	Total/NA	Solid	7471A	264498
720-92642-5	KC-1-190422	Total/NA	Solid	7471A	264498
720-92642-6	GF-1-190422	Total/NA	Solid	7471A	264498
720-92642-7	CIT-1-190422	Total/NA	Solid	7471A	264498
720-92642-8	AT-1-190422	Total/NA	Solid	7471A	264498
MB 720-264498/1-A	Method Blank	Total/NA	Solid	7471A	264498
LCS 720-264498/2-A	Lab Control Sample	Total/NA	Solid	7471A	264498
720-92642-1 MS	HV-1-190422	Total/NA	Solid	7471A	264498
720-92642-1 MSD	HV-1-190422	Total/NA	Solid	7471A	264498

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

## Client Sample ID: HV-1-190422

Lab Sample ID: 720-92642-1

Date Collected: 04/22/19 14:55

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 00:24	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:17	BKR	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:09	MAG	TAL PLS

## Client Sample ID: HV-2-190422

Lab Sample ID: 720-92642-2

Date Collected: 04/22/19 15:10

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 01:22	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:31	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 13:59	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:11	MAG	TAL PLS

## Client Sample ID: HV-SED-190422

Lab Sample ID: 720-92642-3

Date Collected: 04/22/19 15:20

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 01:42	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:36	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:03	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:13	MAG	TAL PLS

## Client Sample ID: TF-1-190422

Lab Sample ID: 720-92642-4

Date Collected: 04/22/19 16:10

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 02:01	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:41	BKR	TAL PLS

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: TF-1-190422**

**Lab Sample ID: 720-92642-4**

Date Collected: 04/22/19 16:10

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:08	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:15	MAG	TAL PLS

**Client Sample ID: KC-1-190422**

**Lab Sample ID: 720-92642-5**

Date Collected: 04/22/19 16:30

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 02:20	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:46	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:13	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:18	MAG	TAL PLS

**Client Sample ID: GF-1-190422**

**Lab Sample ID: 720-92642-6**

Date Collected: 04/22/19 16:40

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 02:40	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:51	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:18	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:20	MAG	TAL PLS

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

Date Collected: 04/22/19 17:00

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 03:38	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 20:55	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:22	MAG	TAL PLS

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

Date Collected: 04/22/19 17:00

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:27	MAG	TAL PLS

**Client Sample ID: AT-1-190422**

**Lab Sample ID: 720-92642-8**

Date Collected: 04/22/19 17:20

Matrix: Solid

Date Received: 04/24/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			291248	04/29/19 14:49	TCS	TAL SAC
Soluble	Analysis	314.0		1	291655	05/01/19 03:57	TCS	TAL SAC
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264698	04/29/19 21:00	BKR	TAL PLS
Total/NA	Prep	3050B			264496	04/29/19 09:16	SUN	TAL PLS
Total/NA	Analysis	6010B		4	264751	04/30/19 14:27	MAG	TAL PLS
Total/NA	Prep	7471A			264498	04/30/19 14:05	GLL	TAL PLS
Total/NA	Analysis	7471A		1	264796	04/30/19 16:29	MAG	TAL PLS

**Laboratory References:**

TAL PLS = Eurofins TestAmerica, Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## Accreditation/Certification Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

### Laboratory: Eurofins TestAmerica, Pleasanton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20
USDA	Federal		P330-17-00380	12-11-20

### Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD / DOE		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19 *
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-19 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	04-01-20
Oregon	NELAP	10	4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-20
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-29-20
Vermont	State Program	1	VT-4040	04-16-20
Virginia	NELAP	3	460278	03-14-20 *
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

Method	Method Description	Protocol	Laboratory
314.0	Perchlorate (IC)	EPA	TAL SAC
6010B	Metals (ICP)	SW846	TAL PLS
7471A	Mercury (CVAA)	SW846	TAL PLS
3050B	Preparation, Metals	SW846	TAL PLS
7471A	Preparation, Mercury	SW846	TAL PLS
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL SAC

**Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL PLS = Eurofins TestAmerica, Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Sample Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-92642-1	HV-1-190422	Solid	04/22/19 14:55	04/24/19 10:15
720-92642-2	HV-2-190422	Solid	04/22/19 15:10	04/24/19 10:15
720-92642-3	HV-SED-190422	Solid	04/22/19 15:20	04/24/19 10:15
720-92642-4	TF-1-190422	Solid	04/22/19 16:10	04/24/19 10:15
720-92642-5	KC-1-190422	Solid	04/22/19 16:30	04/24/19 10:15
720-92642-6	GF-1-190422	Solid	04/22/19 16:40	04/24/19 10:15
720-92642-7	CIT-1-190422	Solid	04/22/19 17:00	04/24/19 10:15
720-92642-8	AT-1-190422	Solid	04/22/19 17:20	04/24/19 10:15



720-92642

189829

<b>FROM</b> GSI Environmental Inc. 155 Grand Ave. Suite 704 Oakland, CA 94612 (510) 463-8484 E-MAIL: tZWICKS@gsi-net.com (510) 463-8484 TestAmerica		<b>PROJECT NAME</b> A.J.U - BB		<b>PROJECT NO</b> A.J.U	
<b>PROJECT CONTACT</b> TRAVIS WICKS cc: Susan Gallardo Travis Wicks		<b>LAB CONTACT</b> Susan Gallardo Travis Wicks		<b>SAMPLERS (PRINT)</b> Travis Wicks	
<b>GLOBAL ID</b> 720-92642		<b>REQUESTED ANALYSES</b> Please check box or fill in blank as needed.			
<b>TEL</b> (510) 463-8484		<b>E-MAIL</b> tZWICKS@gsi-net.com smgallardo@gsi-net.com		Netals 122-CEIC/TA-11 perhydrate 314.0 51-98 905.5292 Tritium 926.0 69-137 9011-0	
<b>LABORATORY</b> TestAmerica		<b>TURNAROUND TIME</b> <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> STANDARD		Unpreserved Preserved Field Filtered	
<b>SPECIAL INSTRUCTIONS</b>		<b>SAMPLING</b>		NO. OF CONT.	
SAMPLE ID		DATE		MATRIX	
HV-1-190422 HV-2-190422 HV-5ED-1-190422 IF-1-190422 KC-1-190422 GF-1-190422 CIT-1-190422 AT-1-190422		4/22/19 1455 1510 1520 1610 1630 1640 1700 1720		S S S S S S S S	
LAB USE ONLY		DATE		MATRIX	
HV-1-190422 HV-2-190422 HV-5ED-1-190422 IF-1-190422 KC-1-190422 GF-1-190422 CIT-1-190422 AT-1-190422		4/22/19 1455 1510 1520 1610 1630 1640 1700 1720		S S S S S S S S	
Relinquished by (Signature)		Relinquished by (Signature)		Relinquished by (Signature)	
Relinquished by (Signature)		Relinquished by (Signature)		Relinquished by (Signature)	
Relinquished by (Signature)		Relinquished by (Signature)		Relinquished by (Signature)	



C-3/2.0





**Eurofins TestAmerica, Pleasanton**  
 1220 Quarry Lane  
 Pleasanton, CA 94566  
 Phone (925) 484-1919 Fax (925) 600-3002

**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>	Sampler:	Lab P/N:	Carrier Tracking No(s):	COC No:
Client Contact:	Phone:	Salmimpour, Afsaneh F		720-41915-1
Shipping/Receiving	E-Mail:	afsaneh.salmimpour@testamericacomm.com	State of Origin:	Page:
Company:	TestAmerica Laboratories, Inc.	Accreditations Required (See note):	California	Page 1 of 1
Address:	880 Riverside Parkway.	Due Date Requested:	5/1/2019	Job #:
City:	West Sacramento	TAT Requested (days):		720-92642-1
State, zip:	CA, 95605	PO #:		Preservation Codes:
Phone:	916-373-5600(Tel) 916-372-1059(Fax)	WO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - PH 4-5 Z - other (specify)
Email:		Project #:	72014323	Other:
Project Name:	AIU-BB	SSCOW#:		
Site:				

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Soil, O=Organic, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Analysis Requested	Total Number of containers	Special Instructions/Note:
						Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)					
HV-1-190422 (720-92642-1)	4/22/19	14:55 Pacific	Solid	Solid		X	X	314.0/DI_LEACH Perchlorate			1	
HV-2-190422 (720-92642-2)	4/22/19	15:10 Pacific	Solid	Solid		X	X				1	
HV-SED-190422 (720-92642-3)	4/22/19	15:20 Pacific	Solid	Solid		X	X				1	
TF-1-190422 (720-92642-4)	4/22/19	16:10 Pacific	Solid	Solid		X	X				1	
KC-1-190422 (720-92642-5)	4/22/19	16:30 Pacific	Solid	Solid		X	X				1	
GF-1-190422 (720-92642-6)	4/22/19	16:40 Pacific	Solid	Solid		X	X				1	
CT-1-190422 (720-92642-7)	4/22/19	17:00 Pacific	Solid	Solid		X	X				1	
AT-1-190422 (720-92642-8)	4/22/19	17:20 Pacific	Solid	Solid		X	X				1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_ Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements: \_\_\_\_\_  
 Method of Shipment: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: 4/25/19 15:43 Company: TRUSSAC  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks: 1, 1

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Sacramento Sample Receiving Notes



Job: 720-92642 Field Sheet

Tracking # \_\_\_\_\_ SO / PO / FO / 2-Day / SAT / Ground / UPS / Counter /  
Drop Off / GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	Therm. ID: <u>AK-2 / AK-3</u> AK-5 / AK-7 / HACCP / Other _____ <small>(-1.0°C)</small>																																																																								
	Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Gel _____ Other _____																																																																								
	Cooler Custody Seal: _____																																																																								
	Sample Custody Seal: _____																																																																								
	Cooler ID: _____																																																																								
	Temp: Observed <u>11</u> Corrected <u>11</u>																																																																								
	From: Temp <input type="checkbox"/> Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>																																																																								
	NCM Filed: Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																								
	<table border="1"><thead><tr><th></th><th>Yes</th><th>No</th><th>NA</th></tr></thead><tbody><tr><td>Perchlorate has headspace (1/3 bottle<sup>1</sup>)?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Alkalinity has no headspace?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>CoC is complete w/o discrepancies?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Samples received within holding time?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample preservatives verified?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Cooler compromised/tampered with?</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Samples compromised/tampered with?</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Samples w/o discrepancies?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample containers have legible labels?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Containers are not broken or leaking?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample date/times are provided.</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Appropriate containers are used?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample bottles are completely filled?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Zero headspace?<sup>2</sup></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Multiphasic samples are not present?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample temp OK?</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Sample out of temp?</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr></tbody></table>		Yes	No	NA	Perchlorate has headspace (1/3 bottle <sup>1</sup> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zero headspace? <sup>2</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Yes	No	NA																																																																					
	Perchlorate has headspace (1/3 bottle <sup>1</sup> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
	Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
	CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
	Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																						
Zero headspace? <sup>2</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																						
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Initials: <u>JR</u> Date: <u>4/25/14</u>																																																																									

<sup>1</sup>For a 250mL polyethylene container, filled no higher than the 200mL mark on the bottle.  
<sup>2</sup>Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4").

W/C

## Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 720-92642-1

**Login Number: 92642**

**List Source: Eurofins TestAmerica, Pleasanton**

**List Number: 1**

**Creator: Mullen, Joan**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 720-92642-1

**Login Number: 92642**

**List Source: Eurofins TestAmerica, Sacramento**

**List Number: 2**

**List Creation: 04/26/19 05:37 PM**

**Creator: Darlington, Jennifer M**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	



## ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton  
1220 Quarry Lane  
Pleasanton, CA 94566  
Tel: (925)484-1919

Laboratory Job ID: 720-92642-2  
Client Project/Site: AJU-BB

For:  
GSI Environmental, Inc  
155 Grand Avenue  
Suite 704  
Oakland, California 94612

Attn: Susan Gallardo



Authorized for release by:  
6/3/2019 3:36:49 PM

Afsaneh Salimpour, Senior Project Manager  
(925)484-1919  
[afsaneh.salimpour@testamericainc.com](mailto:afsaneh.salimpour@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Definitions/Glossary . . . . .	3
Case Narrative . . . . .	4
Client Sample Results . . . . .	6
Tracer Carrier Summary . . . . .	14
QC Sample Results . . . . .	15
QC Association Summary . . . . .	17
Lab Chronicle . . . . .	18
Certification Summary . . . . .	21
Method Summary . . . . .	22
Sample Summary . . . . .	23
Chain of Custody . . . . .	24
Field Data Sheets . . . . .	25
Receipt Checklists . . . . .	26

# Definitions/Glossary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Job ID: 720-92642-2

### Laboratory: Eurofins TestAmerica, Pleasanton

#### Narrative

#### Job Narrative 720-92642-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 4/24/2019 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.3° C and 2.0° C.

#### RAD

Method(s) 901.1: Gamma Prep Batch 160-426743

The cesium-137 detection goal (0.200 pCi/g) was not met. This is caused by the elevated Compton background due to the low level natural activity in the samples (potassium-40). The data have been reported with this narrative. AT-1-190422 (720-92642-8)

Method(s) 901.1: Gamma Prep Batch 160-426743

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from    Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

HV-1-190422 (720-92642-1), HV-2-190422 (720-92642-2), HV-SED-190422 (720-92642-3), TF-1-190422 (720-92642-4), KC-1-190422 (720-92642-5), GF-1-190422 (720-92642-6), CIT-1-190422 (720-92642-7), AT-1-190422 (720-92642-8), (LCS 160-426743/2-A), (MB 160-426743/1-A) and (720-92642-C-1-C DU)

Method(s) 905, SR-03-RC: Strontium-90 Prep Batch 160-428095

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.



# Case Narrative

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Job ID: 720-92642-2 (Continued)

### Laboratory: Eurofins TestAmerica, Pleasanton (Continued)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

HV-1-190422 (720-92642-1), HV-2-190422 (720-92642-2), HV-SED-190422 (720-92642-3), TF-1-190422 (720-92642-4), KC-1-190422 (720-92642-5), GF-1-190422 (720-92642-6), CIT-1-190422 (720-92642-7), AT-1-190422 (720-92642-8), (LCS 160-428095/1-A), (MB 160-428095/19-A), (160-34008-A-9-F) and (160-34008-A-9-I DU)

Method(s) 906.0: H-3 Prep Batch 160-427780

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

HV-1-190422 (720-92642-1), HV-2-190422 (720-92642-2), HV-SED-190422 (720-92642-3), TF-1-190422 (720-92642-4), KC-1-190422 (720-92642-5), GF-1-190422 (720-92642-6), CIT-1-190422 (720-92642-7), AT-1-190422 (720-92642-8), (720-92642-E-3-B DU) and (720-92642-D-4-B MS)

Method(s) 906.0: H-3 Prep Batch 160-427780

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

HV-1-190422 (720-92642-1), HV-2-190422 (720-92642-2), HV-SED-190422 (720-92642-3), TF-1-190422 (720-92642-4), KC-1-190422 (720-92642-5), GF-1-190422 (720-92642-6), CIT-1-190422 (720-92642-7), AT-1-190422 (720-92642-8), (LCS 160-427780/2-A), (MB 160-427780/1-A), (720-92642-E-3-B DU) and (720-92642-D-4-B MS)

Method(s) DPS-7: Strontium- 90 Prep Batch 428095:

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: HV-1-190422 (720-92642-1), HV-2-190422 (720-92642-2), HV-SED-190422 (720-92642-3), TF-1-190422 (720-92642-4), KC-1-190422 (720-92642-5), GF-1-190422 (720-92642-6), CIT-1-190422 (720-92642-7) and AT-1-190422 (720-92642-8). The samples contain rocks.

160-33896: Sample contains twigs

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: HV-1-190422**

**Lab Sample ID: 720-92642-1**

Date Collected: 04/22/19 14:55

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.00790	U	0.107	0.107	0.200	0.187	pCi/g	05/06/19 01:26	05/06/19 08:31	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0559	U	0.146	0.146	3.00	0.273	pCi/g	05/13/19 12:39	05/28/19 12:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.4		40 - 110	05/13/19 12:39	05/28/19 12:07	1
Y Carrier	95.3		40 - 110	05/13/19 12:39	05/28/19 12:07	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0410	U	0.193	0.193	1.00	0.359	pCi/g	05/09/19 10:44	05/09/19 20:34	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: HV-2-190422**

**Lab Sample ID: 720-92642-2**

Date Collected: 04/22/19 15:10

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.00610	U	0.0711	0.0711	0.200	0.125	pCi/g	05/06/19 01:26	05/06/19 08:38	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0199	U	0.136	0.136	3.00	0.242	pCi/g	05/13/19 12:39	05/28/19 12:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.4		40 - 110	05/13/19 12:39	05/28/19 12:07	1
Y Carrier	97.2		40 - 110	05/13/19 12:39	05/28/19 12:07	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0632	U	0.192	0.192	1.00	0.362	pCi/g	05/09/19 10:44	05/09/19 20:56	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: HV-SED-190422**

**Lab Sample ID: 720-92642-3**

Date Collected: 04/22/19 15:20

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0499	U	0.0950	0.0952	0.200	0.161	pCi/g	05/06/19 01:26	05/06/19 08:38	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.169	U	0.174	0.174	3.00	0.284	pCi/g	05/13/19 12:39	05/28/19 12:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	86.8		40 - 110	05/13/19 12:39	05/28/19 12:07	1
Y Carrier	99.1		40 - 110	05/13/19 12:39	05/28/19 12:07	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0972	U	0.210	0.210	1.00	0.363	pCi/g	05/09/19 10:44	05/09/19 21:19	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: TF-1-190422**

**Lab Sample ID: 720-92642-4**

Date Collected: 04/22/19 16:10

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0585	U	0.0941	0.0943	0.200	0.158	pCi/g	05/06/19 01:26	05/06/19 08:33	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.179	U	0.259	0.259	3.00	0.495	pCi/g	05/13/19 12:39	05/28/19 12:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	78.4		40 - 110	05/13/19 12:39	05/28/19 12:08	1
Y Carrier	53.5		40 - 110	05/13/19 12:39	05/28/19 12:08	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0679	U	0.189	0.189	1.00	0.355	pCi/g	05/09/19 10:44	05/09/19 22:04	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: KC-1-190422**

**Lab Sample ID: 720-92642-5**

Date Collected: 04/22/19 16:30

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.0164	U	0.111	0.111	0.200	0.192	pCi/g	05/06/19 01:26	05/06/19 08:36	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.254	U	0.173	0.174	3.00	0.266	pCi/g	05/13/19 12:39	05/28/19 12:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	73.3		40 - 110					05/13/19 12:39	05/28/19 12:08	1
Y Carrier	94.6		40 - 110					05/13/19 12:39	05/28/19 12:08	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0610	U	0.193	0.193	1.00	0.332	pCi/g	05/09/19 10:44	05/09/19 22:49	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: GF-1-190422**

**Lab Sample ID: 720-92642-6**

Date Collected: 04/22/19 16:40

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.00496	U	0.0938	0.0938	0.200	0.165	pCi/g	05/06/19 01:26	05/06/19 08:36	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0866	U	0.150	0.150	3.00	0.281	pCi/g	05/13/19 12:39	05/28/19 12:08	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.8		40 - 110	05/13/19 12:39	05/28/19 12:08	1
Y Carrier	98.7		40 - 110	05/13/19 12:39	05/28/19 12:08	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0172	U	0.214	0.214	1.00	0.393	pCi/g	05/09/19 10:44	05/09/19 23:11	1

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

Date Collected: 04/22/19 17:00

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0334	U	0.0952	0.0953	0.200	0.162	pCi/g	05/06/19 01:26	05/06/19 10:03	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0524	U	0.142	0.142	3.00	0.246	pCi/g	05/13/19 12:39	05/28/19 12:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	82.0		40 - 110					05/13/19 12:39	05/28/19 12:08	1
Y Carrier	96.8		40 - 110					05/13/19 12:39	05/28/19 12:08	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0210	U	0.192	0.192	1.00	0.348	pCi/g	05/09/19 10:44	05/09/19 23:34	1



# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: AT-1-190422**

**Lab Sample ID: 720-92642-8**

Date Collected: 04/22/19 17:20

Matrix: Solid

Date Received: 04/24/19 10:15

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.0503	U G	0.122	0.122	0.200	0.207	pCi/g	05/06/19 01:26	05/06/19 10:00	1

**Method: 905 - Strontium-90 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0719	U	0.156	0.156	3.00	0.267	pCi/g	05/13/19 12:39	05/28/19 12:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	82.6		40 - 110					05/13/19 12:39	05/28/19 12:08	1
Y Carrier	95.7		40 - 110					05/13/19 12:39	05/28/19 12:08	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0565	U	0.191	0.191	1.00	0.356	pCi/g	05/09/19 10:44	05/09/19 23:56	1

# Tracer/Carrier Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Method: 905 - Strontium-90 (GFPC)**

**Matrix: Solid**

**Prep Type: Total/NA**

## Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)
720-92642-1	HV-1-190422	77.4	95.3
720-92642-2	HV-2-190422	82.4	97.2
720-92642-3	HV-SED-190422	86.8	99.1
720-92642-4	TF-1-190422	78.4	53.5
720-92642-5	KC-1-190422	73.3	94.6
720-92642-6	GF-1-190422	80.8	98.7
720-92642-7	CIT-1-190422	82.0	96.8
720-92642-8	AT-1-190422	82.6	95.7
LCS 160-428095/1-A	Lab Control Sample	84.1	95.7
MB 160-428095/19-A	Method Blank	82.5	97.6

### Tracer/Carrier Legend

Sr Carrier = Sr Carrier

Y Carrier = Y Carrier

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-426743/1-A**  
**Matrix: Solid**  
**Analysis Batch: 426758**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 426743**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	-0.05632	U	0.113	0.113	0.200	0.162	pCi/g	05/06/19 01:26	05/06/19 08:40	1

**Lab Sample ID: LCS 160-426743/2-A**  
**Matrix: Solid**  
**Analysis Batch: 426760**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 426743**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Americium-241	96.7	102.8		10.8		1.12	pCi/g	106	87 - 116
Cesium-137	27.7	28.28		3.03	0.200	0.203	pCi/g	102	87 - 120
Cobalt-60	11.7	11.86		1.26		0.116	pCi/g	101	87 - 115

**Lab Sample ID: 720-92642-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 426749**

**Client Sample ID: HV-1-190422**  
**Prep Type: Total/NA**  
**Prep Batch: 426743**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Cesium-137	-0.00790	U	-0.03092	U	0.0888	0.200	0.151	pCi/g	0.12	1

## Method: 905 - Strontium-90 (GFPC)

**Lab Sample ID: MB 160-428095/19-A**  
**Matrix: Solid**  
**Analysis Batch: 430089**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 428095**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	0.01409	U	0.138	0.138	3.00	0.245	pCi/g	05/13/19 12:39	05/28/19 12:10	1

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Sr Carrier	82.5		40 - 110	05/13/19 12:39	05/28/19 12:10	1
Y Carrier	97.6		40 - 110	05/13/19 12:39	05/28/19 12:10	1

**Lab Sample ID: LCS 160-428095/1-A**  
**Matrix: Solid**  
**Analysis Batch: 429839**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 428095**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Strontium-90	8.05	7.853		0.808	3.00	0.246	pCi/g	97	75 - 125

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Sr Carrier	84.1		40 - 110
Y Carrier	95.7		40 - 110

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Method: 906.0 - Tritium, Total (LSC)

**Lab Sample ID: MB 160-427780/1-A**  
**Matrix: Solid**  
**Analysis Batch: 429508**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 427780**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.05706	U	0.204	0.205	1.00	0.358	pCi/g	05/09/19 10:44	05/09/19 19:49	1

**Lab Sample ID: LCS 160-427780/2-A**  
**Matrix: Solid**  
**Analysis Batch: 429508**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 427780**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	8.66	8.762		1.01	1.00	0.372	pCi/g	101	80 - 114

**Lab Sample ID: 720-92642-4 MS**  
**Matrix: Solid**  
**Analysis Batch: 429508**

**Client Sample ID: TF-1-190422**  
**Prep Type: Total/NA**  
**Prep Batch: 427780**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-0.0679	U	8.58	8.439		0.976	1.00	0.356	pCi/g	98	78 - 122

**Lab Sample ID: 720-92642-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 429508**

**Client Sample ID: HV-SED-190422**  
**Prep Type: Total/NA**  
**Prep Batch: 427780**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tritium	0.0972	U	0.1910	U	0.224	1.00	0.370	pCi/g	0.22	1

# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Rad

### Leach Batch: 426374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-2	HV-2-190422	Total/NA	Solid	Dry and Grind	
720-92642-3	HV-SED-190422	Total/NA	Solid	Dry and Grind	
720-92642-4	TF-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-5	KC-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-6	GF-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-7	CIT-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-8	AT-1-190422	Total/NA	Solid	Dry and Grind	
720-92642-1 DU	HV-1-190422	Total/NA	Solid	Dry and Grind	

### Prep Batch: 426743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-2	HV-2-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-3	HV-SED-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-4	TF-1-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-5	KC-1-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-6	GF-1-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-7	CIT-1-190422	Total/NA	Solid	Fill_Geo-0	426374
720-92642-8	AT-1-190422	Total/NA	Solid	Fill_Geo-0	426374
MB 160-426743/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	
LCS 160-426743/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
720-92642-1 DU	HV-1-190422	Total/NA	Solid	Fill_Geo-0	426374

### Prep Batch: 427780

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-2	HV-2-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-3	HV-SED-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-4	TF-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-5	KC-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-6	GF-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-7	CIT-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-8	AT-1-190422	Total/NA	Solid	LSC_Dist_Susp	
MB 160-427780/1-A	Method Blank	Total/NA	Solid	LSC_Dist_Susp	
LCS 160-427780/2-A	Lab Control Sample	Total/NA	Solid	LSC_Dist_Susp	
720-92642-4 MS	TF-1-190422	Total/NA	Solid	LSC_Dist_Susp	
720-92642-3 DU	HV-SED-190422	Total/NA	Solid	LSC_Dist_Susp	

### Prep Batch: 428095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-92642-1	HV-1-190422	Total/NA	Solid	DPS-7	426374
720-92642-2	HV-2-190422	Total/NA	Solid	DPS-7	426374
720-92642-3	HV-SED-190422	Total/NA	Solid	DPS-7	426374
720-92642-4	TF-1-190422	Total/NA	Solid	DPS-7	426374
720-92642-5	KC-1-190422	Total/NA	Solid	DPS-7	426374
720-92642-6	GF-1-190422	Total/NA	Solid	DPS-7	426374
720-92642-7	CIT-1-190422	Total/NA	Solid	DPS-7	426374
720-92642-8	AT-1-190422	Total/NA	Solid	DPS-7	426374
MB 160-428095/19-A	Method Blank	Total/NA	Solid	DPS-7	
LCS 160-428095/1-A	Lab Control Sample	Total/NA	Solid	DPS-7	

