



January 18, 2022

Ms. Shun-Ping Chau
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

**Subject: Trip Report – Revision 1
Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota
EPA Contract No. 68-HE-082 D0001
TD No. 2071-2108-05
DTN #0506a**

Dear Ms. Chau:

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting this Trip Report – Revision 0 for the Griffin Ashing Site (Flat Top Mine OU1) (the Site) in Griffin, Bowman County, North Dakota, for your review and comment. This report summarizes field activities conducted at the Site during the October 2021 sampling event.

The scope of this project was to provide technical assistance and sampling support to characterize the extent and magnitude of contamination in surface soils and native vegetation on the Site where the former processing site was located and in the immediate surrounding area.

This trip report summarizes site activities and findings, including site background and physical location, soil sampling, analytical results, data management, and conclusions. Enclosure 1 presents the site figures, Enclosure 2 contains tables, and Enclosure 3 presents the verified laboratory data package.

SITE BACKGROUND AND PHYSICAL LOCATION

The Site is in the former town of Griffin, Bowman County, North Dakota. The geographic coordinates for the approximate center of the Site are 46.215780° north latitude and -103.540617° west longitude. While active during the 1960s, mining activity wastes were accepted for processing from multiple mines, including both the Flat Top and North Cave Hills mines located in South Dakota. The material was transported to the Site via rail and was processed onsite using a rotary kiln. The former processing site encompasses approximately 1-acre. Portions of the Site are currently farmed for hay. In addition, railroad tracks are adjacent to the northern boundary of the former processing area. (Figures 1 and 2).

SOIL SAMPLING ACTIVITIES

The Environmental Protection Agency (EPA), North Dakota Department of Environmental Quality (ND

DEQ), and START began soil sampling activities on October 4, 2021. Prior to sampling, the 1-acre former processing site was divided into 30 equal grids. One sample location per grid was randomly selected using Visual Sample Plan (VSP) software, as shown in Figure 3.

A total of 30 surface (0 to 6 inches below ground surface [bgs]) soil samples, one from each grid, were collected from the former processing area for metals analysis. Additional soil volume was collected from sample locations in 20 randomly selected grids for radionuclide analysis.

START collected 20 step-out soil samples from transects to the north, east, south, and west of the former processing area for metals analysis. Each transect was composed of five sample locations approximately 40 feet apart. Global positioning system (GPS) coordinates for each location were recorded in a site-specific field mapping application. Collocated vegetation samples were collected from 12 randomly selected grids and 10 percent of the step-out transect sample locations in accordance with the Quality Assurance Project Plan (QAPP).

ND DEQ surveyed the 1-acre processing area and adjacent areas for gamma radiation with a Ludlum 192 Micro-R Survey Meter. Based on the survey, ND DEQ identified 10 locations with elevated radiation within grids 01, 02, and 22, four locations to the south of the former processing area, and three locations to the east of the former processing area. No areas of elevated radiation were identified along the railroad tracks or to the north or west of the processing area during the survey. START collected soil samples from all 10 target sample locations identified by ND DEQ for metals and isotope analysis. Target samples GA-SS-TS-09 and GA-SS-TS-10 were collocated with transect samples GA-SS-S03 and GA-SS-S05, respectively. GPS coordinates for each location were recorded in a site-specific field mapping application.

In accordance with the QAPP, START collected all soil samples from 0 to 6 inches bgs using a stainless-steel trowel and placed the soil directly into sample jars. Vegetation samples were placed directly into labeled zip-tight plastic bags for metals analysis. Samples were stored in coolers on ice under START custody from collection until delivery to ALS Environmental in Fort Collins, Colorado, on October 6, 2021.

ANALYTICAL RESULTS AND DISCUSSION

Metals in Soil

Sixty-two surface (0 to 6 inches bgs) soil samples (58 investigative samples and four field duplicates) were analyzed for Target Analyte List (TAL) Metals (excluding mercury and including molybdenum, thorium, and uranium) via Inductively Coupled Plasma Mass Spectrometry (ICP-MS) by ALS Environmental. Arsenic, copper, iron, lead, molybdenum, uranium, and vanadium were detected at concentrations exceeding the Project Action Levels (PAL) defined in the QAPP. Arsenic and uranium were present in concentrations exceeding both the EPA Regional Screening Level (RSL) for Residential Soil and the Ecological Screening Level (ESL) in most samples collected; arsenic concentrations ranged from 8.2 to 550 milligrams per kilogram (mg/kg), and uranium concentrations ranged from 5.9 to 1,000 mg/kg. Molybdenum and vanadium were present in concentrations exceeding their respective ESLs in most samples collected; molybdenum concentrations ranged from 3.5 to 680 mg/kg, and vanadium concentrations ranged from 12 to 54 mg/kg. Validated metals results for soil samples compared to PALs are presented in Table 1 and exceedances are shown in Figures 4A and 4B.

Metals in Plants

Seventeen plant tissue samples (16 investigative samples and one field duplicate) were analyzed for the same TAL Metals as soil via ICP-MS by ALS Environmental. Molybdenum was detected at concentrations exceeding PALs defined in the QAPP in all samples. Concentrations of molybdenum ranged from 5 to 150 mg/kg. Validated metals results for plant tissue samples are presented in Table 2; the exceedances for metals in plant tissue samples are depicted in Figure 5.

Radionuclides in Soil

Thirty-three soil samples (30 investigative samples and three field duplicates) were analyzed for polonium-210 (Po-210), thorium-230 (Th-230), thorium-232 (Th-232), uranium-234 (U-234), uranium-235 (U-235), and uranium-238 (U-238) via ASTM International (ASTM) D3972/Alpha Spectroscopy; cesium-137 (Cs-137), potassium-40 (K-40), radium-226 (Ra-226), and radium-228 (Ra-228) via EPA Method 901.1; and lead-210 (Pb-210) via the Eichrom Method. K-40, Pb-210, Po-210, Ra-226, Th-230, U-234, U-235, and U-238 were detected at concentrations exceeding the PAL of 5 picocuries per gram (pCi/g) as defined in the QAPP. Concentration ranges for radionuclides exceeding PALs are presented below:

- Pb-210: 2.82 to 194 pCi/g
- Po-210: 2.88 to 192 pCi/g
- Ra-226: 7.41 to 539 pCi/g
- Th-230: 5.36 to 366 pCi/g
- U-234: 4.87 to 347 pCi/g
- U-235: 0.32 to 17.2 pCi/g
- U-238: 4.57 to 356 pCi/g

Table 3 and Figure 6 present validated results for radionuclides in soil.

DATA MANAGEMENT

START personnel collected mobile data using ESRI's Survey123 mobile data collection application to document soil and plant tissue sample location. All soil and plant tissue sample data and analytical results were loaded into a Scribe database.

CONCLUSIONS

START personnel collected soil and plant tissue samples on October 4 and 5, 2021. A total of 58 investigative surface (0 to 6 inches bgs) soil samples were collected: 30 from a grid spanning the former processing area, five from each north, south, east, and west transects, and eight from targeted locations selected using ND DEQ survey information. All 58 soil samples were submitted for laboratory analysis of TAL metals, excluding mercury, and including molybdenum, thorium, and uranium. A subset of 30 soil samples were submitted for laboratory analysis of isotopic analysis. Sixteen plant tissue samples collocated with soil samples were submitted for laboratory analysis of TAL metals, excluding mercury, and including molybdenum, thorium, and uranium.

Arsenic, copper, iron, lead, molybdenum, uranium, and vanadium were detected at concentrations exceeding the PALs in soil samples. Molybdenum was detected at concentrations exceeding the PALs in plant tissue samples. Seven radioactive isotopes were detected at concentrations exceeding the PALs in soil samples. Soil sample locations with concentrations of metals exceeding PALs are presented in Figures 4a and 4b, plant tissue sample locations with concentrations of metals exceeding PALs are

presented in Figure 5, and soil sample locations with concentrations of isotopes exceeding PALs are presented in Figure 6.

A correlation between the concentrations of metals in soil and plants is provided in Table 4. A graphical representation of the correlations is provided in Figure 7. To assess uptake from soil, the correlation coefficient was calculated for metal and plant tissue concentrations of arsenic, copper, molybdenum, and uranium. Soil and plant tissue concentrations for arsenic, molybdenum, and uranium were positively correlated. However, the correlation for copper concentrations in soil and plant tissues was negative. Molybdenum exhibited the strongest correlation, with a correlation coefficient of 0.64 for soil and plant tissue concentrations.

Please contact me at (303) 661-0294 if you have any questions regarding this trip report.

Sincerely,

Ann Lukens Weise, MPH
START 8 Project Manager

Enclosures (3)

Enclosure 1 – Site Figures

Enclosure 2 – Tables

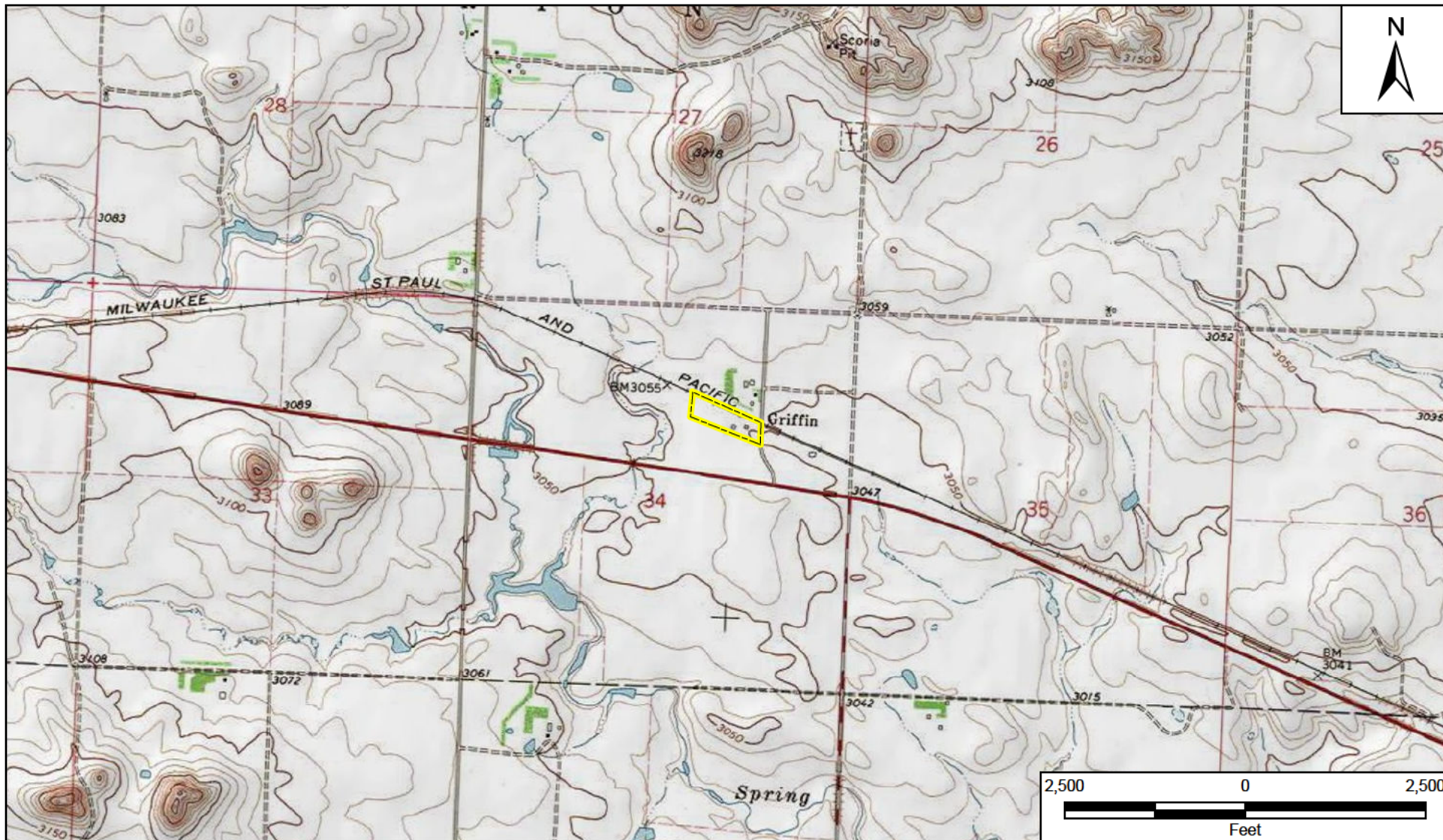
Enclosure 3 – Laboratory Analytical Packages

cc: Kevin Scott, START Region 8 Program Manager
Clayton Longest, START Region 8 Document Control Coordinator

ENCLOSURE 1

FIGURES

(Seven Pages)



Site Location

Legend

 Site Boundary

2,500 0 2,500
Feet

Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota

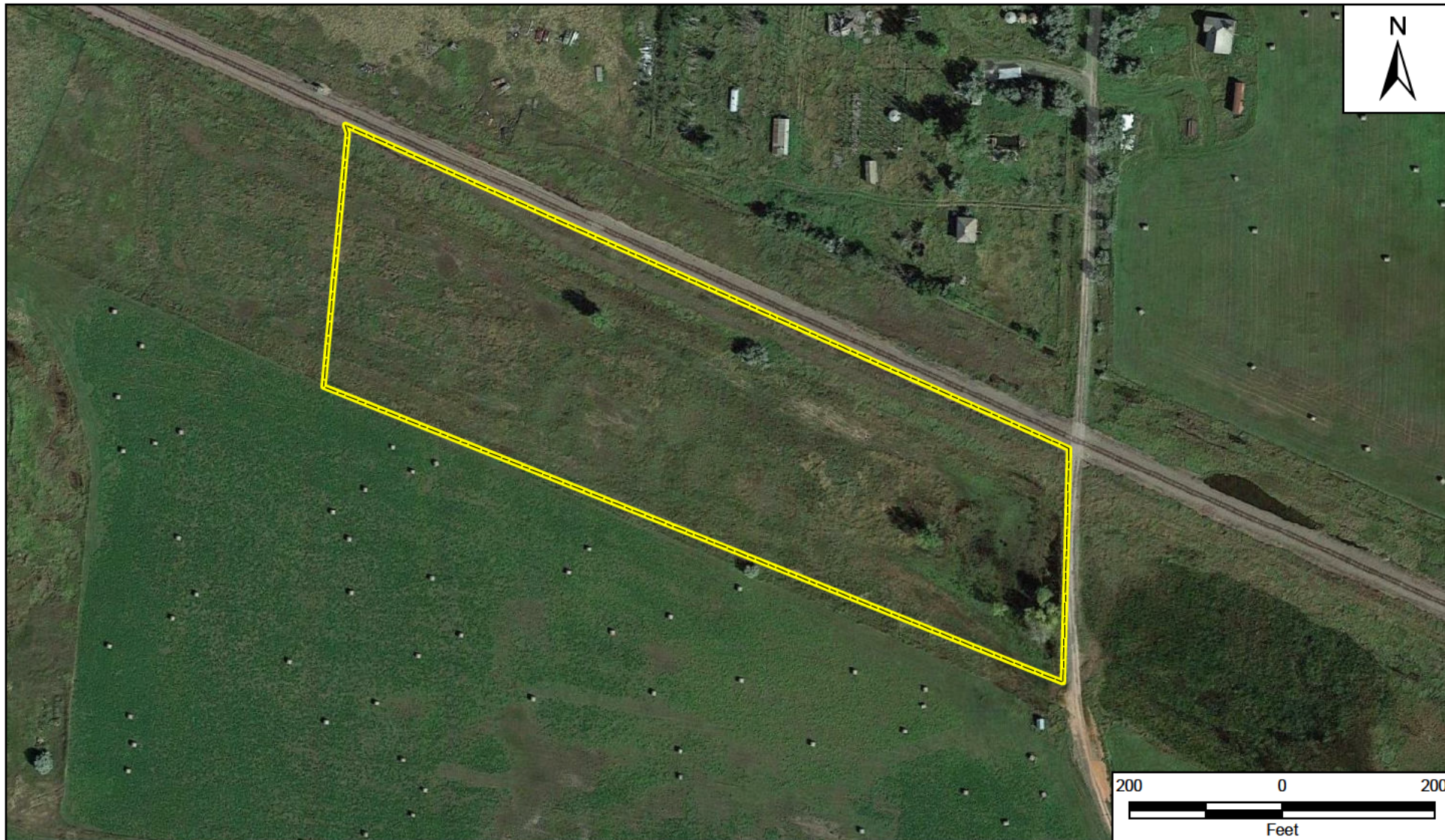
Figure 1 Site Location Map



TETRA TECH

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Legend

 Site Boundary

Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota

Figure 2
Site Layout

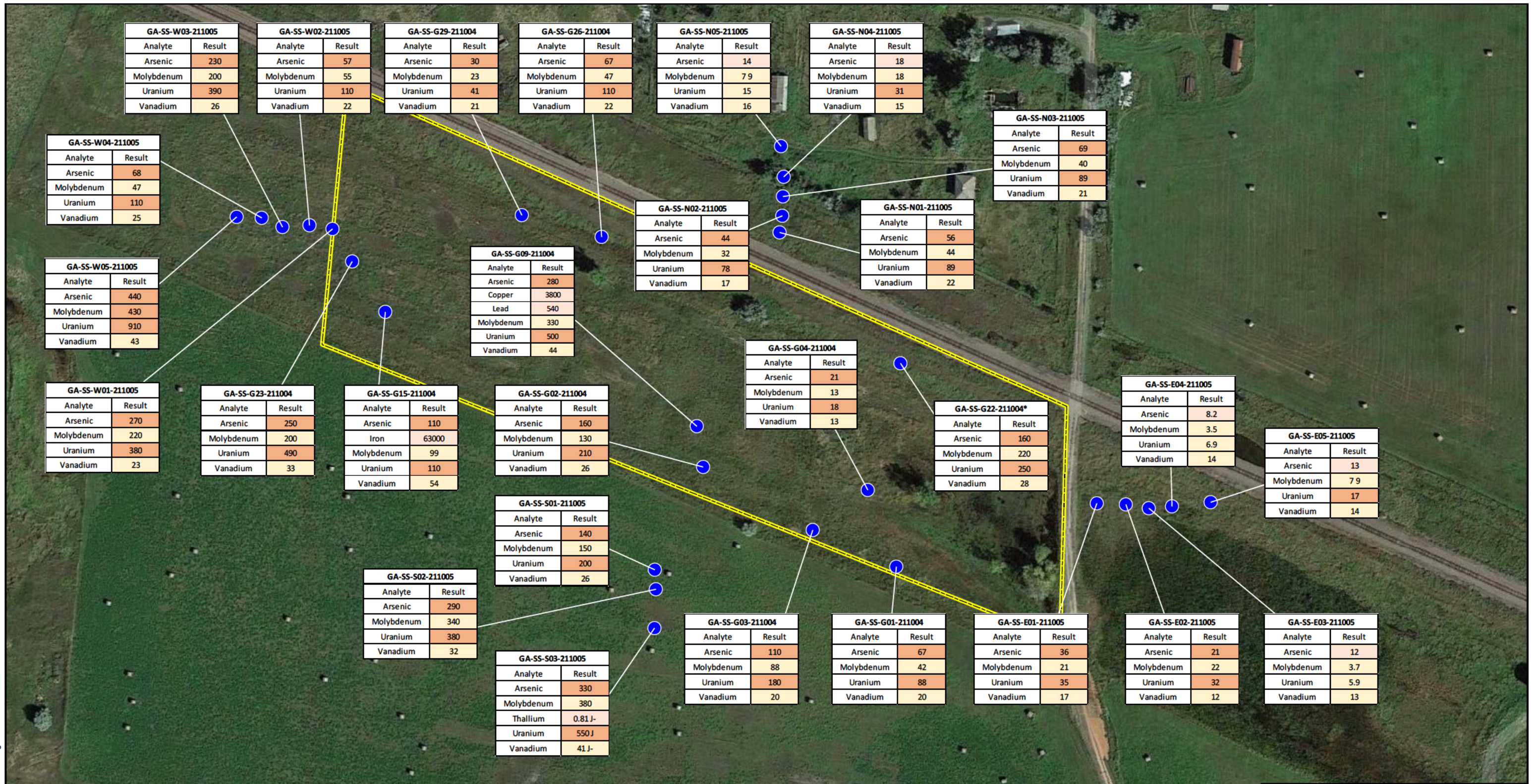


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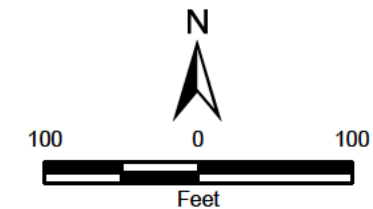
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Legend

- Sample Location - Metals Only
- Approximate Site Boundary
- xx.x The reported concentration exceeds the ESL
- xx.x The reported concentration exceeds the RSL
- xx.x The reported concentration exceeds both the RSL and ESL

Sample IDs with a "*" indicate that the sample has an associated field duplicate and the highest reported concentration is used.
ESL - Environmental Screening Level
RSL - Regional Screening Level
All sample results are presented in units of milligrams per kilogram.