Eurofins TestAmerica, Pleasanton

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: HV-1-190422**

**Lab Sample ID: 720-92642-1**

**Date Collected: 04/22/19 14:55**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426752	05/06/19 08:31	KLS	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:07	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 20:34	TJR	TAL SL

**Client Sample ID: HV-2-190422**

**Lab Sample ID: 720-92642-2**

**Date Collected: 04/22/19 15:10**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426759	05/06/19 08:38	CDR	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:07	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 20:56	TJR	TAL SL

**Client Sample ID: HV-SED-190422**

**Lab Sample ID: 720-92642-3**

**Date Collected: 04/22/19 15:20**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426761	05/06/19 08:38	CDR	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:07	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 21:19	TJR	TAL SL

**Client Sample ID: TF-1-190422**

**Lab Sample ID: 720-92642-4**

**Date Collected: 04/22/19 16:10**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426753	05/06/19 08:33	KLS	TAL SL

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: TF-1-190422**

**Lab Sample ID: 720-92642-4**

**Date Collected: 04/22/19 16:10**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:08	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 22:04	TJR	TAL SL

**Client Sample ID: KC-1-190422**

**Lab Sample ID: 720-92642-5**

**Date Collected: 04/22/19 16:30**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426748	05/06/19 08:36	KLS	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:08	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 22:49	TJR	TAL SL

**Client Sample ID: GF-1-190422**

**Lab Sample ID: 720-92642-6**

**Date Collected: 04/22/19 16:40**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426750	05/06/19 08:36	KLS	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:08	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 23:11	TJR	TAL SL

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

**Date Collected: 04/22/19 17:00**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426748	05/06/19 10:03	KLS	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:08	KLS	TAL SL

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

**Client Sample ID: CIT-1-190422**

**Lab Sample ID: 720-92642-7**

**Date Collected: 04/22/19 17:00**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 23:34	TJR	TAL SL

**Client Sample ID: AT-1-190422**

**Lab Sample ID: 720-92642-8**

**Date Collected: 04/22/19 17:20**

**Matrix: Solid**

**Date Received: 04/24/19 10:15**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	Fill_Geo-0			426743	05/06/19 01:26	MPT	TAL SL
Total/NA	Analysis	901.1		1	426752	05/06/19 10:00	KLS	TAL SL
Total/NA	Leach	Dry and Grind			426374	05/01/19 14:01	DRO	TAL SL
Total/NA	Prep	DPS-7			428095	05/13/19 12:39	KAW	TAL SL
Total/NA	Analysis	905		1	429839	05/28/19 12:08	KLS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			427780	05/09/19 10:44	KNF	TAL SL
Total/NA	Analysis	906.0		1	429508	05/09/19 23:56	TJR	TAL SL

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





# Accreditation/Certification Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

## Laboratory: Eurofins TestAmerica, Pleasanton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20
USDA	Federal		P330-17-00380	12-11-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

Method	Method Description	Protocol	Laboratory
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
DPS-7	Preparation, Digestion/Precipitate Separation (7-Day In-Growth)	None	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency  
None = None

**Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 720-92642-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-92642-1	HV-1-190422	Solid	04/22/19 14:55	04/24/19 10:15	
720-92642-2	HV-2-190422	Solid	04/22/19 15:10	04/24/19 10:15	
720-92642-3	HV-SED-190422	Solid	04/22/19 15:20	04/24/19 10:15	
720-92642-4	TF-1-190422	Solid	04/22/19 16:10	04/24/19 10:15	
720-92642-5	KC-1-190422	Solid	04/22/19 16:30	04/24/19 10:15	
720-92642-6	GF-1-190422	Solid	04/22/19 16:40	04/24/19 10:15	
720-92642-7	CIT-1-190422	Solid	04/22/19 17:00	04/24/19 10:15	
720-92642-8	AT-1-190422	Solid	04/22/19 17:20	04/24/19 10:15	

720-92642

189829

<b>FROM</b> GSI Environmental Inc. 155 Grand Ave. Suite 704 Oakland, CA 94612 (510) 463-8484 E-MAIL: twicks@gsi-net.com (510) 463-8484		<b>PROJECT NAME</b> A.J.U - BB		<b>PROJECT NO</b> A.J.U	
<b>PROJECT CONTACT</b> TRAVIS WICKS		<b>LAB CONTACT</b> Hsueh Salimpour		<b>SAMPLERS (PRINT)</b> Travis Wicks	
<b>GLOBAL ID</b> cc: Susan Gallardo		<b>REQUESTED ANALYSES</b> Please check box or fill in blank as needed.			
<b>TEL</b> Test America (510) 463-8484		<b>E-MAIL</b> smgallardo@gsi-net.com		Netals 122-CEIC/TA-1 perhydrate 314.0 5r-98 905.5r2t Tritium 96.0 69-137 9611-0	
<b>TURNAROUND TIME</b> <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 48 HR <input checked="" type="checkbox"/> STANDARD		<b>SPECIAL INSTRUCTIONS</b>		Unpreserved Preserved Field Filtered	
<b>LAB USE ONLY</b>		<b>SAMPLE ID</b>		<b>SAMPLING DATE</b>	
HV-1-190422 HV-2-190422 HV-5ED-1-190422 IF-1-190422 KC-1-190422 GF-1-190422 CIT-1-190422 AT-1-190422		S S S S S S S S		4/22/19 1455 1510 1520 1610 1630 1640 1700 1720	
NO. OF CONT.		MATRIX		NO. OF CONT.	
X X X X X X X X		S S S S S S S S		5 5 5 5 5 5 5 5	
Relinquished by (Signature)		Relinquished by (Signature)		Received by (Signature)	
Relinquished by (Signature)		Relinquished by (Signature)		Received by (Signature)	
Relinquished by (Signature)		Relinquished by (Signature)		Received by (Signature)	



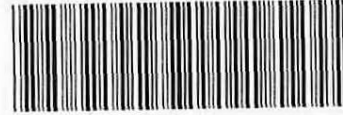
C-3/2.0



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Sacramento Sample Receiving Notes



Job: 720-92642 Field Sheet

Tracking # \_\_\_\_\_ SO / PO / FO / 2-Day / SAT / Ground / UPS / Courier /  
Drop Off / GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	Therm. ID: <u>AK-2 / AK-3</u> <u>AK-5 / AK-7 / HACCP</u> / Other _____ <small>(-1.0°C)</small>																																																																								
	Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Gel _____ Other _____																																																																								
	Cooler Custody Seal: _____																																																																								
	Sample Custody Seal: _____																																																																								
	Cooler ID: _____																																																																								
	Temp: Observed <u>11</u> Corrected <u>11</u>																																																																								
	From: Temp Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>																																																																								
	NCM Filed: Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																								
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="text-align: center; width: 10%;"><u>Yes</u></th> <th style="text-align: center; width: 10%;"><u>No</u></th> <th style="text-align: center; width: 10%;"><u>NA</u></th> </tr> </thead> <tbody> <tr> <td>Perchlorate has headspace(1/3 bottle<sup>1</sup>)?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Alkalinity has no headspace?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>CoC is complete w/o discrepancies?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Samples received within holding time?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample preservatives verified?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Cooler compromised/tampered with?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Samples compromised/tampered with?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Samples w/o discrepancies?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample containers have legible labels?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Containers are not broken or leaking?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample date/times are provided.</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Appropriate containers are used?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample bottles are completely filled?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Zero headspace?<sup>2</sup></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Multiphasic samples are not present?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample temp OK?</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Sample out of temp?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		<u>Yes</u>	<u>No</u>	<u>NA</u>	Perchlorate has headspace(1/3 bottle <sup>1</sup> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zero headspace? <sup>2</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<u>Yes</u>	<u>No</u>	<u>NA</u>																																																																					
	Perchlorate has headspace(1/3 bottle <sup>1</sup> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
	Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
	CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
	Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																					
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																						
Zero headspace? <sup>2</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																						
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																						
Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																						
Initials: <u>JR</u> Date: <u>4/25/14</u>																																																																									
<small><sup>1</sup>For a 250mL polyethylene container, filled no higher than the 200mL mark on the bottle. <sup>2</sup>Containers requiring zero headspace have no headspace, or bubble &lt; 6 mm (1/4").</small>																																																																									

WRC

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15

# Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 720-92642-2

**Login Number: 92642**

**List Source: Eurofins TestAmerica, Pleasanton**

**List Number: 1**

**Creator: Mullen, Joan**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 720-92642-2

**Login Number: 92642**  
**List Number: 3**  
**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**  
**List Creation: 04/30/19 03:09 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendix B**

Appendix B. Analytical Laboratory Reports – June 2019 Event





# Gamma Spectroscopy Case Narrative

---

## **GSI Environmental**

AJU-BB – 5182

Work Order Number: 1906338

1. This report consists of analytical results for five samples received by ALS on 06/15/2019.
2. These samples were prepared according to the current revision of SOP739.
3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP713. The analyses were completed on 07/20/2019.
4. The analysis results for these samples are reported on a “Dry Weight” basis in units of pCi/gram.
5. Sample volumes were insufficient to allow preparation of a duplicate. A duplicate analysis of sample 1906338-9 was performed in lieu of a prepared duplicate.
6. There are cases where the sample density is less or greater than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a ‘G’, denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results where sample density is less than the calibration standard density and low for flagged results where sample density is greater than the standard density. If requested, ALS can perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.
7. No problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.



The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Pik Yee Yuen  
Pik Yee Yuen  
Radiochemistry Primary Data Reviewer

7/26/19  
Date

James Chen  
Radiochemistry Final Data Reviewer

7/26/19  
Date

# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1906338

**Client Name:** GSI Environmental

**Client Project Name:** AJU-BB

**Client Project Number:** 5182

**Client PO Number:**

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
OS3-W-190613	1906338-1		WATER	13-Jun-19	9:50
OS3-SED-1-190613	1906338-2		SOIL	13-Jun-19	10:10
BP-SED-1-190613	1906338-3		SOIL	13-Jun-19	10:40
RRMDF-SED-1-190613	1906338-4		SOIL	13-Jun-19	11:40
OS1-W-190613	1906338-5		WATER	13-Jun-19	13:15
OS1-SED-1-190613	1906338-6		SOIL	13-Jun-19	13:25
SRE-SED-1-190613	1906338-7		SOIL	13-Jun-19	14:25
OS8-SED-1-190613	1906338-8		SOIL	13-Jun-19	15:45
OW-SED-1-190613	1906338-9		SOIL	13-Jun-19	16:30



**ALS Environmental**

225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

**Chain-of-Custody**

Form 202d6

WORKORDER # **1906338**

PAGE 1 of 1

PROJECT NAME	PROJECT NO.	COMPANY NAME	SEND REPORT TO	ADDRESS	CITY/STATE/ZIP	PHONE	FAX	E-MAIL	SAMPLER	TZW	DATE	TURNAROUND	DISPOSAL	By Lab or	Return to Client
AJU-BB	5182	GSI Environmental	SAN Gilgardo	155 Grand Ave.	Oakland / CA / 94612	510 463 8484		Smgillard@gsienv.com tbenicks@gsienv.com	TZW	Standard	6/13/19	Standard			
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC								
1	OS3-W-190613	Water	06/13/19	0950	3	2									
2	OS3-SED-1-190613	Soil	06/13/19	1010	1	N/A									
3	BP-SED-1-190613	Soil	06/13/19	1040	1	N/A									
4	RRMDF-SED-1-190613	Soil	06/13/19	1140	1	N/A									
5	OS1-W-190613	Water	06/13/19	1315	3	2									
6	OS1-SED-1-190613	Soil	06/13/19	1325	1	N/A									
7	SR E-SED-1-190613	Soil	06/13/19	1425	1	N/A									
8	OS8-SED-1-190613	Soil	06/13/19	1545	1	N/A									
9	OW-SED-1-190613	Soil	06/13/19	1630	1	N/A									

\*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)	
	<input checked="" type="checkbox"/>	LEVEL II (Standard OC)
	<input type="checkbox"/>	LEVEL III (Std OC + forms)
	<input type="checkbox"/>	LEVEL IV (Std OC + forms + raw data)
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035		

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>Travis Wicks</i>	Travis Wicks	6/13/19	1755
RELINQUISHED BY	FEDEX			
RECEIVED BY	<i>Emily Lyons</i>	EMILY LYONS	06.15.19	0950
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GSI Enviro.  
Project Manager: LRS

Workorder No: 1906338  
Initials: Em Date: 06.15.19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	<input checked="" type="radio"/> YES	<input type="radio"/> NO			
2. Are custody seals on <b>shipping</b> containers intact?		NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
3. Are custody seals on <b>sample</b> containers intact?		<input checked="" type="radio"/> NONE	<input type="radio"/> YES	<input type="radio"/> NO *			
4. Is there a COC (chain-of-custody) present?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
6. Are short-hold samples present?			<input type="radio"/> YES	<input checked="" type="radio"/> NO			
7. Are all samples within holding times for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
8. Were all sample containers received intact? (not broken or leaking)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
9. Is there sufficient sample for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
10. Are all samples in the proper containers for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
12. Are all aqueous non-preserved samples pH 4-9?		N/A	<input checked="" type="radio"/> YES	<input type="radio"/> NO *			
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		<input checked="" type="radio"/> N/A	<input type="radio"/> YES	<input type="radio"/> NO			
14. Were the samples shipped on ice?			<input checked="" type="radio"/> YES	<input type="radio"/> NO			
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#1	<input checked="" type="radio"/> #3	#4	RAD ONLY	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Cooler #: <u>1</u>							
Temperature (°C): <u>0.1</u>							
No. of custody seals on cooler: <u>2</u>							
External μR/hr reading: <u>1000</u>							
Background μR/hr reading: <u>10</u>							
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)							

\* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

All client bottle ID's vs ALS lab ID's double-checked by: Em

If applicable, was the client contacted? YES / NO / NA Contact: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager Signature / Date: [Signature] 6/15/19

ORIGIN ID: JTOA (510) 463-8484  
GSI  
ENVIRONMENTAL  
155 GRAND AVE STE 704  
OAKLAND, CA 94612  
UNITED STATES US

SHIP DATE: 13 JUN 1  
ACTWGT: 8.60 LB  
CAD: 6991499/SSF02002  
DIMS: 25x13x14 IN  
BILL THIRD PARTY

TO **ALS**

**225 COMMERCE DR**  
**FORT COLLINS CO 80524**

**8-2**

(970) 490-1611  
REF: DEPT:



**FedEx**  
Express



11010108101611

1 of 2  
TRK# 7878 7782 7631  
0201  
## MASTER ##

**SATURDAY 4:30P**  
**\*\* 2DAY \*\***

**DSR AHS**  
**80524**

CO-US DEN

**SO FTCA 0.1°C**



# Gamma Spectroscopy Results

PAI 713 Rev 14

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: GS190717-3MB	Sample Matrix: SOIL	Prep Batch: GS190717-3	Final Aliquot: 92.2 g
Library: USGS.LIB	Prep SOP: PAI 739 Rev 12	QCBatchID: GS190717-3-1	Result Units: pCi/g
	Date Collected: 17-Jul-19	Run ID: GS190717-3A	File Name: 191472d04
	Date Prepared: 17-Jul-19	Count Time: 1000 minutes	
	Date Analyzed: 20-Jul-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	-0.007 +/- 0.016	0.028	0.5	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 half-lives.  
M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: GS190717-3LCS	Sample Matrix: SOIL	Prep Batch: GS190717-3	Final Aliquot: 92.2 g
Library: ANALYTICAL.LI	Prep SOP: PAI 739 Rev 12	QCBatchID: GS190717-3-1	Result Units: pCi/g
	Date Collected: 17-Jul-19	Run ID: GS190717-3A	File Name: 190990d03
	Date Prepared: 17-Jul-19	Count Time: 30 minutes	
	Date Analyzed: 19-Jul-19		

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10045-97-3	Cs-137	380 +/- 45	2	430.3	88.3	85 - 115	P,M3
14596-10-2	Am-241	1050 +/- 120	10	1174	89.7	85 - 115	P
10198-40-0	Co-60	456 +/- 53	1	513.0	88.9	85 - 115	P

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 half-lives.

Data Package ID: GSS1906338-1



# Gamma Spectroscopy Results

PAI 713 Rev 14

## Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OW-SED-1-190613
Lab ID:	1906338-9DUP

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 20-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 135 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190996d03

CASNO	Analyte	Sample				Duplicate				DER	DER Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
10045-97-3	Cs-137	0.031 +/-	0.018	0.028	G	0.030 +/-	0.013	0.019	G	0.0285	2.13

### Comments:

#### Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
Y2 - Chemical Yield outside default limits.  
W - DER is greater than Warning Limit of 1.42  
D - DER is greater than Control Limit of 2.13  
LT - Result is less than Request MDC, greater than sample specific MDC  
M - Requested MDC not met.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS, Matrix Spike Recovery within control limits.  
N - Matrix Spike Recovery outside control limits

#### Abbreviations:

TPU - Total Propagated Uncertainty  
DER - Duplicate Error Ratio  
BDL - Below Detection Limit  
NR - Not Reported  
SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 half-lives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	BP-SED-1-190613
Lab ID:	1906338-3

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 20-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 92.2 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190719d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.055 +/- 0.025	0.038	0.5	NA	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: RR MDF-SED-1-190613

Lab ID: 1906338-4

Library: USGS.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 12

Date Collected: 13-Jun-19

Date Prepared: 17-Jul-19

Date Analyzed: 19-Jul-19

Prep Batch: GS190717-3

QC Batch ID: GS190717-3-1

Run ID: GS190717-3A

Count Time: 1000 minutes

Report Basis: Dry Weight

Final Aliquot: 72.6 g

Prep Basis: Dry Weight

Moisture(%): NA

Result Units: pCi/g

File Name: 191470d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.111 +/- 0.031	0.042	0.5	NA	G

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	SRE-SED-1-190613
Lab ID:	1906338-7

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 106 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190616d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.037 +/- 0.024	0.039	0.5	NA	U,G

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS8-SED-1-190613
Lab ID:	1906338-8

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 89.9 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190788d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.036 +/- 0.019	0.030	0.5	NA	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OW-SED-1-190613
Lab ID:	1906338-9

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 135 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190648d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.031 +/- 0.018	0.028	0.5	NA	G

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Duplicate Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OW-SED-1-190613
Lab ID:	1906338-9DUP

Library: USGS.LIB

Sample Matrix: SOIL  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 17-Jul-19  
Date Analyzed: 20-Jul-19

Prep Batch: GS190717-3  
QCBatchID: GS190717-3-1  
Run ID: GS190717-3A  
Count Time: 1000 minutes  
Report Basis: Dry Weight

Final Aliquot: 135 g  
Prep Basis: Dry Weight  
Moisture(%): NA  
Result Units: pCi/g  
File Name: 190996d03

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	0.030 +/- 0.013	0.019	0.5	NA	G

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.  
W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

Data Package ID: GSS1906338-1

Date Printed:

Friday, July 26, 2019

ALS -- Fort Collins

LIMS Version: 6.901

Page 1 of 1



# Gamma Spectroscopy Case Narrative

---

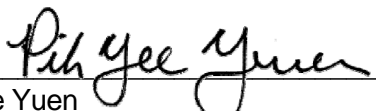
## GSI Environmental

AJU-BB – 5182

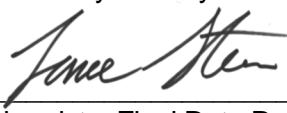
Work Order Number: 1906338

1. This report consists of analytical results for two water samples received by ALS on 06/15/2019.
2. These samples were prepared according to the current revision of SOP739.
3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP713. The analyses were completed on 06/22/2019.
4. The analysis results for these samples are reported in units of pCi/L. The samples were not filtered prior to analysis.
5. No problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

  
\_\_\_\_\_  
Pik Yee Yuen  
Radiochemistry Primary Data Reviewer

7/26/19  
Date

  
\_\_\_\_\_  
Radiochemistry Final Data Reviewer

7/26/19  
Date



# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1906338

**Client Name:** GSI Environmental

**Client Project Name:** AJU-BB

**Client Project Number:** 5182

**Client PO Number:**

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
OS3-W-190613	1906338-1		WATER	13-Jun-19	9:50
OS3-SED-1-190613	1906338-2		SOIL	13-Jun-19	10:10
BP-SED-1-190613	1906338-3		SOIL	13-Jun-19	10:40
RRMDF-SED-1-190613	1906338-4		SOIL	13-Jun-19	11:40
OS1-W-190613	1906338-5		WATER	13-Jun-19	13:15
OS1-SED-1-190613	1906338-6		SOIL	13-Jun-19	13:25
SRE-SED-1-190613	1906338-7		SOIL	13-Jun-19	14:25
OS8-SED-1-190613	1906338-8		SOIL	13-Jun-19	15:45
OW-SED-1-190613	1906338-9		SOIL	13-Jun-19	16:30



# ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524  
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

# Chain-of-Custody

Form 202d

WORKORDER # 1906338

PAGE 1 of 1

PROJECT NAME	PROJECT NO.	SAMPLER	TURNAROUND	DATE	By Lab or	Return to Client	
AJU-BB	5182	TZW	Standard	6/13/19			
COMPANY NAME	GSI Environmental	EDD FORMAT	Standard				
SEND REPORT TO	Susan Szillard	PURCHASE ORDER					
ADDRESS	155 Grand Ave.	BILL TO COMPANY					
CITY/STATE/ZIP	Oakland / CA / 94612	INVOICE ATTN TO					
PHONE	510 463 8484	ADDRESS					
FAX		CITY/STATE/ZIP					
E-MAIL	szillard@gsienv.com	PHONE					
	tenicks@gsienv.com	FAX					
		E-MAIL					
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
1	OS3-W-190613	Water	06/13/19	0950	3	2	
2	OS3-SED-1-190613	Soil	06/13/19	1010	1	N/A	
3	BP-SED-1-190613	Soil	06/13/19	1040	1	N/A	
4	RRMDF-SED-1-190613	Soil	06/13/19	1140	1	N/A	
5	OS1-W-190613	Water	06/13/19	1315	3	2	
6	OS1-SED-1-190613	Soil	06/13/19	1325	1	N/A	
7	SRE-SED-1-190613	Soil	06/13/19	1425	1	N/A	
8	OS8-SED-1-190613	Soil	06/13/19	1545	1	N/A	
9	OW-SED-1-190613	Soil	06/13/19	1630	1	N/A	

Tridium 906  
Sr90 05812  
CS137 901.1  
Hold

\*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)
3 of 9	<input checked="" type="checkbox"/> LEVEL II (Standard OC)
	<input type="checkbox"/> LEVEL III (Std OC + forms)
	<input type="checkbox"/> LEVEL IV (Std OC + forms + raw data)
	<input type="checkbox"/>

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>Travis Wicks</i>	Travis Wicks	6/13/19	1755
RELINQUISHED BY	<i>FEDEX</i>			
RECEIVED BY	<i>Emily Lyons</i>	EMILY LYONS	06.15.19	0950
RELINQUISHED BY				
RECEIVED BY				

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GSI Enviro. Workorder No: 1906338  
Project Manager: LRS Initials: Em Date: 06.15.19

1. Are airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO *
3. Are custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO *
4. Is there a COC (chain-of-custody) present?		<input checked="" type="radio"/> YES	NO *
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO *
6. Are short-hold samples present?		YES	<input checked="" type="radio"/> NO
7. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO *
8. Were all sample containers received intact? (not broken or leaking)		<input checked="" type="radio"/> YES	NO *
9. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO *
10. Are all samples in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO *
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO *
12. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO *
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	<input checked="" type="radio"/> N/A	YES	NO
14. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: #1 <input checked="" type="radio"/> #3 #4	RAD ONLY <input checked="" type="radio"/> YES	NO

Cooler #: 1  
Temperature (°C): 2.1  
No. of custody seals on cooler: 2  
External μR/hr reading: 1000  
Background μR/hr reading: 10

DOT Survey/ Acceptance Information

Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)

\* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

All client bottle ID's vs ALS lab ID's double-checked by: Em

If applicable, was the client contacted? YES / NO / NA Contact: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager Signature / Date: [Signature] 6/15/19

ORIGIN ID: JTOA (510) 463-8484  
GSI  
ENVIRONMENTAL  
155 GRAND AVE STE 704  
OAKLAND, CA 94612  
UNITED STATES US

SHIP DATE: 13 JUN 1  
ACTWGT: 8.60 LB  
CAD: 6991499/SSF02002  
DIMS: 25x13x14 IN  
BILL THIRD PARTY

TO **ALS**

**225 COMMERCE DR**  
**FORT COLLINS CO 80524**

**8-2**

(970) 490-1611  
REF: DEPT:



**FedEx**  
Express



11010108101611

1 of 2  
TRK# 7878 7782 7631  
0201  
## MASTER ##

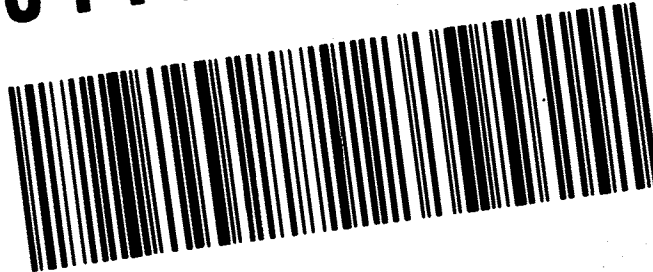
**SATURDAY 4:30P**

**\*\* 2DAY \*\***

**DSR AHS**  
**80524**

**CO-US DEN**

**SO FTCA 0.1°C**



# Gamma Spectroscopy Results

PAI 713 Rev 14

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: GS190620-9CMB

Library: USGS.LIB

Sample Matrix: WATER  
Prep SOP: PAI 739 Rev 12  
Date Collected: 20-Jun-19  
Date Prepared: 20-Jun-19  
Date Analyzed: 22-Jun-19

Prep Batch: GS190620-9  
QCBatchID: GS190620-9-3  
Run ID: GS190620-9A  
Count Time: 500 minutes

Final Aliquot: 1000 ml  
Result Units: pCi/l  
File Name: 190583d05C

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	1.6 +/- 3.7	6.1	10	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 half-lives.  
M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

Data Package ID: GSW1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Laboratory Control Sample(s)

**Lab Name:** ALS -- Fort Collins  
**Work Order Number:** 1906338  
**Client Name:** GSI Environmental  
**ClientProject ID:** AJU-BB 5182

<b>Lab ID:</b> GS190620-9LCS	<b>Sample Matrix:</b> WATER	<b>Prep Batch:</b> GS190620-9	<b>Final Aliquot:</b> 1000 ml
<b>Library:</b> ANALYTICAL.LI	<b>Prep SOP:</b> PAI 739 Rev 12	<b>QCBatchID:</b> GS190620-9-3	<b>Result Units:</b> pCi/l
	<b>Date Collected:</b> 20-Jun-19	<b>Run ID:</b> GS190620-9A	<b>File Name:</b> 190677d02
	<b>Date Prepared:</b> 20-Jun-19	<b>Count Time:</b> 30 minutes	
	<b>Date Analyzed:</b> 22-Jun-19		

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10045-97-3	Cs-137	38000 +/- 4500	200	38190	99.6	85 - 115	P,M3
14596-10-2	Am-241	97000 +/- 12000	5000	101300	95.4	85 - 115	P
10198-40-0	Co-60	41400 +/- 4900	100	41960	98.5	85 - 115	P

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 half-lives.