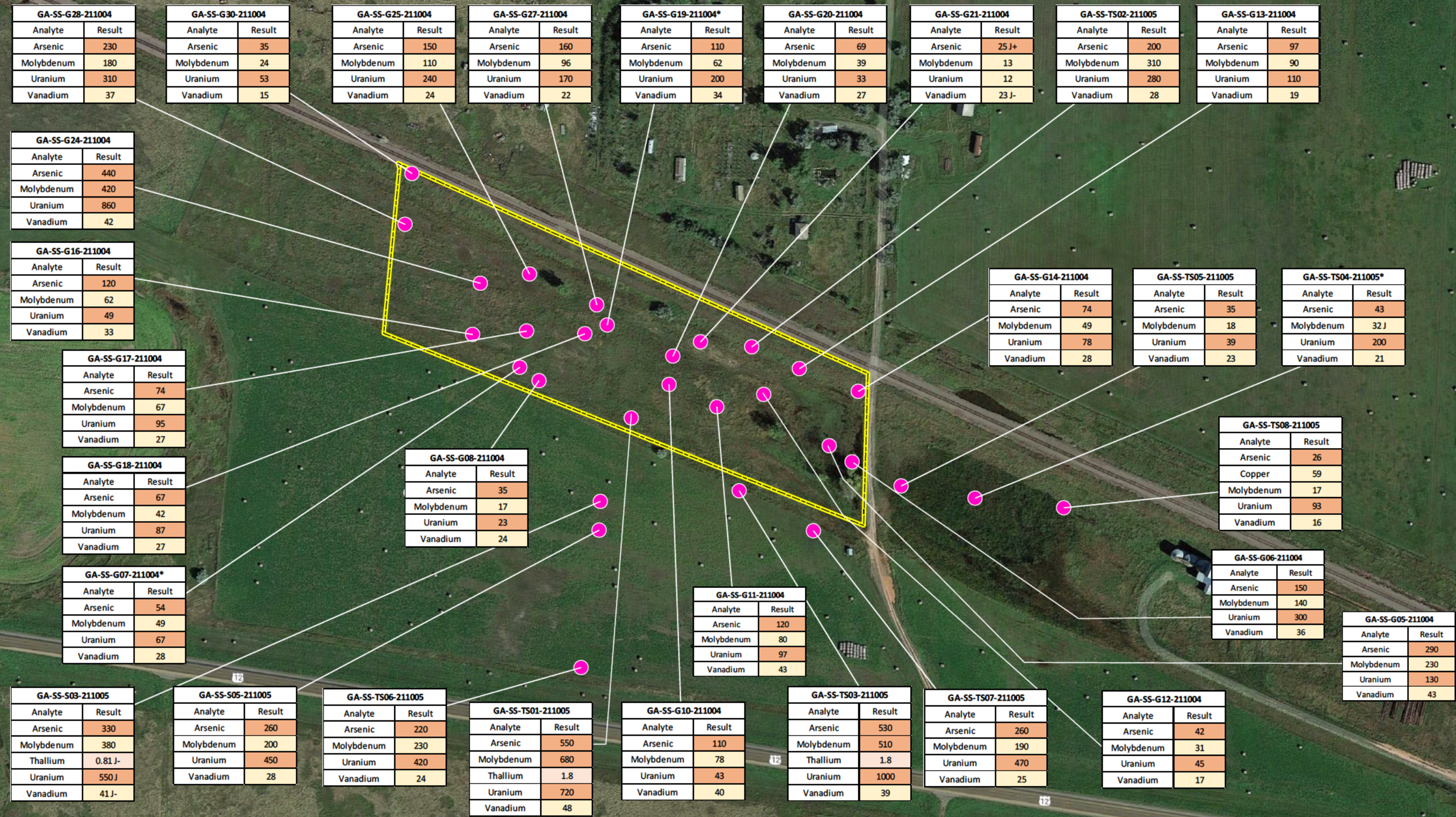
Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota

Figure 4A
Soil Sample Results - Metal Only



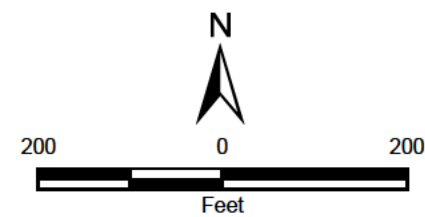
Prepared For: EPA

Prepared By: Tetra Tech



- Legend**
- Metals and Isotopes
 - Approximate Site Boundary
 - xx x The reported concentration exceeds the ESL
 - xx x The reported concentration exceeds the RSL
 - xx x The reported concentration exceeds both the RSL and ESL

Sample IDs with a "*" indicate that the sample has an associated field duplicate and the highest reported concentration is used.
ESL - Environmental Screening Level
RSL - Regional Screening Level
All sample results are presented in units of milligrams per kilogram.



Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota

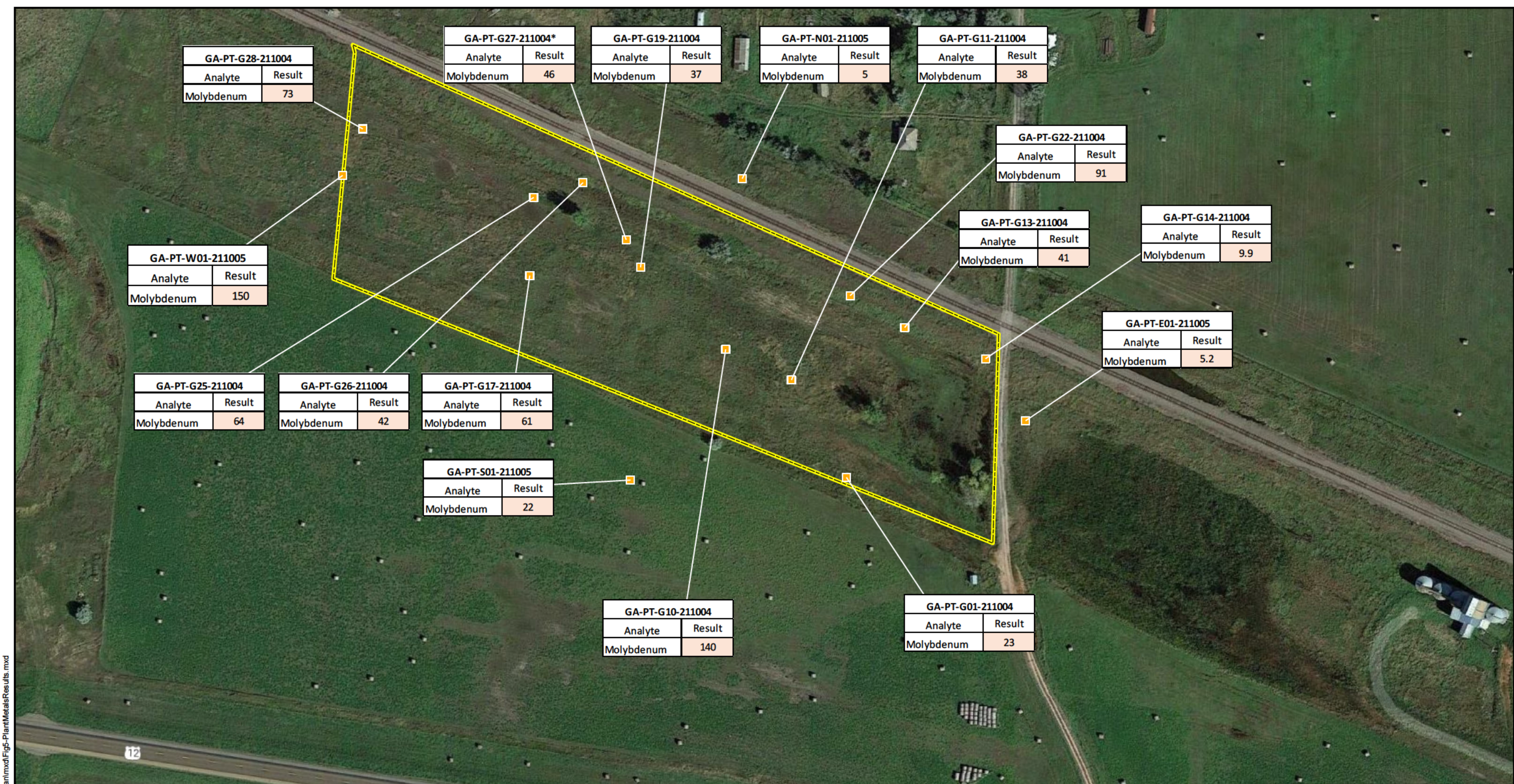
Figure 4B
Soil Sample Results
Metal and Isotopes



Prepared For: EPA Prepared By: Tetra Tech

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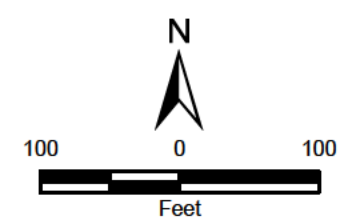
Legend

- Plant Sample Location
- Approximate Site Boundary
- xx.x The reported concentration exceeds the Project Action Level

Sample IDs with a "*" indicate that the sample has an associated field duplicate and the highest reported concentration is used.

All sample results are presented in units of milligrams per kilogram.

Reported results are not yet validated and should be considered preliminary.

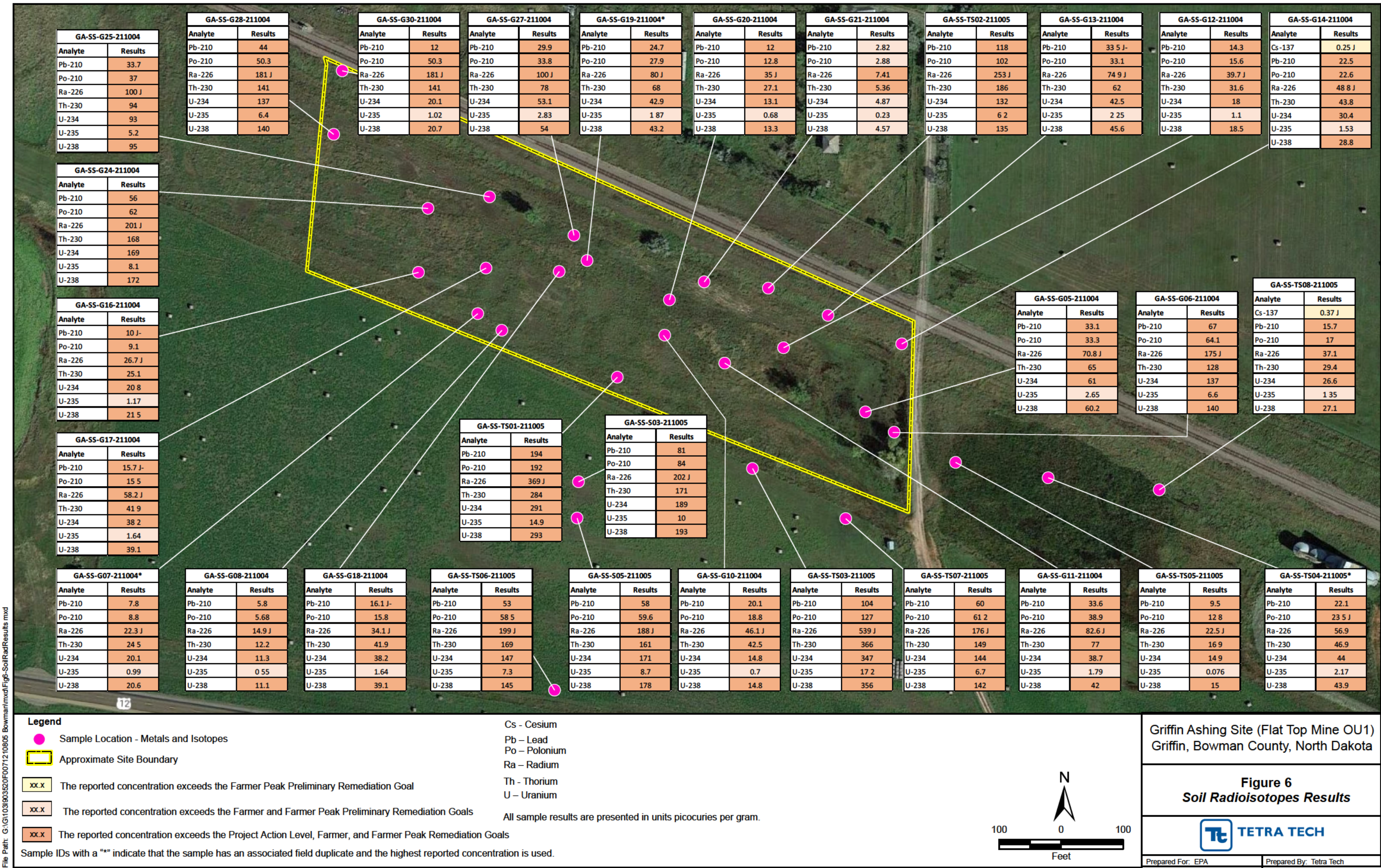


Griffin Ashing Site (Flat Top Mine OU1)
Griffin, Bowman County, North Dakota

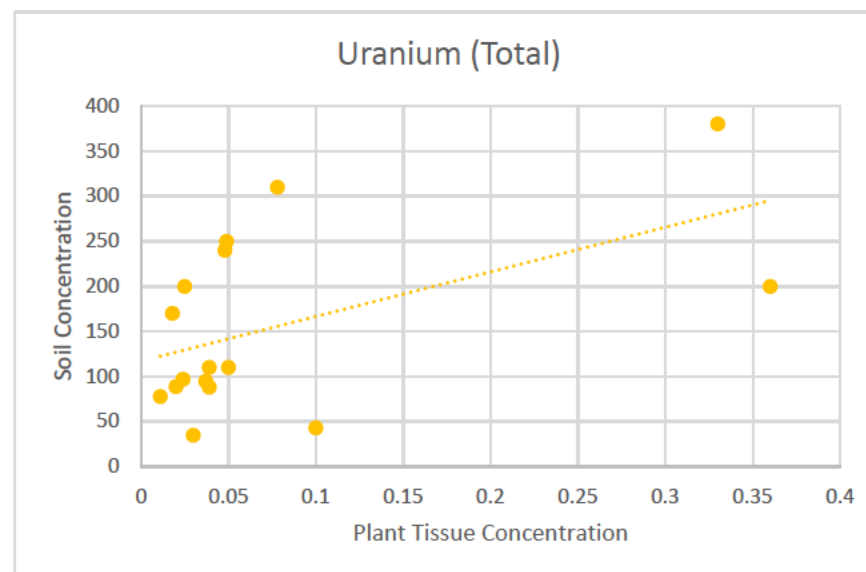
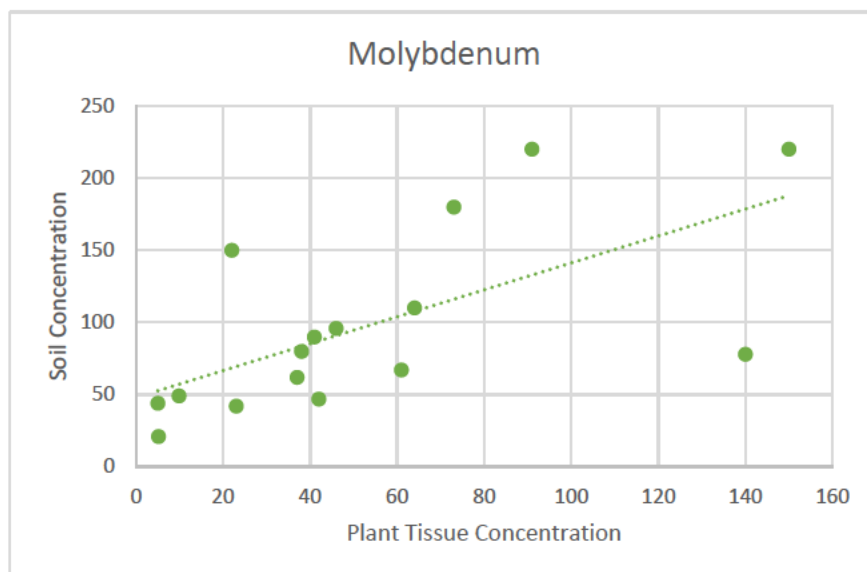
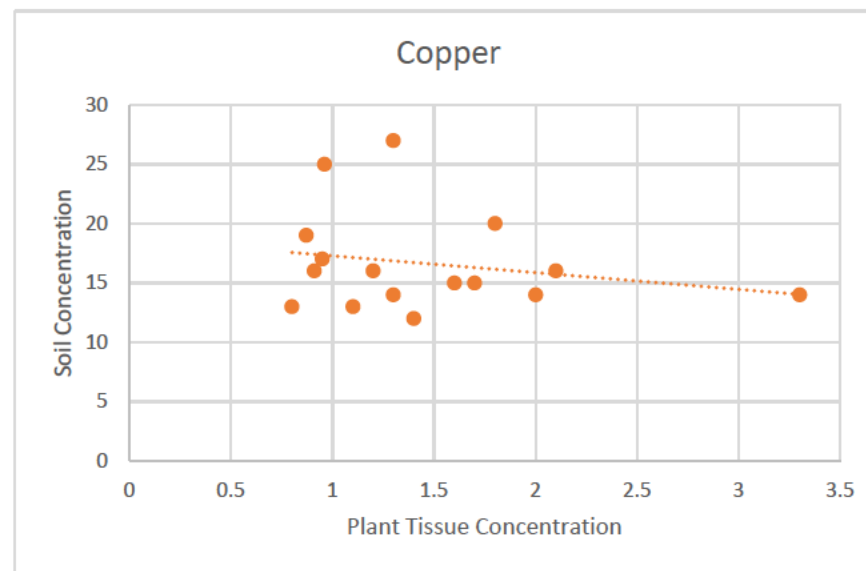
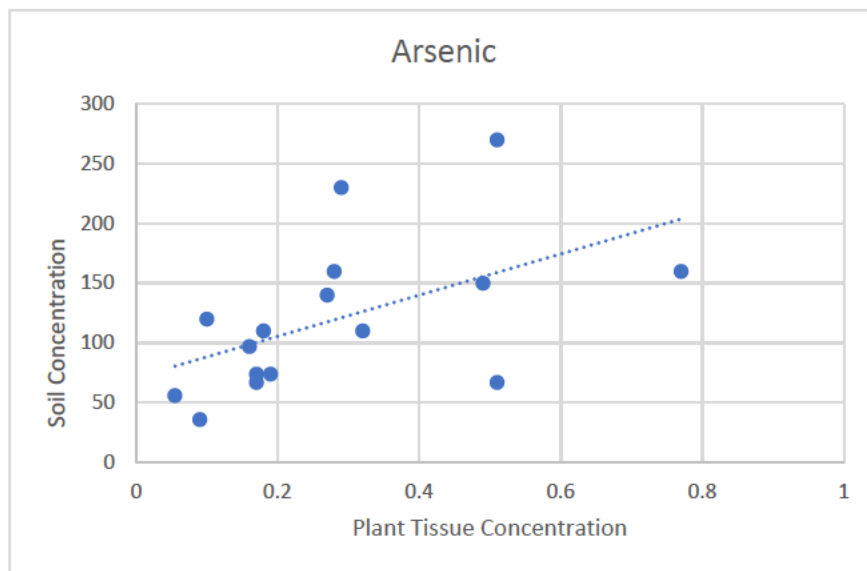
Figure 5
Plant Metal Results