**Data Package ID:** GSW1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: OS3-W-190613

Lab ID: 1906338-1

Library: USGS.LIB

Sample Matrix: WATER

Prep SOP: PAI 739 Rev 12

Date Collected: 13-Jun-19

Date Prepared: 20-Jun-19

Date Analyzed: 22-Jun-19

Prep Batch: GS190620-9

QC Batch ID: GS190620-9-3

Run ID: GS190620-9A

Count Time: 335 minutes

Report Basis: Unfiltered

Final Aliquot: 1000 ml

Prep Basis: Unfiltered

Moisture(%): NA

Result Units: pCi/l

File Name: 190534d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	2.8 +/- 3.1	5.1	10	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP

Y1

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 half-lives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW1906338-1

# Gamma Spectroscopy Results

PAI 713 Rev 14

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS1-W-190613
Lab ID:	1906338-5

Library: USGS.LIB

Sample Matrix: WATER  
Prep SOP: PAI 739 Rev 12  
Date Collected: 13-Jun-19  
Date Prepared: 20-Jun-19  
Date Analyzed: 22-Jun-19

Prep Batch: GS190620-9  
QCBatchID: GS190620-9-3  
Run ID: GS190620-9A  
Count Time: 335 minutes  
Report Basis: Unfiltered

Final Aliquot: 1000 ml  
Prep Basis: Unfiltered  
Moisture(%): NA  
Result Units: pCi/l  
File Name: 190684d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10045-97-3	Cs-137	-2.5 +/- 3.9	7.1	10	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TP  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

SQ - Spectral quality prevents accurate quantitation.  
SI - Nuclide identification and/or quantitation is tentative.  
TI - Nuclide identification is tentative.  
R - Nuclide has exceeded 8 halfives.  
G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSW1906338-1





# Tritium Case Narrative

---

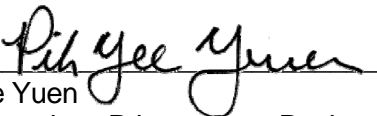
## GSI Environmental

AJU-BB – 5182


Work Order Number: 1906338

1. This report consists of the analytical results for two water samples and five soil samples received by ALS on 06/15/2019.
2. The water samples were prepared according to the current revision of SOP 700. The soil samples were prepared according to the current revision of SOP 754.
3. The samples were analyzed for the presence of tritium according to the current revision of SOP 704. The analyses were completed on 07/24/2019.
4. The analysis results for the soil samples are reported on a 'Dry Weight' basis in units of pCi/gram.
5. The analysis results for the water samples are reported in units of pCi/L. The samples were not filtered prior to analysis.
6. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

  
\_\_\_\_\_  
Pik Yee Yuen  
Radiochemistry Primary Data Reviewer

7/26/19  
Date

  
\_\_\_\_\_  
Radiochemistry Final Data Reviewer

7/26/19  
Date

# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1906338

**Client Name:** GSI Environmental

**Client Project Name:** AJU-BB

**Client Project Number:** 5182

**Client PO Number:**

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
OS3-W-190613	1906338-1		WATER	13-Jun-19	9:50
OS3-SED-1-190613	1906338-2		SOIL	13-Jun-19	10:10
BP-SED-1-190613	1906338-3		SOIL	13-Jun-19	10:40
RRMDF-SED-1-190613	1906338-4		SOIL	13-Jun-19	11:40
OS1-W-190613	1906338-5		WATER	13-Jun-19	13:15
OS1-SED-1-190613	1906338-6		SOIL	13-Jun-19	13:25
SRE-SED-1-190613	1906338-7		SOIL	13-Jun-19	14:25
OS8-SED-1-190613	1906338-8		SOIL	13-Jun-19	15:45
OW-SED-1-190613	1906338-9		SOIL	13-Jun-19	16:30



**ALS Environmental**

225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

**Chain-of-Custody**

Form 202d6

WORKORDER # **1906338**

PAGE 1 of 1

PROJECT NAME	PROJECT NO.	SAMPLER	TURNAROUND	DATE	By Lab or	Return to Client	
AJU-BB	5182	TZW	Standard	6/13/19	Standard		
COMPANY NAME	GSI Environmental	EDD FORMAT	Standard				
SEND REPORT TO	Susan Szillard	PURCHASE ORDER					
ADDRESS	155 Grand Ave.	BILL TO COMPANY					
CITY/STATE/ZIP	Oakland / CA / 94612	INVOICE ATTN TO					
PHONE	510 463 8484	ADDRESS					
FAX		CITY/STATE/ZIP					
E-MAIL	szillard@gsienv.com	PHONE					
	tenicks@gsienv.com	FAX					
		E-MAIL					
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
1	OS3-W-190613	Water	06/13/19	0950	3	2	
2	OS3-SED-1-190613	Soil	06/13/19	1010	1	N/A	
3	BP-SED-1-190613	Soil	06/13/19	1040	1	N/A	
4	RRMDF-SED-1-190613	Soil	06/13/19	1140	1	N/A	
5	OS1-W-190613	Water	06/13/19	1315	3	2	
6	OS1-SED-1-190613	Soil	06/13/19	1325	1	N/A	
7	SRE-SED-1-190613	Soil	06/13/19	1425	1	N/A	
8	OS8-SED-1-190613	Soil	06/13/19	1545	1	N/A	
9	OW-SED-1-190613	Soil	06/13/19	1630	1	N/A	

Tridium 906  
 Sr90 05812  
 CS137 901.1  
 HOLD

\*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)
3 of 16	<input checked="" type="checkbox"/> LEVEL II (Standard OC)
	<input type="checkbox"/> LEVEL III (Std OC + forms)
	<input type="checkbox"/> LEVEL IV (Std OC + forms + raw data)
	<input type="checkbox"/>

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>Travis Wicks</i>	Travis Wicks	6/13/19	1755
RELINQUISHED BY	<i>FEDEX</i>			
RECEIVED BY	<i>Emily Lyons</i>	EMILY LYONS	06.15.19	0950
RELINQUISHED BY				
RECEIVED BY				

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GSI Enviro.

Workorder No: 1906338

Project Manager: LRS

Initials: Em Date: 06.15.19

1.	Are airbills / shipping documents present and/or removable?		DROP OFF	<input checked="" type="radio"/> YES	NO
2.	Are custody seals on <b>shipping</b> containers intact?		NONE	<input checked="" type="radio"/> YES	NO *
3.	Are custody seals on <b>sample</b> containers intact?		<input checked="" type="radio"/> NONE	YES	NO *
4.	Is there a COC (chain-of-custody) present?			<input checked="" type="radio"/> YES	NO *
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<input checked="" type="radio"/> YES	NO *
6.	Are short-hold samples present?			YES	<input checked="" type="radio"/> NO
7.	Are all samples within holding times for the requested analyses?			<input checked="" type="radio"/> YES	NO *
8.	Were all sample containers received intact? (not broken or leaking)			<input checked="" type="radio"/> YES	NO *
9.	Is there sufficient sample for the requested analyses?			<input checked="" type="radio"/> YES	NO *
10.	Are all samples in the proper containers for the requested analyses?			<input checked="" type="radio"/> YES	NO *
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	<input checked="" type="radio"/> YES	NO *
12.	Are all aqueous non-preserved samples pH 4-9?		N/A	<input checked="" type="radio"/> YES	NO *
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		<input checked="" type="radio"/> N/A	YES	NO
14.	Were the samples shipped on ice?			<input checked="" type="radio"/> YES	NO
15.	Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#1	<input checked="" type="radio"/> #3	#4
	Cooler #:	<u>1</u>			
	Temperature (°C):	<u>0.1</u>			
	No. of custody seals on cooler:	<u>2</u>			
DOT Survey/ Acceptance Information	External µR/hr reading:	<u>1000</u>			
	Background µR/hr reading:	<u>10</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)					

\* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

All client bottle ID's vs ALS lab ID's double-checked by: Em

If applicable, was the client contacted? YES / NO / NA Contact: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager Signature / Date: [Signature] 6/15/19

ORIGIN ID: JTOA (510) 463-8484  
GSI  
ENVIRONMENTAL  
155 GRAND AVE STE 704  
OAKLAND, CA 94612  
UNITED STATES US

SHIP DATE: 13 JUN 1  
ACTWGT: 8.60 LB  
CAD: 6991499/SSF02002  
DIMS: 25x13x14 IN  
BILL THIRD PARTY

TO **ALS**

**225 COMMERCE DR**  
**FORT COLLINS CO 80524**

**8-2**

(970) 490-1611  
IN: PR:

REF:

DEPT:



**FedEx**  
Express



1101010810161

1 of 2  
TRK# 7878 7782 7631  
0201  
## MASTER ##

**SATURDAY 4:30P**

**\*\* 2DAY \*\***

**DSR AHS**  
**80524**

**CO-US DEN**

**SO FTCA 0.1°C**



# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: 3H190618-3MB	Sample Matrix: WATER	Prep Batch: 3H190618-3	Final Aliquot: 10.0 ml
	Prep SOP: PAI 700 Rev 15	QCBatchID: 3H190618-3-3	Result Units: pCi/l
	Date Collected: 18-Jun-19	Run ID: 3H190618-3A	File Name: B60_09_062101
	Date Prepared: 18-Jun-19	Count Time: 90 minutes	
	Date Analyzed: 22-Jun-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	-70 +/- 180	310	400	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: 3H190627-2MB	Sample Matrix: SOIL	Prep Batch: 3H190627-2	Final Aliquot: 50.0 g
	Prep SOP: PAI 754 Rev 8	QCBatchID: 3H190627-2-2	Result Units: pCi/g
	Date Collected: 27-Jun-19	Run ID: 3H190627-2C	File Name: B60_19_072301
	Date Prepared: 27-Jun-19	Count Time: 180 minutes	
	Date Analyzed: 23-Jul-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.015 +/- 0.026	0.043	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: 3H190618-3LCS

Sample Matrix: WATER  
Prep SOP: PAI 700 Rev 15  
Date Collected: 18-Jun-19  
Date Prepared: 18-Jun-19  
Date Analyzed: 22-Jun-19

Prep Batch: 3H190618-3  
QCBatchID: 3H190618-3-3  
Run ID: 3H190618-3A  
Count Time: 90 minutes

Final Aliquot: 9.84 ml  
Result Units: pCi/l  
File Name: B60\_09\_062101

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	17400 +/- 2700	300	16790	103	80 - 120	P

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

Data Package ID: H31906338-1



# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Laboratory Control Sample(s)

**Lab Name:** ALS -- Fort Collins  
**Work Order Number:** 1906338  
**Client Name:** GSI Environmental  
**ClientProject ID:** AJU-BB 5182

<b>Lab ID:</b> 3H190627-2LCS	<b>Sample Matrix:</b> SOIL	<b>Prep Batch:</b> 3H190627-2	<b>Final Aliquot:</b> 48.8 g
	<b>Prep SOP:</b> PAI 754 Rev 8	<b>QCBatchID:</b> 3H190627-2-2	<b>Result Units:</b> pCi/g
	<b>Date Collected:</b> 27-Jun-19	<b>Run ID:</b> 3H190627-2C	<b>File Name:</b> B60_10_072401
	<b>Date Prepared:</b> 27-Jun-19	<b>Count Time:</b> 30 minutes	
	<b>Date Analyzed:</b> 24-Jul-19		

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10028-17-8	H-3	2.72 +/- 0.44	0.11	2.506	109	85 - 115	P

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

**Data Package ID:** H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID:	OS3-W-190613
Lab ID:	1906338-1

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 15

Date Collected: 13-Jun-19

Date Prepared: 18-Jun-19

Date Analyzed: 22-Jun-19

Prep Batch: 3H190618-3

QC Batch ID: 3H190618-3-3

Run ID: 3H190618-3A

Count Time: 90 minutes

Report Basis: Unfiltered

Final Aliquot: 10.0 ml

Prep Basis: Unfiltered

Moisture(%): 100.000

Result Units: pCi/l

File Name: B60\_09\_062101

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	-70 +/- 180	310	400	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID:	BP-SED-1-190613
Lab ID:	1906338-3

Sample Matrix: SOIL  
Prep SOP: PAI 754 Rev 8  
Date Collected: 13-Jun-19  
Date Prepared: 27-Jun-19  
Date Analyzed: 24-Jul-19

Prep Batch: 3H190627-2  
QCBatchID: 3H190627-2-2  
Run ID: 3H190627-2C  
Count Time: 30 minutes  
Report Basis: Dry Weight

Final Aliquot: 91.1 g  
Prep Basis: As Received  
Moisture(%): 3.497  
Result Units: pCi/g  
File Name: B60\_10\_072401

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.023 +/- 0.037	0.061	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: RR MDF-SED-1-190613

Lab ID: 1906338-4

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 8

Date Collected: 13-Jun-19

Date Prepared: 27-Jun-19

Date Analyzed: 24-Jul-19

Prep Batch: 3H190627-2

QC Batch ID: 3H190627-2-2

Run ID: 3H190627-2C

Count Time: 30 minutes

Report Basis: Dry Weight

Final Aliquot: 87.3 g

Prep Basis: As Received

Moisture(%): 8.963

Result Units: pCi/g

File Name: B60\_10\_072401

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.019 +/- 0.041	0.068	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: OS1-W-190613

Lab ID: 1906338-5

Sample Matrix: WATER

Prep SOP: PAI 700 Rev 15

Date Collected: 13-Jun-19

Date Prepared: 18-Jun-19

Date Analyzed: 22-Jun-19

Prep Batch: 3H190618-3

QC Batch ID: 3H190618-3-3

Run ID: 3H190618-3A

Count Time: 90 minutes

Report Basis: Unfiltered

Final Aliquot: 10.0 ml

Prep Basis: Unfiltered

Moisture(%): 100.000

Result Units: pCi/l

File Name: B60\_09\_062101

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	30 +/- 190	310	400	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: SRE-SED-1-190613

Lab ID: 1906338-7

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 8

Date Collected: 13-Jun-19

Date Prepared: 27-Jun-19

Date Analyzed: 24-Jul-19

Prep Batch: 3H190627-2

QC Batch ID: 3H190627-2-2

Run ID: 3H190627-2C

Count Time: 30 minutes

Report Basis: Dry Weight

Final Aliquot: 85.3 g

Prep Basis: As Received

Moisture(%): 4.254

Result Units: pCi/g

File Name: B60\_10\_072401

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.016 +/- 0.039	0.066	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID: OS8-SED-1-190613

Lab ID: 1906338-8

Sample Matrix: SOIL

Prep SOP: PAI 754 Rev 8

Date Collected: 13-Jun-19

Date Prepared: 27-Jun-19

Date Analyzed: 23-Jul-19

Prep Batch: 3H190627-2

QC Batch ID: 3H190627-2-2

Run ID: 3H190627-2C

Count Time: 180 minutes

Report Basis: Dry Weight

Final Aliquot: 21.2 g

Prep Basis: As Received

Moisture(%): 37.274

Result Units: pCi/g

File Name: B60\_19\_072301

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.021 +/- 0.097	0.161	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1

# Tritium by Liquid Scintillation

PAI 704 Rev 12

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OW-SED-1-190613
Lab ID:	1906338-9

Sample Matrix: SOIL  
Prep SOP: PAI 754 Rev 8  
Date Collected: 13-Jun-19  
Date Prepared: 27-Jun-19  
Date Analyzed: 24-Jul-19

Prep Batch: 3H190627-2  
QCBatchID: 3H190627-2-2  
Run ID: 3H190627-2C  
Count Time: 30 minutes  
Report Basis: Dry Weight

Final Aliquot: 61.2 g  
Prep Basis: As Received  
Moisture(%): 13.018  
Result Units: pCi/g  
File Name: B60\_10\_072401

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10028-17-8	H-3	0.026 +/- 0.060	0.101	0.2	NA	U

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: H31906338-1





# Strontium-90

## Case Narrative

---

### **GSI Environmental**

AJU-BB – 5182

Work Order Number: 1906338

1. This report consists of the analytical results five soil samples and two water samples received by ALS on 06/15/2019.
2. These samples were prepared according to the current revision of SOP 707.
3. These samples were analyzed for the presence of  $^{90}\text{Sr}$  according to the current revision of SOP 724. The analyses were completed on 07/19/2019.
4. Total radio-strontium is reported as  $^{90}\text{Sr}$ . The presence of other radioisotopes of strontium may cause positive bias in the measured strontium concentration.
5. The analysis results for the soil samples are reported on a 'Dry Weight' basis in units of pCi/gram.
6. Sample volume was insufficient to allow preparation of a duplicate in batch SR190708-1. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate.
7. No anomalous situations were encountered during the preparation and analysis of these samples. All quality control criteria were met.



The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Pik Yee Yuen  
Pik Yee Yuen  
Radiochemistry Primary Data Reviewer

7/26/19  
Date

James Chen  
Radiochemistry Final Data Reviewer

7/26/19  
Date

# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1906338

**Client Name:** GSI Environmental

**Client Project Name:** AJU-BB

**Client Project Number:** 5182

**Client PO Number:**

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
OS3-W-190613	1906338-1		WATER	13-Jun-19	9:50
OS3-SED-1-190613	1906338-2		SOIL	13-Jun-19	10:10
BP-SED-1-190613	1906338-3		SOIL	13-Jun-19	10:40
RRMDF-SED-1-190613	1906338-4		SOIL	13-Jun-19	11:40
OS1-W-190613	1906338-5		WATER	13-Jun-19	13:15
OS1-SED-1-190613	1906338-6		SOIL	13-Jun-19	13:25
SRE-SED-1-190613	1906338-7		SOIL	13-Jun-19	14:25
OS8-SED-1-190613	1906338-8		SOIL	13-Jun-19	15:45
OW-SED-1-190613	1906338-9		SOIL	13-Jun-19	16:30



**ALS Environmental**

225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

**Chain-of-Custody**

Form 202d6

WORKORDER # **1906338**

PAGE 1 of 1

PROJECT NAME	PROJECT NO.	COMPANY NAME	SEND REPORT TO	ADDRESS	CITY/STATE/ZIP	PHONE	FAX	E-MAIL	SAMPLER	TZW	DATE	TURNAROUND	DISPOSAL	By Lab or	Return to Client
AJU-BB	5182	GSI Environmental	Susan Szillard	155 Grand Ave.	Oakland / CA / 94612	510 463 8484		Smgallard@gsienv.com tbenicks@gsienv.com	TZW	Standard	6/13/19	Standard			
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC								
1	OS3-W-190613	Water	06/13/19	0950	3	2									
2	OS3-SED-1-190613	Soil	06/13/19	1010	1	N/A									
3	BP-SED-1-190613	Soil	06/13/19	1040	1	N/A									
4	RRMDF-SED-1-190613	Soil	06/13/19	1140	1	N/A									
5	OS1-W-190613	Water	06/13/19	1315	3	2									
6	OS1-SED-1-190613	Soil	06/13/19	1325	1	N/A									
7	SRE-SED-1-190613	Soil	06/13/19	1425	1	N/A									
8	OS8-SED-1-190613	Soil	06/13/19	1545	1	N/A									
9	OW-SED-1-190613	Soil	06/13/19	1630	1	N/A									

\*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)		
	<input checked="" type="checkbox"/>	LEVEL II (Standard OC)	
	<input type="checkbox"/>	LEVEL III (Std OC + forms)	
	<input type="checkbox"/>	LEVEL IV (Std OC + forms + raw data)	
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035			

RELINQUISHED BY	SIGATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	Travis Wicks	Travis Wicks	6/13/19	1755
RELINQUISHED BY	FEDEX			
RECEIVED BY	Emily Lyons	EMILY LYONS	06.15.19	0950
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GSI Enviro.

Workorder No: 1906338

Project Manager: LRS

Initials: Em Date: 06.15.19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	<u>YES</u>	NO
2. Are custody seals on <b>shipping</b> containers intact?		NONE	<u>YES</u>	NO *
3. Are custody seals on <b>sample</b> containers intact?		<u>NONE</u>	YES	NO *
4. Is there a COC (chain-of-custody) present?			<u>YES</u>	NO *
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<u>YES</u>	NO *
6. Are short-hold samples present?			YES	<u>NO</u>
7. Are all samples within holding times for the requested analyses?			<u>YES</u>	NO *
8. Were all sample containers received intact? (not broken or leaking)			<u>YES</u>	NO *
9. Is there sufficient sample for the requested analyses?			<u>YES</u>	NO *
10. Are all samples in the proper containers for the requested analyses?			<u>YES</u>	NO *
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	<u>YES</u>	NO *
12. Are all aqueous non-preserved samples pH 4-9?		N/A	<u>YES</u>	NO *
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		<u>N/A</u>	YES	NO
14. Were the samples shipped on ice?			<u>YES</u>	NO
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#1	<u>#3</u>	#4
	Cooler #:	<u>1</u>		
	Temperature (°C):	<u>0.1</u>		
	No. of custody seals on cooler:	<u>2</u>		
	External µR/hr reading:	<u>1000</u>		
	Background µR/hr reading:	<u>10</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)				

DOT Survey/ Acceptance Information

\* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

All client bottle ID's vs ALS lab ID's double-checked by: Em

If applicable, was the client contacted? YES / NO / NA Contact: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager Signature / Date: [Signature] 6/15/19

ORIGIN ID: JTOA (510) 463-8484  
GSI  
ENVIRONMENTAL  
155 GRAND AVE STE 704  
OAKLAND, CA 94612  
UNITED STATES US

SHIP DATE: 13 JUN 1  
ACTWGT: 8.60 LB  
CAD: 6991499/SSF02002  
DIMS: 25x13x14 IN  
BILL THIRD PARTY

TO **ALS**

**225 COMMERCE DR**  
**FORT COLLINS CO 80524**

**8-2**

(970) 490-1611  
REF: DEPT:



**FedEx**  
Express



161010810161

1 of 2  
TRK# 7878 7782 7631  
0201  
## MASTER ##

**SATURDAY 4:30P**

**\*\* 2DAY \*\***

**DSR AHS**  
**80524**

**CO-US DEN**

**SO FTCA 0.1°C**



# Strontium-90 by GFPC

PAI 724 Rev 13

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: SR190708-1MB	Sample Matrix: WATER	Prep Batch: SR190708-1	Final Aliquot: 994 ml
	Prep SOP: PAI 707 Rev 15	QCBatchID: SR190708-1-2	Result Units: pCi/l
	Date Collected: 08-Jul-19	Run ID: SR190708-1A	File Name: SRC0711A
	Date Prepared: 08-Jul-19	Count Time: 120 minutes	
	Date Analyzed: 11-Jul-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.12 +/- 0.26	0.58	1	NA	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1019	873.2	ug	85.7	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Method Blank Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: SR190715-1MB	Sample Matrix: SOIL	Prep Batch: SR190715-1	Final Aliquot: 1.97 g
	Prep SOP: PAI 707 Rev 15	QCBatchID: SR190715-1-1	Result Units: pCi/g
	Date Collected: 15-Jul-19	Run ID: SR190715-1A	File Name: SRC0719B
	Date Prepared: 15-Jul-19	Count Time: 600 minutes	
	Date Analyzed: 19-Jul-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.085 +/- 0.066	0.114	0.25	NA	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1017	925.4	ug	91.0	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit

M - Requested MDC not met.  
B - Analyte concentration greater than MDC.  
B3 - Analyte concentration greater than MDC but less than Requested MDC.  
DL - Decision Level

Data Package ID: SR1906338-1



# Strontium-90 by GFPC

PAI 724 Rev 13

## Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: SR190708-1LCS

Sample Matrix: WATER  
Prep SOP: PAI 707 Rev 15  
Date Collected: 08-Jul-19  
Date Prepared: 08-Jul-19  
Date Analyzed: 11-Jul-19

Prep Batch: SR190708-1  
QCBatchID: SR190708-1-2  
Run ID: SR190708-1A  
Count Time: 90 minutes

Final Aliquot: 994 ml  
Result Units: pCi/l  
File Name: SRC0711

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	11.8 +/- 2.9	0.7	11.62	101	75 - 125	P

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1019	876.7	ug	86.0	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: SR190708-1LCSD

Sample Matrix: WATER  
Prep SOP: PAI 707 Rev 15  
Date Collected: 08-Jul-19  
Date Prepared: 08-Jul-19  
Date Analyzed: 11-Jul-19

Prep Batch: SR190708-1  
QCBatchID: SR190708-1-2  
Run ID: SR190708-1A  
Count Time: 90 minutes

Final Aliquot: 994 ml  
Result Units: pCi/l  
File Name: SRC0711

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	11.2 +/- 2.7	0.6	11.62	96.1	75 - 125	P

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1019	925.3	ug	90.8	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Lab ID: SR190715-1LCS	Sample Matrix: SOIL	Prep Batch: SR190715-1	Final Aliquot: 1.97 g
	Prep SOP: PAI 707 Rev 15	QCBatchID: SR190715-1-1	Result Units: pCi/g
	Date Collected: 15-Jul-19	Run ID: SR190715-1A	File Name: SRC0718C
	Date Prepared: 15-Jul-19	Count Time: 30 minutes	
	Date Analyzed: 18-Jul-19		

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	6.1 +/- 1.6	0.6	5.806	105	75 - 125	P,M3

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1029	959.8	ug	93.3	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.  
Y2 - Chemical Yield outside default limits.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS Recovery within control limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Minimum Detectable Concentration

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID:	
Lab ID:	SR190708-1LCSD

Sample Matrix: WATER

Prep SOP: PAI 707 Rev 15

Date Collected: 08-Jul-19

Date Prepared: 08-Jul-19

Date Analyzed: 11-Jul-19

Prep Batch: SR190708-1

QCBatchID: SR190708-1-2

Run ID: SR190708-1A

Count Time: 90 minutes

Final Aliquot: 994 ml

Prep Basis: Unfiltered

Moisture(%): NA

Result Units: pCi/l

File Name: SRC0711

CASNO	Analyte	Sample				Duplicate				DER	DER Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
10098-97-2	Sr-90	11.8 +/-	2.9	0.7	P	11.2 +/-	2.7	0.6	P	0.151	2.13

### Comments:

#### Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

#### Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins

Work Order Number: 1906338

Client Name: GSI Environmental

ClientProject ID: AJU-BB 5182

Field ID:	OS8-SED-1-190613
Lab ID:	1906338-8DUP

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes

Final Aliquot: 2.05 g  
Prep Basis: As Received  
Moisture(%): 37.274  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Analyte	Sample				Duplicate				DER	DER Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
10098-97-2	Sr-90	0.36 +/-	0.14	0.18		0.20 +/-	0.10	0.16		0.934	2.13

### Comments:

#### Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
Y2 - Chemical Yield outside default limits.  
W - DER is greater than Warning Limit of 1.42  
D - DER is greater than Control Limit of 2.13  
LT - Result is less than Request MDC, greater than sample specific MDC  
M - Requested MDC not met.  
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
L - LCS Recovery below lower control limit.  
H - LCS Recovery above upper control limit.  
P - LCS, Matrix Spike Recovery within control limits.  
N - Matrix Spike Recovery outside control limits

#### Abbreviations:

TPU - Total Propagated Uncertainty  
DER - Duplicate Error Ratio  
BDL - Below Detection Limit  
NR - Not Reported

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS3-W-190613
Lab ID:	1906338-1

Sample Matrix: WATER  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 08-Jul-19  
Date Analyzed: 11-Jul-19

Prep Batch: SR190708-1  
QCBatchID: SR190708-1-2  
Run ID: SR190708-1A  
Count Time: 90 minutes  
Report Basis: Unfiltered

Final Aliquot: 994 ml  
Prep Basis: Unfiltered  
Moisture(%): NA  
Result Units: pCi/l  
File Name: SRC0711

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.04 +/- 0.28	0.65	1	NA	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1655	1483	ug	89.6	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	BP-SED-1-190613
Lab ID:	1906338-3

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.04 g  
Prep Basis: As Received  
Moisture(%): 3.497  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.32 +/- 0.10	0.11	0.25	NA	

## Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1080	978.6	ug	90.6	40 - 110 %	

## Comments:

### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	RRMDF-SED-1-190613
Lab ID:	1906338-4

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.03 g  
Prep Basis: As Received  
Moisture(%): 8.963  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.48 +/- 0.13	0.11	0.25	NA	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1146	1041	ug	90.8	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1



# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS1-W-190613
Lab ID:	1906338-5

Sample Matrix: WATER  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 08-Jul-19  
Date Analyzed: 11-Jul-19

Prep Batch: SR190708-1  
QCBatchID: SR190708-1-2  
Run ID: SR190708-1A  
Count Time: 90 minutes  
Report Basis: Unfiltered

Final Aliquot: 994 ml  
Prep Basis: Unfiltered  
Moisture(%): NA  
Result Units: pCi/l  
File Name: SRC0711

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.07 +/- 0.29	0.66	1	NA	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1401	1174	ug	83.8	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	SRE-SED-1-190613
Lab ID:	1906338-7

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.05 g  
Prep Basis: As Received  
Moisture(%): 4.254  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.232 +/- 0.087	0.116	0.25	NA	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1063	973.0	ug	91.6	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS8-SED-1-190613
Lab ID:	1906338-8

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.05 g  
Prep Basis: As Received  
Moisture(%): 37.274  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.36 +/- 0.14	0.18	0.25	NA	

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1746	1519	ug	87.0	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Duplicate Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OS8-SED-1-190613
Lab ID:	1906338-8DUP

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.05 g  
Prep Basis: As Received  
Moisture(%): 37.274  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.20 +/- 0.10	0.16	0.25	NA	

## Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1622	1619	ug	99.8	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.  
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
Y2 - Chemical Yield outside default limits.  
M - The requested MDC was not met.  
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.  
W - DER is greater than Warning Limit of 1.42  
  
D - DER is greater than Control Limit of 2.13

#### Abbreviations:

TPU - Total Propagated Uncertainty  
MDC - Sample specific Minimum Detectable Concentration  
BDL - Below Detection Limit  
DL - Decision Level

Data Package ID: SR1906338-1

Date Printed:

Friday, July 26, 2019

ALS -- Fort Collins

LIMS Version: 6.901

Page 1 of 1

# Strontium-90 by GFPC

PAI 724 Rev 13

## Sample Results

Lab Name: ALS -- Fort Collins  
Work Order Number: 1906338  
Client Name: GSI Environmental  
ClientProject ID: AJU-BB 5182

Field ID:	OW-SED-1-190613
Lab ID:	1906338-9

Sample Matrix: SOIL  
Prep SOP: PAI 707 Rev 15  
Date Collected: 13-Jun-19  
Date Prepared: 15-Jul-19  
Date Analyzed: 19-Jul-19

Prep Batch: SR190715-1  
QCBatchID: SR190715-1-1  
Run ID: SR190715-1A  
Count Time: 600 minutes  
Report Basis: Dry Weight

Final Aliquot: 2.04 g  
Prep Basis: As Received  
Moisture(%): 13.018  
Result Units: pCi/g  
File Name: SRC0719B

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	0.097 +/- 0.074	0.128	0.25	NA	U

### Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1176	1080	ug	91.8	40 - 110 %	

### Comments:

#### Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

#### Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1906338-1

## ANALYTICAL REPORT

Eurofins TestAmerica, Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-243821-1  
Client Project/Site: AJU-BB

For:  
GSI Environmental, Inc  
155 Grand Avenue  
Suite 704  
Oakland, California 94612

Attn: Susan Gallardo



---

Authorized for release by:  
6/25/2019 12:48:16 PM

Afsaneh Salimpour, Senior Project Manager  
(925)484-1919  
[afsaneh.salimpour@testamericainc.com](mailto:afsaneh.salimpour@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Sample Summary . . . . .	3
Case Narrative . . . . .	4
Client Sample Results . . . . .	5
Method Summary . . . . .	9
Lab Chronicle . . . . .	10
QC Sample Results . . . . .	12
QC Association Summary . . . . .	16
Definitions/Glossary . . . . .	18
Certification Summary . . . . .	19
Chain of Custody . . . . .	20
Receipt Checklists . . . . .	21

# Sample Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-243821-1	OS3-W-190613	Water	06/13/19 09:50	06/14/19 09:23	
440-243821-3	BP-SED-1-190613	Solid	06/13/19 10:40	06/14/19 09:23	
440-243821-4	RRMDF-SED-1-190613	Solid	06/13/19 11:40	06/14/19 09:23	
440-243821-5	OS1-W-190613	Water	06/13/19 13:15	06/14/19 09:23	
440-243821-7	SRE-SED-1-190613	Solid	06/13/19 14:25	06/14/19 09:23	
440-243821-8	OS8-SED-1-190613	Solid	06/13/19 15:45	06/14/19 09:23	
440-243821-9	OW-SED-1-190613	Solid	06/13/19 16:30	06/14/19 09:23	



# Case Narrative

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

---

## Job ID: 440-243821-1

---

Laboratory: Eurofins TestAmerica, Irvine

### Narrative

---

#### Job Narrative 440-243821-1

### Comments

No additional comments.

### Receipt

The samples were received on 6/14/2019 9:23 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

### HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Metals

Method(s) 6010B: The method blank for preparation batch 440-553089 and analytical batch 440-553213 contained Antimony above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method(s) 6010B: The serial dilution performed for the following sample associated with batch 440-554195 was outside control limits: (440-243821-A-3-B SD ^25)

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-554011 and analytical batch 440-554195 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: OS3-W-190613**

**Lab Sample ID: 440-243821-1**

Date Collected: 06/13/19 09:50

Matrix: Water

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			06/17/19 11:21	1

**Method: 6010B - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010	0.0060	mg/L		06/17/19 12:04	06/17/19 22:08	1
Arsenic	ND		0.010	0.0089	mg/L		06/17/19 12:04	06/17/19 22:08	1
<b>Barium</b>	<b>0.039</b>		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1
Beryllium	ND		0.0020	0.0010	mg/L		06/17/19 12:04	06/17/19 22:08	1
Cadmium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 22:08	1
Chromium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 22:08	1
Cobalt	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1
<b>Copper</b>	<b>0.0083</b>	<b>J</b>	0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1
Lead	ND		0.0050	0.0038	mg/L		06/17/19 12:04	06/17/19 22:08	1
Molybdenum	ND		0.020	0.010	mg/L		06/17/19 12:04	06/17/19 22:08	1
<b>Nickel</b>	<b>0.0055</b>	<b>J</b>	0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1
Selenium	ND		0.010	0.0087	mg/L		06/17/19 12:04	06/17/19 22:08	1
Thallium	ND		0.010	0.0080	mg/L		06/17/19 12:04	06/17/19 22:08	1
Vanadium	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1
Zinc	ND		0.020	0.012	mg/L		06/17/19 12:04	06/17/19 22:08	1
Silver	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:08	1

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		06/17/19 18:48	06/18/19 06:05	1

**Client Sample ID: BP-SED-1-190613**

**Lab Sample ID: 440-243821-3**

Date Collected: 06/13/19 10:40

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/17/19 21:15	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	F1	9.9		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Arsenic</b>	<b>11</b>		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Barium</b>	<b>52</b>		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Beryllium	ND		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Cadmium	ND		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Chromium</b>	<b>11</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Cobalt</b>	<b>2.3</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Copper</b>	<b>4.5</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Lead</b>	<b>5.7</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Molybdenum	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Nickel</b>	<b>6.2</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Selenium	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Thallium	ND		9.9		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Vanadium</b>	<b>21</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
<b>Zinc</b>	<b>42</b>		5.0		mg/Kg		06/21/19 14:04	06/23/19 18:11	5
Silver	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:11	5

Eurofins TestAmerica, Irvine

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: BP-SED-1-190613**

**Lab Sample ID: 440-243821-3**

Date Collected: 06/13/19 10:40

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.032		0.020	0.012	mg/Kg		06/17/19 12:45	06/17/19 18:08	1

**Client Sample ID: RR MDF-SED-1-190613**

**Lab Sample ID: 440-243821-4**

Date Collected: 06/13/19 11:40

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/17/19 21:35	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Arsenic	4.2		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Barium	63		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Beryllium	0.54		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Cadmium	ND		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Chromium	10		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Cobalt	2.1		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Copper	5.2		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Lead	6.4		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Molybdenum	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Nickel	5.7		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Selenium	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Thallium	ND		10		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Vanadium	21		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Zinc	53		5.0		mg/Kg		06/21/19 14:04	06/23/19 18:28	5
Silver	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:28	5

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.018	J	0.020	0.012	mg/Kg		06/17/19 12:45	06/17/19 18:10	1

**Client Sample ID: OS1-W-190613**

**Lab Sample ID: 440-243821-5**

Date Collected: 06/13/19 13:15

Matrix: Water

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			06/17/19 11:42	1

**Method: 6010B - Metals (ICP) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010	0.0060	mg/L		06/17/19 12:04	06/17/19 22:10	1
Arsenic	ND		0.010	0.0089	mg/L		06/17/19 12:04	06/17/19 22:10	1
Barium	0.040		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1
Beryllium	ND		0.0020	0.0010	mg/L		06/17/19 12:04	06/17/19 22:10	1
Cadmium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 22:10	1
Chromium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 22:10	1
Cobalt	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1
Copper	0.047		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1

Eurofins TestAmerica, Irvine

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: OS1-W-190613**

**Lab Sample ID: 440-243821-5**

Date Collected: 06/13/19 13:15

Matrix: Water

Date Received: 06/14/19 09:23

**Method: 6010B - Metals (ICP) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Lead</b>	<b>0.0063</b>		0.0050	0.0038	mg/L		06/17/19 12:04	06/17/19 22:10	1
Molybdenum	ND		0.020	0.010	mg/L		06/17/19 12:04	06/17/19 22:10	1
<b>Nickel</b>	<b>0.0078</b>	<b>J</b>	0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1
Selenium	ND		0.010	0.0087	mg/L		06/17/19 12:04	06/17/19 22:10	1
Thallium	ND		0.010	0.0080	mg/L		06/17/19 12:04	06/17/19 22:10	1
Vanadium	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1
<b>Zinc</b>	<b>0.63</b>		0.020	0.012	mg/L		06/17/19 12:04	06/17/19 22:10	1
Silver	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 22:10	1

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		06/17/19 18:48	06/18/19 06:07	1

**Client Sample ID: SRE-SED-1-190613**

**Lab Sample ID: 440-243821-7**

Date Collected: 06/13/19 14:25

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/17/19 21:56	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Arsenic</b>	<b>4.3</b>		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Barium</b>	<b>51</b>		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Beryllium</b>	<b>0.51</b>		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
Cadmium	ND		0.50		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Chromium</b>	<b>7.9</b>		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Cobalt</b>	<b>2.1</b>		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Copper</b>	<b>3.2</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Lead</b>	<b>6.8</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
Molybdenum	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Nickel</b>	<b>4.1</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
Selenium	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
Thallium	ND		10		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Vanadium</b>	<b>20</b>		1.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
<b>Zinc</b>	<b>47</b>		5.0		mg/Kg		06/21/19 14:04	06/23/19 18:31	5
Silver	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:31	5

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020	0.012	mg/Kg		06/17/19 12:45	06/17/19 18:12	1

**Client Sample ID: OS8-SED-1-190613**

**Lab Sample ID: 440-243821-8**

Date Collected: 06/13/19 15:45

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/17/19 22:16	1

Eurofins TestAmerica, Irvine

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: OS8-SED-1-190613**

**Lab Sample ID: 440-243821-8**

Date Collected: 06/13/19 15:45

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		9.9		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Arsenic</b>	<b>3.8</b>		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Barium</b>	<b>34</b>		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Beryllium	ND		0.49		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Cadmium	ND		0.49		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Chromium</b>	<b>12</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Cobalt</b>	<b>1.4</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Copper</b>	<b>4.8</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Lead</b>	<b>5.4</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Molybdenum	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Nickel</b>	<b>6.1</b>		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Selenium	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Thallium	ND		9.9		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Vanadium</b>	<b>21</b>		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
<b>Zinc</b>	<b>32</b>		4.9		mg/Kg		06/21/19 14:04	06/23/19 18:33	5
Silver	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:33	5

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020	0.012	mg/Kg		06/17/19 12:45	06/17/19 18:14	1

**Client Sample ID: OW-SED-1-190613**

**Lab Sample ID: 440-243821-9**

Date Collected: 06/13/19 16:30

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 314.0 - Perchlorate (IC) - Soluble**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/17/19 22:36	1

# Method Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

Method	Method Description	Protocol	Laboratory
314.0	Perchlorate (IC)	EPA	TAL IRV
6010B	Metals (ICP)	SW846	TAL IRV
7470A	Mercury (CVAA)	SW846	TAL IRV
7471A	Mercury (CVAA)	SW846	TAL IRV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL IRV
3050B	Preparation, Metals	SW846	TAL IRV
7470A	Preparation, Mercury	SW846	TAL IRV
7471A	Preparation, Mercury	SW846	TAL IRV
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL IRV

**Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: OS3-W-190613**

**Lab Sample ID: 440-243821-1**

**Date Collected: 06/13/19 09:50**

**Matrix: Water**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	314.0		1			553028	06/17/19 11:21	CTH	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	553089	06/17/19 12:04	EP	TAL IRV
Total Recoverable	Analysis	6010B		1			553213	06/17/19 22:08	P1R	TAL IRV
Total/NA	Prep	7470A			20 mL	20 mL	553168	06/17/19 18:48	EMS	TAL IRV
Total/NA	Analysis	7470A		1			553331	06/18/19 06:05	DB	TAL IRV

**Client Sample ID: BP-SED-1-190613**

**Lab Sample ID: 440-243821-3**

**Date Collected: 06/13/19 10:40**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.02 g	40 mL	553108	06/17/19 13:08	CTH	TAL IRV
Soluble	Analysis	314.0		1			553028	06/17/19 21:15	CTH	TAL IRV
Total/NA	Prep	3050B			2.02 g	50 mL	554011	06/21/19 14:04	DT	TAL IRV
Total/NA	Analysis	6010B		5			554195	06/23/19 18:11	VS	TAL IRV
Total/NA	Prep	7471A			0.51 g	50 mL	553109	06/17/19 12:45	EMS	TAL IRV
Total/NA	Analysis	7471A		1			553341	06/17/19 18:08	DB	TAL IRV

**Client Sample ID: RRMDF-SED-1-190613**

**Lab Sample ID: 440-243821-4**

**Date Collected: 06/13/19 11:40**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.00 g	40 mL	553108	06/17/19 13:12	CTH	TAL IRV
Soluble	Analysis	314.0		1			553028	06/17/19 21:35	CTH	TAL IRV
Total/NA	Prep	3050B			2.00 g	50 mL	554011	06/21/19 14:04	DT	TAL IRV
Total/NA	Analysis	6010B		5			554195	06/23/19 18:28	VS	TAL IRV
Total/NA	Prep	7471A			0.50 g	50 mL	553109	06/17/19 12:45	EMS	TAL IRV
Total/NA	Analysis	7471A		1			553341	06/17/19 18:10	DB	TAL IRV

**Client Sample ID: OS1-W-190613**

**Lab Sample ID: 440-243821-5**

**Date Collected: 06/13/19 13:15**

**Matrix: Water**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	314.0		1			553028	06/17/19 11:42	CTH	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	553089	06/17/19 12:04	EP	TAL IRV
Total Recoverable	Analysis	6010B		1			553213	06/17/19 22:10	P1R	TAL IRV
Total/NA	Prep	7470A			20 mL	20 mL	553168	06/17/19 18:48	EMS	TAL IRV
Total/NA	Analysis	7470A		1			553331	06/18/19 06:07	DB	TAL IRV

# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

**Client Sample ID: SRE-SED-1-190613**

**Lab Sample ID: 440-243821-7**

**Date Collected: 06/13/19 14:25**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.02 g	40 mL	553108	06/17/19 13:12	CTH	TAL IRV
Soluble	Analysis	314.0		1			553028	06/17/19 21:56	CTH	TAL IRV
Total/NA	Prep	3050B			2.00 g	50 mL	554011	06/21/19 14:04	DT	TAL IRV
Total/NA	Analysis	6010B		5			554195	06/23/19 18:31	VS	TAL IRV
Total/NA	Prep	7471A			0.50 g	50 mL	553109	06/17/19 12:45	EMS	TAL IRV
Total/NA	Analysis	7471A		1			553341	06/17/19 18:12	DB	TAL IRV

**Client Sample ID: OS8-SED-1-190613**

**Lab Sample ID: 440-243821-8**

**Date Collected: 06/13/19 15:45**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.02 g	40 mL	553108	06/17/19 13:12	CTH	TAL IRV
Soluble	Analysis	314.0		1			553028	06/17/19 22:16	CTH	TAL IRV
Total/NA	Prep	3050B			2.03 g	50 mL	554011	06/21/19 14:04	DT	TAL IRV
Total/NA	Analysis	6010B		5			554195	06/23/19 18:33	VS	TAL IRV
Total/NA	Prep	7471A			0.50 g	50 mL	553109	06/17/19 12:45	EMS	TAL IRV
Total/NA	Analysis	7471A		1			553341	06/17/19 18:14	DB	TAL IRV

**Client Sample ID: OW-SED-1-190613**

**Lab Sample ID: 440-243821-9**

**Date Collected: 06/13/19 16:30**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.01 g	40 mL	553108	06/17/19 13:12	CTH	TAL IRV
Soluble	Analysis	314.0		1			553028	06/17/19 22:36	CTH	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-553028/6  
Matrix: Water  
Analysis Batch: 553028

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			06/17/19 09:15	1

Lab Sample ID: LCS 440-553028/5  
Matrix: Water  
Analysis Batch: 553028

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	23.9		ug/L		95	85 - 115

Lab Sample ID: MRL 440-553028/4  
Matrix: Water  
Analysis Batch: 553028

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	ND		ug/L		92	75 - 125

Lab Sample ID: MRL 440-553028/8  
Matrix: Solid  
Analysis Batch: 553028

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.72	J	ug/L		93	75 - 125

Lab Sample ID: MB 440-553108/1-A  
Matrix: Solid  
Analysis Batch: 553255

Client Sample ID: Method Blank  
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		0.040	0.0095	mg/Kg			06/19/19 03:57	1

Lab Sample ID: LCS 440-553108/2-A  
Matrix: Solid  
Analysis Batch: 553255

Client Sample ID: Lab Control Sample  
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	0.499	0.482		mg/Kg		97	85 - 115

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 440-554011/1-A ^5  
Matrix: Solid  
Analysis Batch: 554195

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 554011

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		9.9		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Arsenic	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Barium	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Beryllium	ND		0.49		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Cadmium	ND		0.49		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Chromium	ND		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:01	5

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: MB 440-554011/1-A ^5**  
**Matrix: Solid**  
**Analysis Batch: 554195**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 554011**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Copper	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Lead	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Molybdenum	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Nickel	ND		2.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Selenium	ND		3.0		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Thallium	ND		9.9		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Vanadium	ND		0.99		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Zinc	ND		4.9		mg/Kg		06/21/19 14:04	06/23/19 18:01	5
Silver	ND		1.5		mg/Kg		06/21/19 14:04	06/23/19 18:01	5

**Lab Sample ID: LCS 440-554011/2-A ^5**  
**Matrix: Solid**  
**Analysis Batch: 554195**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 554011**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	49.8	52.6		mg/Kg		106	80 - 120
Arsenic	49.8	51.4		mg/Kg		103	80 - 120
Barium	49.8	51.7		mg/Kg		104	80 - 120
Beryllium	49.8	49.7		mg/Kg		100	80 - 120
Cadmium	49.8	50.4		mg/Kg		101	80 - 120
Chromium	49.8	50.7		mg/Kg		102	80 - 120
Cobalt	49.8	51.1		mg/Kg		103	80 - 120
Copper	49.8	52.5		mg/Kg		105	80 - 120
Lead	49.8	50.9		mg/Kg		102	80 - 120
Molybdenum	49.8	52.4		mg/Kg		105	80 - 120
Nickel	49.8	51.9		mg/Kg		104	80 - 120
Selenium	49.8	46.8		mg/Kg		94	80 - 120
Thallium	49.8	49.8		mg/Kg		100	80 - 120
Vanadium	49.8	49.9		mg/Kg		100	80 - 120
Zinc	49.8	50.9		mg/Kg		102	80 - 120
Silver	24.9	25.2		mg/Kg		101	80 - 120

**Lab Sample ID: 440-243821-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 554195**

**Client Sample ID: BP-SED-1-190613**  
**Prep Type: Total/NA**  
**Prep Batch: 554011**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND	F1	49.8	25.9	F1	mg/Kg		52	75 - 125
Arsenic	11		49.8	62.3		mg/Kg		102	75 - 125
Barium	52		49.8	100		mg/Kg		98	75 - 125
Beryllium	ND		49.8	49.7		mg/Kg		99	75 - 125
Cadmium	ND		49.8	48.1		mg/Kg		97	75 - 125
Chromium	11		49.8	59.6		mg/Kg		99	75 - 125
Cobalt	2.3		49.8	50.4		mg/Kg		97	75 - 125
Copper	4.5		49.8	55.7		mg/Kg		103	75 - 125
Lead	5.7		49.8	54.3		mg/Kg		98	75 - 125
Molybdenum	ND		49.8	50.8		mg/Kg		102	75 - 125
Nickel	6.2		49.8	55.3		mg/Kg		99	75 - 125

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 440-243821-3 MS**

**Matrix: Solid**

**Analysis Batch: 554195**

**Client Sample ID: BP-SED-1-190613**

**Prep Type: Total/NA**

**Prep Batch: 554011**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Selenium	ND		49.8	46.7		mg/Kg		94	75 - 125
Thallium	ND		49.8	47.8		mg/Kg		96	75 - 125
Vanadium	21		49.8	71.8		mg/Kg		101	75 - 125
Zinc	42		49.8	90.9		mg/Kg		98	75 - 125
Silver	ND		24.9	24.3		mg/Kg		98	75 - 125

**Lab Sample ID: 440-243821-3 MSD**

**Matrix: Solid**

**Analysis Batch: 554195**

**Client Sample ID: BP-SED-1-190613**

**Prep Type: Total/NA**

**Prep Batch: 554011**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND	F1	49.8	25.4	F1	mg/Kg		51	75 - 125	2	20
Arsenic	11		49.8	61.1		mg/Kg		100	75 - 125	2	20
Barium	52		49.8	101		mg/Kg		100	75 - 125	1	20
Beryllium	ND		49.8	49.2		mg/Kg		98	75 - 125	1	20
Cadmium	ND		49.8	47.5		mg/Kg		95	75 - 125	1	20
Chromium	11		49.8	59.0		mg/Kg		97	75 - 125	1	20
Cobalt	2.3		49.8	49.6		mg/Kg		95	75 - 125	2	20
Copper	4.5		49.8	55.1		mg/Kg		102	75 - 125	1	20
Lead	5.7		49.8	53.4		mg/Kg		96	75 - 125	2	20
Molybdenum	ND		49.8	50.6		mg/Kg		102	75 - 125	0	20
Nickel	6.2		49.8	54.7		mg/Kg		97	75 - 125	1	20
Selenium	ND		49.8	46.0		mg/Kg		93	75 - 125	2	20
Thallium	ND		49.8	48.5		mg/Kg		97	75 - 125	1	20
Vanadium	21		49.8	71.2		mg/Kg		100	75 - 125	1	20
Zinc	42		49.8	89.1		mg/Kg		94	75 - 125	2	20
Silver	ND		24.9	24.0		mg/Kg		96	75 - 125	1	20

**Lab Sample ID: MB 440-553089/1-A**

**Matrix: Water**

**Analysis Batch: 553213**

**Client Sample ID: Method Blank**

**Prep Type: Total Recoverable**

**Prep Batch: 553089**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00650	J	0.010	0.0060	mg/L		06/17/19 12:04	06/17/19 21:37	1
Arsenic	ND		0.010	0.0089	mg/L		06/17/19 12:04	06/17/19 21:37	1
Barium	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1
Beryllium	ND		0.0020	0.0010	mg/L		06/17/19 12:04	06/17/19 21:37	1
Cadmium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 21:37	1
Chromium	ND		0.0050	0.0025	mg/L		06/17/19 12:04	06/17/19 21:37	1
Cobalt	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1
Copper	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1
Lead	ND		0.0050	0.0038	mg/L		06/17/19 12:04	06/17/19 21:37	1
Molybdenum	ND		0.020	0.010	mg/L		06/17/19 12:04	06/17/19 21:37	1
Nickel	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1
Selenium	ND		0.010	0.0087	mg/L		06/17/19 12:04	06/17/19 21:37	1
Thallium	ND		0.010	0.0080	mg/L		06/17/19 12:04	06/17/19 21:37	1
Vanadium	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1
Zinc	ND		0.020	0.012	mg/L		06/17/19 12:04	06/17/19 21:37	1
Silver	ND		0.010	0.0050	mg/L		06/17/19 12:04	06/17/19 21:37	1

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: LCS 440-553089/2-A**  
**Matrix: Water**  
**Analysis Batch: 553213**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 553089**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	1.00	1.12		mg/L		112	80 - 120
Arsenic	1.00	1.02		mg/L		102	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Beryllium	1.00	1.02		mg/L		102	80 - 120
Cadmium	1.00	1.02		mg/L		102	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Cobalt	1.00	1.03		mg/L		103	80 - 120
Copper	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Molybdenum	1.00	1.08		mg/L		108	80 - 120
Nickel	1.00	1.03		mg/L		103	80 - 120
Selenium	1.00	0.970		mg/L		97	80 - 120
Thallium	1.00	0.977		mg/L		98	80 - 120
Vanadium	1.00	1.04		mg/L		104	80 - 120
Zinc	1.00	1.02		mg/L		102	80 - 120
Silver	0.500	0.512		mg/L		102	80 - 120