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**FIGURE 7. Soil and Plant Tissue Correlation Summary Griffin
Ashing Site (Flat Top Mine Site OU1)**



ENCLOSURE 2

TABLES

(Five Pages)

TABLE 1. Validated Soil Sample Metals Analytical Results
Griffin Ashing Site (Flat Top Mine Site OU1)

Analyte		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Thorium	Uranium	Vanadium	Zinc
CAS Number		7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-98-7	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-29-1	7440-61-1	7440-62-2	7440-66-6
Project Action Limits	EPA RSL Residential Soil ^a	77,000	31	0 68	15,000	160	71	NS	NS	23	3,100	55,000	400	NS	1,800	390	1,500	NS	390 0	390 0	NS	0 78	NS	16	390	13,000
	Ecological Screening Levels ^b	NS	NS	18	NS	NS	NS	NS	NS	NS	28	NS	NS	NS	NS	2	NS	NS	NS	NS	NS	NS	NB	5	7 8	NS
GA-SS-E01-211005		5,500	0.36	36	190	0.66	0.51	10,000	11	7	20	15,000	42	4,100	510	21	16	2,500	2.7	0.17	150	0.19	2.7	35	17	85
GA-SS-E02-211005		3,800	0.2	21	140	0.46	0.37	13,000	7.2	6.4	12	9,800	26	4,600	430	22	13	1,700	2.2	0.05 J	130	0.15	1.5	32	12	57
GA-SS-E03-211005		3,100	0.13	12	120	0.27	0.23	13,000	6.9	5.3	9.1	9,700	12	5,400	330	3.7	13	1,200	0.86 J	0.032 J	76 J	0.11	1.7	5.9	13	39
GA-SS-E04-211005		3,000	0.13	8.2	100	0.27	0.13 J	6,600	7.6	4.2	7.3	12,000	8.3	2,400	260	3.5	9.5	890	0.83 J	0.021 J	160	0.082	2.1	6.9	14	23
GA-SS-E05-211005		4,300	0.19	13	160	0.48	0.28	8,800	8.4	5.4	12	13,000	22	3,600	330	7.9	12	1,500	1.4	0.046 J	640	0.13	2.9	17	14	46
GA-SS-G01-211004		7,300	0.25	67	210	0.9	0.58	4,900	11	7.1	14	18,000	14	2,800	400	42	15	2,500	4.2	0.066	290	0.25	3.7	88	20	62
GA-SS-G02-211004		8,500	0.26	160	280	1.2	0.73	6,100	9	7.2	13	17,000	14	2,200	330	130	15	2,400	8.6	0.058	1,500	0.5	3.6	210	26	49
GA-SS-G03-211004		6,400	0.22	110	230	1	0.77	6,100	9.2	6.8	12	13,000	16	2,500	320	88	15	2,500	8.9	0.059	760	0.33	2.9	180	20	62
GA-SS-G04-211004		5,600	0.21	21	140	0.52	0.28	7,800	8.7	5.5	11	12,000	9.7	2,900	280	13	12	1,800	1.6	0.051 J	110	0.14	2.9	18	13	38
GA-SS-G05-211004		5,800	1.8	290	220	1.2	0.63	5,400	10	8.3	17	39,000	24	2,700	520	230	16	2,400	6.8	0.057 J	220	0.26	3.3	130	43	77
GA-SS-G06-211004		8,700	0.45	150	250	1.7	1.1	4,600	15	9	20	24,000	22	3,100	350	140	22	3,100	13	0.063	190	0.45	5	300	36	72
GA-SS-G07-211004		6,500	0.33	37	210	0.81	0.41	3,000	11	7.5	12	23,000	11	2,400	500	49	15	2,100	3	0.051 J	97 J	0.19	3.6	42	28	53
GA-SS-G07-211004-DUP		6,700	0.31	54	220	0.77	0.41	3,300	11	7.3	12	20,000	11	2,400	470	41	16	2,100	3.5	0.05 J	180	0.2	3.5	67	23	46
GA-SS-G08-211004		7,200	0.5	35	170	0.74	0.34	2,800	13	8.5	12	22,000	11	2,400	460	17	14	2,200	2.3	0.054 J	79 J	0.17	3.6	23	24	51
GA-SS-G09-211004		8,800	7.2	280	340	1.8	1.3	12,000	33	13	3,800	55,000	540	2,200	1,100	330	58	2,200	18	0.83	1,600	0.61	4.6	500	44	120
GA-SS-G10-211004		7,900	0.72	110	270	1.2	0.72	8,200	12	12	27	34,000	20	2,900	850	78	25	2,200	3.6	0.057	530	0.33	4.3	43	40	64
GA-SS-G11-211004		6,200	0.51	120	220	1.1	0.7	5,000	9.8	8.1	17	32,000	25	2,400	740	80	18	2,000	5.9	0.051 J	320	0.32	3.6	97	43	56
GA-SS-G12-211004		6,000	0.25	42	180	0.69	0.4	10,000	9	6.8	15	15,000	13	3,900	300	31	14	1,800	2.9	0.053 J	290	0.2	3.8	45	17	45
GA-SS-G13-211004		7,700	0.27	97	190	1	0.52	6,500	11	6.9	13	16,000	16	2,700	370	90	17	2,700	3.9	0.056 J	360	0.26	3.1	110	19	48
GA-SS-G14-211004		6,400	0.54	74	290	1	0.51	8,300	9.3	7	19	20,000	28	2,600	550	49	14	2,200	4	0.05 J	200	0.18	2.7	78	28	60
GA-SS-G15-211004		5,900	0.67	110	200	1.2	0.63	3,000	13	7.9	14	63,000	13	2,300	990	99	18	2,100	5.5	0.049 J	140	0.35	3.5	110	54	52
GA-SS-G16-211004		5,100	2.5	120	140	0.76	0.47	1,800	9.7	9.5	12	48,000	17	1,900	620	62	18	1,600	4.1	0.054 J	110	0.17	2.6	49	33	53
GA-SS-G17-211004		7,100	0.56	74	200	0.87	0.49	4,900	11	7.7	13	22,000	13	2,600	500	67	15	2,200	4.9	0.044 J	300	0.23	3.6	95	27	52
GA-SS-G18-211004		6,100	0.63	67	190	0.81	0.48	3,500	11	8.5	13	22,000	14	2,500	510	42	14	1,900	4.8	0.039 J	510	0.21	3.1	87	27	56
GA-SS-G19-211004		6,200	0.36	87	210	0.93	0.55	8,900 J	10	7.4	13	19,000	15	3,700	370	51	15	2,000	5.7	0.053 J	310	0.24	3.6	100	34	51
GA-SS-G19-211004-DUP		6,100	0.25	110	220	0.98	0.7	21,000 J	10	7.7	15	21,000	15 J-	4,700	540	62	17	2,200	6.4	0.055 J	330	0.27	3.8	200	23	53
GA-SS-G20-211004		6,200	1.1	69	210	0.77	0.47	14,000	11	8.5	20	19,000	18 J-	4,900	320	39	18	1,800	2.8	0.065	240	0.2	4	33	27	55
GA-SS-G21-211004		2,400	0.12 J-	25 J+	290	0.41	0.21	15,000 J	7.1	4.7	7.6	22,000	5.8 J+	3,000 J-	560 J	13	9.3	640	1.6	0.046 J	82 J	0.081	2.5	12	23 J-	24
GA-SS-G22-211004		7,000	0.39	160	220	1.2	0.59	12,000	12	8	16	18,000	21	3,600	380	200	19	2,800	6.9	0.053 J	640	0.41	3.1	230	28	48
GA-SS-G22-211004-DUP		7,100	0.48	160	220	1.3	0.63	9,200	11	7.8	16	18,000	20	2,800	350	220	19	2,800	7.4	0.057	840	0.41	3.3	250	24	51
GA-SS-G23-211004		6,600	0.41	250	250	1.4	1.1	4,600	12	9.1	14	32,000	17	2,200	570	200	20	2,300	15	0.052 J	480	0.51	3.8	490	33	53
GA-SS-G24-211004		8,400	0.55	440	440	2.8	2.2	7,700	11	13	15	26,000	24	2,000	370	420	38	2,000	30	0.058	1,800	0.52	4.7	860	42	56
GA-SS-G25-211004		6,600	0.29	150	260	1.1	0.82	5,700	16	8.2	25	23,000	16	2,700	530	110	21	2,500	9	0.067	410	0.39	3.8	240	24	51
GA-SS-G26-211004		6,800	0.25	67	250	0.84	0.59	4,600	11	7.9	14	19,000	15	2,500	570	47	15	2,900	5.4	0.048 J	210	0.26	2.9	110	22	54

TABLE 1. Validated Soil Sample Metals Analytical Results
Griffin Ashing Site (Flat Top Mine Site OU1)

Analyte		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Thorium	Uranium	Vanadium	Zinc
CAS Number		7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-98-7	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-29-1	7440-61-1	7440-62-2	7440-66-6
Project Action Limits	EPA RSL Residential Soil ^a	77,000	31	0 68	15,000	160	71	NS	NS	23	3,100	55,000	400	NS	1,800	390	1,500	NS	390 0	390 0	NS	0 78	NS	16	390	13,000
	Ecological Screening Levels ^b	NS	NS	18	NS	NS	NS	NS	NS	NS	28	NS	NS	NS	NS	2	NS	NS	NS	NS	NS	NS	NB	5	7 8	NS
GA-SS-TS01-211005		16,000	0.43	550	420	2.1	0.76	6,900	11	14	15	41,000	26	1,800	280	680	24	3,500	18	0.066	7,900	1.8	4.9	720	48	42
GA-SS-TS02-211005		7,200	0.41	200	250	1.4	0.69	12,000	12	11	23	26,000	20	3,600	400	310	23	3,100	7.4	0.11	980	0.5	3.2	280	28	67
GA-SS-TS03-211005		9,200	0.37	530	380	2.9	2.4	7,800	13	13	17	22,000	29 J-	2,500	360	510	32	3,000	43	0.059 J	1,700	0.88	4.6	1000	39	60
GA-SS-TS04-211005		6,800	0.21	43	200	1.1	0.76	5,400	12	8.4	19	15,000	18	3,100	350	32 J	17	3,200	6	0.062	220	0.3	4.1	200	21	61
GA-SS-TS04-211005-DUP		5,600	0.15	23	190	0.79	0.51	4,700	11	7	15	13,000	16	2,900	340	15 J	15	2,500	3.4	0.054	220	0.25	3.4	100	17	53
GA-SS-TS05-211005		6,600	0.5	35	220	0.91	0.47	4,700	12	7.9	17	22,000	17 J-	3,100	510	18	16	2,600	2.5	0.061	170	0.19	3.7	39	23	59
GA-SS-TS06-211005		5,600	0.28	220	160	1.2	0.9	3,500	11	8.6	14	15,000	17	2,600	280	230	19	1,800	15	0.045 J	420	0.53	3.8	420	24	39
GA-SS-TS07-211005		8,300	0.39	260	270	1.5	1.2	5,500	13	9	17	19,000	20	2,700	400	190	19	3,000	28	0.061	770	0.53	3.8	470	25	54
GA-SS-TS08-211005		6,400	0.33	26	200	0.86	0.63	6,500	11	5.2	59	15,000	52	2,700	290	17	14	3,100	3.4	0.071	120 J	0.22	3	93	16	120
GA-SS-W01-211005		6,000	0.36	270	210	0.88	0.79	3,000	11	7.1	12	18,000	13	2,000	440	220	16	2,100	9.9	0.061	180	0.39	3.2	380	23	46
GA-SS-W02-211005		6,900	0.2	57	200	0.67	0.36	3,600	9.6	5.8	10	19,000	10	1,900	400	55	12	2,100	3.5	0.058	240	0.19	3.2	110	22	39
GA-SS-W03-211005		5,700	0.38	230	220	0.96	0.73	4,000	11	8.1	13	24,000	16	2,100	440	200	16	2,300	10	0.055 J	200	0.4	3.2	390	26	47
GA-SS-W04-211005		6,100	0.31	68	200	0.65	0.43	3,400	11	7.1	13	20,000	12	2,200	490	47	14	1,800	4.4	0.042 J	85 J	0.2	3.5	110	25	46
GA-SS-W05-211005		5,400	0.58	440	240	1.3	1.1	4,800	12	8	16	31,000	18	2,000	480	430	20	2,100	24	0.049 J	290	0.63	4	910	43	47

Notes:

All results and screening levels are in milligram per kilogram

The reported concentration exceeds the ESL

The reported concentration exceeds the RSL

The reported concentration exceeds both the RSL and ESL

^a EPA Regional Screening Levels for Residential Soils (EPA 2021), using a target cancer rate of 1 in 1 million (1E-06) and target hazard quotient=1 0

^b The lower of EPA Region 4 Ecological Soil Screening Levels (EPA 2015) and toxicological benchmarks for effects on terrestrial plants (Efroymsen, R A , et al 1997)

CAS Chemical Abstract Service

EPA U S Environmental Protection Agency

ESL Ecological Screening Level

J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample

J- The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low

J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high

NS No screening level

RSL Regional Screening Level

U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)

References:

Efroymsen, R A , et al 1997 Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision Oak Ridge National Laboratories ES/ER/TM-85/R3

United States Environmental Protection Agency (EPA) 2015 Region 4 Ecological Risk Assessment Supplemental Guidance Interim Draft August https://www.epa.gov/sites/default/files/2015-09/documents/r4_era_guidance_document_draft_final_8-25-2015.pdf

EPA 2021 Regional Screening Levels (RSLs), Target Cancer Risk of 1 in 1 million (1E-06 and Target Hazard Quotient=1 0 May 11 <https://www.epa.gov/risk/regional-screening-levels-rsls>

**TABLE 2. Preliminary Plant Tissue Sample Metals Analytical Results
Griffin Ashing Site (Flat Top Mine Site OU1)**

Analyte	Arsenic	Copper	Molybdenum	Uranium	Vanadium
CAS Number	7440-38-2	7440-50-8	7439-98-7	7440-61-1	7440-62-2
Project Action Level^a	18	28	2	5	7.8
GA-PT-E01-211005	0.09 J	1.8 J	5.2	0.03	0.48 U
GA-PT-G01-211004	0.17 J	1.3 J	23	0.039	0.13 J
GA-PT-G10-211004	0.32	1.3 J	140	0.1	0.49 U
GA-PT-G11-211004	0.1 J	0.95 J	38	0.024	0.49 U
GA-PT-G13-211004	0.16 J	0.8 J	41	0.039	0.49 U
GA-PT-G14-211004	0.19 U	0.87 J	9.9	0.011 J	0.48 U
GA-PT-G17-211004	0.17 J	1.1 J	61	0.037	0.5 U
GA-PT-G19-211004	0.18 J	1.6 J	37	0.025	0.46 U
GA-PT-G22-211004	0.77	2.1	91	0.049	0.46 U
GA-PT-G25-211004	0.49	0.96 J	64	0.048	0.14 J
GA-PT-G26-211004	0.51	2	42	0.05	0.48 U
GA-PT-G27-211004	0.093 J	0.95 J	21	0.01 J	0.49 U
GA-PT-G27-211004-DUP	0.28	1.7 J	46	0.018 J	0.5 U
GA-PT-G28-211004	0.29	1.2 J	73	0.078	0.45 U
GA-PT-N01-211005	0.055 J	0.91 J	5	0.02 J	0.49 U
GA-PT-S01-211005	0.27	3.3	22	0.36	0.49 U
GA-PT-W01-211005	0.51	1.4 J	150	0.33	0.46 U

Notes:

All results and screening levels are in milligram per kilogram.

The report concentration exceeds the Project Action Level.

^a The project action level is the lower of EPA Region 4 Ecological Soil Screening Levels (EPA 2015) and toxicological benchmarks for effects on terrestrial plants (Efroymson, R. A., et. al 1997).

CAS Chemical abstract service

J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the samp

U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).