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 440-553168/1-A**  
**Matrix: Water**  
**Analysis Batch: 553331**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 553168**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		06/17/19 18:48	06/18/19 05:31	1

**Lab Sample ID: LCS 440-553168/2-A**  
**Matrix: Water**  
**Analysis Batch: 553331**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 553168**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00400	0.00422		mg/L		105	80 - 120

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 440-553109/1-A**  
**Matrix: Solid**  
**Analysis Batch: 553341**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 553109**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020	0.012	mg/Kg		06/17/19 12:45	06/17/19 17:31	1

**Lab Sample ID: LCS 440-553109/2-A**  
**Matrix: Solid**  
**Analysis Batch: 553341**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 553109**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.408	0.407		mg/Kg		100	80 - 120

Eurofins TestAmerica, Irvine

# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## HPLC/IC

### Analysis Batch: 553028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-1	OS3-W-190613	Total/NA	Water	314.0	
440-243821-3	BP-SED-1-190613	Soluble	Solid	314.0	553108
440-243821-4	RRMDF-SED-1-190613	Soluble	Solid	314.0	553108
440-243821-5	OS1-W-190613	Total/NA	Water	314.0	
440-243821-7	SRE-SED-1-190613	Soluble	Solid	314.0	553108
440-243821-8	OS8-SED-1-190613	Soluble	Solid	314.0	553108
440-243821-9	OW-SED-1-190613	Soluble	Solid	314.0	553108
MB 440-553028/6	Method Blank	Total/NA	Water	314.0	
LCS 440-553028/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-553028/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-553028/8	Lab Control Sample	Total/NA	Solid	314.0	

### Leach Batch: 553108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-3	BP-SED-1-190613	Soluble	Solid	DI Leach	
440-243821-4	RRMDF-SED-1-190613	Soluble	Solid	DI Leach	
440-243821-7	SRE-SED-1-190613	Soluble	Solid	DI Leach	
440-243821-8	OS8-SED-1-190613	Soluble	Solid	DI Leach	
440-243821-9	OW-SED-1-190613	Soluble	Solid	DI Leach	
MB 440-553108/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-553108/2-A	Lab Control Sample	Soluble	Solid	DI Leach	

### Analysis Batch: 553255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-553108/1-A	Method Blank	Soluble	Solid	314.0	553108
LCS 440-553108/2-A	Lab Control Sample	Soluble	Solid	314.0	553108

## Metals

### Prep Batch: 553089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-1	OS3-W-190613	Total Recoverable	Water	3005A	
440-243821-5	OS1-W-190613	Total Recoverable	Water	3005A	
MB 440-553089/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 440-553089/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Prep Batch: 553109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-3	BP-SED-1-190613	Total/NA	Solid	7471A	
440-243821-4	RRMDF-SED-1-190613	Total/NA	Solid	7471A	
440-243821-7	SRE-SED-1-190613	Total/NA	Solid	7471A	
440-243821-8	OS8-SED-1-190613	Total/NA	Solid	7471A	
MB 440-553109/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 440-553109/2-A	Lab Control Sample	Total/NA	Solid	7471A	

### Prep Batch: 553168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-1	OS3-W-190613	Total/NA	Water	7470A	
440-243821-5	OS1-W-190613	Total/NA	Water	7470A	
MB 440-553168/1-A	Method Blank	Total/NA	Water	7470A	
LCS 440-553168/2-A	Lab Control Sample	Total/NA	Water	7470A	

Eurofins TestAmerica, Irvine

# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Metals

### Analysis Batch: 553213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-1	OS3-W-190613	Total Recoverable	Water	6010B	553089
440-243821-5	OS1-W-190613	Total Recoverable	Water	6010B	553089
MB 440-553089/1-A	Method Blank	Total Recoverable	Water	6010B	553089
LCS 440-553089/2-A	Lab Control Sample	Total Recoverable	Water	6010B	553089

### Analysis Batch: 553331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-1	OS3-W-190613	Total/NA	Water	7470A	553168
440-243821-5	OS1-W-190613	Total/NA	Water	7470A	553168
MB 440-553168/1-A	Method Blank	Total/NA	Water	7470A	553168
LCS 440-553168/2-A	Lab Control Sample	Total/NA	Water	7470A	553168

### Analysis Batch: 553341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-3	BP-SED-1-190613	Total/NA	Solid	7471A	553109
440-243821-4	RRMDF-SED-1-190613	Total/NA	Solid	7471A	553109
440-243821-7	SRE-SED-1-190613	Total/NA	Solid	7471A	553109
440-243821-8	OS8-SED-1-190613	Total/NA	Solid	7471A	553109
MB 440-553109/1-A	Method Blank	Total/NA	Solid	7471A	553109
LCS 440-553109/2-A	Lab Control Sample	Total/NA	Solid	7471A	553109

### Prep Batch: 554011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-3	BP-SED-1-190613	Total/NA	Solid	3050B	
440-243821-4	RRMDF-SED-1-190613	Total/NA	Solid	3050B	
440-243821-7	SRE-SED-1-190613	Total/NA	Solid	3050B	
440-243821-8	OS8-SED-1-190613	Total/NA	Solid	3050B	
MB 440-554011/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 440-554011/2-A ^5	Lab Control Sample	Total/NA	Solid	3050B	
440-243821-3 MS	BP-SED-1-190613	Total/NA	Solid	3050B	
440-243821-3 MSD	BP-SED-1-190613	Total/NA	Solid	3050B	

### Analysis Batch: 554195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-3	BP-SED-1-190613	Total/NA	Solid	6010B	554011
440-243821-4	RRMDF-SED-1-190613	Total/NA	Solid	6010B	554011
440-243821-7	SRE-SED-1-190613	Total/NA	Solid	6010B	554011
440-243821-8	OS8-SED-1-190613	Total/NA	Solid	6010B	554011
MB 440-554011/1-A ^5	Method Blank	Total/NA	Solid	6010B	554011
LCS 440-554011/2-A ^5	Lab Control Sample	Total/NA	Solid	6010B	554011
440-243821-3 MS	BP-SED-1-190613	Total/NA	Solid	6010B	554011
440-243821-3 MSD	BP-SED-1-190613	Total/NA	Solid	6010B	554011

# Definitions/Glossary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-1

## Laboratory: Eurofins TestAmerica, Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-19 *
Arizona	State Program	9	AZ0671	10-14-19
California	LA Cty Sanitation Districts	9	10256	06-30-19 *
California	State Program	9	CA ELAP 2706	06-30-19 *
Guam	State Program	9	Cert. No. 19-005R	01-23-20
Hawaii	State Program	9	N/A	01-29-20
Kansas	NELAP	7	E-10420	07-31-19 *
Nevada	State Program	9	CA015312018-1	07-31-19
New Mexico	State Program	6	N/A	01-29-20
Oregon	NELAP	10	4028	01-29-20
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-18-00214	07-09-21
Washington	State Program	10	C900	09-03-19

## Laboratory: Eurofins TestAmerica, Pleasanton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20
USDA	Federal		P330-17-00380	12-11-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Irvine



# Chain of Custody Record 323071

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING  
 TestAmerica Laboratories, Inc.  
 TAL-8210 (07/18)

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact  
 Company Name: **GST Environmental**  
 Address: **155 Grand Ave. Ste 304**  
 City/State/Zip: **510 - 463 - 8494**  
 Phone: **Oakland, CA 94612**  
 Fax:  
 Project Name: **ASU-BB**  
 Site:  
 P.O.# **5182**

Project Manager: **Susan Gallardo** Date: **06/13/19**  
 Tel/Fax: Lab Contact: **Hanna Salinas** Carrier: **TZL**  
 Analysis Turnaround Time: **Perchlorate 314.0**  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below: **6/13/19**  
 2 weeks  1 week  2 days  1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Carrier	COCs
OS3-W-190613	6/13/19	0950	G	W	2	N	N	HOLD	1
OS3-SED-1-190613		1010	S	S	1	N	N		1
BP-SED-1-190613		1040	S	S	1	N	N		1
RRMDF-SED-1-190613		1140	S	S	1	N	N		1
OS1-W-190613		1315	W	W	1	N	N		1
OS1-SED-2-190613		1325	S	S	1	N	N		1
SRE-SED-1-190613		1425	S	S	1	N	N		1
OS8-SED-1-190613		1545	S	S	1	N	N		1
OW-SED-1-190613		1630	S	S	1	N	N		1



Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other  
 Possible Hazard Identification: **Perchlorate 314.0**  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Cooler Temp (°C): Obs'd **22** Corr'd **22**  
 Therm ID No: **1K-85**  
 Received by: **GST** Date/Time: **06/14/19 0123**  
 Company: **GST**  
 Received in Laboratory by: **FAIR** Date/Time: **06/14/19 9.23**  
 Company: **FAIR**



## Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 440-243821-1

**Login Number: 243821**

**List Source: Eurofins TestAmerica, Irvine**

**List Number: 1**

**Creator: Skinner, Alma D**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## ANALYTICAL REPORT

Eurofins TestAmerica, Irvine  
17461 Derian Ave  
Suite 100  
Irvine, CA 92614-5817  
Tel: (949)261-1022

Laboratory Job ID: 440-243821-2  
Client Project/Site: AJU-BB

For:  
GSI Environmental, Inc  
155 Grand Avenue  
Suite 704  
Oakland, California 94612

Attn: Susan Gallardo



---

Authorized for release by:  
7/10/2019 1:55:55 PM

Afsaneh Salimpour, Senior Project Manager  
(925)484-1919  
[afsaneh.salimpour@testamericainc.com](mailto:afsaneh.salimpour@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Sample Summary . . . . .	3
Case Narrative . . . . .	4
Client Sample Results . . . . .	5
Method Summary . . . . .	6
Lab Chronicle . . . . .	7
QC Sample Results . . . . .	8
QC Association Summary . . . . .	10
Definitions/Glossary . . . . .	11
Certification Summary . . . . .	12
Chain of Custody . . . . .	13
Receipt Checklists . . . . .	15

# Sample Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-243821-9	OW-SED-1-190613	Solid	06/13/19 16:30	06/14/19 09:23	

---

1

2

3

4

5

6

7

8

9

10

11

12

13

# Case Narrative

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

---

**Job ID: 440-243821-2**

---

**Laboratory: Eurofins TestAmerica, Irvine**

## Narrative

---

**Job Narrative**  
**440-243821-2**

## Comments

No additional comments.

## Receipt

The samples were received on 6/14/2019 9:23 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

## Metals

Method(s) 6010B:

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# Client Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

**Client Sample ID: OW-SED-1-190613**

**Lab Sample ID: 440-243821-9**

Date Collected: 06/13/19 16:30

Matrix: Solid

Date Received: 06/14/19 09:23

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Arsenic	ND		3.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Barium</b>	<b>39</b>		1.5		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Beryllium	ND		0.50		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Cadmium	ND		0.50		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Chromium</b>	<b>7.3</b>		1.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Cobalt</b>	<b>1.2</b>		1.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Copper</b>	<b>2.0</b>		2.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Lead</b>	<b>4.0</b>		2.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Molybdenum	ND		2.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Nickel</b>	<b>3.8</b>		2.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Selenium	ND		3.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Thallium	ND		10		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Vanadium</b>	<b>15</b>		1.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
<b>Zinc</b>	<b>29</b>		5.0		mg/Kg		07/06/19 08:57	07/09/19 11:44	5
Silver	ND		1.5		mg/Kg		07/06/19 08:57	07/09/19 11:44	5

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg		06/29/19 14:13	06/29/19 19:24	1

# Method Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL IRV
7471A	Mercury (CVAA)	SW846	TAL IRV
3050B	Preparation, Metals	SW846	TAL IRV
7471A	Preparation, Mercury	SW846	TAL IRV

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022





# Lab Chronicle

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

**Client Sample ID: OW-SED-1-190613**

**Lab Sample ID: 440-243821-9**

**Date Collected: 06/13/19 16:30**

**Matrix: Solid**

**Date Received: 06/14/19 09:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.01 g	50 mL	556335	07/06/19 08:57	DT	TAL IRV
Total/NA	Analysis	6010B		5			556685	07/09/19 11:44	P1R	TAL IRV
Total/NA	Prep	7471A			0.50 g	50 mL	555402	06/29/19 14:13	EMS	TAL IRV
Total/NA	Analysis	7471A		1			555600	06/29/19 19:24	DB	TAL IRV

**Laboratory References:**

TAL IRV = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 440-556335/1-A ^5**  
**Matrix: Solid**  
**Analysis Batch: 556685**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 556335**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		9.9		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Arsenic	ND		3.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Barium	ND		1.5		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Beryllium	ND		0.50		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Cadmium	ND		0.50		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Chromium	ND		0.99		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Cobalt	ND		0.99		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Copper	ND		2.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Lead	ND		2.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Molybdenum	ND		2.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Nickel	ND		2.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Selenium	ND		3.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Thallium	ND		9.9		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Vanadium	ND		0.99		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Zinc	ND		5.0		mg/Kg		07/06/19 08:57	07/09/19 10:58	5
Silver	ND		1.5		mg/Kg		07/06/19 08:57	07/09/19 10:58	5

**Lab Sample ID: LCS 440-556335/2-A ^5**  
**Matrix: Solid**  
**Analysis Batch: 556685**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 556335**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	49.8	51.1		mg/Kg		103	80 - 120
Arsenic	49.8	50.0		mg/Kg		100	80 - 120
Barium	49.8	47.8		mg/Kg		96	80 - 120
Beryllium	49.8	48.0		mg/Kg		97	80 - 120
Cadmium	49.8	48.7		mg/Kg		98	80 - 120
Chromium	49.8	48.6		mg/Kg		98	80 - 120
Cobalt	49.8	48.2		mg/Kg		97	80 - 120
Copper	49.8	50.0		mg/Kg		101	80 - 120
Lead	49.8	48.7		mg/Kg		98	80 - 120
Molybdenum	49.8	49.0		mg/Kg		98	80 - 120
Nickel	49.8	49.7		mg/Kg		100	80 - 120
Selenium	49.8	46.3		mg/Kg		93	80 - 120
Thallium	49.8	47.1		mg/Kg		95	80 - 120
Vanadium	49.8	47.7		mg/Kg		96	80 - 120
Zinc	49.8	48.7		mg/Kg		98	80 - 120
Silver	24.9	23.8		mg/Kg		95	80 - 120

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 440-555402/1-A**  
**Matrix: Solid**  
**Analysis Batch: 555418**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 555402**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg		06/29/19 14:13	06/29/19 17:15	1

Eurofins TestAmerica, Irvine

# QC Sample Results

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

## Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-555402/2-A  
Matrix: Solid  
Analysis Batch: 555418

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 555402  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.400	0.368		mg/Kg		92	80 - 120

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# QC Association Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

## Metals

### Prep Batch: 555402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-9	OW-SED-1-190613	Total/NA	Solid	7471A	
MB 440-555402/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 440-555402/2-A	Lab Control Sample	Total/NA	Solid	7471A	

### Analysis Batch: 555418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-555402/1-A	Method Blank	Total/NA	Solid	7471A	555402
LCS 440-555402/2-A	Lab Control Sample	Total/NA	Solid	7471A	555402

### Analysis Batch: 555600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-9	OW-SED-1-190613	Total/NA	Solid	7471A	555402

### Prep Batch: 556335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-9	OW-SED-1-190613	Total/NA	Solid	3050B	
MB 440-556335/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 440-556335/2-A ^5	Lab Control Sample	Total/NA	Solid	3050B	

### Analysis Batch: 556685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-243821-9	OW-SED-1-190613	Total/NA	Solid	6010B	556335
MB 440-556335/1-A ^5	Method Blank	Total/NA	Solid	6010B	556335
LCS 440-556335/2-A ^5	Lab Control Sample	Total/NA	Solid	6010B	556335

# Definitions/Glossary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: GSI Environmental, Inc  
Project/Site: AJU-BB

Job ID: 440-243821-2

## Laboratory: Eurofins TestAmerica, Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-20
Arizona	State Program	9	AZ0671	10-14-19
California	LA Cty Sanitation Districts	9	10256	06-30-20
California	State Program	9	CA ELAP 2706	06-30-19 *
Guam	State Program	9	Cert. No. 19-005R	01-23-20
Hawaii	State Program	9	N/A	01-29-20
Kansas	NELAP	7	E-10420	07-31-19 *
Nevada	State Program	9	CA015312019-5	07-31-19 *
New Mexico	State Program	6	N/A	01-29-20
Oregon	NELAP	10	4028	01-29-20
US Fish & Wildlife	Federal		058448	07-31-19 *
USDA	Federal		P330-18-00214	07-09-21
Washington	State Program	10	C900	09-03-19

## Laboratory: Eurofins TestAmerica, Pleasanton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20
USDA	Federal		P330-17-00380	12-11-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Irvine

440-243821-2  
6-25-19

Salimpour, Afsaneh

**From:** Travis Wicks <TZWicks@gsi-net.com>  
**Sent:** Tuesday, June 25, 2019 1:04 PM  
**To:** Salimpour, Afsaneh; Susan Gallardo  
**Subject:** RE: Eurofins TestAmerica EDD and report files from 440-243821-1 AJU-BB

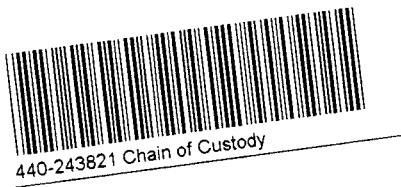
External Email

Hi Afsaneh,

Thanks for sending those over. I realized that for whatever reason we didn't ask for CAM 17 metals for lab sample 440-243821-9 (GSI Sample ID OW-SED-1-190613). Could we please have that sample analyzed for those compounds by 6010/7471?

Thank you,

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave, Suite 704  
Oakland, CA 94612  
510-463-8494 (Direct)  
510-468-6940 (Mobile)



**From:** Afsaneh Salimpour <[afsaneh.salimpour@testamericainc.com](mailto:afsaneh.salimpour@testamericainc.com)>  
**Sent:** Tuesday, June 25, 2019 12:51 PM  
**To:** Susan Gallardo <[SMGallardo@gsi-net.com](mailto:SMGallardo@gsi-net.com)>; Travis Wicks <[TZWicks@gsi-net.com](mailto:TZWicks@gsi-net.com)>  
**Subject:** Eurofins TestAmerica EDD and report files from 440-243821-1 AJU-BB

Hello,

Attached please find the EDD and report files for job 440-243821-1; AJU-BB

Please feel free to contact me if you have any questions.

Thank you.

Afsaneh F Salimpour  
Project Manager

Eurofins TestAmerica, Pleasanton  
Phone: 925-484-1919


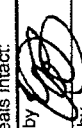
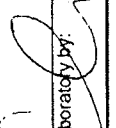


440-243821 Chain of Custody Record 323071

TestAmerica  
THE LEADER IN ENVIRONMENTAL TESTING  
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program:  DW  NPDES  RCRA  Other

Client Contact Company Name: <b>GST Environmental</b> Address: <b>155 Grand Ave. Ste 704</b> City/State/Zip: <b>510-463-8484</b> Phone: <b>Oakland, CA 94612</b> Fax: Project Name: <b>ASU-BB</b> Site: P O #: <b>5182</b>		Site Contact: <b>TZWL/CJB</b> Date: <b>06/13/19</b> Lab Contact: <b>Hanna Salazar</b> Carrier: Perform MS/MSD (Y/N) Filtered Sample (Y/N)		COC No: _____ of _____ COCs Sampler: <b>JZLW</b> For Lab Use Only: Walk-in Client Lab Sampling Job/SDG No.: _____			
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Specific Notes:  440-243821 Chain of Custody 6/14/19					
Sample Identification	Sample Date	Sample Time	Sample Type (G-Comp, G-Gas)	Matrix	# of Cont.	Performs	Notes
OS3-W-190613	6/13/19	0950	G	W	2	M	
OS3-SED-1-190613		1010	S	S	1	M	
BP-SED-1-190613		1040	S	S	1	M	
RRMDF-SED-1-190613		1140	S	S	1	M	
OS1-W-190613		1315	W	W	1	M	
OS1-SED-1-190613		1325	S	S	1	M	
SRE-SED-1-190613		1425	S	S	1	M	
OS8-SED-1-190613		1545	S	S	1	M	
OW-SED-1-190613		1630	S	S	1	M	
Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							
Special Instructions/QC Requirements & Comments: Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months							
Custody Seal No.: _____ Relinquished by: 		Received by: _____ Date/Time: <b>06/14/19 0123</b>		Cooler Temp (C): Obs'd <b>22.2</b> Cor'd <b>22</b> Company: _____ Therm ID No: <b>1R-85</b>			
Relinquished by: _____ Date/Time: _____		Received by: _____ Date/Time: _____		Date/Time: _____			
Relinquished by: _____ Date/Time: _____		Received in Laboratory by:  Date/Time: <b>6/14/19</b>		Date/Time: <b>9.23</b>			





## Login Sample Receipt Checklist

Client: GSI Environmental, Inc

Job Number: 440-243821-2

**Login Number: 243821**

**List Source: Eurofins TestAmerica, Irvine**

**List Number: 1**

**Creator: Skinner, Alma D**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendix C**

Appendix C. Analytical Laboratory Reports – August 2019 Event

September 18, 2019

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California 94612

Re: Near S SFL  
Work Order: 489264

Dear Travis Wicks:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4487.

Sincerely,



Brielle Luthman  
Project Manager

Purchase Order: GELP19-1037  
Enclosures

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

### Certificate of Analysis Report for

GSIE002 GSI Environmental Inc.

Client SDG: 489264 GEL Work Order: 489264

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Brielle Luthman.

Reviewed by \_\_\_\_\_

*B. Luthman*

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 18, 2019

Client Sample ID: BP-SED-1-190829  
Sample ID: 489264001  
Matrix: Soil  
Collect Date: 29-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 3.4%

Project: GSIE00119  
Client ID: GSIE002

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.00549	+/-0.0287	0.0506	+/-0.0287	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	90.6	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: BP-SED-1A-190829

Project: GSIE00119

Sample ID: 489264002

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 3.66%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.00308	+/-0.0515	0.0968	+/-0.0515	0.100	pCi/g			AEA	09/18/19	0709	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	88.4	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: BP-SED-1B-190829

Project: GSIE00119

Sample ID: 489264003

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: .762%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0352	+/-0.0287	0.0474	+/-0.0294	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	86.2	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks  
Project: Near S SFL

Client Sample ID: BP-SED-1C-190829  
Sample ID: 489264004  
Matrix: Soil  
Collect Date: 29-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 1.98%

Project: GSIE00119  
Client ID: GSIE002

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	-------------	-----	-----	----	-------	----	----	---------	------	------	-------	------

### Rad Gas Flow Proportional Counting

*GFPC, Sr90, Solid "Dry Weight Corrected"*

Strontium-90	U	0.00193	+/-0.0517	0.0976	+/-0.0517	0.100	pCi/g			AEA	09/18/19	0709	1916851	1
--------------	---	---------	-----------	--------	-----------	-------	-------	--	--	-----	----------	------	---------	---

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	77.3	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: RRMDF-SED-1-190829

Project: GSIE00119

Sample ID: 489264005

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 2.03%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0648	+/-0.0408	0.0667	+/-0.0424	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	84	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: RRMDF-SED-1A-190829

Project: GSIE00119

Sample ID: 489264006

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 1.39%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0665	+/-0.0603	0.0984	+/-0.0615	0.100	pCi/g			AEA	09/18/19	0709	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	88.4	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: RRMDF-SED-1B-190829

Project: GSIE00119

Sample ID: 489264007

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 2.17%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.021	+/-0.0373	0.0661	+/-0.0373	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	88.4	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: RRMDF-SED-1C-190829

Project: GSIE00119

Sample ID: 489264008

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 1.77%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.055	+/-0.0357	0.0582	+/-0.0372	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	77.3	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: SRE-SED-1-190829

Project: GSIE00119

Sample ID: 489264009

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: .814%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0607	+/-0.0594	0.0982	+/-0.0604	0.100	pCi/g			AEA	09/18/19	0709	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	55.2	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: SRE-SED-1A-190829

Project: GSIE00119

Sample ID: 489264010

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: .58%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0113	+/-0.0308	0.053	+/-0.0309	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	88.4	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 18, 2019

Client Sample ID: SRE-SED-1B-190829      Project: GSIE00119  
Sample ID: 489264011      Client ID: GSIE002  
Matrix: Soil  
Collect Date: 29-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 1.6%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0516	+/-0.0582	0.0977	+/-0.059	0.100	pCi/g			AEA	09/18/19	0709	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	86.2	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor      Mtd.: Method  
DL: Detection Limit      PF: Prep Factor  
Lc/LC: Critical Level      RL: Reporting Limit  
MDA: Minimum Detectable Activity      TPU: Total Propagated Uncertainty  
MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: SRE-SED-1C-190829

Project: GSIE00119

Sample ID: 489264012

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: .801%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.0227	+/-0.0237	0.0435	+/-0.0237	0.100	pCi/g			AEA	09/17/19	1933	1916851	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	95	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: SRE-SED-2-190829

Project: GSIE00119

Sample ID: 489264013

Client ID: GSIE002

Matrix: Soil

Collect Date: 29-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 3.16%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b> <i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0186	+/-0.0261	0.0443	+/-0.0263	0.100	pCi/g			AEA	09/17/19	1934	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	97.2	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: OS8-SED-1-190830

Project: GSIE00119

Sample ID: 489264014

Client ID: GSIE002

Matrix: Soil

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 27%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.028	+/-0.0363	0.0644	+/-0.0363	0.100	pCi/g			AEA	09/17/19	1934	1916851	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	97.2	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: OS8-SED-1A-190830

Project: GSIE00119

Sample ID: 489264015

Client ID: GSIE002

Matrix: Soil

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 4.3%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.029	+/-0.0485	0.0821	+/-0.0488	0.100	pCi/g			AEA	09/17/19	1935	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	86.2	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: OS8-SED-1B-190830

Project: GSIE00119

Sample ID: 489264016

Client ID: GSIE002

Matrix: Soil

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 12.1%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.0462	+/-0.0583	0.0991	+/-0.0589	0.100	pCi/g			AEA	09/18/19	0710	1916851	1

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	88.4	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612

Report Date: September 18, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: OS8-SED-1C-190830

Project: GSIE00119

Sample ID: 489264017

Client ID: GSIE002

Matrix: Soil

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 44.8%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.00492	+/-0.0262	0.0462	+/-0.0262	0.100	pCi/g			AEA	09/17/19	1935	1916851	1

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	09/09/19	1304	1913626

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Solid "Dry Weight Corrected"	1916851	99.4	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: September 18, 2019  
Page 1 of 2

**Client :** GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California

**Contact:** Travis Wicks

**Workorder:** 489264

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1916851										
QC1204381282	489264001	DUP									
Strontium-90		U	-0.00549	U	0.00362	pCi/g	0		N/A	AEA	09/17/19 19:35
		Uncert:	+/-0.0287		+/-0.0286						
		TPU:	+/-0.0287		+/-0.0286						
QC1204381283	LCS										
Strontium-90	6.94				6.77	pCi/g	97.7	(75%-125%)	AEA	09/17/19 16:51	
		Uncert:			+/-0.390						
		TPU:			+/-1.35						
QC1204381281	MB										
Strontium-90				U	-0.0494	pCi/g			AEA	09/17/19 19:35	
		Uncert:			+/-0.0211						
		TPU:			+/-0.0211						

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 489264

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
X										
Y										
^										
h										

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



489264

PROJECT NAME: AJU-B3  
 PROJECT CONTACT: Susan Gallardo  
 GLOBAL ID: \_\_\_\_\_

PROJECT NO.: 518Z  
 LAB CONTACT: Sriela Luthman  
 SAMPLER(S) (PRINT): Tavis Wicks; Katin Howell

FROM: GSI Environmental Inc.  
 155 Grand Ave. Suite 704  
 Oakland, CA 94612  
 (510) 463-8484

TEL: (510) 463-8484 E-MAIL: sgallardo@gienv.com

LABORATORY: GEL Laboratories

TURNAROUND TIME:  SAME DAY  24 HR  48 HR  10 DAY  
 72 HR  5 DAYS  STANDARD

SPECIAL INSTRUCTIONS: Detection Limit  $\leq 0.1$  pci/g

LAB USE ONLY	SAMPLE ID	SAMPLING TIME		MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered
		DATE	TIME					
	BPS-SED-1A-190829	8/25/19	1108	Soil	1	X		
	BP-SED-1A-190829		1117			X		
	BP-SED-1B-190829		1124			X		
	BP-SED-1C-190829		1133			X		
	RRHDF-SED-1-190829		1322			X		
	RRHDF-SED-1A-190829		1327			X		
	RRHDF-SED-1B-190829		1335			X		
	RRHDF-SED-1C-190829		1341			X		
	SRC-SED-1-190829		1550			X		
	SRE-SED-1A-190829		1553			X		
	SRE-SED-1B-190829		1600			X		
	SRE-SED-1C-190829		1608			X		
	SRE-SED-2-190829		1639			X		
	ØS8-SED-1-190830	8/30/19	1145			X		
	ØS8-SED-1A-190830		1157			X		

Requested Analyses: \_\_\_\_\_

Please check box or fill in blank as needed.