References:

Efroymson, R. A., et. al. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Oak Ridge National Laboratories. ES/ER/TM-85/R3

United States Environmental Protection Agency (EPA). 2015. Region 4 Ecological Risk Assessment Supplemental Guidance. Interim Draft. August. https://www.epa.gov/sites/default/files/2015-09/documents/r4_era_guidance_document_draft_final_8-25-2015.pdf

**TABLE 3. Validated Soil Sample Radionuclide Analytical Results
Griffin Ashing Site (Flat Top Mine Site OU1)**

Analyte		Cesium-137	Potassium-40	Lead-210	Polonium-210	Radium-226	Radium-228	Thorium-230	Thorium-232	Uranium-234	Uranium-235	Uranium-238
CAS Number		10045-97-3	13966-00-2	14255-04-0	13981-52-7	13982-63-3	15262-20-1	14269-63-7	7440-29-1	13966-29-5	15117-96-1	7440-61-1
Project Action Limits	Project Action Limit ^a	5	5	5	5	5	5	5	5	5	5	5
	Farmer PRG for Soil ^b	0.094	0.019	0.079	0.012	0.080	0.030	1.6	1.5	1.5	0.067	1.6
	Farmer Peak PRG for Soil ^b	0.02	0.019	0.018	0.88	0.0033	0.015	0.0033	0.030	0.0052	0.014	0.0030
GA-SS-G05-211004		0.72 UJ	9.5 J	33.1	33.3	70.8 J	2.6 UJ	65	1.03	61	2.65	60.2
GA-SS-G06-211004		0.65 UJ	18.9 J	67	64.1	175 J	2.6 UJ	128	1.27	137	6.6	140
GA-SS-G07-211004		0.38 UJ	15.3 J	7.8	8.8	22.2 J	1.45 UJ	22.1	0.7	19.3	0.99	18.8
GA-SS-G07-211004-DUP		0.34 UJ	15.9 J	7.7	8.7	22.3 J	1.08 J	24.5	0.97	20.1	0.94	20.6
GA-SS-G08-211004		0.35 UJ	18.5 J	5.8	5.68	14.9 J	1.2 UJ	12.2	0.75	11.3	0.55	11.1
GA-SS-G10-211004		0.69 UJ	17 J	20.1	18.8	46.1 J	2.1 UJ	42.5	0.82	14.8	0.7	14.8
GA-SS-G11-211004		0.82 UJ	11.9 J	33.6	38.9	82.6 J	2.6 UJ	77	1.04	38.7	1.79	42
GA-SS-G12-211004		0.37 UJ	16.5 J	14.3	15.6	39.7 J	1.43 UJ	31.6	0.96	18	1.1	18.5
GA-SS-G13-211004		0.74 UJ	16.3 J	33.5 J-	33.1	74.9 J	1.7 UJ	62	0.81	42.5	2.25	45.6
GA-SS-G14-211004		0.25 J	16.6 J	22.5	22.6	48.8 J	1.79 UJ	43.8	1.07	30.4	1.53	28.8
GA-SS-G16-211004		0.59 UJ	11.8 J	10 J-	9.1	26.7 J	1.8 UJ	25.1	1.02	20.8	1.17	21.5
GA-SS-G17-211004		0.64 UJ	15.9 J	15.7 J-	15.5	58.2 J	1.55 UJ	41.9	0.87	38.2	1.64	39.1
GA-SS-G18-211004		0.56 UJ	13.4 J	16.1 J-	15.8	34.1 J	1.8 UJ	34.6	0.79	34.6	1.75	35
GA-SS-G19-211004		0.72 UJ	13.7 J	24.7	25.6	80 J	1.9 UJ	68	0.97	39.3	1.87	40.7
GA-SS-G19-211004-DUP		0.73 UJ	11 J	22.8	27.9	72 J	2.3 UJ	64	1.08 J-	42.9	1.84	43.2
GA-SS-G20-211004		0.54 UJ	17.6 J	12	12.8	35 J	1.86 UJ	27.1	0.82	13.1	0.68	13.3
GA-SS-G21-211004		0.188 U	16.8	2.82	2.88	7.41	0.66 U	5.36	0.44	4.87	0.23	4.57
GA-SS-G24-211004		1.2 UJ	12.4 J	56	62	201 J	3.8 UJ	168	1.41	169	8.1	172
GA-SS-G25-211004		0.75 UJ	18.5 J	33.7	37	100 J	1.8 UJ	94	0.87	93	5.2	95
GA-SS-G27-211004		0.89 UJ	14.9 J	29.9	33.8	100 J	2.6 UJ	78	0.89	53.1	2.83	54
GA-SS-G28-211004		1.26 UJ	11.9 UJ	44	50.3	181 J	2.4 UJ	141	1.23	137	6.4	140
GA-SS-G30-211004		0.48 UJ	10.9 J	12	13.9	42.6 J	1.95 UJ	25	0.85	20.1	1.02	20.7
GA-SS-S03-211005		1.16 UJ	12.9 J	81	84	202 J	3.7 UJ	171	1.35	189	10	193
GA-SS-S05-211005		0.94 UJ	23.9 J	58	59.6	188 J	2.9 UJ	161	1.48	171	8.7	178
GA-SS-TS01-211005		1.35 UJ	11.3 J	194	192	369 J	4 UJ	284	1.09	291	14.9	293
GA-SS-TS02-211005		1.58 UJ	11.3 UJ	118	102	253 J	4.9 UJ	186	0.96	132	6.2	135
GA-SS-TS03-211005		1.7 UJ	17.3 J	104	127	539 J	5.4 UJ	366	1.98	347	17.2	356
GA-SS-TS04-211005		0.6 UJ	18.6 J	22.1	19	36 J	2 UJ	33	0.98	25.1	1.33	25.6
GA-SS-TS04-211005-DUP		0.87 UJ	23.7 J	21.2 J-	23.5	56.9 J	2.6 UJ	46.9	0.88	44	2.17	43.9

**TABLE 3. Validated Soil Sample Radionuclide Analytical Results
Griffin Ashing Site (Flat Top Mine Site OU1)**

Analyte		Cesium-137	Potassium-40	Lead-210	Polonium-210	Radium-226	Radium-228	Thorium-230	Thorium-232	Uranium-234	Uranium-235	Uranium-238
CAS Number		10045-97-3	13966-00-2	14255-04-0	13981-52-7	13982-63-3	15262-20-1	14269-63-7	7440-29-1	13966-29-5	15117-96-1	7440-61-1
Project Action Limits	Project Action Limit ^a	5	5	5	5	5	5	5	5	5	5	5
	Farmer PRG for Soil ^b	0.094	0.019	0.079	0.012	0.080	0.030	1.6	1.5	1.5	0.067	1.6
	Farmer Peak PRG for Soil ^b	0.02	0.019	0.018	0.88	0.0033	0.015	0.0033	0.030	0.0052	0.014	0.0030
GA-SS-TS05-211005		0.48 UJ	15.8 J	9.5	12.8	22.5 J	1.7 UJ	16.9	0.82	14.9	0.76	15
GA-SS-TS06-211005		0.63 UJ	18.4 J	53	58.5	199 J	1.8 UJ	169	1.16	147	7.3	145
GA-SS-TS07-211005		1.11 UJ	15 J	60	61.2	176 J	3.3 UJ	149	1.24	144	6.7	142
GA-SS-TS08-211005		0.37 J	14.3 J	15.7	17	37.1 J	1.62 UJ	29.4	0.95	26.6	1.35	27.1

Notes:

All results and screening levels are in picocuries per gram.

The reported concentration exceeds the Farmer Peak PRG.

The reported concentration exceeds the Farmer PRG.

The reported concentration exceeds the Project Action Level, and the PRG.

CAS Chemical Abstract Service

EPA U.S. Environmental Protection Agency

MDC Minimum Detectable Concentration

PRG Preliminary Remediation Goal

J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.

J- The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.

U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).

UJ The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one of more quality control criteria.

References:

United States Environmental Protection Agency (EPA). 2015. Region 4 Ecological Risk Assessment Supplemental Guidance. Interim Draft. August.

https://www.epa.gov/sites/default/files/2015-09/documents/r4_era_guidance_document_draft_final_8-25-2015.pdf

**TABLE 4. Soil and Plant Tissue Correlation Summary
Griffin Ashing Site (Flat Top Mine Site OU1)**

Sample Location	Arsenic		Copper		Molybdenum		Uranium		Vanadium	
	Plant Tissue*	Soil	Plant Tissue*	Soil	Plant Tissue*	Soil	Plant Tissue*	Soil	Plant Tissue*	Soil
East Transect 01	0.09 J	36	1.8 J	20	5.2	21	0.03	35	0.48 U	17
Grid 01	0.17 J	67	1.3 J	14	23	42	0.04	88	0.13 J	20
Grid 10	0.32	110	1.3 J	27	140	78	0.1	43	0.49 U	40
Grid 11	0.1 J	120	0.95 J	17	38	80	0.02	97	0.49 U	43
Grid 13	0.16 J	97	0.8 J	13	41	90	0.04	110	0.49 U	19
Grid 14	0.19 U	74	0.87 J	19	9.9	49	0.01 J	78	0.48 U	28
Grid 17	0.17 J	74	1.1 J	13	61	67	0.04	95	0.5 U	27
Grid 19	0.18 J	110	1.6 J	15	37	62	0.03	200	0.46 U	34
Grid 22	0.77	160	2.1	16	91	220	0.05	250	0.46 U	28
Grid 25	0.49	150	0.96 J	25	64	110	0.05	240	0.14 J	24
Grid 26	0.51	67	2	14	42	47	0.05	110	0.48 U	22
Grid 27	0.28	160	1.7 J	15	46	96	0.02 J	170	0.5 U	22
Grid 28	0.29	230	1.2 J	16	73	180	0.08	310	0.45 U	37
North Transect 01	0.06 J	56	0.91 J	16	5	44	0.02 J	89	0.49 U	22
South Transect 01	0.27	140	3.3	14	22	150	0.36	200	0.49 U	26
West Transect 01	0.51	270	1.4 J	12	150	220	0.33	380	0.46 U	23
Correlation	0.53		-0.21		0.64		0.53		NA^a	

Notes:

All results and screening levels are in milligram per kilogram.

For duplicate samples, the maximum detected concentration was used.

* Plant tissue sample results are preliminary and have not yet been validated.

^a The number of detected results for vanadium is inadequate to perform a correlation.

J - The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.

NA - Not applicable

U - The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).

ENCLOSURE 3

DATA VALIDATION REPORT

(Eighty-five Pages)



December 23, 2021

Shun-Ping Chau
Contracting Officer Representative
U.S. Environmental Protection Agency, Region 8
Superfund and Emergency Management Division
1595 Wynkoop Street
Denver, CO 80202

Subject: Data Validation Report, Revision 1
Griffin Ashing DV
EPA Contract No.: 68HERH20D0015
Task Order/Technical Direction No.: 2071-2108-05
Document Tracking No. 0505

Dear Ms. Chau:

Tetra Tech, Inc. (Tetra Tech) is submitting this data validation report for 62 soil samples (including four field duplicate samples) collected at the Griffin Ashing site. The samples were collected on October 4 and 5, 2021, and were analyzed for radiological isotopes and ICP-MS metals by ALS Environmental, Fort Collins, Colorado. The final laboratory data package was received on November 5, 2021.

Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review*.

No rejection of results was required for this data package. The results may be used as qualified based on the findings of this validation effort.

If you have any questions regarding this data validation report, please call me at (303) 312-8843.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Tisdale'.

Rob Tisdale
Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager
Ann Weise, Tetra Tech Project Manager
Clayton Longest, Tetra Tech Project Document Control Coordinator

ATTACHMENT

**DATA VALIDATION REPORT
ALS ENVIRONMENTAL, FORT COLLINS, CO
REPORT NOS. 2110168, 2110170, AND 2110173**

ATTACHMENT

**DATA VALIDATION REPORT
ALS ENVIRONMENTAL, FORT COLLINS, CO
REPORT NOs. 2110168, 2110170, AND 2110173**

DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Site Name	Griffin Ashing Site	TO/TOLIN No.	2071-2108-05
Document Tracking No.	0505	Technical Reviewer (signature and date)	<i>Harry N. Ellis III</i> 8 December 2021
Data Reviewer (signature and date)	<i>Carol Smith</i> 12/1/2021	Laboratory	ALS Environmental – Fort Collins, CO
Laboratory Report No.	2110168		
Analyses	Gamma emitting radionuclides by modified EPA Method 901.1, isotopic lead, isotopic polonium, isotopic thorium, and isotopic uranium by ASTM method D3972, and metals by SW-846 Method 6020B		
Samples and Matrix	Twenty soil samples		
Collection Date(s)	October 4 th , 2021		
Field Duplicate Pairs	GA-SS-G07-211004 and GA-SS-G07-211004-DUP GA-SS-G19-211004 and GA-SS-G19-211004-DUP (Reported in ALS Report No. 2110170)		
Field QC Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 2B validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* (May 2021), and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection of the data was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Y	



**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
N	The Th-230 and U-234 activity levels in the associated method blanks were above the instrument minimum detectable concentration (MDC), but below the requested MDC. There was no impact to the associated Th-230 and U-234 results.



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
NA	

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
N	In the isotopic lead analysis, the ICP-AES measurement of lead concentrations prior to chemical separation for samples GA-SS-G13-211004, GA-SS-G16-211004, GA-SS-G17-211004, and GA-SS-G18-211004 showed concentrations less than the amount known to have been added to the samples in the form of lead carrier. To minimize the potential for low bias, the laboratory used the known concentration of the carrier in the chemical yield calculations. The reported Pb-210 TPU values for these samples may not reflect the additional uncertainty imparted in the pre-separation ICP measurement. As a result, the Pb-210 results for GA-SS-G13-211004, GA-SS-G16-211004, GA-SS-G17-211004, and GA-SS-G18-211004 were qualified as estimated, potentially biased low (flagged J-).

MS/MSDs:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
N	GA-SS-G19-211004 and GA-SS-G19-211004-DUP (reported in ALS Report No. 2110170): The relative percent difference (RPD) between the parent sample result and the field duplicate result for calcium was outside criteria. The calcium results for both samples were qualified as estimated (flagged J).

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	Cs-137, K-40, Ra-226 and Ra-228 results for all samples were qualified “G” by the laboratory to indicate a density more than 15% different in the sample than the LCS. As a result, Cs-137, K-40, Ra-226 and Ra-228 in all samples were qualified as estimated (flagged J/UJ).

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	According to laboratory practice, all samples analyzed for metals by method SW-846 6020B were analyzed at a 10-fold dilution. Additional dilutions of 100-fold were required for uranium in GA-SS-G06-211004, GA-SS-G09-211004, and iron in GA-SS-G15-211004 due to levels exceeding the calibration range of the instrument. Method detection limits (MDLs) and reporting limits (RLs) were adjusted accordingly.



DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
N	<p>Metals: Analytes detected at concentrations above the MDL but below the RL were qualified as estimated (flagged J) by the laboratory. Analytes detected at concentrations below the MDL were reported as not detected (flagged U) by the laboratory and were raised to the value of the RL by the data reviewer. MDLs and RLs are provided in the attached analytical data table.</p> <p>Radionuclides and Isotopes: Results are reported according to activity counts for radionuclides and isotopes. The radionuclide and isotope results are reported compared to their MDC. If the activity concentration in a sample is equal to or greater than the MDC, then there is a 95% chance that radioactive material in the sample will be detected. Radionuclides and isotopes detected at concentrations below the MDC were reported as not detected (flagged U) by the laboratory and were raised to the value of the MDC by the data reviewer. The sample-specific MDCs for the radionuclide and isotope samples are provided in the attached analytical data table in the RL column.</p> <p>The requested MDCs for the following radionuclides and isotopes in the samples listed below were not met, but the reported activity was greater than the reported MDCs:</p> <ul style="list-style-type: none"> • Th-230 in all samples. • U-234 in samples GA-SS-G06-211004, GA-SS-G10-211004, GA-SS-G12-211004, and GA-SS-G16-211004. • U-235 in samples GA-SS-G10-211004. • U-238 in samples GA-SS-G06-211004 and GA-SS-G10-211004. • Ra-226 in samples GA-SS-G05-211004, GA-SS-G06-211004, GA-SS-G10-211004, and GA-SS-G11-211004, GA-SS-G13-211004, GA-SS-G14-211004, GA-SS-G16-211004, GA-SS-G17-211004, GA-SS-G18-211004, and GA-SS-G19-211004. <p>The requested MDCs for Cs-137 in samples GA-SS-G10-211004, GA-SS-G11-211004, GA-SS-G13-211004, GA-SS-G16-211004, GA-SS-G17-211004, GA-SS-G18-211004, and GA-SS-G19-211004 were not met and the reported activity was less than the reported MDCs (flagged U). As a result, the not-detected Cs-137 results in these samples were qualified as estimated (flagged UJ).</p>

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
Y	The result for Ra-228 in sample GA-SS-G07-211004-DUP was considered tentatively identified and was qualified as estimated (flagged J) during this DV effort.



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Other [Software quantitation]:

Within Criteria	Exceedance/Notes
NA	The Cs-137 results in GA-SS-G05-211004 and GA-SS-G06-211004 were qualified “NQ” by the laboratory. In cases where there are no peaks found in the search routine, the software performs a net quantification. The lack of energy peaks for Cs-137 indicates that nuclides were not detected at any level above the MDC. As a result, the Cs-137 detects for GA-SS-G05-211004 and GA-SS-G06-211004 were qualified as not-detected (flagged UJ), and the MDC was raised to the value reported by the net quantification.

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G01-211004	SW6020	ALUMINUM	7300000		7100	16000	UG/KG	7300000	
GA-SS-G01-211004	SW6020	ANTIMONY	250		20	110	UG/KG	250	
GA-SS-G01-211004	SW6020	ARSENIC	67000		53	220	UG/KG	67000	
GA-SS-G01-211004	SW6020	BARIUM	210000		250	540	UG/KG	210000	
GA-SS-G01-211004	SW6020	BERYLLIUM	900		5.4	54	UG/KG	900	
GA-SS-G01-211004	SW6020	CADMIUM	580		24	220	UG/KG	580	
GA-SS-G01-211004	SW6020	CALCIUM	4900000		18000	110000	UG/KG	4900000	
GA-SS-G01-211004	SW6020	CHROMIUM	11000		600	1100	UG/KG	11000	
GA-SS-G01-211004	SW6020	COBALT	7100		35	540	UG/KG	7100	
GA-SS-G01-211004	SW6020	COPPER	14000		310	2200	UG/KG	14000	
GA-SS-G01-211004	SW6020	IRON	18000000		12000	22000	UG/KG	18000000	
GA-SS-G01-211004	SW6020	LEAD	14000		72	220	UG/KG	14000	
GA-SS-G01-211004	SW6020	MAGNESIUM	2800000		3600	11000	UG/KG	2800000	
GA-SS-G01-211004	SW6020	MANGANESE	400000		410	810	UG/KG	400000	
GA-SS-G01-211004	SW6020	MOLYBDENUM	42000		47	220	UG/KG	42000	
GA-SS-G01-211004	SW6020	NICKEL	15000		480	2200	UG/KG	15000	
GA-SS-G01-211004	SW6020	POTASSIUM	2500000		16000	110000	UG/KG	2500000	
GA-SS-G01-211004	SW6020	SELENIUM	4200		220	1100	UG/KG	4200	
GA-SS-G01-211004	SW6020	SILVER	66		9	54	UG/KG	66	
GA-SS-G01-211004	SW6020	SODIUM	290000		16000	110000	UG/KG	290000	
GA-SS-G01-211004	SW6020	THALLIUM	250		2.7	11	UG/KG	250	
GA-SS-G01-211004	SW6020	THORIUM	3700		8.7	22	UG/KG	3700	
GA-SS-G01-211004	SW6020	URANIUM	88000		10	22	UG/KG	88000	
GA-SS-G01-211004	SW6020	VANADIUM	20000		140	540	UG/KG	20000	
GA-SS-G01-211004	SW6020	ZINC	62000		4400	11000	UG/KG	62000	
GA-SS-G02-211004	SW6020	ALUMINUM	8500000		7100	16000	UG/KG	8500000	
GA-SS-G02-211004	SW6020	ANTIMONY	260		20	110	UG/KG	260	
GA-SS-G02-211004	SW6020	ARSENIC	160000		54	220	UG/KG	160000	
GA-SS-G02-211004	SW6020	BARIUM	280000		250	550	UG/KG	280000	
GA-SS-G02-211004	SW6020	BERYLLIUM	1200		5.5	55	UG/KG	1200	
GA-SS-G02-211004	SW6020	CADMIUM	730		24	220	UG/KG	730	
GA-SS-G02-211004	SW6020	CALCIUM	6100000		19000	110000	UG/KG	6100000	
GA-SS-G02-211004	SW6020	CHROMIUM	9000		600	1100	UG/KG	9000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G02-211004	SW6020	COBALT	7200		35	550	UG/KG	7200	
GA-SS-G02-211004	SW6020	COPPER	13000		320	2200	UG/KG	13000	
GA-SS-G02-211004	SW6020	IRON	17000000		12000	22000	UG/KG	17000000	
GA-SS-G02-211004	SW6020	LEAD	14000		72	220	UG/KG	14000	
GA-SS-G02-211004	SW6020	MAGNESIUM	2200000		3600	11000	UG/KG	2200000	
GA-SS-G02-211004	SW6020	MANGANESE	330000		420	820	UG/KG	330000	
GA-SS-G02-211004	SW6020	MOLYBDENUM	130000		47	220	UG/KG	130000	
GA-SS-G02-211004	SW6020	NICKEL	15000		480	2200	UG/KG	15000	
GA-SS-G02-211004	SW6020	POTASSIUM	2400000		16000	110000	UG/KG	2400000	
GA-SS-G02-211004	SW6020	SELENIUM	8600		220	1100	UG/KG	8600	
GA-SS-G02-211004	SW6020	SILVER	58		9.1	55	UG/KG	58	
GA-SS-G02-211004	SW6020	SODIUM	1500000		16000	110000	UG/KG	1500000	
GA-SS-G02-211004	SW6020	THALLIUM	500		2.7	11	UG/KG	500	
GA-SS-G02-211004	SW6020	THORIUM	3600		8.8	22	UG/KG	3600	
GA-SS-G02-211004	SW6020	URANIUM	210000		10	22	UG/KG	210000	
GA-SS-G02-211004	SW6020	VANADIUM	26000		140	550	UG/KG	26000	
GA-SS-G02-211004	SW6020	ZINC	49000		4500	11000	UG/KG	49000	
GA-SS-G03-211004	SW6020	ALUMINUM	6400000		7100	16000	UG/KG	6400000	
GA-SS-G03-211004	SW6020	ANTIMONY	220		20	110	UG/KG	220	
GA-SS-G03-211004	SW6020	ARSENIC	110000		54	220	UG/KG	110000	
GA-SS-G03-211004	SW6020	BARIUM	230000		250	550	UG/KG	230000	
GA-SS-G03-211004	SW6020	BERYLLIUM	1000		5.5	55	UG/KG	1000	
GA-SS-G03-211004	SW6020	CADMIUM	770		24	220	UG/KG	770	
GA-SS-G03-211004	SW6020	CALCIUM	6100000		19000	110000	UG/KG	6100000	
GA-SS-G03-211004	SW6020	CHROMIUM	9200		600	1100	UG/KG	9200	
GA-SS-G03-211004	SW6020	COBALT	6800		35	550	UG/KG	6800	
GA-SS-G03-211004	SW6020	COPPER	12000		320	2200	UG/KG	12000	
GA-SS-G03-211004	SW6020	IRON	13000000		12000	22000	UG/KG	13000000	
GA-SS-G03-211004	SW6020	LEAD	16000		72	220	UG/KG	16000	
GA-SS-G03-211004	SW6020	MAGNESIUM	2500000		3600	11000	UG/KG	2500000	
GA-SS-G03-211004	SW6020	MANGANESE	320000		420	820	UG/KG	320000	
GA-SS-G03-211004	SW6020	MOLYBDENUM	88000		47	220	UG/KG	88000	
GA-SS-G03-211004	SW6020	NICKEL	15000		480	2200	UG/KG	15000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G03-211004	SW6020	POTASSIUM	2500000		16000	110000	UG/KG	2500000	
GA-SS-G03-211004	SW6020	SELENIUM	8900		220	1100	UG/KG	8900	
GA-SS-G03-211004	SW6020	SILVER	59		9.1	55	UG/KG	59	
GA-SS-G03-211004	SW6020	SODIUM	760000		16000	110000	UG/KG	760000	
GA-SS-G03-211004	SW6020	THALLIUM	330		2.7	11	UG/KG	330	
GA-SS-G03-211004	SW6020	THORIUM	2900		8.8	22	UG/KG	2900	
GA-SS-G03-211004	SW6020	URANIUM	180000		10	22	UG/KG	180000	
GA-SS-G03-211004	SW6020	VANADIUM	20000		140	550	UG/KG	20000	
GA-SS-G03-211004	SW6020	ZINC	62000		4500	11000	UG/KG	62000	
GA-SS-G04-211004	SW6020	ALUMINUM	5600000		6700	15000	UG/KG	5600000	
GA-SS-G04-211004	SW6020	ANTIMONY	210		19	100	UG/KG	210	
GA-SS-G04-211004	SW6020	ARSENIC	21000		50	210	UG/KG	21000	
GA-SS-G04-211004	SW6020	BARIUM	140000		240	510	UG/KG	140000	
GA-SS-G04-211004	SW6020	BERYLLIUM	520		5.1	51	UG/KG	520	
GA-SS-G04-211004	SW6020	CADMIUM	280		23	210	UG/KG	280	
GA-SS-G04-211004	SW6020	CALCIUM	7800000		17000	100000	UG/KG	7800000	
GA-SS-G04-211004	SW6020	CHROMIUM	8700		570	1000	UG/KG	8700	
GA-SS-G04-211004	SW6020	COBALT	5500		33	510	UG/KG	5500	
GA-SS-G04-211004	SW6020	COPPER	11000		300	2100	UG/KG	11000	
GA-SS-G04-211004	SW6020	IRON	12000000		11000	21000	UG/KG	12000000	
GA-SS-G04-211004	SW6020	LEAD	9700		68	210	UG/KG	9700	
GA-SS-G04-211004	SW6020	MAGNESIUM	2900000		3400	10000	UG/KG	2900000	
GA-SS-G04-211004	SW6020	MANGANESE	280000		390	770	UG/KG	280000	
GA-SS-G04-211004	SW6020	MOLYBDENUM	13000		44	210	UG/KG	13000	
GA-SS-G04-211004	SW6020	NICKEL	12000		450	2100	UG/KG	12000	
GA-SS-G04-211004	SW6020	POTASSIUM	1800000		15000	100000	UG/KG	1800000	
GA-SS-G04-211004	SW6020	SELENIUM	1600		210	1000	UG/KG	1600	
GA-SS-G04-211004	SW6020	SILVER	51 J		8.5	51	UG/KG	51 J	
GA-SS-G04-211004	SW6020	SODIUM	110000		15000	100000	UG/KG	110000	
GA-SS-G04-211004	SW6020	THALLIUM	140		2.6	10	UG/KG	140	
GA-SS-G04-211004	SW6020	THORIUM	2900		8.2	21	UG/KG	2900	
GA-SS-G04-211004	SW6020	URANIUM	18000		9.8	21	UG/KG	18000	
GA-SS-G04-211004	SW6020	VANADIUM	13000		130	510	UG/KG	13000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G04-211004	SW6020	ZINC	38000		4200	10000	UG/KG	38000	
GA-SS-G05-211004		704 Pb-210	33.1		0.2	0.2	pCi/g	33.1	
GA-SS-G05-211004		713 Cs-137	0.72	M,G,NQ	0.72	0.72	pCi/g	0.72	UJ
GA-SS-G05-211004		713 K-40	9.5	G	8.5	8.5	pCi/g	9.5	J
GA-SS-G05-211004		713 Ra-226	70.8	M3,G	1.7	1.7	pCi/g	70.8	J
GA-SS-G05-211004		713 Ra-228	0.2	U,G	2.6	2.6	pCi/g	2.6	UJ
GA-SS-G05-211004		714 Po-210	33.3		0.1	0.1	pCi/g	33.3	
GA-SS-G05-211004		714 Th-230	65	M3	0	0	pCi/g	65	
GA-SS-G05-211004		714 Th-232	1.03		0.06	0.06	pCi/g	1.03	
GA-SS-G05-211004		714 U-234	61		0	0	pCi/g	61	
GA-SS-G05-211004		714 U-235	2.65		0.03	0.03	pCi/g	2.65	
GA-SS-G05-211004		714 U-238	60.2		0.1	0.1	pCi/g	60.2	
GA-SS-G05-211004	SW6020	ALUMINUM	5800000		7500	17000	UG/KG	5800000	
GA-SS-G05-211004	SW6020	ANTIMONY	1800		21	120	UG/KG	1800	
GA-SS-G05-211004	SW6020	ARSENIC	290000		57	230	UG/KG	290000	
GA-SS-G05-211004	SW6020	BARIUM	220000		270	580	UG/KG	220000	
GA-SS-G05-211004	SW6020	BERYLLIUM	1200		5.8	58	UG/KG	1200	
GA-SS-G05-211004	SW6020	CADMIUM	630		26	230	UG/KG	630	
GA-SS-G05-211004	SW6020	CALCIUM	5400000		20000	120000	UG/KG	5400000	
GA-SS-G05-211004	SW6020	CHROMIUM	10000		640	1200	UG/KG	10000	
GA-SS-G05-211004	SW6020	COBALT	8300		37	580	UG/KG	8300	
GA-SS-G05-211004	SW6020	COPPER	17000		340	2300	UG/KG	17000	
GA-SS-G05-211004	SW6020	IRON	39000000		13000	23000	UG/KG	39000000	
GA-SS-G05-211004	SW6020	LEAD	24000		77	230	UG/KG	24000	
GA-SS-G05-211004	SW6020	MAGNESIUM	2700000		3800	12000	UG/KG	2700000	
GA-SS-G05-211004	SW6020	MANGANESE	520000		440	870	UG/KG	520000	
GA-SS-G05-211004	SW6020	MOLYBDENUM	230000		50	230	UG/KG	230000	
GA-SS-G05-211004	SW6020	NICKEL	16000		510	2300	UG/KG	16000	
GA-SS-G05-211004	SW6020	POTASSIUM	2400000		17000	120000	UG/KG	2400000	
GA-SS-G05-211004	SW6020	SELENIUM	6800		230	1200	UG/KG	6800	
GA-SS-G05-211004	SW6020	SILVER	57	J	9.6	58	UG/KG	57	J
GA-SS-G05-211004	SW6020	SODIUM	220000		17000	120000	UG/KG	220000	
GA-SS-G05-211004	SW6020	THALLIUM	260		2.9	12	UG/KG	260	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G05-211004	SW6020	THORIUM	3300		9.3	23	UG/KG	3300	
GA-SS-G05-211004	SW6020	URANIUM	130000		11	23	UG/KG	130000	
GA-SS-G05-211004	SW6020	VANADIUM	43000		150	580	UG/KG	43000	
GA-SS-G05-211004	SW6020	ZINC	77000		4800	12000	UG/KG	77000	
GA-SS-G06-211004		704 Pb-210	67		0	0	pCi/g	67	
GA-SS-G06-211004		713 Cs-137	0.65 M,G,NQ		0.62	0.62	pCi/g	0.65 UJ	
GA-SS-G06-211004		713 K-40	18.9 G		6.9	6.9	pCi/g	18.9 J	
GA-SS-G06-211004		713 Ra-226	175 M3,G		2	2	pCi/g	175 J	
GA-SS-G06-211004		713 Ra-228	1.4 U,G		2.6	2.6	pCi/g	2.6 UJ	
GA-SS-G06-211004		714 Po-210	64.1		0.1	0.1	pCi/g	64.1	
GA-SS-G06-211004		714 Th-230	128 M3		0	0	pCi/g	128	
GA-SS-G06-211004		714 Th-232	1.27		0.07	0.07	pCi/g	1.27	
GA-SS-G06-211004		714 U-234	137 M3		0	0	pCi/g	137	
GA-SS-G06-211004		714 U-235	6.6		0.1	0.1	pCi/g	6.6	
GA-SS-G06-211004		714 U-238	140 M3		0	0	pCi/g	140	
GA-SS-G06-211004	SW6020	ALUMINUM	8700000		7300	17000	UG/KG	8700000	
GA-SS-G06-211004	SW6020	ANTIMONY	450		20	110	UG/KG	450	
GA-SS-G06-211004	SW6020	ARSENIC	150000		55	220	UG/KG	150000	
GA-SS-G06-211004	SW6020	BARIUM	250000		260	560	UG/KG	250000	
GA-SS-G06-211004	SW6020	BERYLLIUM	1700		5.6	56	UG/KG	1700	
GA-SS-G06-211004	SW6020	CADMIUM	1100		25	220	UG/KG	1100	
GA-SS-G06-211004	SW6020	CALCIUM	4600000		19000	110000	UG/KG	4600000	
GA-SS-G06-211004	SW6020	CHROMIUM	15000		620	1100	UG/KG	15000	
GA-SS-G06-211004	SW6020	COBALT	9000		36	560	UG/KG	9000	
GA-SS-G06-211004	SW6020	COPPER	20000		330	2200	UG/KG	20000	
GA-SS-G06-211004	SW6020	IRON	24000000		12000	22000	UG/KG	24000000	
GA-SS-G06-211004	SW6020	LEAD	22000		74	220	UG/KG	22000	
GA-SS-G06-211004	SW6020	MAGNESIUM	3100000		3700	11000	UG/KG	3100000	
GA-SS-G06-211004	SW6020	MANGANESE	350000		430	840	UG/KG	350000	
GA-SS-G06-211004	SW6020	MOLYBDENUM	140000		48	220	UG/KG	140000	
GA-SS-G06-211004	SW6020	NICKEL	22000		490	2200	UG/KG	22000	
GA-SS-G06-211004	SW6020	POTASSIUM	3100000		17000	110000	UG/KG	3100000	
GA-SS-G06-211004	SW6020	SELENIUM	13000		220	1100	UG/KG	13000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G06-211004	SW6020	SILVER	63		9.3	56	UG/KG	63	
GA-SS-G06-211004	SW6020	SODIUM	190000		17000	110000	UG/KG	190000	
GA-SS-G06-211004	SW6020	THALLIUM	450		2.8	11	UG/KG	450	
GA-SS-G06-211004	SW6020	THORIUM	5000		9	22	UG/KG	5000	
GA-SS-G06-211004	SW6020	URANIUM	300000		110	220	UG/KG	300000	
GA-SS-G06-211004	SW6020	VANADIUM	36000		150	560	UG/KG	36000	
GA-SS-G06-211004	SW6020	ZINC	72000		4600	11000	UG/KG	72000	
GA-SS-G07-211004		704 Pb-210	7.8		0.2	0.2	pCi/g	7.8	
GA-SS-G07-211004		713 Cs-137	0.08 U,G		0.38	0.38	pCi/g	0.38 UJ	
GA-SS-G07-211004		713 K-40	15.3 G		4	4	pCi/g	15.3 J	
GA-SS-G07-211004		713 Ra-226	22.2 G		1	1	pCi/g	22.2 J	
GA-SS-G07-211004		713 Ra-228	0.58 U,G		1.45	1.45	pCi/g	1.45 UJ	
GA-SS-G07-211004		714 Po-210	8.8		0.1	0.1	pCi/g	8.8	
GA-SS-G07-211004		714 Th-230	22.1 M3		0.1	0.1	pCi/g	22.1	
GA-SS-G07-211004		714 Th-232	0.7		0.01	0.01	pCi/g	0.7	
GA-SS-G07-211004		714 U-234	19.3		0	0	pCi/g	19.3	
GA-SS-G07-211004		714 U-235	0.99		0.03	0.03	pCi/g	0.99	
GA-SS-G07-211004		714 U-238	18.8		0	0	pCi/g	18.8	
GA-SS-G07-211004	SW6020	ALUMINUM	6500000		6900	16000	UG/KG	6500000	
GA-SS-G07-211004	SW6020	ANTIMONY	330		19	110	UG/KG	330	
GA-SS-G07-211004	SW6020	ARSENIC	37000		52	210	UG/KG	37000	
GA-SS-G07-211004	SW6020	BARIUM	210000		240	530	UG/KG	210000	
GA-SS-G07-211004	SW6020	BERYLLIUM	810		5.3	53	UG/KG	810	
GA-SS-G07-211004	SW6020	CADMIUM	410		23	210	UG/KG	410	
GA-SS-G07-211004	SW6020	CALCIUM	3000000		18000	110000	UG/KG	3000000	
GA-SS-G07-211004	SW6020	CHROMIUM	11000		580	1100	UG/KG	11000	
GA-SS-G07-211004	SW6020	COBALT	7500		34	530	UG/KG	7500	
GA-SS-G07-211004	SW6020	COPPER	12000		310	2100	UG/KG	12000	
GA-SS-G07-211004	SW6020	IRON	23000000		12000	21000	UG/KG	23000000	
GA-SS-G07-211004	SW6020	LEAD	11000		70	210	UG/KG	11000	
GA-SS-G07-211004	SW6020	MAGNESIUM	2400000		3500	11000	UG/KG	2400000	
GA-SS-G07-211004	SW6020	MANGANESE	500000		400	790	UG/KG	500000	
GA-SS-G07-211004	SW6020	MOLYBDENUM	49000		45	210	UG/KG	49000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G07-211004	SW6020	NICKEL	15000		460	2100	UG/KG	15000	
GA-SS-G07-211004	SW6020	POTASSIUM	2100000		16000	110000	UG/KG	2100000	
GA-SS-G07-211004	SW6020	SELENIUM	3000		210	1100	UG/KG	3000	
GA-SS-G07-211004	SW6020	SILVER	51 J		8.8	53	UG/KG	51 J	
GA-SS-G07-211004	SW6020	SODIUM	97000 J		16000	110000	UG/KG	97000 J	
GA-SS-G07-211004	SW6020	THALLIUM	190		2.6	11	UG/KG	190	
GA-SS-G07-211004	SW6020	THORIUM	3600		8.4	21	UG/KG	3600	
GA-SS-G07-211004	SW6020	URANIUM	42000		10	21	UG/KG	42000	
GA-SS-G07-211004	SW6020	VANADIUM	28000		140	530	UG/KG	28000	
GA-SS-G07-211004	SW6020	ZINC	53000		4300	11000	UG/KG	53000	
GA-SS-G07-211004-DUP		704 Pb-210	7.7		0.2	0.2	pCi/g	7.7	
GA-SS-G07-211004-DUP		713 Cs-137	-0.1 U,G		0.34	0.34	pCi/g	0.34 UJ	
GA-SS-G07-211004-DUP		713 K-40	15.9 G		4.3	4.3	pCi/g	15.9 J	
GA-SS-G07-211004-DUP		713 Ra-226	22.3 G		0.9	0.9	pCi/g	22.3 J	
GA-SS-G07-211004-DUP		713 Ra-228	1.08 G,Tl		0.96	0.96	pCi/g	1.08 J	
GA-SS-G07-211004-DUP		714 Po-210	8.7		0.1	0.1	pCi/g	8.7	
GA-SS-G07-211004-DUP		714 Th-230	24.5 M3		0.1	0.1	pCi/g	24.5	
GA-SS-G07-211004-DUP		714 Th-232	0.97		0.05	0.05	pCi/g	0.97	
GA-SS-G07-211004-DUP		714 U-234	20.1		0.1	0.1	pCi/g	20.1	
GA-SS-G07-211004-DUP		714 U-235	0.94		0.03	0.03	pCi/g	0.94	
GA-SS-G07-211004-DUP		714 U-238	20.6		0	0	pCi/g	20.6	
GA-SS-G07-211004-DUP	SW6020	ALUMINUM	6700000		6600	15000	UG/KG	6700000	
GA-SS-G07-211004-DUP	SW6020	ANTIMONY	310		18	100	UG/KG	310	
GA-SS-G07-211004-DUP	SW6020	ARSENIC	54000		50	200	UG/KG	54000	
GA-SS-G07-211004-DUP	SW6020	BARIUM	220000		230	510	UG/KG	220000	
GA-SS-G07-211004-DUP	SW6020	BERYLLIUM	770		5.1	51	UG/KG	770	
GA-SS-G07-211004-DUP	SW6020	CADMIUM	410		22	200	UG/KG	410	
GA-SS-G07-211004-DUP	SW6020	CALCIUM	3300000		17000	100000	UG/KG	3300000	
GA-SS-G07-211004-DUP	SW6020	CHROMIUM	11000		560	1000	UG/KG	11000	
GA-SS-G07-211004-DUP	SW6020	COBALT	7300		33	510	UG/KG	7300	
GA-SS-G07-211004-DUP	SW6020	COPPER	12000		290	2000	UG/KG	12000	
GA-SS-G07-211004-DUP	SW6020	IRON	20000000		11000	20000	UG/KG	20000000	
GA-SS-G07-211004-DUP	SW6020	LEAD	11000		67	200	UG/KG	11000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G07-211004-DUP	SW6020	MAGNESIUM	2400000		3400	10000	UG/KG	2400000	
GA-SS-G07-211004-DUP	SW6020	MANGANESE	470000		390	760	UG/KG	470000	
GA-SS-G07-211004-DUP	SW6020	MOLYBDENUM	41000		44	200	UG/KG	41000	
GA-SS-G07-211004-DUP	SW6020	NICKEL	16000		450	2000	UG/KG	16000	
GA-SS-G07-211004-DUP	SW6020	POTASSIUM	2100000		15000	100000	UG/KG	2100000	
GA-SS-G07-211004-DUP	SW6020	SELENIUM	3500		200	1000	UG/KG	3500	
GA-SS-G07-211004-DUP	SW6020	SILVER	50 J		8.4	51	UG/KG	50 J	
GA-SS-G07-211004-DUP	SW6020	SODIUM	180000		15000	100000	UG/KG	180000	
GA-SS-G07-211004-DUP	SW6020	THALLIUM	200		2.5	10	UG/KG	200	
GA-SS-G07-211004-DUP	SW6020	THORIUM	3500		8.1	20	UG/KG	3500	
GA-SS-G07-211004-DUP	SW6020	URANIUM	67000		9.7	20	UG/KG	67000	
GA-SS-G07-211004-DUP	SW6020	VANADIUM	23000		130	510	UG/KG	23000	
GA-SS-G07-211004-DUP	SW6020	ZINC	46000		4200	10000	UG/KG	46000	
GA-SS-G08-211004		704 Pb-210	5.8		0.2	0.2	pCi/g	5.8	
GA-SS-G08-211004		713 Cs-137	-0.14 U,G		0.35	0.35	pCi/g	0.35 UJ	
GA-SS-G08-211004		713 K-40	18.5 G		4	4	pCi/g	18.5 J	
GA-SS-G08-211004		713 Ra-226	14.9 G		0.7	0.7	pCi/g	14.9 J	
GA-SS-G08-211004		713 Ra-228	0.98 U,G		1.2	1.2	pCi/g	1.2 UJ	
GA-SS-G08-211004		714 Po-210	5.68		0.1	0.1	pCi/g	5.68	
GA-SS-G08-211004		714 Th-230	12.2 M3		0.1	0.1	pCi/g	12.2	
GA-SS-G08-211004		714 Th-232	0.75		0.03	0.03	pCi/g	0.75	
GA-SS-G08-211004		714 U-234	11.3		0.1	0.1	pCi/g	11.3	
GA-SS-G08-211004		714 U-235	0.55		0.06	0.06	pCi/g	0.55	
GA-SS-G08-211004		714 U-238	11.1		0.1	0.1	pCi/g	11.1	
GA-SS-G08-211004	SW6020	ALUMINUM	7200000		7400	17000	UG/KG	7200000	
GA-SS-G08-211004	SW6020	ANTIMONY	500		21	110	UG/KG	500	
GA-SS-G08-211004	SW6020	ARSENIC	35000		56	230	UG/KG	35000	
GA-SS-G08-211004	SW6020	BARIUM	170000		260	570	UG/KG	170000	
GA-SS-G08-211004	SW6020	BERYLLIUM	740		5.7	57	UG/KG	740	
GA-SS-G08-211004	SW6020	CADMIUM	340		25	230	UG/KG	340	
GA-SS-G08-211004	SW6020	CALCIUM	2800000		19000	110000	UG/KG	2800000	
GA-SS-G08-211004	SW6020	CHROMIUM	13000		630	1100	UG/KG	13000	
GA-SS-G08-211004	SW6020	COBALT	8500		37	570	UG/KG	8500	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G08-211004	SW6020	COPPER	12000		330	2300	UG/KG	12000	
GA-SS-G08-211004	SW6020	IRON	22000000		13000	23000	UG/KG	22000000	
GA-SS-G08-211004	SW6020	LEAD	11000		75	230	UG/KG	11000	
GA-SS-G08-211004	SW6020	MAGNESIUM	2400000		3800	11000	UG/KG	2400000	
GA-SS-G08-211004	SW6020	MANGANESE	460000		430	860	UG/KG	460000	
GA-SS-G08-211004	SW6020	MOLYBDENUM	17000		49	230	UG/KG	17000	
GA-SS-G08-211004	SW6020	NICKEL	14000		500	2300	UG/KG	14000	
GA-SS-G08-211004	SW6020	POTASSIUM	2200000		17000	110000	UG/KG	2200000	
GA-SS-G08-211004	SW6020	SELENIUM	2300		230	1100	UG/KG	2300	
GA-SS-G08-211004	SW6020	SILVER	54 J		9.5	57	UG/KG	54 J	
GA-SS-G08-211004	SW6020	SODIUM	79000 J		17000	110000	UG/KG	79000 J	
GA-SS-G08-211004	SW6020	THALLIUM	170		2.9	11	UG/KG	170	
GA-SS-G08-211004	SW6020	THORIUM	3600		9.1	23	UG/KG	3600	
GA-SS-G08-211004	SW6020	URANIUM	23000		11	23	UG/KG	23000	
GA-SS-G08-211004	SW6020	VANADIUM	24000		150	570	UG/KG	24000	
GA-SS-G08-211004	SW6020	ZINC	51000		4700	11000	UG/KG	51000	
GA-SS-G09-211004	SW6020	ALUMINUM	8800000		7300	17000	UG/KG	8800000	
GA-SS-G09-211004	SW6020	ANTIMONY	7200		20	110	UG/KG	7200	
GA-SS-G09-211004	SW6020	ARSENIC	280000		55	230	UG/KG	280000	
GA-SS-G09-211004	SW6020	BARIUM	340000		260	560	UG/KG	340000	
GA-SS-G09-211004	SW6020	BERYLLIUM	1800		5.6	56	UG/KG	1800	
GA-SS-G09-211004	SW6020	CADMIUM	1300		25	230	UG/KG	1300	
GA-SS-G09-211004	SW6020	CALCIUM	12000000		19000	110000	UG/KG	12000000	
GA-SS-G09-211004	SW6020	CHROMIUM	33000		620	1100	UG/KG	33000	
GA-SS-G09-211004	SW6020	COBALT	13000		36	560	UG/KG	13000	
GA-SS-G09-211004	SW6020	COPPER	3800000		330	2300	UG/KG	3800000	
GA-SS-G09-211004	SW6020	IRON	55000000		120000	230000	UG/KG	55000000	
GA-SS-G09-211004	SW6020	LEAD	540000		74	230	UG/KG	540000	
GA-SS-G09-211004	SW6020	MAGNESIUM	2200000		3700	11000	UG/KG	2200000	
GA-SS-G09-211004	SW6020	MANGANESE	1100000		430	840	UG/KG	1100000	
GA-SS-G09-211004	SW6020	MOLYBDENUM	330000		48	230	UG/KG	330000	
GA-SS-G09-211004	SW6020	NICKEL	58000		500	2300	UG/KG	58000	
GA-SS-G09-211004	SW6020	POTASSIUM	2200000		17000	110000	UG/KG	2200000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G09-211004	SW6020	SELENIUM	18000		230	1100	UG/KG	18000	
GA-SS-G09-211004	SW6020	SILVER	830		9.3	56	UG/KG	830	
GA-SS-G09-211004	SW6020	SODIUM	1600000		17000	110000	UG/KG	1600000	
GA-SS-G09-211004	SW6020	THALLIUM	610		2.8	11	UG/KG	610	
GA-SS-G09-211004	SW6020	THORIUM	4600		9	23	UG/KG	4600	
GA-SS-G09-211004	SW6020	URANIUM	500000		110	230	UG/KG	500000	
GA-SS-G09-211004	SW6020	VANADIUM	44000		150	560	UG/KG	44000	
GA-SS-G09-211004	SW6020	ZINC	120000		4600	11000	UG/KG	120000	
GA-SS-G10-211004		704 Pb-210	20.1		0.2	0.2	pCi/g	20.1	
GA-SS-G10-211004		713 Cs-137	0 U,M,G		0.69	0.69	pCi/g	0.69 UJ	
GA-SS-G10-211004		713 K-40	17 G		7.6	7.6	pCi/g	17 J	
GA-SS-G10-211004		713 Ra-226	46.1 M3,G		1.4	1.4	pCi/g	46.1 J	
GA-SS-G10-211004		713 Ra-228	0.9 U,G		2.1	2.1	pCi/g	2.1 UJ	
GA-SS-G10-211004		714 Po-210	18.8		0.1	0.1	pCi/g	18.8	
GA-SS-G10-211004		714 Th-230	42.5 M3		0.1	0.1	pCi/g	42.5	