Received by: (Signature) \_\_\_\_\_ Date: 8/30/19 Time: 15:30  
 Received by: (Signature) Diyada Dattam Date: 8/31/19 Time: 9:15  
 Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



<b>FROM:</b> GSI Environmental Inc. 155 Grand Ave. Suite 704 Oakland, CA 94612 (510) 463-8484	<b>PROJECT NAME:</b> ASV-BB <b>PROJECT CONTACT:</b> Susan Gallardo <b>GLOBAL ID:</b>	<b>PROJECT NO.:</b> 5182 <b>LAB CONTACT:</b> Isabelle Leathman <b>SAMPLER(S) (PRINT):</b> Travis Wickes, Kaitlin Powell	<b>TEL:</b> (510) 463-8484 <b>E-MAIL:</b> smgallardo@gsienv.com																																															
<b>LABORATORY:</b> GEL Laboratories * 10 Day		<b>REQUESTED ANALYSES</b> Please check box or fill in blank as needed.																																																
<b>TURNAROUND TIME:</b> <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 5 DAYS <input type="checkbox"/> STANDARD		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">LAB USE ONLY</th> <th rowspan="2">SAMPLE ID</th> <th colspan="2">SAMPLING DATE</th> <th rowspan="2">MATRIX</th> <th rowspan="2">NO. OF CONT.</th> <th colspan="3">PRESERVATION</th> </tr> <tr> <th>TIME</th> <th>TIME</th> <th>Unpreserved</th> <th>Preserved</th> <th>Field Filtered</th> </tr> </thead> <tbody> <tr> <td></td> <td>PS8-SD-BB-190830</td> <td>8/30/19</td> <td>1203</td> <td>SDI</td> <td>1</td> <td>X</td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td></td> <td>PS8-SD-1C-190830</td> <td></td> <td>1217</td> <td>L</td> <td>1</td> <td>X</td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td colspan="11" style="text-align: center; height: 150px;"> <div style="font-size: 4em; opacity: 0.5; transform: rotate(-45deg); position: absolute; top: 50%; left: 50%;">           [Large handwritten signature/initials]         </div> </td> </tr> </tbody> </table>		LAB USE ONLY	SAMPLE ID	SAMPLING DATE		MATRIX	NO. OF CONT.	PRESERVATION			TIME	TIME	Unpreserved	Preserved	Field Filtered		PS8-SD-BB-190830	8/30/19	1203	SDI	1	X		X				PS8-SD-1C-190830		1217	L	1	X		X			<div style="font-size: 4em; opacity: 0.5; transform: rotate(-45deg); position: absolute; top: 50%; left: 50%;">           [Large handwritten signature/initials]         </div>										
LAB USE ONLY	SAMPLE ID	SAMPLING DATE				MATRIX	NO. OF CONT.			PRESERVATION																																								
		TIME	TIME	Unpreserved	Preserved			Field Filtered																																										
	PS8-SD-BB-190830	8/30/19	1203	SDI	1	X		X																																										
	PS8-SD-1C-190830		1217	L	1	X		X																																										
<div style="font-size: 4em; opacity: 0.5; transform: rotate(-45deg); position: absolute; top: 50%; left: 50%;">           [Large handwritten signature/initials]         </div>																																																		
<b>SPECIAL INSTRUCTIONS:</b> * Detection Limit $\pm 0.1 \mu\text{g/g}$		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Received by: (Signature)</th> <th>Date: 8/30/19</th> <th>Time: 1:30</th> </tr> </thead> <tbody> <tr> <td><i>[Signature]</i></td> <td>8/30/19</td> <td>1:30</td> </tr> <tr> <td><b>FED EX</b></td> <td></td> <td></td> </tr> <tr> <td><i>[Signature]</i></td> <td>8/30/19</td> <td>9:15</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Received by: (Signature)	Date: 8/30/19	Time: 1:30	<i>[Signature]</i>	8/30/19	1:30	<b>FED EX</b>			<i>[Signature]</i>	8/30/19	9:15																																			
Received by: (Signature)	Date: 8/30/19	Time: 1:30																																																
<i>[Signature]</i>	8/30/19	1:30																																																
<b>FED EX</b>																																																		
<i>[Signature]</i>	8/30/19	9:15																																																



Laboratories

### SAMPLE RECEIPT & REVIEW FORM

Client: GSTF SDG/AR/COC/Work Order: 489264 B.L  
 Received By: TVE Date Received: 8/31/19

Carrier and Tracking Number  
 FedEx Express FedEx Ground UPS Field Services Courier Other  
7895 0169 6544 - 4°C  
7895 0169 6533 - 5°C

Suspected Hazard Information  
 \*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

A) Shipped as a DOT Hazardous?  Yes  No  
 Hazard Class Shipped: \_\_\_\_\_ UN#: \_\_\_\_\_  
 If UN2910, is the Radioactive Shipment Survey Compliant? Yes \_\_\_ No \_\_\_

B) Did the client designate the samples are to be received as radioactive?  Yes  No  
 COC notation or radioactive stickers on containers equal client designation.

C) Did the RSO classify the samples as radioactive?  Yes  No  
 Maximum Net Counts Observed\* (Observed Counts -- Area Background Counts): 0 CPM / mR/hr  
 Classified as: Rad 1 Rad 2 Rad 3

D) Did the client designate samples are hazardous?  Yes  No  
 COC notation or hazard labels on containers equal client designation.

E) Did the RSO identify possible hazards?  Yes  No  
 If D or E is yes, select Hazards below.  
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: \_\_\_\_\_

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>181-18</u> TEMP: <u>↑</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Preservation added, Lot#:
				If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
				Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No)
Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___				Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe)
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials eme Date 9/3/19 Page 1 of 1

**List of current GEL Certifications as of 18 September 2019**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-013
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

**Radiochemistry  
Technical Case Narrative  
GSI Environmental Inc.  
SDG #: 489264**

**Product:** Dry Weight

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913626

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489264001	BP-SED-1-190829
489264002	BP-SED-1A-190829
489264003	BP-SED-1B-190829
489264004	BP-SED-1C-190829
489264005	RRMDF-SED-1-190829
489264006	RRMDF-SED-1A-190829
489264007	RRMDF-SED-1B-190829
489264008	RRMDF-SED-1C-190829
489264009	SRE-SED-1-190829
489264010	SRE-SED-1A-190829
489264011	SRE-SED-1B-190829
489264012	SRE-SED-1C-190829
489264013	SRE-SED-2-190829
489264014	OS8-SED-1-190830
489264015	OS8-SED-1A-190830
489264016	OS8-SED-1B-190830
489264017	OS8-SED-1C-190830

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product:** GFPC, Sr90, Solid

**Analytical Method:** EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

**Analytical Procedure:** GL-RAD-A-004 REV# 21

**Analytical Batch:** 1916851

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913626

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489264001	BP-SED-1-190829
489264002	BP-SED-1A-190829
489264003	BP-SED-1B-190829
489264004	BP-SED-1C-190829
489264005	RRMDF-SED-1-190829
489264006	RRMDF-SED-1A-190829
489264007	RRMDF-SED-1B-190829
489264008	RRMDF-SED-1C-190829
489264009	SRE-SED-1-190829
489264010	SRE-SED-1A-190829
489264011	SRE-SED-1B-190829
489264012	SRE-SED-1C-190829
489264013	SRE-SED-2-190829
489264014	OS8-SED-1-190830
489264015	OS8-SED-1A-190830
489264016	OS8-SED-1B-190830
489264017	OS8-SED-1C-190830
1204381281	Method Blank (MB)
1204381282	489264001(BP-SED-1-190829) Sample Duplicate (DUP)
1204381283	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

#### **Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

#### **Technical Information**

##### **Sample Re-prep/Re-analysis**

Samples were re-prepped to verify the results. The re-analysis is being reported.

##### **Recounts**

Sample 489264009 (SRE-SED-1-190829) was recounted due to high MDC. The recount is reported. Sample 489264016 (OS8-SED-1B-190830) was recounted due to results more negative than the three sigma TPU. The second count is reported. Samples 489264002 (BP-SED-1A-190829), 489264004 (BP-SED-1C-190829), 489264006 (RRMDF-SED-1A-190829) and 489264011 (SRE-SED-1B-190829) were recounted due to a suspected false positive. The recounts are reported.

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

September 13, 2019

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California 94612

Re: Near S SFL  
Work Order: 489266

Dear Travis Wicks:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4487.

Sincerely,



Brielle Luthman  
Project Manager

Purchase Order: GELP19-1037  
Enclosures

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

## Certificate of Analysis Report for

GSIE002 GSI Environmental Inc.

Client SDG: 489266 GEL Work Order: 489266

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Brielle Luthman.

Reviewed by \_\_\_\_\_

*B. Luthman*

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 13, 2019

Client Sample ID: G-1-190830 Project: GSIE00119  
Sample ID: 489266001 Client ID: GSIE002  
Matrix: Vegetation  
Collect Date: 30-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 86.7%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	0.0817	+/-0.123	0.212	+/-0.124	0.240	pCi/g			BXF1	09/12/19	1358	1913937	1

### Solid Preparation

*Laboratory Composite "As Received"*

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	86.2	(40%-110%)

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 13, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: G-2-190830

Project: GSIE00119

Sample ID: 489266002

Client ID: GSIE002

Matrix: Vegetation

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 88.5%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0289	+/-0.0739	0.150	+/-0.0739	0.240	pCi/g			BXF1	09/13/19	0724	1913937	1

**Solid Preparation**

*Laboratory Composite "As Received"*

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	84	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: September 13, 2019  
Page 1 of 2

**Client :** GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California

**Contact:** Travis Wicks

**Workorder:** 489266

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1913937										
QC1204374100	489269002	DUP									
Strontium-90		U	-0.0146	U	0.0564	pCi/g	0		N/A	BXF1	09/13/1907:24
		Uncert:	+/-0.116		+/-0.133						
		TPU:	+/-0.116		+/-0.134						
QC1204374101	LCS										
Strontium-90	5.35				4.99	pCi/g	93.4	(75%-125%)	BXF1	09/12/1913:58	
		Uncert:			+/-0.279						
		TPU:			+/-1.19						
QC1204374099	MB										
Strontium-90				U	-0.0124	pCi/g			BXF1	09/12/1913:58	
		Uncert:			+/-0.0913						
		TPU:			+/-0.0913						

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 489266

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
X										
Y										
^										
h										

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



SAMPLE RECEIPT & REVIEW FORM

Client: <b>GSFE</b>		SDG/ARCOC/Work Order: <b>489266</b>		<b>B.L</b>	
Received By: <b>TVE</b>		Date Received: <b>8/31/19</b>			
Carrier and Tracking Number		Circle Applicable: FedEx Express    FedEx Ground    UPS    Field Services    Courier    Other <b>7895 0169 6544 - 4°C</b> <b>7895 0169 6533 - 5°C</b>			
Suspected Hazard Information		Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
A) Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___	
B) Did the client designate the samples are to be received as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.	
C) Did the RSO classify the samples as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b> CPM / mR/Hr Classified as: Rad 1    Rad 2    -Rad 3	
D) Did the client designate samples are hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or hazard labels on containers equal client designation.	
E) Did the RSO identify possible hazards?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	If D or E is yes, select Hazards below. PCB's    Flammable    Foreign Soil    RCRA    Asbestos    Beryllium    Other:	
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC    COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs    Dry ice    None    Other: *all temperatures are recorded in Celsius
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <b>11-18</b> TEMP: <b>↑</b> Secondary Temperature Serial # (If Applicable):
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected:
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers    No times on containers    COC missing info    Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC    Other (describe)
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished    Other (describe)
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials eme Date 9/3/19 Page 1 of 1

**List of current GEL Certifications as of 13 September 2019**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-013
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

**Radiochemistry  
Technical Case Narrative  
GSI Environmental Inc.  
SDG #: 489266**

**Product: Dry Weight**

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489266001	G-1-190830
489266002	G-2-190830

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: GFPC, Sr90, Vegetation**

**Analytical Method:** EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

**Analytical Procedure:** GL-RAD-A-004 REV# 21

**Analytical Batch:** 1913937

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489266001	G-1-190830
489266002	G-2-190830
1204374099	Method Blank (MB)
1204374100	489269002(AV-2-190830) Sample Duplicate (DUP)
1204374101	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

### **Preparation Information**

#### **Homogenous Matrix**

Samples were non-homogenous matrix. mixture of fluffy dark brown peat moss, large clay chunks, fine powder, and rocks

### **Technical Information**

#### **Recounts**

Samples 1204374100 (AV-2-190830DUP) and 489266002 (G-2-190830) were recounted due to a suspected false positive. The recounts are reported.

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.



September 13, 2019

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California 94612

Re: Near S SFL  
Work Order: 489267

Dear Travis Wicks:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4487.

Sincerely,



Brielle Luthman  
Project Manager

Purchase Order: GELP19-1037  
Enclosures

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

### Certificate of Analysis Report for

GSIE002 GSI Environmental Inc.

Client SDG: 489267 GEL Work Order: 489267

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Brielle Luthman.

Reviewed by \_\_\_\_\_

*B. Luthman*

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 13, 2019

Client Sample ID: L-1-190830  
Sample ID: 489267001  
Matrix: Vegetation  
Collect Date: 30-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 92.2%

Project: GSIE00119  
Client ID: GSIE002

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	0.0599	+/-0.0697	0.117	+/-0.071	0.240	pCi/g			BXF1	09/12/19	1358	1913937	1

### Solid Preparation

*Laboratory Composite "As Received"*

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	90.6	(40%-110%)

### Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 13, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: L-2-190830

Project: GSIE00119

Sample ID: 489267002

Client ID: GSIE002

Matrix: Vegetation

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 93%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0491	+/-0.0618	0.126	+/-0.0618	0.240	pCi/g			BXF1	09/12/19	1358	1913937	1

**Solid Preparation**

*Laboratory Composite "As Received"*

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	95	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: September 13, 2019  
Page 1 of 2

**Client :** GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California

**Contact:** Travis Wicks

**Workorder:** 489267

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1913937										
QC1204374100	489269002	DUP									
Strontium-90		U	-0.0146	U	0.0564	pCi/g	0		N/A	BXF1	09/13/1907:24
		Uncert:	+/-0.116		+/-0.133						
		TPU:	+/-0.116		+/-0.134						
QC1204374101	LCS										
Strontium-90	5.35				4.99	pCi/g	93.4	(75%-125%)	BXF1	09/12/1913:58	
		Uncert:			+/-0.279						
		TPU:			+/-1.19						
QC1204374099	MB										
Strontium-90				U	-0.0124	pCi/g			BXF1	09/12/1913:58	
		Uncert:			+/-0.0913						
		TPU:			+/-0.0913						

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 489267

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
X										
Y										
^										
h										

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



489267

<b>FROM:</b> GSI Environmental Inc. 155 Grand Ave. Suite 704 Oakland, CA 94612 (510) 463-8484 E-MAIL: smgallardo@gseenv.com		<b>PROJECT NAME:</b> ADU-BB <b>PROJECT CONTACT:</b> Susan Gallardo <b>GLOBAL ID:</b> _____		<b>PROJECT NO.:</b> 5182 <b>LAB CONTACT:</b> Shelle Luthman <b>SAMPLER(S) (PRINT):</b> Travis Wilcox, Kalin Havel	
<b>LABORATORY:</b> GEL Laboratories		<b>REQUESTED ANALYSES</b> Please check box or fill in blank as needed.			
<b>TURNAROUND TIME:</b> <input type="checkbox"/> SAME DAY <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 5 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> 10 DAY		Unpreserved Preserved Field Filtered			
<b>SPECIAL INSTRUCTIONS:</b> * Sample interior flesh only; no peel * Detection Limit $\leq$ 0.24 ug/kg		Sr-90 EPA 9050			
LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.
		DATE	TIME		
	L-1-190830	8/30/19	0938	Fruit	1
	L-2-190830	I	1454	I	I
(Large handwritten scribble/loop)					
Relinquished by: (Signature) _____ Relinquished by: (Signature) <b>FED EX</b> Relinquished by: (Signature) _____		Received by: (Signature) <b>FED EX</b> Received by: (Signature) <b>Dhyagadatum</b> Received by: (Signature) _____		Date: 8/30/19 Time: 1:30 Date: 8/31/19 Time: 9:15 Date: _____ Time: _____	

SAMPLE RECEIPT & REVIEW FORM

Client: GSTE SDG/AR/COC/Work Order: 489267 B.L  
 Received By: IVE Date Received: 8/31/19  
 Carrier and Tracking Number: 7895 0169 6544 - 4C  
7895 0169 6533 - 5C

Suspected Hazard Information

Yes  No \*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

A) Shipped as a DOT Hazardous?  Hazard Class Shipped: \_\_\_\_\_ UN#: \_\_\_\_\_  
 If UN2910, Is the Radioactive Shipment Survey Compliant? Yes \_\_\_ No \_\_\_

B) Did the client designate the samples are to be received as radioactive?  COC notation or radioactive stickers on containers equal client designation.

C) Did the RSO classify the samples as radioactive?  Maximum Net Counts Observed\* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr  
 Classified as: Rad 1 Rad 2 Rad 3

D) Did the client designate samples are hazardous?  COC notation or hazard labels on containers equal client designation.

E) Did the RSO identify possible hazards?  If D or E is yes, select Hazards below.  
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: \_\_\_\_\_

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry Ice None Other: *all temperatures are recorded in Celsius
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>TR-18</u> TEMP: <u>↑</u> Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected:
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials gma Date 9/3/19 Page 1 of 1



**List of current GEL Certifications as of 13 September 2019**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-013
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

**Radiochemistry  
Technical Case Narrative  
GSI Environmental Inc.  
SDG #: 489267**

**Product: Dry Weight**

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489267001	L-1-190830
489267002	L-2-190830

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: GFPC, Sr90, Vegetation**

**Analytical Method:** EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

**Analytical Procedure:** GL-RAD-A-004 REV# 21

**Analytical Batch:** 1913937

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489267001	L-1-190830
489267002	L-2-190830
1204374099	Method Blank (MB)
1204374100	489269002(AV-2-190830) Sample Duplicate (DUP)
1204374101	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

### **Preparation Information**

#### **Homogenous Matrix**

Samples were non-homogenous matrix. mixture of fluffy dark brown peat moss, large clay chunks, fine powder, and rocks

### **Technical Information**

#### **Recounts**

Sample 1204374100 (AV-2-190830DUP) was recounted due to a suspected false positive. The recount is reported.

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

September 13, 2019

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California 94612

Re: Near S SFL  
Work Order: 489268

Dear Travis Wicks:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4487.

Sincerely,



Brielle Luthman  
Project Manager

Purchase Order: GELP19-1037  
Enclosures

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

### Certificate of Analysis Report for

GSIE002 GSI Environmental Inc.

Client SDG: 489268 GEL Work Order: 489268

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Brielle Luthman.

Reviewed by \_\_\_\_\_

*B. Luthman*

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 13, 2019

Client Sample ID: A-1-190830 Project: GSIE00119  
Sample ID: 489268001 Client ID: GSIE002  
Matrix: Vegetation  
Collect Date: 30-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 82.9%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0431	+/-0.0905	0.187	+/-0.0905	0.240	pCi/g			BXF1	09/13/19	0724	1913937	1

### Solid Preparation

*Laboratory Composite "As Received"*

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	90.6	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor  
DL: Detection Limit  
Lc/LC: Critical Level  
MDA: Minimum Detectable Activity  
MDC: Minimum Detectable Concentration

Mtd.: Method  
PF: Prep Factor  
RL: Reporting Limit  
TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 13, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: A-2-190830

Project: GSIE00119

Sample ID: 489268002

Client ID: GSIE002

Matrix: Vegetation

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 87.7%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0567	+/-0.0697	0.151	+/-0.0697	0.240	pCi/g			BXF1	09/13/19	0724	1913937	1

**Solid Preparation**

*Laboratory Composite "As Received"*

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	84	(40%-110%)

**Notes:**

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: September 13, 2019  
Page 1 of 2

**Client :** GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California

**Contact:** Travis Wicks

**Workorder:** 489268

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1913937										
QC1204374100	489269002	DUP									
Strontium-90		U	-0.0146	U	0.0564	pCi/g	0		N/A	BXF1	09/13/1907:24
		Uncert:	+/-0.116		+/-0.133						
		TPU:	+/-0.116		+/-0.134						
QC1204374101	LCS										
Strontium-90	5.35				4.99	pCi/g	93.4	(75%-125%)	BXF1	09/12/1913:58	
		Uncert:			+/-0.279						
		TPU:			+/-1.19						
QC1204374099	MB										
Strontium-90				U	-0.0124	pCi/g				BXF1	09/12/1913:58
		Uncert:			+/-0.0913						
		TPU:			+/-0.0913						

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 489268

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
X										
Y										
^										
h										

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



489268

<b>FROM:</b> GSI Environmental Inc. 155 Grand Ave. Suite 704 Oakland, CA 94612 (510) 463-8484 TEL: (510) 463-8484 E-MAIL: smgallardo@gssienv.com		<b>PROJECT NAME:</b> AJ11-BB <b>PROJECT CONTACT:</b> Susana Gallardo <b>GLOBAL ID:</b>		<b>PROJECT NO.:</b> 5182 <b>LAB CONTACT:</b> Brielle Lauthman <b>SAMPLER(S): (PRINT)</b> Travis Wicks, Kalin Howell	
<b>LABORATORY:</b> GEL Laboratory TURNAROUND TIME: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 72 HR <input type="checkbox"/> 5 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> 10 DAYS		<b>REQUESTED ANALYSES</b> Please check box or fill in blank as needed.			
<b>SPECIAL INSTRUCTIONS:</b> * Sample both skin + flesh, but not seeds or stem * Detection Limit ≤ 0.24 pc/g		Unpreserved <input checked="" type="checkbox"/>	Preserved <input type="checkbox"/>	Field Filtered <input type="checkbox"/>	NO. OF CONT. <input type="checkbox"/>
LAB USE ONLY SAMPLE ID DATE SAMPLING TIME MATRIX	A-1-190830 8/30/19 0943 Fruit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 →
A-2-190830 I 1457 I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	→
dw 8/30/19					
Relinquished by: (Signature) <i>[Signature]</i> Relinquished by: (Signature) <b>FED EX</b> Relinquished by: (Signature)		Received by: (Signature) <b>FED EX</b> Received by: (Signature) <i>[Signature]</i> Received by: (Signature)			
Date: 8/30/19 Time: 15:30 Date: 8/31/19 Time: 15:15 Date: _____ Time: _____		Date: 8/30/19 Time: 15:30 Date: 8/31/19 Time: 15:15 Date: _____ Time: _____			

SAMPLE RECEIPT & REVIEW FORM

Client: GSTF SDG/AR/COC/Work Order: 489268 B.L  
 Received By: IVL Date Received: 8/31/19

Carrier and Tracking Number  
 FedEx Express FedEx Ground UPS Field Services Courier Other  
7895 0169 6544 - 4°C  
7895 0169 6533 - 5°C

Suspected Hazard Information  
 \*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.  
 A) Shipped as a DOT Hazardous?  Hazard Class Shipped: UN#:  
 (If UN2910, Is the Radioactive Shipment Survey Compliant? Yes \_\_\_ No \_\_\_  
 B) Did the client designate the samples are to be received as radioactive?  COC notation or radioactive stickers on containers equal client designation.  
 C) Did the RSO classify the samples as radioactive?  Maximum Net Counts Observed\* (Observed Counts - Area Background Counts): 0 CPM / mR/hr  
 Classified as: Rad 1 Rad 2 Rad 3  
 D) Did the client designate samples are hazardous?  COC notation or hazard labels on containers equal client designation.  
 E) Did the RSO identify possible hazards?  If D or E is yes, select Hazards below.  
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>↑</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Temperature Device Serial #: <u>ERL-18</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
				Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No)
				Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___ Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: No container count on COC Other (describe)
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials gma Date 9/3/19 Page 1 of 1

**List of current GEL Certifications as of 13 September 2019**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-013
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

**Radiochemistry  
Technical Case Narrative  
GSI Environmental Inc.  
SDG #: 489268**

**Product: Dry Weight**

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489268001	A-1-190830
489268002	A-2-190830

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: GFPC, Sr90, Vegetation**

**Analytical Method:** EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

**Analytical Procedure:** GL-RAD-A-004 REV# 21

**Analytical Batch:** 1913937

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489268001	A-1-190830
489268002	A-2-190830
1204374099	Method Blank (MB)
1204374100	489269002(AV-2-190830) Sample Duplicate (DUP)
1204374101	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

### **Preparation Information**

#### **Homogenous Matrix**

Samples were non-homogenous matrix. mixture of fluffy dark brown peat moss, large clay chunks, fine powder, and rocks

### **Technical Information**

#### **Recounts**

Sample 489268001 (A-1-190830) was recounted due to high MDC. The recount is reported. Sample 489268002 (A-2-190830) was recounted due to results more negative than the three sigma TPU. The second count is reported. Sample 1204374100 (AV-2-190830DUP) was recounted due to a suspected false positive. The recount is reported.

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

September 13, 2019

Travis Wicks  
GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California 94612

Re: Near S SFL  
Work Order: 489269

Dear Travis Wicks:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4487.

Sincerely,



Brielle Luthman  
Project Manager

Purchase Order: GELP19-1037  
Enclosures

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

### Certificate of Analysis Report for

GSIE002 GSI Environmental Inc.

Client SDG: 489269 GEL Work Order: 489269

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Brielle Luthman.

Reviewed by \_\_\_\_\_

*B. Luthman*



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
Address : 155 Grand Ave  
Suite 704  
Oakland, California 94612  
Contact: Travis Wicks  
Project: Near S SFL

Report Date: September 13, 2019

Client Sample ID: AV-1-190830      Project: GSIE00119  
Sample ID: 489269001      Client ID: GSIE002  
Matrix: Vegetation  
Collect Date: 30-AUG-19  
Receive Date: 31-AUG-19  
Collector: Client  
Moisture: 70.7%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b> <i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0815	+/-0.106	0.227	+/-0.106	0.240	pCi/g			BXF1	09/13/19	0724	1913937	1

### Solid Preparation

*Laboratory Composite "As Received"*

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

### The following Analytical Methods were performed

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	92.8	(40%-110%)

**Notes:**  
The MDC is a sample specific MDC.  
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

### Column headers are defined as follows:

DF: Dilution Factor      Mtd.: Method  
DL: Detection Limit      PF: Prep Factor  
Lc/LC: Critical Level      RL: Reporting Limit  
MDA: Minimum Detectable Activity      TPU: Total Propagated Uncertainty  
MDC: Minimum Detectable Concentration

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : GSI Environmental Inc.  
 Address : 155 Grand Ave  
 Suite 704  
 Oakland, California 94612

Report Date: September 13, 2019

Contact: Travis Wicks

Project: Near S SFL

Client Sample ID: AV-2-190830

Project: GSIE00119

Sample ID: 489269002

Client ID: GSIE002

Matrix: Vegetation

Collect Date: 30-AUG-19

Receive Date: 31-AUG-19

Collector: Client

Moisture: 76.3%

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Sr90, Vegetation "As Received"</i>														
Strontium-90	U	-0.0146	+/-0.116	0.225	+/-0.116	0.240	pCi/g			BXF1	09/13/19	0724	1913937	1

**Solid Preparation**

*Laboratory Composite "As Received"*

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	RYH1	09/07/19	1030	1913641

**The following Analytical Methods were performed**

Method	Description
1	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
2	GEL Prep Method

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, Vegetation "As Received"	1913937	90.6	(40%-110%)

**Notes:**  
 The MDC is a sample specific MDC.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| DF: Dilution Factor                   | Mtd.: Method                      |
| DL: Detection Limit                   | PF: Prep Factor                   |
| Lc/LC: Critical Level                 | RL: Reporting Limit               |
| MDA: Minimum Detectable Activity      | TPU: Total Propagated Uncertainty |
| MDC: Minimum Detectable Concentration |                                   |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: September 13, 2019  
Page 1 of 2

**Client :** GSI Environmental Inc.  
155 Grand Ave  
Suite 704  
Oakland, California

**Contact:** Travis Wicks

**Workorder:** 489269

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1913937										
QC1204374100	489269002	DUP									
Strontium-90		U	-0.0146	U	0.0564	pCi/g	0		N/A	BXF1	09/13/1907:24
		Uncert:	+/-0.116		+/-0.133						
		TPU:	+/-0.116		+/-0.134						
QC1204374101	LCS										
Strontium-90	5.35				4.99	pCi/g	93.4	(75%-125%)	BXF1	09/12/1913:58	
		Uncert:			+/-0.279						
		TPU:			+/-1.19						
QC1204374099	MB										
Strontium-90				U	-0.0124	pCi/g			BXF1	09/12/1913:58	
		Uncert:			+/-0.0913						
		TPU:			+/-0.0913						

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 489269

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
X										
Y										
^										
h										

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



SAMPLE RECEIPT & REVIEW FORM

Client: <b>GSTFE</b>		SDG/AR/COC/Work Order: <b>489269</b>		<b>B.L</b>	
Received By: <b>TVE</b>		Date Received: <b>8/31/19</b>			
Carrier and Tracking Number		Circle Applicable: FedEx Express    FedEx Ground    UPS    Field Services    Courier    Other <b>7895 0169 6544 - 4°C</b> <b>7895 0169 6533 - 5°C</b>			
Suspected Hazard Information		Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
A) Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___	
B) Did the client designate the samples are to be received as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.	
C) Did the RSO classify the samples as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b> CPM / mR/hr Classified as: Rad 1    Rad 2    Rad 3	
D) Did the client designate samples are hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or hazard labels on containers equal client designation.	
E) Did the RSO identify possible hazards?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	If D or E is yes, select Hazards below: PCB's    Flammable    Foreign Soil    RCRA    Asbestos    Beryllium    Other:	
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC    COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs    Dry Ice    None    Other: *all temperatures are recorded in Celsius
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <b>TR-18</b> TEMP: <b>↑</b> Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected:
7	Do any samples require Volatile Analysis?	If Preservation added, Lot#:			
		If Yes, are Eucoros or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)			
		Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No)			
		Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___			
		Sample ID's and containers affected:			
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers    No times on containers    COC missing info    Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC    Other (describe)
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Not relinquished    Other (describe)
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials emm Date 9/3/19 Page 1 of 1

**List of current GEL Certifications as of 13 September 2019**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-013
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

**Radiochemistry  
Technical Case Narrative  
GSI Environmental Inc.  
SDG #: 489269**

**Product: Dry Weight**

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489269001	AV-1-190830
489269002	AV-2-190830

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product: GFPC, Sr90, Vegetation**

**Analytical Method:** EPA 905.0 Modified/DOE RP501 Rev. 1 Modified

**Analytical Procedure:** GL-RAD-A-004 REV# 21

**Analytical Batch:** 1913937

**Preparation Method:** Dry Soil Prep

**Preparation Procedure:** GL-RAD-A-021 REV# 23

**Preparation Batch:** 1913641

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
489269001	AV-1-190830
489269002	AV-2-190830
1204374099	Method Blank (MB)
1204374100	489269002(AV-2-190830) Sample Duplicate (DUP)
1204374101	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.



### **Preparation Information**

#### **Homogenous Matrix**

Samples were non-homogenous matrix. mixture of fluffy dark brown peat moss, large clay chunks, fine powder, and rocks

### **Technical Information**

#### **Recounts**

Samples 489269001 (AV-1-190830) and 489269002 (AV-2-190830) were recounted due to high MDCs. The recounts are reported. Sample 1204374100 (AV-2-190830DUP) was recounted due to a suspected false positive. The recount is reported.

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendix D**

Appendix D. Preliminary Remediation Goal Calculation Methodology and Inputs

## Appendix D Preliminary Remediation Goal Calculations

### OVERVIEW

This document describes the methodology and assumptions used to calculate preliminary remediation goals (PRGs) for cesium-137, tritium, and strontium-90 that may be present in soil at the American Jewish University (AJU) Brandeis-Bardin Campus in Brandeis, California, located at 1101 Peppertree Lane in Brandeis, California (the Site). The results are tabulated for ease of interpretation.

The PRGs address two different residential exposure scenarios. The first of these scenarios considers a hypothetical resident exposed to these three radionuclides by incidental ingestion, dermal contact, external exposure (cesium-137 and strontium-90), and inhalation of resuspended soil. The second scenario considers these same residential soil-based exposure pathways for strontium-90, but also includes consumption of home-grown apples, citrus, and avocados. These specific types of produce were selected for evaluation because they are grown on Site and may be ingested by the individuals residing there.

### METHODOLOGY

The PRGs for the radionuclides and exposure scenarios of interest were calculated using the United States Environmental Protection Agency (US EPA) PRG Calculator for radionuclides. The calculator is a database tool comprised of standard risk-based equations for radioactive contaminants. The radionuclide PRGs are based on the carcinogenicity of the individual isotopes, and, for isotopes like cesium-137 and strontium-90, also accounts for the carcinogenicity of daughter radionuclides (progeny). Non-cancer health effects are not considered for most radionuclides (uranium is the exception to this, but is not a concern for the AJU site). The conceptual framework of the PRG calculator is EPA's *Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals) (RAGS Part B)*.<sup>1</sup> The PRG Calculator can be used with default exposure assumptions, or with select site-specific exposure factors, as appropriate. The equations and default assumptions are available online.<sup>2</sup>

PRGs were calculated by selecting a target risk level of one in a million ( $1 \times 10^{-6}$ ), a region-specific climate zone (Los Angeles), and by specifying that the radionuclides were not in secular equilibrium. The latter selection results in PRGs that account for exposures to, and health effects from, daughter radionuclides. For the AJU Site, these are Barium-137 (Cs-137 daughter product) and Yttrium-90 (Strontium-90 daughter product). Tritium does not have radioactive progeny.

### Soil PRGs

All exposure factors and assumptions used to calculate the soil PRGs were standard model defaults for a residential receptor exposed via contaminated soil. Under this scenario, the

<sup>1</sup> <https://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part-b>

<sup>2</sup> <https://epa-prgs.ornl.gov/radionuclides/equations.html> and [https://epa-prgs.ornl.gov/radionuclides/prg\\_guide.html](https://epa-prgs.ornl.gov/radionuclides/prg_guide.html)

receptors are assumed not to ingest any produce grown on Site. The default exposure factors include variables such as a 26-year exposure duration (20 years as an adult, 6 years as a child); a 350-day per year exposure frequency; and a 24-hour per day exposure time. Additionally, adults are assumed to ingest 100 milligram per day of soil (mg/d), and children to ingest 200 mg/d.

Table D1 provides the results of the PRG calculations for residential soil-based exposures to cesium-137, tritium, and strontium-90.

**Table D1. PRGs for Residential Soil-based Exposure, AJU**

Radionuclide	PRG (pCi/g)
Barium-137 (Cesium 137 daughter)	1.6 x 10 <sup>5</sup>
Cesium-137	25.3
Tritium	0.237
Strontium-90	13.4
Yttrium-90 (Strontium-90 daughter)	1.12 x 10 <sup>4</sup>

### Soil and Produce PRGs

Because the AJU property has on-Site apple, lemon, grapefruit, and avocado trees, this scenario accounted for all of the soil-based exposure pathways addressed for the soil PRGs, but also included additional assumptions regarding home-grown produce.

Site-specific consumption rates of apples, lemons, grapefruits, and avocados for the AJU Site are not available. Accordingly, age-adjusted intake rates of these fruits per body weight (as available) were obtained from the US EPA Exposure Factors Handbook<sup>3</sup>, and adjusted to account for the body weight of a child (17.0 kilograms [kg]) and an adult (79.6 kg).<sup>4</sup> The fruit intake rates (summarized in Table D2) reflect the fact that only citrus ingestion rates are available – as opposed to specific intake rates for lemons and grapefruits. Avocado ingestion rates are from NHANES.<sup>5</sup> We assumed that 50 percent (%) of the produce ingested by a Site resident was grown on Site.

**Table D2. Age-adjusted Produce Intake Rates**

Produce Item	Child Intake Rate (grams/day)	Adult Intake Rate (grams/day)
Apple	21.76	76.41
Citrus	77.52	362.98
Avocado	78 (not age-specific)	78 (not age-specific)

Table D3 provides the results of the PRG calculations for residential soil and produce-based exposures to strontium-90. The All Produce PRGs provide the activity-concentration of each radionuclide that could be present collectively in the homegrown produce items. The Total PRG is a soil-based activity-concentration that is protective of human exposure via ingestion of

<sup>3</sup> <https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>

<sup>4</sup> [https://epa-prgs.ornl.gov/radionuclides/20161130\\_Biota\\_TM\\_KLM\\_Final\\_printable\\_version.pdf](https://epa-prgs.ornl.gov/radionuclides/20161130_Biota_TM_KLM_Final_printable_version.pdf)

<sup>5</sup> <https://www.cdc.gov/nchs/nhanes/>

contaminated home-grown produce and separate soil-based exposures. Produce-specific PRGs that account for consumption of each produce item (no other exposure pathways) are summarized in Table D4.

**Table D3. PRGs for Residential Soil and Produce based Exposure, AJU**

Radionuclide	All Produce PRG (pCi/g)	Total PRG (pCi/g)
Strontium-90	0.571	0.547
Yttrium-90 (Strontium-90 daughter)	$4.6 \times 10^3$	$3.3 \times 10^3$

**Table D4. PRGs for Individual Produce Items**

Radionuclide	Apple Consumption PRG (pCi/g)	Citrus Consumption PRG (pCi/g)	Avocado Consumption PRG (pCi/g)
Strontium-90	3.9	0.843	3.21
Yttrium-90 (Strontium-90 daughter)	$3 \times 10^4$	$7 \times 10^3$	$3 \times 10^4$

## DISCUSSION

The PRGs summarized in Tables D1 and D3 are likely conservative PRGs for individuals that may use the AJU Site, as they assume that a residential receptor spends most of their time on Site on an on-going basis over a significant portion of their lifetime. The PRGs for Total Produce and Individual Produce items in Table D4 include an additional conservative assumption by assuming that 50% of the produce ingested by the residents is contaminated. In actuality, recent sampling results found no detectable level of strontium 90 in apples, lemons, grapefruit, or avocados collected from the Site (see Table 6 of the main report). However, a comparison of the Soil PRGs with the Soil and Produce PRGs, indicates that if radionuclide-contaminated produce were present, ingestion of that produce represents the dominant route of exposure.

The Soil PRG for Residential Soil-based Exposure to tritium (0.237 pCi/g) is lower than the detection limit of certain samples collected in April of 2019 (e.g., Main Campus sampling locations). However, the tritium PRG is similar – and nearly equal to – the site tritium background level identified by Ogden Environmental and Energy Services (1998) and markedly lower than the site tritium background level of 7.38 pCi/g identified by HydroGeologic Inc. (2012) and approved by the US EPA. Accordingly, even if tritium had been present just below the detection limit in soils analyzed from the April 2019 sampling, it would not have been distinguishable from background levels identified for the site.

The daughter progeny of strontium-90 (yttrium-90) does not make a significant contribution to exposure regardless of whether exposure occurs through soil or via ingestion of produce.

Variable	Default Value	Form-input Value
A (PEF Dispersion Constant)	16.2302	11.911
B (PEF Dispersion Constant)	18.7762	18.4385
City (Climate Zone)	Default	Los Angeles, CA (2)
C (PEF Dispersion Constant)	216.108	209.7845
Cover thickness for GSF <sub>o</sub> (gamma shielding factor) cm	0 cm	0 cm
Cover thickness for GSF <sub>b</sub> (gamma shielding factor) cm	0 cm	0 cm
CF <sub>res-produce</sub> (contaminated plant fraction) unitiles:	1	0.5
CF <sub>res-apple</sub> (contaminated apple fraction) unitiles:	1	0.5
CF <sub>res-asparagus</sub> (contaminated asparagus fraction) unitiles	1	0.5
CF <sub>res-berry</sub> (contaminated berry fraction) unitiles:	1	0.5
CF <sub>res-broccoli</sub> (contaminated broccoli fraction) unitiles:	1	0.5
CF <sub>res-beet</sub> (contaminated beet fraction) unitiles:	1	0.5
CF <sub>res-cabbage</sub> (contaminated cabbage fraction) unitiles:	1	0.5
CF <sub>res-cereal grain</sub> (contaminated cereal grain fraction) unitiles	1	0.5
CF <sub>res-citrus</sub> (contaminated citrus fraction) unitiles:	1	0.5
CF <sub>res-corn</sub> (contaminated corn fraction) unitiles:	1	0.5
CF <sub>res-carrot</sub> (contaminated carrot fraction) unitiles:	1	0.5
CF <sub>res-cucumber</sub> (contaminated cucumber fraction) unitiles:	1	0.5
CF <sub>res-lettuce</sub> (contaminated lettuce fraction) unitiles:	1	0.5
CF <sub>res-lima bean</sub> (contaminated lima bean fraction) unitiles:	1	0.5
CF <sub>res-okra</sub> (contaminated okra fraction) unitiles:	1	0.5
CF <sub>res-onion</sub> (contaminated onion fraction) unitiles:	1	0.5
CF <sub>res-peach</sub> (contaminated peach fraction) unitiles:	1	0.5
CF <sub>res-pea</sub> (contaminated pea fraction) unitiles:	1	0.5
CF <sub>res-pear</sub> (contaminated pear fraction) unitiles:	1	0.5
CF <sub>res-potato</sub> (contaminated potato fraction) unitiles:	1	0.5
CF <sub>res-pumpkin</sub> (contaminated pumpkin fraction) unitiles:	1	0.5
CF <sub>res-rice</sub> (contaminated rice fraction) unitiles:	1	0.5
CF <sub>res-snap bean</sub> (contaminated snap bean fraction) unitiles	1	0.5
CF <sub>res-strawberry</sub> (contaminated strawberry fraction) unitiles:	1	0.5
CF <sub>res-tomato</sub> (contaminated tomato fraction) unitiles:	1	0.5
ED <sub>res-a</sub> (exposure duration - resident adult) y	20	20
ED <sub>res-c</sub> (exposure duration - resident child) y	6	6
EF <sub>res-a</sub> (exposure frequency - resident adult) day/y	350	350
EF <sub>res-c</sub> (exposure frequency - resident child) day/y	350	350
IFAP <sub>res-adj</sub> (age-adjusted apple ingestion factor) ζ	667520	580636
IFAS <sub>res-adj</sub> (age-adjusted asparagus ingestion factor) ζ	300300	300300
IFBE <sub>res-adj</sub> (age-adjusted berry ingestion factor) ζ	297990	297990
IFBR <sub>res-adj</sub> (age-adjusted broccoli ingestion factor) ζ	251510	251510
IFBT <sub>res-adj</sub> (age-adjusted beet ingestion factor) ζ	245490	245490
IFCB <sub>res-adj</sub> (age-adjusted cabbage ingestion factor) ζ	670530	670530
IFCG <sub>res-adj</sub> (age-adjusted cereal grain ingestion factor) ζ	611800	611800
IFCI <sub>res-adj</sub> (age-adjusted citrus ingestion factor) ζ	2573410	2703652
IFCO <sub>res-adj</sub> (age-adjusted corn ingestion factor) ζ	468580	468580
IFCR <sub>res-adj</sub> (age-adjusted carrot ingestion factor) ζ	222390	222390
IFCU <sub>res-adj</sub> (age-adjusted cucumber ingestion factor) ζ	630140	630140
IFLE <sub>res-adj</sub> (age-adjusted lettuce ingestion factor) ζ	271320	271320
IFLI <sub>res-adj</sub> (age-adjusted lima bean ingestion factor) ζ	250250	250250
IFOK <sub>res-adj</sub> (age-adjusted okra ingestion factor) ζ	222530	222530
IFON <sub>res-adj</sub> (age-adjusted onion ingestion factor) ζ	164780	164780
IFPC <sub>res-adj</sub> (age-adjusted peach ingestion factor) ζ	1043840	1043840
IFPE <sub>res-adj</sub> (age-adjusted pea ingestion factor) ζ	315210	315210

Variable	Default Value	Form-input Value
IFPR <sub>res-adj</sub> (age-adjusted pear ingestion factor) $\zeta$	503370	709800
IFPT <sub>res-adj</sub> (age-adjusted potato ingestion factor) $\zeta$	1003170	1003170
IFPU <sub>res-adj</sub> (age-adjusted pumpkin ingestion factor) $\zeta$	548520	548520
IFRI <sub>res-adj</sub> (age-adjusted rice ingestion factor) $\zeta$	572880	572880
IFSN <sub>res-adj</sub> (age-adjusted snap bean ingestion factor) $\zeta$	434630	434630
IFST <sub>res-adj</sub> (age-adjusted strawberry ingestion factor) $\zeta$	336630	336630
IFTO <sub>res-adj</sub> (age-adjusted tomato ingestion factor) $\zeta$	624470	624470
IRAP <sub>res-a</sub> (apple ingestion rate - resident adult) g/da	73.7	76.42
IRAP <sub>res-c</sub> (apple ingestion rate - resident child) g/da	72.2	21.76
IRAS <sub>res-a</sub> (asparagus ingestion rate - resident adult) g/da	39.3	39.3
IRAS <sub>res-c</sub> (asparagus ingestion rate - resident child) g/da	12	12
IRBE <sub>res-a</sub> (berry ingestion rate - resident adult) g/da	35.4	35.4
IRBE <sub>res-c</sub> (berry ingestion rate - resident child) g/da	23.9	23.9
IRBR <sub>res-a</sub> (broccoli ingestion rate - resident adult) g/da	32	32
IRBR <sub>res-c</sub> (broccoli ingestion rate - resident child) g/da	13.1	13.1
IRBT <sub>res-a</sub> (beet ingestion rate - resident adult) g/da	33.9	33.9
IRBT <sub>res-c</sub> (beet ingestion rate - resident child) g/da	3.9	3.9
IRCB <sub>res-a</sub> (cabbage ingestion rate - resident adult) g/da	92.1	92.1
IRCB <sub>res-c</sub> (cabbage ingestion rate - resident child) g/da	12.3	12.3
IRCG <sub>res-a</sub> (cereal grain ingestion rate - resident adult) g/da	76	76
IRCG <sub>res-c</sub> (cereal grain ingestion rate - resident child) g/da	38	38
IRCI <sub>res-a</sub> (citrus ingestion rate - resident adult) g/da	309.4	362.98
IRCI <sub>res-c</sub> (citrus ingestion rate - resident child) g/da	194.1	77.52
IRCO <sub>res-a</sub> (corn ingestion rate - resident adult) g/da	59.8	59.8
IRCO <sub>res-c</sub> (corn ingestion rate - resident child) g/da	23.8	23.8
IRCR <sub>res-a</sub> (carrot ingestion rate - resident adult) g/da	27.3	27.3
IRCR <sub>res-c</sub> (carrot ingestion rate - resident child) g/da	14.9	14.9
IRCU <sub>res-a</sub> (cucumber ingestion rate - resident adult) g/da	82.4	82.4
IRCU <sub>res-c</sub> (cucumber ingestion rate - resident child) g/da	25.4	25.4
IRLE <sub>res-a</sub> (lettuce ingestion rate - resident adult) g/da	37.5	37.5
IRLE <sub>res-c</sub> (lettuce ingestion rate - resident child) g/da	4.2	4.2
IRLI <sub>res-a</sub> (lima bean ingestion rate - resident adult) g/da	33.8	33.8
IRLI <sub>res-c</sub> (lima bean ingestion rate - resident child) g/da	6.5	6.5
IROK <sub>res-a</sub> (okra ingestion rate - resident adult) g/da	30.2	30.2
IROK <sub>res-c</sub> (okra ingestion rate - resident child) g/da	5.3	5.3
IRON <sub>res-a</sub> (onion ingestion rate - resident adult) g/da	21.8	21.8
IRON <sub>res-c</sub> (onion ingestion rate - resident child) g/da	5.8	5.8
IRPC <sub>res-a</sub> (peach ingestion rate - resident adult) g/da	115.7	115.7
IRPC <sub>res-c</sub> (peach ingestion rate - resident child) g/da	111.4	111.4
IRPE <sub>res-a</sub> (pea ingestion rate - resident adult) g/da	35.4	35.4
IRPE <sub>res-c</sub> (pea ingestion rate - resident child) g/da	32.1	32.1
IRPR <sub>res-a</sub> (pear ingestion rate - resident adult) g/da	51.9	78
IRPR <sub>res-c</sub> (pear ingestion rate - resident child) g/da	66.7	78
IRPT <sub>res-a</sub> (potato ingestion rate - resident adult) g/da	127.8	127.8
IRPT <sub>res-c</sub> (potato ingestion rate - resident child) g/da	51.7	51.7
IRPU <sub>res-a</sub> (pumpkin ingestion rate - resident adult) g/da	64.8	64.8
IRPU <sub>res-c</sub> (pumpkin ingestion rate - resident child) g/da	45.2	45.2
IRRI <sub>res-a</sub> (rice ingestion rate - resident adult) g/da	73.2	73.2
IRRI <sub>res-c</sub> (rice ingestion rate - resident child) g/da	28.8	28.8
IRSN <sub>res-a</sub> (snap bean ingestion rate - resident adult) g/da	53.9	53.9
IRSN <sub>res-c</sub> (snap bean ingestion rate - resident child) g/da	27.3	27.3
IRST <sub>res-a</sub> (strawberry ingestion rate - resident adult) g/da	40.5	40.5