GA-SS-G10-211004		714 Th-232	0.82		0.02	0.02	pCi/g	0.82	
GA-SS-G10-211004		714 U-234	14.8 M3		0.2	0.2	pCi/g	14.8	
GA-SS-G10-211004		714 U-235	0.7 M3		0.19	0.19	pCi/g	0.7	
GA-SS-G10-211004		714 U-238	14.8 M3		0.2	0.2	pCi/g	14.8	
GA-SS-G10-211004	SW6020	ALUMINUM	7900000		6600	15000	UG/KG	7900000	
GA-SS-G10-211004	SW6020	ANTIMONY	720		18	100	UG/KG	720	
GA-SS-G10-211004	SW6020	ARSENIC	110000		50	200	UG/KG	110000	
GA-SS-G10-211004	SW6020	BARIUM	270000		230	510	UG/KG	270000	
GA-SS-G10-211004	SW6020	BERYLLIUM	1200		5.1	51	UG/KG	1200	
GA-SS-G10-211004	SW6020	CADMIUM	720		22	200	UG/KG	720	
GA-SS-G10-211004	SW6020	CALCIUM	8200000		17000	100000	UG/KG	8200000	
GA-SS-G10-211004	SW6020	CHROMIUM	12000		560	1000	UG/KG	12000	
GA-SS-G10-211004	SW6020	COBALT	12000		33	510	UG/KG	12000	
GA-SS-G10-211004	SW6020	COPPER	27000		290	2000	UG/KG	27000	
GA-SS-G10-211004	SW6020	IRON	34000000		11000	20000	UG/KG	34000000	
GA-SS-G10-211004	SW6020	LEAD	20000		67	200	UG/KG	20000	
GA-SS-G10-211004	SW6020	MAGNESIUM	2900000		3400	10000	UG/KG	2900000	
GA-SS-G10-211004	SW6020	MANGANESE	850000		390	760	UG/KG	850000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G10-211004	SW6020	MOLYBDENUM	78000		44	200	UG/KG	78000	
GA-SS-G10-211004	SW6020	NICKEL	25000		450	2000	UG/KG	25000	
GA-SS-G10-211004	SW6020	POTASSIUM	2200000		15000	100000	UG/KG	2200000	
GA-SS-G10-211004	SW6020	SELENIUM	3600		200	1000	UG/KG	3600	
GA-SS-G10-211004	SW6020	SILVER	57		8.4	51	UG/KG	57	
GA-SS-G10-211004	SW6020	SODIUM	530000		15000	100000	UG/KG	530000	
GA-SS-G10-211004	SW6020	THALLIUM	330		2.5	10	UG/KG	330	
GA-SS-G10-211004	SW6020	THORIUM	4300		8.1	20	UG/KG	4300	
GA-SS-G10-211004	SW6020	URANIUM	43000		9.7	20	UG/KG	43000	
GA-SS-G10-211004	SW6020	VANADIUM	40000		130	510	UG/KG	40000	
GA-SS-G10-211004	SW6020	ZINC	64000		4200	10000	UG/KG	64000	
GA-SS-G11-211004		704 Pb-210	33.6		0.2	0.2	pCi/g	33.6	
GA-SS-G11-211004		713 Cs-137	0.09 U,M,G		0.82	0.82	pCi/g	0.82 UJ	
GA-SS-G11-211004		713 K-40	11.9 G		9.1	9.1	pCi/g	11.9 J	
GA-SS-G11-211004		713 Ra-226	82.6 M3,G		1.7	1.7	pCi/g	82.6 J	
GA-SS-G11-211004		713 Ra-228	1.5 U,G		2.6	2.6	pCi/g	2.6 UJ	
GA-SS-G11-211004		714 Po-210	38.9		0.1	0.1	pCi/g	38.9	
GA-SS-G11-211004		714 Th-230	77 M3		0	0	pCi/g	77	
GA-SS-G11-211004		714 Th-232	1.04		0.06	0.06	pCi/g	1.04	
GA-SS-G11-211004		714 U-234	38.7		0.1	0.1	pCi/g	38.7	
GA-SS-G11-211004		714 U-235	1.79		0.08	0.08	pCi/g	1.79	
GA-SS-G11-211004		714 U-238	42		0.1	0.1	pCi/g	42	
GA-SS-G11-211004	SW6020	ALUMINUM	6200000		7200	17000	UG/KG	6200000	
GA-SS-G11-211004	SW6020	ANTIMONY	510		20	110	UG/KG	510	
GA-SS-G11-211004	SW6020	ARSENIC	120000		55	220	UG/KG	120000	
GA-SS-G11-211004	SW6020	BARIUM	220000		260	560	UG/KG	220000	
GA-SS-G11-211004	SW6020	BERYLLIUM	1100		5.6	56	UG/KG	1100	
GA-SS-G11-211004	SW6020	CADMIUM	700		24	220	UG/KG	700	
GA-SS-G11-211004	SW6020	CALCIUM	5000000		19000	110000	UG/KG	5000000	
GA-SS-G11-211004	SW6020	CHROMIUM	9800		610	1100	UG/KG	9800	
GA-SS-G11-211004	SW6020	COBALT	8100		36	560	UG/KG	8100	
GA-SS-G11-211004	SW6020	COPPER	17000		320	2200	UG/KG	17000	
GA-SS-G11-211004	SW6020	IRON	32000000		12000	22000	UG/KG	32000000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G11-211004	SW6020	LEAD	25000		73	220	UG/KG	25000	
GA-SS-G11-211004	SW6020	MAGNESIUM	2400000		3700	11000	UG/KG	2400000	
GA-SS-G11-211004	SW6020	MANGANESE	740000		420	830	UG/KG	740000	
GA-SS-G11-211004	SW6020	MOLYBDENUM	80000		48	220	UG/KG	80000	
GA-SS-G11-211004	SW6020	NICKEL	18000		490	2200	UG/KG	18000	
GA-SS-G11-211004	SW6020	POTASSIUM	2000000		17000	110000	UG/KG	2000000	
GA-SS-G11-211004	SW6020	SELENIUM	5900		220	1100	UG/KG	5900	
GA-SS-G11-211004	SW6020	SILVER	51 J		9.2	56	UG/KG	51 J	
GA-SS-G11-211004	SW6020	SODIUM	320000		17000	110000	UG/KG	320000	
GA-SS-G11-211004	SW6020	THALLIUM	320		2.8	11	UG/KG	320	
GA-SS-G11-211004	SW6020	THORIUM	3600		8.9	22	UG/KG	3600	
GA-SS-G11-211004	SW6020	URANIUM	97000		11	22	UG/KG	97000	
GA-SS-G11-211004	SW6020	VANADIUM	43000		140	560	UG/KG	43000	
GA-SS-G11-211004	SW6020	ZINC	56000		4600	11000	UG/KG	56000	
GA-SS-G12-211004		704 Pb-210	14.3		0.2	0.2	pCi/g	14.3	
GA-SS-G12-211004		713 Cs-137	-0.03 U,G		0.37	0.37	pCi/g	0.37 UJ	
GA-SS-G12-211004		713 K-40	16.5 G		3.6	3.6	pCi/g	16.5 J	
GA-SS-G12-211004		713 Ra-226	39.7 G		1	1	pCi/g	39.7 J	
GA-SS-G12-211004		713 Ra-228	1.04 U,G		1.43	1.43	pCi/g	1.43 UJ	
GA-SS-G12-211004		714 Po-210	15.6		0.1	0.1	pCi/g	15.6	
GA-SS-G12-211004		714 Th-230	31.6 M3		0.1	0.1	pCi/g	31.6	
GA-SS-G12-211004		714 Th-232	0.96		0.05	0.05	pCi/g	0.96	
GA-SS-G12-211004		714 U-234	18 M3		0.1	0.1	pCi/g	18	
GA-SS-G12-211004		714 U-235	1.1		0.03	0.03	pCi/g	1.1	
GA-SS-G12-211004		714 U-238	18.5		0.1	0.1	pCi/g	18.5	
GA-SS-G12-211004	SW6020	ALUMINUM	6000000		7200	17000	UG/KG	6000000	
GA-SS-G12-211004	SW6020	ANTIMONY	250		20	110	UG/KG	250	
GA-SS-G12-211004	SW6020	ARSENIC	42000		54	220	UG/KG	42000	
GA-SS-G12-211004	SW6020	BARIUM	180000		250	550	UG/KG	180000	
GA-SS-G12-211004	SW6020	BERYLLIUM	690		5.5	55	UG/KG	690	
GA-SS-G12-211004	SW6020	CADMIUM	400		24	220	UG/KG	400	
GA-SS-G12-211004	SW6020	CALCIUM	10000000		19000	110000	UG/KG	10000000	
GA-SS-G12-211004	SW6020	CHROMIUM	9000		610	1100	UG/KG	9000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G12-211004	SW6020	COBALT	6800		35	550	UG/KG	6800	
GA-SS-G12-211004	SW6020	COPPER	15000		320	2200	UG/KG	15000	
GA-SS-G12-211004	SW6020	IRON	15000000		12000	22000	UG/KG	15000000	
GA-SS-G12-211004	SW6020	LEAD	13000		73	220	UG/KG	13000	
GA-SS-G12-211004	SW6020	MAGNESIUM	3900000		3700	11000	UG/KG	3900000	
GA-SS-G12-211004	SW6020	MANGANESE	300000		420	830	UG/KG	300000	
GA-SS-G12-211004	SW6020	MOLYBDENUM	31000		48	220	UG/KG	31000	
GA-SS-G12-211004	SW6020	NICKEL	14000		490	2200	UG/KG	14000	
GA-SS-G12-211004	SW6020	POTASSIUM	1800000		17000	110000	UG/KG	1800000	
GA-SS-G12-211004	SW6020	SELENIUM	2900		220	1100	UG/KG	2900	
GA-SS-G12-211004	SW6020	SILVER	53 J		9.2	55	UG/KG	53 J	
GA-SS-G12-211004	SW6020	SODIUM	290000		17000	110000	UG/KG	290000	
GA-SS-G12-211004	SW6020	THALLIUM	200		2.8	11	UG/KG	200	
GA-SS-G12-211004	SW6020	THORIUM	3800		8.9	22	UG/KG	3800	
GA-SS-G12-211004	SW6020	URANIUM	45000		11	22	UG/KG	45000	
GA-SS-G12-211004	SW6020	VANADIUM	17000		140	550	UG/KG	17000	
GA-SS-G12-211004	SW6020	ZINC	45000		4500	11000	UG/KG	45000	
GA-SS-G13-211004		704 Pb-210	33.5		0.2	0.2	pCi/g	33.5 J-	
GA-SS-G13-211004		713 Cs-137	-0.24 U,M,G		0.74	0.74	pCi/g	0.74 UJ	
GA-SS-G13-211004		713 K-40	16.3 G		6.4	6.4	pCi/g	16.3 J	
GA-SS-G13-211004		713 Ra-226	74.9 M3,G		1.3	1.3	pCi/g	74.9 J	
GA-SS-G13-211004		713 Ra-228	1 U,G		1.7	1.7	pCi/g	1.7 UJ	
GA-SS-G13-211004		714 Po-210	33.1		0.1	0.1	pCi/g	33.1	
GA-SS-G13-211004		714 Th-230	62 M3		0	0	pCi/g	62	
GA-SS-G13-211004		714 Th-232	0.81		0.06	0.06	pCi/g	0.81	
GA-SS-G13-211004		714 U-234	42.5		0.1	0.1	pCi/g	42.5	
GA-SS-G13-211004		714 U-235	2.25		0.09	0.09	pCi/g	2.25	
GA-SS-G13-211004		714 U-238	45.6		0.1	0.1	pCi/g	45.6	
GA-SS-G13-211004	SW6020	ALUMINUM	7700000		7400	17000	UG/KG	7700000	
GA-SS-G13-211004	SW6020	ANTIMONY	270		21	110	UG/KG	270	
GA-SS-G13-211004	SW6020	ARSENIC	97000		56	230	UG/KG	97000	
GA-SS-G13-211004	SW6020	BARIUM	190000		260	570	UG/KG	190000	
GA-SS-G13-211004	SW6020	BERYLLIUM	1000		5.7	57	UG/KG	1000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G13-211004	SW6020	CADMIUM	520		25	230	UG/KG	520	
GA-SS-G13-211004	SW6020	CALCIUM	6500000		19000	110000	UG/KG	6500000	
GA-SS-G13-211004	SW6020	CHROMIUM	11000		630	1100	UG/KG	11000	
GA-SS-G13-211004	SW6020	COBALT	6900		37	570	UG/KG	6900	
GA-SS-G13-211004	SW6020	COPPER	13000		330	2300	UG/KG	13000	
GA-SS-G13-211004	SW6020	IRON	16000000		13000	23000	UG/KG	16000000	
GA-SS-G13-211004	SW6020	LEAD	16000		76	230	UG/KG	16000	
GA-SS-G13-211004	SW6020	MAGNESIUM	2700000		3800	11000	UG/KG	2700000	
GA-SS-G13-211004	SW6020	MANGANESE	370000		440	860	UG/KG	370000	
GA-SS-G13-211004	SW6020	MOLYBDENUM	90000		49	230	UG/KG	90000	
GA-SS-G13-211004	SW6020	NICKEL	17000		500	2300	UG/KG	17000	
GA-SS-G13-211004	SW6020	POTASSIUM	2700000		17000	110000	UG/KG	2700000	
GA-SS-G13-211004	SW6020	SELENIUM	3900		230	1100	UG/KG	3900	
GA-SS-G13-211004	SW6020	SILVER	56 J		9.5	57	UG/KG	56 J	
GA-SS-G13-211004	SW6020	SODIUM	360000		17000	110000	UG/KG	360000	
GA-SS-G13-211004	SW6020	THALLIUM	260		2.9	11	UG/KG	260	
GA-SS-G13-211004	SW6020	THORIUM	3100		9.2	23	UG/KG	3100	
GA-SS-G13-211004	SW6020	URANIUM	110000		11	23	UG/KG	110000	
GA-SS-G13-211004	SW6020	VANADIUM	19000		150	570	UG/KG	19000	
GA-SS-G13-211004	SW6020	ZINC	48000		4700	11000	UG/KG	48000	
GA-SS-G14-211004		704 Pb-210	22.5		0.2	0.2	pCi/g	22.5	
GA-SS-G14-211004		713 Cs-137	0.25 G		0.25	0.25	pCi/g	0.25 J	
GA-SS-G14-211004		713 K-40	16.6 G		4.8	4.8	pCi/g	16.6 J	
GA-SS-G14-211004		713 Ra-226	48.8 M3,G		1.1	1.1	pCi/g	48.8 J	
GA-SS-G14-211004		713 Ra-228	0.81 U,G		1.79	1.79	pCi/g	1.79 UJ	
GA-SS-G14-211004		714 Po-210	22.6		0.1	0.1	pCi/g	22.6	
GA-SS-G14-211004		714 Th-230	43.8 M3		0.1	0.1	pCi/g	43.8	
GA-SS-G14-211004		714 Th-232	1.07		0.01	0.01	pCi/g	1.07	
GA-SS-G14-211004		714 U-234	30.4		0.1	0.1	pCi/g	30.4	
GA-SS-G14-211004		714 U-235	1.53		0.06	0.06	pCi/g	1.53	
GA-SS-G14-211004		714 U-238	28.8		0	0	pCi/g	28.8	
GA-SS-G14-211004	SW6020	ALUMINUM	6400000		7400	17000	UG/KG	6400000	
GA-SS-G14-211004	SW6020	ANTIMONY	540		21	110	UG/KG	540	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G14-211004	SW6020	ARSENIC	74000		56	230	UG/KG	74000	
GA-SS-G14-211004	SW6020	BARIUM	290000		260	570	UG/KG	290000	
GA-SS-G14-211004	SW6020	BERYLLIUM	1000		5.7	57	UG/KG	1000	
GA-SS-G14-211004	SW6020	CADMIUM	510		25	230	UG/KG	510	
GA-SS-G14-211004	SW6020	CALCIUM	8300000		19000	110000	UG/KG	8300000	
GA-SS-G14-211004	SW6020	CHROMIUM	9300		630	1100	UG/KG	9300	
GA-SS-G14-211004	SW6020	COBALT	7000		36	570	UG/KG	7000	
GA-SS-G14-211004	SW6020	COPPER	19000		330	2300	UG/KG	19000	
GA-SS-G14-211004	SW6020	IRON	20000000		13000	23000	UG/KG	20000000	
GA-SS-G14-211004	SW6020	LEAD	28000		75	230	UG/KG	28000	
GA-SS-G14-211004	SW6020	MAGNESIUM	2600000		3800	11000	UG/KG	2600000	
GA-SS-G14-211004	SW6020	MANGANESE	550000		430	860	UG/KG	550000	
GA-SS-G14-211004	SW6020	MOLYBDENUM	49000		49	230	UG/KG	49000	
GA-SS-G14-211004	SW6020	NICKEL	14000		500	2300	UG/KG	14000	
GA-SS-G14-211004	SW6020	POTASSIUM	2200000		17000	110000	UG/KG	2200000	
GA-SS-G14-211004	SW6020	SELENIUM	4000		230	1100	UG/KG	4000	
GA-SS-G14-211004	SW6020	SILVER	50 J		9.5	57	UG/KG	50 J	
GA-SS-G14-211004	SW6020	SODIUM	200000		17000	110000	UG/KG	200000	
GA-SS-G14-211004	SW6020	THALLIUM	180		2.9	11	UG/KG	180	
GA-SS-G14-211004	SW6020	THORIUM	2700		9.1	23	UG/KG	2700	
GA-SS-G14-211004	SW6020	URANIUM	78000		11	23	UG/KG	78000	
GA-SS-G14-211004	SW6020	VANADIUM	28000		150	570	UG/KG	28000	
GA-SS-G14-211004	SW6020	ZINC	60000		4700	11000	UG/KG	60000	
GA-SS-G15-211004	SW6020	ALUMINUM	5900000		7000	16000	UG/KG	5900000	
GA-SS-G15-211004	SW6020	ANTIMONY	670		19	110	UG/KG	670	
GA-SS-G15-211004	SW6020	ARSENIC	110000		53	210	UG/KG	110000	
GA-SS-G15-211004	SW6020	BARIUM	200000		250	540	UG/KG	200000	
GA-SS-G15-211004	SW6020	BERYLLIUM	1200		5.4	54	UG/KG	1200	
GA-SS-G15-211004	SW6020	CADMIUM	630		24	210	UG/KG	630	
GA-SS-G15-211004	SW6020	CALCIUM	3000000		18000	110000	UG/KG	3000000	
GA-SS-G15-211004	SW6020	CHROMIUM	13000		590	1100	UG/KG	13000	
GA-SS-G15-211004	SW6020	COBALT	7900		34	540	UG/KG	7900	
GA-SS-G15-211004	SW6020	COPPER	14000		310	2100	UG/KG	14000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G15-211004	SW6020	IRON	63000000		120000	210000	UG/KG	63000000	
GA-SS-G15-211004	SW6020	LEAD	13000		71	210	UG/KG	13000	
GA-SS-G15-211004	SW6020	MAGNESIUM	2300000		3500	11000	UG/KG	2300000	
GA-SS-G15-211004	SW6020	MANGANESE	990000		410	810	UG/KG	990000	
GA-SS-G15-211004	SW6020	MOLYBDENUM	99000		46	210	UG/KG	99000	
GA-SS-G15-211004	SW6020	NICKEL	18000		470	2100	UG/KG	18000	
GA-SS-G15-211004	SW6020	POTASSIUM	2100000		16000	110000	UG/KG	2100000	
GA-SS-G15-211004	SW6020	SELENIUM	5500		210	1100	UG/KG	5500	
GA-SS-G15-211004	SW6020	SILVER	49 J		8.9	54	UG/KG	49 J	
GA-SS-G15-211004	SW6020	SODIUM	140000		16000	110000	UG/KG	140000	
GA-SS-G15-211004	SW6020	THALLIUM	350		2.7	11	UG/KG	350	
GA-SS-G15-211004	SW6020	THORIUM	3500		8.6	21	UG/KG	3500	
GA-SS-G15-211004	SW6020	URANIUM	110000		10	21	UG/KG	110000	
GA-SS-G15-211004	SW6020	VANADIUM	54000		140	540	UG/KG	54000	
GA-SS-G15-211004	SW6020	ZINC	52000		4400	11000	UG/KG	52000	
GA-SS-G16-211004		704 Pb-210	10		0.2	0.2	pCi/g	10 J-	
GA-SS-G16-211004		713 Cs-137	0.04 U,M,G		0.59	0.59	pCi/g	0.59 UJ	
GA-SS-G16-211004		713 K-40	11.8 G		4.1	4.1	pCi/g	11.8 J	
GA-SS-G16-211004		713 Ra-226	26.7 M3,G		1	1	pCi/g	26.7 J	
GA-SS-G16-211004		713 Ra-228	0.7 U,G		1.8	1.8	pCi/g	1.8 UJ	
GA-SS-G16-211004		714 Po-210	9.1		0	0	pCi/g	9.1	
GA-SS-G16-211004		714 Th-230	25.1 M3		0.1	0.1	pCi/g	25.1	
GA-SS-G16-211004		714 Th-232	1.02		0.04	0.04	pCi/g	1.02	
GA-SS-G16-211004		714 U-234	20.8 M3		0.1	0.1	pCi/g	20.8	
GA-SS-G16-211004		714 U-235	1.17		0.08	0.08	pCi/g	1.17	
GA-SS-G16-211004		714 U-238	21.5		0.1	0.1	pCi/g	21.5	
GA-SS-G16-211004	SW6020	ALUMINUM	5100000		7000	16000	UG/KG	5100000	
GA-SS-G16-211004	SW6020	ANTIMONY	2500		19	110	UG/KG	2500	
GA-SS-G16-211004	SW6020	ARSENIC	120000		53	210	UG/KG	120000	
GA-SS-G16-211004	SW6020	BARIUM	140000		250	540	UG/KG	140000	
GA-SS-G16-211004	SW6020	BERYLLIUM	760		5.4	54	UG/KG	760	
GA-SS-G16-211004	SW6020	CADMIUM	470		24	210	UG/KG	470	
GA-SS-G16-211004	SW6020	CALCIUM	1800000		18000	110000	UG/KG	1800000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G16-211004	SW6020	CHROMIUM	9700		590	1100	UG/KG	9700	
GA-SS-G16-211004	SW6020	COBALT	9500		34	540	UG/KG	9500	
GA-SS-G16-211004	SW6020	COPPER	12000		310	2100	UG/KG	12000	
GA-SS-G16-211004	SW6020	IRON	48000000		12000	21000	UG/KG	48000000	
GA-SS-G16-211004	SW6020	LEAD	17000		71	210	UG/KG	17000	
GA-SS-G16-211004	SW6020	MAGNESIUM	1900000		3500	11000	UG/KG	1900000	
GA-SS-G16-211004	SW6020	MANGANESE	620000		410	810	UG/KG	620000	
GA-SS-G16-211004	SW6020	MOLYBDENUM	62000		46	210	UG/KG	62000	
GA-SS-G16-211004	SW6020	NICKEL	18000		470	2100	UG/KG	18000	
GA-SS-G16-211004	SW6020	POTASSIUM	1600000		16000	110000	UG/KG	1600000	
GA-SS-G16-211004	SW6020	SELENIUM	4100		210	1100	UG/KG	4100	
GA-SS-G16-211004	SW6020	SILVER	54 J		8.9	54	UG/KG	54 J	
GA-SS-G16-211004	SW6020	SODIUM	110000		16000	110000	UG/KG	110000	
GA-SS-G16-211004	SW6020	THALLIUM	170		2.7	11	UG/KG	170	
GA-SS-G16-211004	SW6020	THORIUM	2600		8.6	21	UG/KG	2600	
GA-SS-G16-211004	SW6020	URANIUM	49000		10	21	UG/KG	49000	
GA-SS-G16-211004	SW6020	VANADIUM	33000		140	540	UG/KG	33000	
GA-SS-G16-211004	SW6020	ZINC	53000		4400	11000	UG/KG	53000	
GA-SS-G17-211004		704 Pb-210	15.7		0.2	0.2	pCi/g	15.7 J-	
GA-SS-G17-211004		713 Cs-137	0.41 U,M,G		0.64	0.64	pCi/g	0.64 UJ	
GA-SS-G17-211004		713 K-40	15.9 G		7.8	7.8	pCi/g	15.9 J	
GA-SS-G17-211004		713 Ra-226	58.2 M3,G		1.4	1.4	pCi/g	58.2 J	
GA-SS-G17-211004		713 Ra-228	1.04 U,G		1.55	1.55	pCi/g	1.55 UJ	
GA-SS-G17-211004		714 Po-210	15.5		0.1	0.1	pCi/g	15.5	
GA-SS-G17-211004		714 Th-230	41.9 M3		0.1	0.1	pCi/g	41.9	
GA-SS-G17-211004		714 Th-232	0.87		0.04	0.04	pCi/g	0.87	
GA-SS-G17-211004		714 U-234	38.2		0.1	0.1	pCi/g	38.2	
GA-SS-G17-211004		714 U-235	1.64		0.06	0.06	pCi/g	1.64	
GA-SS-G17-211004		714 U-238	39.1		0	0	pCi/g	39.1	
GA-SS-G17-211004	SW6020	ALUMINUM	7100000		7000	16000	UG/KG	7100000	
GA-SS-G17-211004	SW6020	ANTIMONY	560		19	110	UG/KG	560	
GA-SS-G17-211004	SW6020	ARSENIC	74000		53	210	UG/KG	74000	
GA-SS-G17-211004	SW6020	BARIUM	200000		250	540	UG/KG	200000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G17-211004	SW6020	BERYLLIUM	870		5.4	54	UG/KG	870	
GA-SS-G17-211004	SW6020	CADMIUM	490		24	210	UG/KG	490	
GA-SS-G17-211004	SW6020	CALCIUM	4900000		18000	110000	UG/KG	4900000	
GA-SS-G17-211004	SW6020	CHROMIUM	11000		590	1100	UG/KG	11000	
GA-SS-G17-211004	SW6020	COBALT	7700		34	540	UG/KG	7700	
GA-SS-G17-211004	SW6020	COPPER	13000		310	2100	UG/KG	13000	
GA-SS-G17-211004	SW6020	IRON	22000000		12000	21000	UG/KG	22000000	
GA-SS-G17-211004	SW6020	LEAD	13000		71	210	UG/KG	13000	
GA-SS-G17-211004	SW6020	MAGNESIUM	2600000		3500	11000	UG/KG	2600000	
GA-SS-G17-211004	SW6020	MANGANESE	500000		410	800	UG/KG	500000	
GA-SS-G17-211004	SW6020	MOLYBDENUM	67000		46	210	UG/KG	67000	
GA-SS-G17-211004	SW6020	NICKEL	15000		470	2100	UG/KG	15000	
GA-SS-G17-211004	SW6020	POTASSIUM	2200000		16000	110000	UG/KG	2200000	
GA-SS-G17-211004	SW6020	SELENIUM	4900		210	1100	UG/KG	4900	
GA-SS-G17-211004	SW6020	SILVER	44 J		8.9	54	UG/KG	44 J	
GA-SS-G17-211004	SW6020	SODIUM	300000		16000	110000	UG/KG	300000	
GA-SS-G17-211004	SW6020	THALLIUM	230		2.7	11	UG/KG	230	
GA-SS-G17-211004	SW6020	THORIUM	3600		8.6	21	UG/KG	3600	
GA-SS-G17-211004	SW6020	URANIUM	95000		10	21	UG/KG	95000	
GA-SS-G17-211004	SW6020	VANADIUM	27000		140	540	UG/KG	27000	
GA-SS-G17-211004	SW6020	ZINC	52000		4400	11000	UG/KG	52000	
GA-SS-G18-211004		704 Pb-210	16.1		0.2	0.2	pCi/g	16.1 J-	
GA-SS-G18-211004		713 Cs-137	-0.2 U,M,G		0.56	0.56	pCi/g	0.56 UJ	
GA-SS-G18-211004		713 K-40	13.4 G		6.5	6.5	pCi/g	13.4 J	
GA-SS-G18-211004		713 Ra-226	34.1 M3,G		1.2	1.2	pCi/g	34.1 J	
GA-SS-G18-211004		713 Ra-228	1.3 U,G		1.8	1.8	pCi/g	1.8 UJ	
GA-SS-G18-211004		714 Po-210	15.8		0.1	0.1	pCi/g	15.8	
GA-SS-G18-211004		714 Th-230	34.6 M3		0.1	0.1	pCi/g	34.6	
GA-SS-G18-211004		714 Th-232	0.79		0.01	0.01	pCi/g	0.79	
GA-SS-G18-211004		714 U-234	34.6		0.1	0.1	pCi/g	34.6	
GA-SS-G18-211004		714 U-235	1.75		0.07	0.07	pCi/g	1.75	
GA-SS-G18-211004		714 U-238	35		0.1	0.1	pCi/g	35	
GA-SS-G18-211004	SW6020	ALUMINUM	6100000		7000	16000	UG/KG	6100000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G18-211004	SW6020	ANTIMONY	630		20	110	UG/KG	630	
GA-SS-G18-211004	SW6020	ARSENIC	67000		53	220	UG/KG	67000	
GA-SS-G18-211004	SW6020	BARIUM	190000		250	540	UG/KG	190000	
GA-SS-G18-211004	SW6020	BERYLLIUM	810		5.4	54	UG/KG	810	
GA-SS-G18-211004	SW6020	CADMIUM	480		24	220	UG/KG	480	
GA-SS-G18-211004	SW6020	CALCIUM	3500000		18000	110000	UG/KG	3500000	
GA-SS-G18-211004	SW6020	CHROMIUM	11000		600	1100	UG/KG	11000	
GA-SS-G18-211004	SW6020	COBALT	8500		35	540	UG/KG	8500	
GA-SS-G18-211004	SW6020	COPPER	13000		310	2200	UG/KG	13000	
GA-SS-G18-211004	SW6020	IRON	22000000		12000	22000	UG/KG	22000000	
GA-SS-G18-211004	SW6020	LEAD	14000		72	220	UG/KG	14000	
GA-SS-G18-211004	SW6020	MAGNESIUM	2500000		3600	11000	UG/KG	2500000	
GA-SS-G18-211004	SW6020	MANGANESE	510000		410	810	UG/KG	510000	
GA-SS-G18-211004	SW6020	MOLYBDENUM	42000		47	220	UG/KG	42000	
GA-SS-G18-211004	SW6020	NICKEL	14000		480	2200	UG/KG	14000	
GA-SS-G18-211004	SW6020	POTASSIUM	1900000		16000	110000	UG/KG	1900000	
GA-SS-G18-211004	SW6020	SELENIUM	4800		220	1100	UG/KG	4800	
GA-SS-G18-211004	SW6020	SILVER	39 J		9	54	UG/KG	39 J	
GA-SS-G18-211004	SW6020	SODIUM	510000		16000	110000	UG/KG	510000	
GA-SS-G18-211004	SW6020	THALLIUM	210		2.7	11	UG/KG	210	
GA-SS-G18-211004	SW6020	THORIUM	3100		8.7	22	UG/KG	3100	
GA-SS-G18-211004	SW6020	URANIUM	87000		10	22	UG/KG	87000	
GA-SS-G18-211004	SW6020	VANADIUM	27000		140	540	UG/KG	27000	
GA-SS-G18-211004	SW6020	ZINC	56000		4400	11000	UG/KG	56000	
GA-SS-G19-211004		704 Pb-210	24.7		0.2	0.2	pCi/g	24.7	
GA-SS-G19-211004		713 Cs-137	-0.03 U,M,G		0.72	0.72	pCi/g	0.72 UJ	
GA-SS-G19-211004		713 K-40	13.7 G		4.7	4.7	pCi/g	13.7 J	
GA-SS-G19-211004		713 Ra-226	80 M3,G		1.4	1.4	pCi/g	80 J	
GA-SS-G19-211004		713 Ra-228	0.8 U,G		1.9	1.9	pCi/g	1.9 UJ	
GA-SS-G19-211004		714 Po-210	25.6		0.1	0.1	pCi/g	25.6	
GA-SS-G19-211004		714 Th-230	68 M3		0	0	pCi/g	68	
GA-SS-G19-211004		714 Th-232	0.97		0.04	0.04	pCi/g	0.97	
GA-SS-G19-211004		714 U-234	39.3		0.1	0.1	pCi/g	39.3	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110168