Variable	Default Value	Form-input Value
IRST <sub>res-c</sub> (strawberry ingestion rate - resident child) g/da	25.3	25.3
IRTO <sub>res-a</sub> (tomato ingestion rate - resident adult) g/da	80.3	80.3
IRTO <sub>res-c</sub> (tomato ingestion rate - resident child) g/da	29.7	29.7
MLF <sub>apple</sub> (apple mass loading factor) unitless:	0.00016	0.00016
MLF <sub>asparagus</sub> (asparagus mass loading factor) unitless:	0.000079	0.000079
MLF <sub>berry</sub> (berry mass loading factor) unitless:	0.000166	0.000166
MLF <sub>broccoli</sub> (broccoli mass loading factor) unitless:	0.00101	0.00101
MLF <sub>beet</sub> (beet mass loading factor) unitless:	0.000138	0.000138
MLF <sub>cabbage</sub> (cabbage mass loading factor) unitless:	0.000105	0.000105
MLF <sub>cereal grain</sub> (cereal grain mass loading factor) unitless:	0.25	0.25
MLF <sub>citrus</sub> (citrus mass loading factor) unitless:	0.000157	0.000157
MLF <sub>corn</sub> (corn mass loading factor) unitless:	0.000145	0.000145
MLF <sub>carrot</sub> (carrot mass loading factor) unitless:	0.000097	0.000097
MLF <sub>cucumber</sub> (cucumber mass loading factor) unitless:	0.00004	0.00004
MLF <sub>lettuce</sub> (lettuce mass loading factor) unitless:	0.0135	0.0135
MLF <sub>lima bean</sub> (lima bean mass loading factor) unitless:	0.00383	0.00383
MLF <sub>okra</sub> (okra mass loading factor) unitless:	0.00008	0.00008
MLF <sub>onion</sub> (onion mass loading factor) unitless:	0.000097	0.000097
MLF <sub>peach</sub> (peach mass loading factor) unitless:	0.00015	0.00015
MLF <sub>pea</sub> (pea mass loading factor) unitless:	0.000178	0.000178
MLF <sub>pear</sub> (pear mass loading factor) unitless:	0.00016	0.00016
MLF <sub>potato</sub> (potato mass loading factor) unitless:	0.00021	0.00021
MLF <sub>pumpkin</sub> (pumpkin mass loading factor) unitless:	0.000058	0.000058
MLF <sub>rice</sub> (rice mass loading factor) unitless:	0.25	0.25
MLF <sub>snap bean</sub> (snap bean mass loading factor) unitless:	0.005	0.005
MLF <sub>strawberry</sub> (strawberry mass loading factor) unitless:	0.00008	0.00008
MLF <sub>tomato</sub> (tomato mass loading factor) unitless:	0.00159	0.00159
TR (target cancer risk) unitless	0.000001	0.000001
F(x) (function dependent on $l_m/U_t$ ) unitless	0.194	0.00474
PEF (particulate emission factor) m <sup>3</sup> /kg	1359344438	1.15077E+11
Q/C <sub>wind</sub> (g/m <sup>2</sup> -s per kg/m <sup>3</sup> )	93.77	68.18364995
A <sub>s</sub> (acres)	0.5	0.5
Site area for ACF (area correction factor) m <sup>2</sup>	1000029 m <sup>2</sup>	1000029 m <sup>2</sup>
ED <sub>res</sub> (exposure duration - resident) y	26	26
ED <sub>res-a</sub> (exposure duration - resident adult) y	20	20
ED <sub>res-c</sub> (exposure duration - resident child) y	6	6
EF <sub>res</sub> (exposure frequency - resident) day/y	350	350
EF <sub>res-a</sub> (exposure frequency - resident adult) day/y	350	350
EF <sub>res-c</sub> (exposure frequency - resident child) day/y	350	350
ET <sub>res</sub> (exposure time - resident) hr/da	24	24
ET <sub>res-a</sub> (exposure time - resident adult) hr/da	24	24
ET <sub>res-c</sub> (exposure time - resident child) hr/da	24	24
ET <sub>res-i</sub> (exposure time - indoor resident) hr/da	16.416	16.416
ET <sub>res-o</sub> (exposure time - outdoor resident) hr/da	1.752	1.752
GSF <sub>i</sub> (gamma shielding factor - indoor) unitless:	0.4	0.4
IFA <sub>res-adj</sub> (age-adjusted soil inhalation factor - resident) r <sup>3</sup>	161000	161000
IFS <sub>res-adj</sub> (age-adjusted soil ingestion factor - resident) m <sub>i</sub>	1120000	1120000
IRA <sub>res-a</sub> (inhalation rate - resident adult) n <sup>3</sup> /day	20	20
IRA <sub>res-c</sub> (inhalation rate - resident child) n <sup>3</sup> /day	10	10
IRS <sub>res-a</sub> (soil intake rate - resident adult) mg/da	100	100
IRS <sub>res-c</sub> (soil intake rate - resident child) mg/da	200	200
t <sub>res</sub> (time - resident) yr	26	26



<b>Variable</b>	<b>Default Value</b>	<b>Form-input Value</b>
TR (target cancer risk) unitless	0.000001	0.000001
U <sub>m</sub> (mean annual wind speed) m/s	4.69	3.31
U <sub>t</sub> (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Resident PRGs for Soil - No secular equilibrium, progeny included (with decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Particulate Emission Factor (m <sup>3</sup> /kg)	Lambda (1/yr)	Half-life (yr)	1000029 m <sup>2</sup> Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Total Indoor GSF Soil Volume	Ingestion PRG TR=1E-06 (pCi/g)	Inhalation PRG TR=1E-06 (pCi/g)	External Exposure PRG TR=1E-06 (pCi/g)	Produce Consumption PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (mg/kg)
Sr-90	S	4.26E-10	4.83E-10	6.88E-11	8.62E-11	1.15E+11	2.41E-02	2.88E+01	9.00E-01	1.00E+00	4.00E-01	1.39E+01	2.26E+06	3.58E+02	5.71E-01	<b>5.47E-01</b>	3.97E-09
Y-90	S	8.40E-12	1.90E-08	2.65E-11	4.92E-11	1.15E+11	9.47E+01	7.32E-03	1.00E+00	1.00E+00	4.00E-01	4.47E+04	2.10E+11	1.50E+04	4.59E+03	<b>3.26E+03</b>	6.00E-09

Resident Produce Output for Soil - No secular equilibrium, progeny included (with decay)

Isotope	Wet Soil-to-plant transfer factor Woody tree (pCi/g-fresh plant per pCi/g-wet soil)	Apple Consumption PRG TR=1E-06 (pCi/g)	Citrus fruit Consumption PRG TR=1E-06 (pCi/g)	Pears (avocados) Consumption PRG TR=1E-06 (pCi/g)	Total Produce PRG TR=1E-06 (pCi/g)
Sr-90	0	3.9	0.843	3.210	<b>0.571</b>
Y-90	0	3.E+04	7.E+03	3.E+04	<b>5.E+03</b>

Variable	Default Value	Form-input Value
A (PEF Dispersion Constant)	16.2302	11.911
B (PEF Dispersion Constant)	18.7762	18.4385
City (Climate Zone)	Default	Los Angeles, CA (2)
C (PEF Dispersion Constant)	216.108	209.7845
Cover thickness for GSF <sub>o</sub> (gamma shielding factor) cm	0 cm	0 cm
Cover thickness for GSF <sub>b</sub> (gamma shielding factor) cm	0 cm	0 cm
CF <sub>res-produce</sub> (contaminated plant fraction) unitiles:	1	1
CF <sub>res-apple</sub> (contaminated apple fraction) unitiles:	1	1
CF <sub>res-asparagus</sub> (contaminated asparagus fraction) unitiles	1	1
CF <sub>res-berry</sub> (contaminated berry fraction) unitiles:	1	1
CF <sub>res-broccoli</sub> (contaminated broccoli fraction) unitiles:	1	1
CF <sub>res-beet</sub> (contaminated beet fraction) unitiles:	1	1
CF <sub>res-cabbage</sub> (contaminated cabbage fraction) unitiles:	1	1
CF <sub>res-cereal grain</sub> (contaminated cereal grain fraction) unitiles	1	1
CF <sub>res-citrus</sub> (contaminated citrus fraction) unitiles:	1	1
CF <sub>res-corn</sub> (contaminated corn fraction) unitiles:	1	1
CF <sub>res-carrot</sub> (contaminated carrot fraction) unitiles:	1	1
CF <sub>res-cucumber</sub> (contaminated cucumber fraction) unitiles:	1	1
CF <sub>res-lettuce</sub> (contaminated lettuce fraction) unitiles:	1	1
CF <sub>res-lima bean</sub> (contaminated lima bean fraction) unitiles:	1	1
CF <sub>res-okra</sub> (contaminated okra fraction) unitiles:	1	1
CF <sub>res-onion</sub> (contaminated onion fraction) unitiles:	1	1
CF <sub>res-peach</sub> (contaminated peach fraction) unitiles:	1	1
CF <sub>res-pea</sub> (contaminated pea fraction) unitiles:	1	1
CF <sub>res-pear</sub> (contaminated pear fraction) unitiles:	1	1
CF <sub>res-potato</sub> (contaminated potato fraction) unitiles:	1	1
CF <sub>res-pumpkin</sub> (contaminated pumpkin fraction) unitiles:	1	1
CF <sub>res-rice</sub> (contaminated rice fraction) unitiles:	1	1
CF <sub>res-snap bean</sub> (contaminated snap bean fraction) unitiles	1	1
CF <sub>res-strawberry</sub> (contaminated strawberry fraction) unitiles:	1	1
CF <sub>res-tomato</sub> (contaminated tomato fraction) unitiles:	1	1
ED <sub>res-a</sub> (exposure duration - resident adult) y	20	20
ED <sub>res-c</sub> (exposure duration - resident child) y	6	6
EF <sub>res-a</sub> (exposure frequency - resident adult) day/y	350	350
EF <sub>res-c</sub> (exposure frequency - resident child) day/y	350	350
IFAP <sub>res-adj</sub> (age-adjusted apple ingestion factor) ζ	667520	667520
IFAS <sub>res-adj</sub> (age-adjusted asparagus ingestion factor) ζ	300300	300300
IFBE <sub>res-adj</sub> (age-adjusted berry ingestion factor) ζ	297990	297990
IFBR <sub>res-adj</sub> (age-adjusted broccoli ingestion factor) ζ	251510	251510
IFBT <sub>res-adj</sub> (age-adjusted beet ingestion factor) ζ	245490	245490
IFCB <sub>res-adj</sub> (age-adjusted cabbage ingestion factor) ζ	670530	670530
IFCG <sub>res-adj</sub> (age-adjusted cereal grain ingestion factor) ζ	611800	611800
IFCI <sub>res-adj</sub> (age-adjusted citrus ingestion factor) ζ	2573410	2573410
IFCO <sub>res-adj</sub> (age-adjusted corn ingestion factor) ζ	468580	468580
IFCR <sub>res-adj</sub> (age-adjusted carrot ingestion factor) ζ	222390	222390
IFCU <sub>res-adj</sub> (age-adjusted cucumber ingestion factor) ζ	630140	630140
IFLE <sub>res-adj</sub> (age-adjusted lettuce ingestion factor) ζ	271320	271320
IFLI <sub>res-adj</sub> (age-adjusted lima bean ingestion factor) ζ	250250	250250
IFOK <sub>res-adj</sub> (age-adjusted okra ingestion factor) ζ	222530	222530
IFON <sub>res-adj</sub> (age-adjusted onion ingestion factor) ζ	164780	164780
IFPC <sub>res-adj</sub> (age-adjusted peach ingestion factor) ζ	1043840	1043840
IFPE <sub>res-adj</sub> (age-adjusted pea ingestion factor) ζ	315210	315210

Variable	Default Value	Form-input Value
IFPR <sub>res-adj</sub> (age-adjusted pear ingestion factor) $\zeta$	503370	503370
IFPT <sub>res-adj</sub> (age-adjusted potato ingestion factor) $\zeta$	1003170	1003170
IFPU <sub>res-adj</sub> (age-adjusted pumpkin ingestion factor) $\zeta$	548520	548520
IFRI <sub>res-adj</sub> (age-adjusted rice ingestion factor) $\zeta$	572880	572880
IFSN <sub>res-adj</sub> (age-adjusted snap bean ingestion factor) $\zeta$	434630	434630
IFST <sub>res-adj</sub> (age-adjusted strawberry ingestion factor) $\zeta$	336630	336630
IFTO <sub>res-adj</sub> (age-adjusted tomato ingestion factor) $\zeta$	624470	624470
IRAP <sub>res-a</sub> (apple ingestion rate - resident adult) g/da	73.7	73.7
IRAP <sub>res-c</sub> (apple ingestion rate - resident child) g/da	72.2	72.2
IRAS <sub>res-a</sub> (asparagus ingestion rate - resident adult) g/da	39.3	39.3
IRAS <sub>res-c</sub> (asparagus ingestion rate - resident child) g/da	12	12
IRBE <sub>res-a</sub> (berry ingestion rate - resident adult) g/da	35.4	35.4
IRBE <sub>res-c</sub> (berry ingestion rate - resident child) g/da	23.9	23.9
IRBR <sub>res-a</sub> (broccoli ingestion rate - resident adult) g/da	32	32
IRBR <sub>res-c</sub> (broccoli ingestion rate - resident child) g/da	13.1	13.1
IRBT <sub>res-a</sub> (beet ingestion rate - resident adult) g/da	33.9	33.9
IRBT <sub>res-c</sub> (beet ingestion rate - resident child) g/da	3.9	3.9
IRCB <sub>res-a</sub> (cabbage ingestion rate - resident adult) g/da	92.1	92.1
IRCB <sub>res-c</sub> (cabbage ingestion rate - resident child) g/da	12.3	12.3
IRCG <sub>res-a</sub> (cereal grain ingestion rate - resident adult) g/da	76	76
IRCG <sub>res-c</sub> (cereal grain ingestion rate - resident child) g/da	38	38
IRCI <sub>res-a</sub> (citrus ingestion rate - resident adult) g/da	309.4	309.4
IRCI <sub>res-c</sub> (citrus ingestion rate - resident child) g/da	194.1	194.1
IRCO <sub>res-a</sub> (corn ingestion rate - resident adult) g/da	59.8	59.8
IRCO <sub>res-c</sub> (corn ingestion rate - resident child) g/da	23.8	23.8
IRCR <sub>res-a</sub> (carrot ingestion rate - resident adult) g/da	27.3	27.3
IRCR <sub>res-c</sub> (carrot ingestion rate - resident child) g/da	14.9	14.9
IRCU <sub>res-a</sub> (cucumber ingestion rate - resident adult) g/da	82.4	82.4
IRCU <sub>res-c</sub> (cucumber ingestion rate - resident child) g/da	25.4	25.4
IRLE <sub>res-a</sub> (lettuce ingestion rate - resident adult) g/da	37.5	37.5
IRLE <sub>res-c</sub> (lettuce ingestion rate - resident child) g/da	4.2	4.2
IRLI <sub>res-a</sub> (lima bean ingestion rate - resident adult) g/da	33.8	33.8
IRLI <sub>res-c</sub> (lima bean ingestion rate - resident child) g/da	6.5	6.5
IROK <sub>res-a</sub> (okra ingestion rate - resident adult) g/da	30.2	30.2
IROK <sub>res-c</sub> (okra ingestion rate - resident child) g/da	5.3	5.3
IRON <sub>res-a</sub> (onion ingestion rate - resident adult) g/da	21.8	21.8
IRON <sub>res-c</sub> (onion ingestion rate - resident child) g/da	5.8	5.8
IRPC <sub>res-a</sub> (peach ingestion rate - resident adult) g/da	115.7	115.7
IRPC <sub>res-c</sub> (peach ingestion rate - resident child) g/da	111.4	111.4
IRPE <sub>res-a</sub> (pea ingestion rate - resident adult) g/da	35.4	35.4
IRPE <sub>res-c</sub> (pea ingestion rate - resident child) g/da	32.1	32.1
IRPR <sub>res-a</sub> (pear ingestion rate - resident adult) g/da	51.9	51.9
IRPR <sub>res-c</sub> (pear ingestion rate - resident child) g/da	66.7	66.7
IRPT <sub>res-a</sub> (potato ingestion rate - resident adult) g/da	127.8	127.8
IRPT <sub>res-c</sub> (potato ingestion rate - resident child) g/da	51.7	51.7
IRPU <sub>res-a</sub> (pumpkin ingestion rate - resident adult) g/da	64.8	64.8
IRPU <sub>res-c</sub> (pumpkin ingestion rate - resident child) g/da	45.2	45.2
IRRI <sub>res-a</sub> (rice ingestion rate - resident adult) g/da	73.2	73.2
IRRI <sub>res-c</sub> (rice ingestion rate - resident child) g/da	28.8	28.8
IRSN <sub>res-a</sub> (snap bean ingestion rate - resident adult) g/da	53.9	53.9
IRSN <sub>res-c</sub> (snap bean ingestion rate - resident child) g/da	27.3	27.3
IRST <sub>res-a</sub> (strawberry ingestion rate - resident adult) g/da	40.5	40.5

Variable	Default Value	Form-input Value
IRST <sub>res-c</sub> (strawberry ingestion rate - resident child) g/da	25.3	25.3
IRTO <sub>res-a</sub> (tomato ingestion rate - resident adult) g/da	80.3	80.3
IRTO <sub>res-c</sub> (tomato ingestion rate - resident child) g/da	29.7	29.7
MLF <sub>apple</sub> (apple mass loading factor) unitiles:	0.00016	0.00016
MLF <sub>asparagus</sub> (asparagus mass loading factor) unitiles	0.000079	0.000079
MLF <sub>berry</sub> (berry mass loading factor) unitiles:	0.000166	0.000166
MLF <sub>broccoli</sub> (broccoli mass loading factor) unitiles:	0.00101	0.00101
MLF <sub>beet</sub> (beet mass loading factor) unitiles:	0.000138	0.000138
MLF <sub>cabbage</sub> (cabbage mass loading factor) unitiles:	0.000105	0.000105
MLF <sub>cereal grain</sub> (cereal grain mass loading factor) unitiles	0.25	0.25
MLF <sub>citrus</sub> (citrus mass loading factor) unitiles:	0.000157	0.000157
MLF <sub>corn</sub> (corn mass loading factor) unitiles:	0.000145	0.000145
MLF <sub>carrot</sub> (carrot mass loading factor) unitiles:	0.000097	0.000097
MLF <sub>cucumber</sub> (cucumber mass loading factor) unitiles:	0.00004	0.00004
MLF <sub>lettuce</sub> (lettuce mass loading factor) unitiles:	0.0135	0.0135
MLF <sub>lima bean</sub> (lima bean mass loading factor) unitiles:	0.00383	0.00383
MLF <sub>okra</sub> (okra mass loading factor) unitiles:	0.00008	0.00008
MLF <sub>onion</sub> (onion mass loading factor) unitiles:	0.000097	0.000097
MLF <sub>peach</sub> (peach mass loading factor) unitiles:	0.00015	0.00015
MLF <sub>pea</sub> (pea mass loading factor) unitiles:	0.000178	0.000178
MLF <sub>pear</sub> (pear mass loading factor) unitiles:	0.00016	0.00016
MLF <sub>potato</sub> (potato mass loading factor) unitiles:	0.00021	0.00021
MLF <sub>pumpkin</sub> (pumpkin mass loading factor) unitiles:	0.000058	0.000058
MLF <sub>rice</sub> (rice mass loading factor) unitiles:	0.25	0.25
MLF <sub>snap bean</sub> (snap bean mass loading factor) unitiles	0.005	0.005
MLF <sub>strawberry</sub> (strawberry mass loading factor) unitiles:	0.00008	0.00008
MLF <sub>tomato</sub> (tomato mass loading factor) unitiles:	0.00159	0.00159
TR (target cancer risk) unitless	0.000001	0.000001
F(x) (function dependent on $l_m/U_t$ ) unitless	0.194	0.00474
PEF (particulate emission factor) m <sup>3</sup> /kg	1359344438	1.15077E+11
Q/C <sub>wind</sub> (g/m <sup>2</sup> -s per kg/m <sup>3</sup> )	93.77	68.18364995
A <sub>s</sub> (acres)	0.5	0.5
Site area for ACF (area correction factor) m <sup>2</sup>	1000029 m <sup>2</sup>	1000029 m <sup>2</sup>
ED <sub>res</sub> (exposure duration - resident) y	26	26
ED <sub>res-a</sub> (exposure duration - resident adult) y	20	20
ED <sub>res-c</sub> (exposure duration - resident child) y	6	6
EF <sub>res</sub> (exposure frequency - resident) day/y	350	350
EF <sub>res-a</sub> (exposure frequency - resident adult) day/y	350	350
EF <sub>res-c</sub> (exposure frequency - resident child) day/y	350	350
ET <sub>res</sub> (exposure time - resident) hr/da	24	24
ET <sub>res-a</sub> (exposure time - resident adult) hr/da	24	24
ET <sub>res-c</sub> (exposure time - resident child) hr/da	24	24
ET <sub>res-i</sub> (exposure time - indoor resident) hr/da	16.416	16.416
ET <sub>res-o</sub> (exposure time - outdoor resident) hr/da	1.752	1.752
GSF <sub>i</sub> (gamma shielding factor - indoor) unitiles:	0.4	0.4
IFA <sub>res-adj</sub> (age-adjusted soil inhalation factor - resident) r <sup>3</sup>	161000	161000
IFS <sub>res-adj</sub> (age-adjusted soil ingestion factor - resident) m <sub>i</sub>	1120000	1120000
IRA <sub>res-a</sub> (inhalation rate - resident adult) n <sup>3</sup> /day	20	20
IRA <sub>res-c</sub> (inhalation rate - resident child) n <sup>3</sup> /day	10	10
IRS <sub>res-a</sub> (soil intake rate - resident adult) mg/da	100	100
IRS <sub>res-c</sub> (soil intake rate - resident child) mg/da	200	200
t <sub>res</sub> (time - resident) yr	26	26

<b>Variable</b>	<b>Default Value</b>	<b>Form-input Value</b>
TR (target cancer risk) unitless	0.000001	0.000001
U <sub>m</sub> (mean annual wind speed) m/s	4.69	3.31
U <sub>t</sub> (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Resident PRGs for Soil - No secular equilibrium, progeny included (with decay)

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Particulate Emission Factor (m <sup>3</sup> /kg)	Lambda (1/yr)	Half-life (yr)	1000029 m <sup>2</sup> Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Total Indoor GSF Soil Volume	Ingestion PRG TR=1E-06 (pCi/g)	Inhalation PRG TR=1E-06 (pCi/g)	External Exposure PRG TR=1E-06 (pCi/g)	Produce Consumption PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (mg/kg)
Ba-137m	-	0.00E+00	2.69E-06	0.00E+00	0.00E+00	1.15E+11	1.43E+05	4.86E-06	1.00E+00	1.00E+00	4.00E-01	-	-	1.60E+05	-	<b>1.60E+05</b>	2.98E-10
Cs-137	S	1.12E-10	5.52E-10	3.74E-11	4.26E-11	1.15E+11	2.30E-02	3.02E+01	1.00E+00	1.00E+00	4.00E-01	2.79E+01	8.44E+06	2.78E+02	-	<b>2.53E+01</b>	2.93E-07
H-3	S	8.47E-13	0.00E+00	1.44E-13	8.99E-14	1.70E+01	5.63E-02	1.23E+01	9.00E-01	1.00E+00	4.00E-01	1.89E+04	2.37E-01	-	-	<b>2.37E-01</b>	2.45E-11
Sr-90	S	4.26E-10	4.83E-10	6.88E-11	8.62E-11	1.15E+11	2.41E-02	2.88E+01	9.00E-01	1.00E+00	4.00E-01	1.39E+01	2.26E+06	3.58E+02	-	<b>1.34E+01</b>	9.73E-08
Y-90	S	8.40E-12	1.90E-08	2.65E-11	4.92E-11	1.15E+11	9.47E+01	7.32E-03	1.00E+00	1.00E+00	4.00E-01	4.47E+04	2.10E+11	1.50E+04	-	<b>1.12E+04</b>	2.07E-08



**2019 MONITORING REPORT  
AMERICAN JEWISH UNIVERSITY, BRANDEIS-BARDIN  
CAMPUS  
1101 PEPPERTREE LANE  
BRANDEIS, CALIFORNIA**

**Appendix E**

Appendix E. Background Threshold Value ProUCL Output Files

## Appendix E

### Background Threshold Value ProUCL Output Files

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	<b>McLaren/Hart, 1993, 1995</b>			<b>General Statistics on Uncensored Data</b>									
2	Date/Time of Computation			ProUCL 5.19/20/2019 4:59:58 PM									
3	<b>User Selected Options</b>												
4	From File			Background_Proucl_input_c.xls									
5	Full Precision			OFF									
6													
7	From File: Background_Proucl_input_c.xls												
8													
9	<b>General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method</b>												
10													
11	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>Num Ds</b>	<b>NumNDs</b>	<b>% NDs</b>	<b>Min ND</b>	<b>Max ND</b>	<b>KM Mean</b>	<b>KM Var</b>	<b>KM SD</b>	<b>KM CV</b>	
12	Cs	54	0	36	18	33.33%	0.03	0.07	0.106	0.0071	0.0843	0.792	
13	Sr	54	0	28	26	48.15%	0.01	0.1	0.0528	0.0015	0.0388	0.734	
14													
15	<b>General Statistics for Raw Data Sets using Detected Data Only</b>												
16													
17	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Median</b>	<b>Var</b>	<b>SD</b>	<b>MAD/0.675</b>	<b>Skewness</b>	<b>CV</b>	
18	Cs	36	0	0.031	0.456	0.144	0.14	0.00661	0.0813	0.0712	1.72	0.565	
19	Sr	28	0	0.01	0.13	0.071	0.081	0.00173	0.0416	0.0578	-0.0606	0.586	
20													
21	<b>Percentiles using all Detects (Ds) and Non-Detects (NDs)</b>												
22													
23	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>10%ile</b>	<b>20%ile</b>	<b>25%ile(Q1)</b>	<b>50%ile(Q2)</b>	<b>75%ile(Q3)</b>	<b>80%ile</b>	<b>90%ile</b>	<b>95%ile</b>	<b>99%ile</b>	
24	Cs	54	0	0.04	0.0412	0.05	0.0885	0.152	0.165	0.209	0.249	0.361	
25	Sr	54	0	0.02	0.046	0.05	0.0885	0.0978	0.1	0.117	0.124	0.13	

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	<b>Ogden, 1998</b>			<b>General Statistics on Uncensored Data</b>									
2	Date/Time of Computation			ProUCL 5.19/20/2019 4:01:03 PM									
3	<b>User Selected Options</b>												
4	From File			Background_Proucl_input.xls									
5	Full Precision			OFF									
6													
7	From File: Background_Proucl_input.xls												
8													
9	<b>General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method</b>												
10													
11	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>Num Ds</b>	<b>NumNDs</b>	<b>% NDs</b>	<b>Min ND</b>	<b>Max ND</b>	<b>KM Mean</b>	<b>KM Var</b>	<b>KM SD</b>	<b>KM CV</b>	
12	H3	6	0	1	5	83.33%	0.08	0.09	0.107	0.00356	0.0596	0.559	
13	CS	6	0	4	2	33.33%	0.033	0.18	0.0798	0.00189	0.0435	0.545	
14													
15	<b>General Statistics for Raw Data Sets using Detected Data Only</b>												
16													
17	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Median</b>	<b>Var</b>	<b>SD</b>	<b>MAD/0.675</b>	<b>Skewness</b>	<b>CV</b>	
18	H3	1	0	0.24	0.24	0.24	0.24	N/A	N/A	0	N/A	N/A	
19	CS	4	0	0.036	0.15	0.0915	0.09	0.00224	0.0473	0.0474	0.179	0.517	
20													
21	<b>Percentiles using all Detects (Ds) and Non-Detects (NDs)</b>												
22													
23	<b>Variable</b>	<b>NumObs</b>	<b># Missing</b>	<b>10%ile</b>	<b>20%ile</b>	<b>25%ile(Q1)</b>	<b>50%ile(Q2)</b>	<b>75%ile(Q3)</b>	<b>80%ile</b>	<b>90%ile</b>	<b>95%ile</b>	<b>99%ile</b>	
24	H3	6	0	0.08	0.08	0.08	0.085	0.09	0.09	0.165	0.203	0.233	
25	CS	6	0	0.0345	0.036	0.047	0.09	0.138	0.15	0.165	0.173	0.179	