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-G19-211004		714 U-235	1.87		0.06	0.06	pCi/g	1.87	
GA-SS-G19-211004		714 U-238	40.7		0.1	0.1	pCi/g	40.7	
GA-SS-G19-211004	SW6020	ALUMINUM	6200000		7000	16000	UG/KG	6200000	
GA-SS-G19-211004	SW6020	ANTIMONY	360		19	110	UG/KG	360	
GA-SS-G19-211004	SW6020	ARSENIC	87000		53	220	UG/KG	87000	
GA-SS-G19-211004	SW6020	BARIUM	210000		250	540	UG/KG	210000	
GA-SS-G19-211004	SW6020	BERYLLIUM	930		5.4	54	UG/KG	930	
GA-SS-G19-211004	SW6020	CADMIUM	550		24	220	UG/KG	550	
GA-SS-G19-211004	SW6020	CALCIUM	8900000		18000	110000	UG/KG	8900000	J
GA-SS-G19-211004	SW6020	CHROMIUM	10000		590	1100	UG/KG	10000	
GA-SS-G19-211004	SW6020	COBALT	7400		35	540	UG/KG	7400	
GA-SS-G19-211004	SW6020	COPPER	13000		310	2200	UG/KG	13000	
GA-SS-G19-211004	SW6020	IRON	19000000		12000	22000	UG/KG	19000000	
GA-SS-G19-211004	SW6020	LEAD	15000		71	220	UG/KG	15000	
GA-SS-G19-211004	SW6020	MAGNESIUM	3700000		3600	11000	UG/KG	3700000	
GA-SS-G19-211004	SW6020	MANGANESE	370000		410	810	UG/KG	370000	
GA-SS-G19-211004	SW6020	MOLYBDENUM	51000		46	220	UG/KG	51000	
GA-SS-G19-211004	SW6020	NICKEL	15000		470	2200	UG/KG	15000	
GA-SS-G19-211004	SW6020	POTASSIUM	2000000		16000	110000	UG/KG	2000000	
GA-SS-G19-211004	SW6020	SELENIUM	5700		220	1100	UG/KG	5700	
GA-SS-G19-211004	SW6020	SILVER	53 J		8.9	54	UG/KG	53 J	
GA-SS-G19-211004	SW6020	SODIUM	310000		16000	110000	UG/KG	310000	
GA-SS-G19-211004	SW6020	THALLIUM	240		2.7	11	UG/KG	240	
GA-SS-G19-211004	SW6020	THORIUM	3600		8.6	22	UG/KG	3600	
GA-SS-G19-211004	SW6020	URANIUM	100000		10	22	UG/KG	100000	
GA-SS-G19-211004	SW6020	VANADIUM	34000		140	540	UG/KG	34000	
GA-SS-G19-211004	SW6020	ZINC	51000		4400	11000	UG/KG	51000	

DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Site Name	Griffin Ashing Site	TO/TOLIN No.	2071-2108-05
Document Tracking No.	0505	Technical Reviewer (signature and date)	<i>Harry N. Ellis III</i> 8 December 2021
Data Reviewer (signature and date)	<i>Carol Smith</i> 12/3/2021	Laboratory	ALS Environmental – Fort Collins, CO
Laboratory Report No.	2110170		
Analyses	Gamma emitting radionuclides by modified EPA Method 901.1, isotopic lead, isotopic polonium, isotopic thorium, and isotopic uranium by ASTM method D3972, and metals by SW-846 Method 6020B		
Samples and Matrix	Twenty soil samples		
Collection Date(s)	October 4 and 5, 2021		
Field Duplicate Pairs	GA-SS-G19-211004 (reported in ALS Report No. 2110168) and GA-SS-G19-211004-DUP GA-SS-G22-211004 and GA-SS-G22-211004-DUP GA-SS-TS04-211005 and GA-SS-TS04-211005-DUP (reported in ALS Report No. 2110173)		
Field QC Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 2B validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* (May 2021), and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection of the data was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Method blanks:

Within Criteria	Exceedance/Notes
N	The U-234 activity level in the associated method blank was above the instrument minimum detectable concentration (MDC), but below the requested MDC. There was no impact to the associated U-234 results. Copper was found in the associated method blank at a concentration greater than the method detection limit (MDL), but less than reporting limit (RL). There was no impact to the associated copper results.

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
N	<p>The Th-229 tracer percent recovery (%R) in GA-SS-G19-211004-DUP and the U-232 tracer %Rs in GA-SS-TS01-211005 and GA-SS-TS03-211005 were below the lower control limit (LCL). There was adequate spectral quality for accurate quantification of the associated target nuclides, Th-230, Th-232, U-234, U-235, and U-238. The Th-230 and Th-232 results in GA-SS-G19-211004-DUP and the U-234, U-235, and U-238 results in GA-SS-TS01-211005 and GA-SS-TS03-211005 were qualified as estimated, potentially biased low (flagged J-).</p> <p>In the isotopic lead analysis, ICP-AES measurement of lead concentrations prior to chemical separation for samples GA-SS-G19-211004-DUP, GA-SS-G20-211004, GA-SS-G28-211004, GA-SS-TS03-211005, and GA-SS-TS05-211005 showed concentrations less than the amount known to have been added to the samples in the form of lead carrier. To minimize the potential for low bias, the laboratory used the known concentration of the carrier in the chemical yield calculations. The reported Pb-210 TPU values for these samples may not reflect the additional uncertainty imparted in the pre-separation ICP measurement. As a result, the Pb-210 results for GA-SS-G19-211004-DUP, GA-SS-G20-211004, GA-SS-G28-211004, GA-SS-TS03-211005, and GA-SS-TS05-211005 were qualified as estimated, potentially biased low (flagged J-).</p>

MS/MSDs:

Within Criteria	Exceedance/Notes
N	<p><u>GA-SS-G21-211004</u>: The matrix spike (MS) and/or matrix spike duplicate (MSD) %Rs for aluminum, barium, calcium, iron, manganese, and uranium were outside of the acceptance limits. However, qualification of data for analytes was not required, as the parent sample results were greater than four times (4x) the spike added.</p> <p>The average matrix spike/matrix spike duplicate (MS/MSD) %Rs for antimony, magnesium, and vanadium were less than the lower acceptance limits. The antimony, magnesium, and vanadium detected results were qualified as estimated, potentially biased low (flagged J-).</p> <p>The average MS/MSD %Rs for arsenic and lead were greater than the upper acceptance limits. As a result, arsenic and lead were qualified as estimated, potentially biased high (flagged J+).</p> <p>The MS/MSD relative percent differences (RPDs) for arsenic, calcium, manganese, sodium, and vanadium were greater than the acceptance limits. The detected results for calcium, manganese, and sodium were qualified as estimated (flagged J). The results for arsenic and vanadium were previously qualified based on MS/MSD %Rs.</p>

DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Post digestion spikes:

Within Criteria	Exceedance/Notes
Y	

Serial dilutions:

Within Criteria	Exceedance/Notes
Y	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	

Field duplicates:

Within Criteria	Exceedance/Notes
N	<p><u>GA-SS-G19-211004</u> (reported in ALS Report No. 2110168) and <u>GA-SS-G19-211004-DUP</u>: The relative percent difference between the parent sample result and the field duplicate result for calcium was outside criteria. The calcium results for both samples were qualified as estimated (flagged J).</p> <p><u>GA-SS-TS04-211005</u> and <u>GA-SS-TS04-211005-DUP</u> (reported in ALS Report No. 2110173): The relative percent difference (RPD) between the parent sample result and the field duplicate result for molybdenum was outside acceptance criteria. The molybdenum results for both samples were qualified as estimated (flagged J).</p>

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	Cs-137, K-40, Ra-226, and Ra-228 results for all samples, except GA-SS-G21-211004 were qualified "G" by the laboratory to indicate a density more than 15% different in the sample than the LCS. As a result, the Cs-137, K-40, Ra-226, and Ra-228 results for these samples were qualified as estimated (flagged J/UJ).



DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT

Sample dilutions:

Within Criteria	Exceedance/Notes
N	According to laboratory practice, all samples analyzed for metals by method SW-846 6020B were analyzed at a 10-fold dilution. Additional dilutions of 100-fold were required for uranium in GA-SS-G22-211004, GA-SS-G22-211004-DUP, GA-SS-G23-211004, GA-SS-G24-211004, GA-SS-G25-211004, GA-SS-G28-211004, GA-SS-TS01-211005, GA-SS-TS02-211005, GA-SS-TS03-211005, GA-SS-TS06-211005, and GA-SS-TS07-211005 due to levels exceeding the calibration range of the instrument. MDLs and RLs were adjusted accordingly.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
N	<p>Metals: Analytes detected at concentrations above the MDL but below the RL were qualified as estimated (flagged J) by the laboratory. Analytes detected at concentrations below the MDL were reported as not detected (flagged U) by the laboratory and were raised to the value of the RL by the data reviewer. MDLs and RLs are provided in the attached analytical data table.</p> <p>Radionuclides and Isotopes: Results are reported according to activity counts for radionuclides and isotopes. The radionuclide and isotope results are reported compared to their MDC. If the activity concentration in a sample is equal to or greater than the MDC, then there is a 95% chance that radioactive material in the sample will be detected. Radionuclides and isotopes detected at concentrations below the MDC were reported as not detected (flagged U) by the laboratory and were raised to the value of the MDC by the data reviewer. The sample-specific MDCs for the radionuclide and isotope samples are provided in the attached analytical data table in the RL column.</p> <p>The requested MDCs for the following radionuclides and isotopes in the samples listed below were not met, but the reported activity was greater than the reported MDCs:</p> <ul style="list-style-type: none"> • Th-230 in all samples and Th-232 in samples GA-SS-TS04-211005 and GA-SS-TS05-211005 • U-234 in samples GA-SS-G24-211004, GA-SS-G25-211004, GA-SS-G28-211004, GA-SS-TS01-211005, GA-SS-TS02-211005, GA-SS-TS03-211005, GA-SS-TS06-211005, and GA-SS-TS07-211005. • U-235 in samples GA-SS-G28-211004, GA-SS-TS01-211005, GA-SS-TS02-211005, GA-SS-TS03-211005, and GA-SS-TS06-211005. • U-238 in samples GA-SS-G28-211004, GA-SS-TS01-211005, GA-SS-TS02-211005, GA-SS-TS03-211005, and GA-SS-TS07-211005. • Ra-226 in all samples, except GA-SS-G21-211004. <p>The requested MDCs for Cs-137 in all samples except GA-SS-G21-211004, GA-SS-G30-211004, and GA-SS-TS05-211005 were not met and the reported activity was less than the reported MDCs (flagged U). As a result, the not-detected Cs-137 results in these samples were qualified as estimated (flagged UJ).</p>

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Other [Software quantitation]:

Within Criteria	Exceedance/Notes
NA	The Cs-137 result in GA-SS-G30-211004 was qualified “NQ” by the laboratory. In cases where there are no peaks found in the search routine, the software performs a net quantification. The lack of energy peaks for Cs-137 indicates that nuclides were not detected at any level above the MDC. As a result, the Cs-137 detect for GA-SS-G30-211004 was qualified as not-detected (flagged UJ), and the MDC was raised to the value reported by the net quantification.

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.



GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110170

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G19-211004-DUP	704	Pb-210	22.8		0.2	0.2 pCi/g	22.8 J-	
GA-SS-G19-211004-DUP	713	Cs-137	-0.16	U,M,G	0.73	0.73 pCi/g	0.73	UJ
GA-SS-G19-211004-DUP	713	K-40	11	G	6.4	6.4 pCi/g	11	J
GA-SS-G19-211004-DUP	713	Ra-226	72	M3,G	1.6	1.6 pCi/g	72	J
GA-SS-G19-211004-DUP	713	Ra-228	0.5	U,G	2.3	2.3 pCi/g	2.3	UJ
GA-SS-G19-211004-DUP	714	Po-210	27.9		0.1	0.1 pCi/g	27.9	
GA-SS-G19-211004-DUP	714	Th-230	64	Y2,M3	0	0 pCi/g	64	J-
GA-SS-G19-211004-DUP	714	Th-232	1.08	Y2	0.02	0.02 pCi/g	1.08	J-
GA-SS-G19-211004-DUP	714	U-234	42.9		0.1	0.1 pCi/g	42.9	
GA-SS-G19-211004-DUP	714	U-235	1.84		0.04	0.04 pCi/g	1.84	
GA-SS-G19-211004-DUP	714	U-238	43.2		0.1	0.1 pCi/g	43.2	
GA-SS-G19-211004-DUP	SW6020	ALUMINUM	6100000		7200	17000 UG/KG	6100000	
GA-SS-G19-211004-DUP	SW6020	ANTIMONY	250		20	110 UG/KG	250	
GA-SS-G19-211004-DUP	SW6020	ARSENIC	110000		54	220 UG/KG	110000	
GA-SS-G19-211004-DUP	SW6020	BARIUM	220000		250	550 UG/KG	220000	
GA-SS-G19-211004-DUP	SW6020	BERYLLIUM	980		5.5	55 UG/KG	980	
GA-SS-G19-211004-DUP	SW6020	CADMIUM	700		24	220 UG/KG	700	
GA-SS-G19-211004-DUP	SW6020	CALCIUM	21000000		19000	110000 UG/KG	21000000	J
GA-SS-G19-211004-DUP	SW6020	CHROMIUM	10000		610	1100 UG/KG	10000	
GA-SS-G19-211004-DUP	SW6020	COBALT	7700		35	550 UG/KG	7700	
GA-SS-G19-211004-DUP	SW6020	COPPER	15000		320	2200 UG/KG	15000	
GA-SS-G19-211004-DUP	SW6020	IRON	21000000		12000	22000 UG/KG	21000000	
GA-SS-G19-211004-DUP	SW6020	LEAD	15000		73	220 UG/KG	15000	
GA-SS-G19-211004-DUP	SW6020	MAGNESIUM	4700000		3600	11000 UG/KG	4700000	
GA-SS-G19-211004-DUP	SW6020	MANGANESE	540000		420	830 UG/KG	540000	
GA-SS-G19-211004-DUP	SW6020	MOLYBDENUM	62000		47	220 UG/KG	62000	
GA-SS-G19-211004-DUP	SW6020	NICKEL	17000		480	2200 UG/KG	17000	
GA-SS-G19-211004-DUP	SW6020	POTASSIUM	2200000		17000	110000 UG/KG	2200000	
GA-SS-G19-211004-DUP	SW6020	SELENIUM	6400		220	1100 UG/KG	6400	
GA-SS-G19-211004-DUP	SW6020	SILVER	55	J	9.1	55 UG/KG	55	J
GA-SS-G19-211004-DUP	SW6020	SODIUM	330000		17000	110000 UG/KG	330000	
GA-SS-G19-211004-DUP	SW6020	THALLIUM	270		2.8	11 UG/KG	270	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110170

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G19-211004-DUP	SW6020	THORIUM	3800		8.8	22 UG/KG	3800	
GA-SS-G19-211004-DUP	SW6020	URANIUM	200000		10	22 UG/KG	200000	
GA-SS-G19-211004-DUP	SW6020	VANADIUM	23000		140	550 UG/KG	23000	
GA-SS-G19-211004-DUP	SW6020	ZINC	53000		4500	11000 UG/KG	53000	
GA-SS-G20-211004	704	Pb-210	12		0.2	0.2 pCi/g	12 J-	
GA-SS-G20-211004	713	Cs-137	-0.3 U,M,G		0.54	0.54 pCi/g	0.54 UJ	
GA-SS-G20-211004	713	K-40	17.6 G		6.8	6.8 pCi/g	17.6 J	
GA-SS-G20-211004	713	Ra-226	35 M3,G		1.2	1.2 pCi/g	35 J	
GA-SS-G20-211004	713	Ra-228	1.63 U,G		1.86	1.86 pCi/g	1.86 UJ	
GA-SS-G20-211004	714	Po-210	12.8		0.1	0.1 pCi/g	12.8	
GA-SS-G20-211004	714	Th-230	27.1 M3		0.2	0.2 pCi/g	27.1	
GA-SS-G20-211004	714	Th-232	0.82		0.09	0.09 pCi/g	0.82	
GA-SS-G20-211004	714	U-234	13.1		0.1	0.1 pCi/g	13.1	
GA-SS-G20-211004	714	U-235	0.68		0.08	0.08 pCi/g	0.68	
GA-SS-G20-211004	714	U-238	13.3		0.1	0.1 pCi/g	13.3	
GA-SS-G20-211004	SW6020	ALUMINUM	6200000		6800	16000 UG/KG	6200000	
GA-SS-G20-211004	SW6020	ANTIMONY	1100		19	100 UG/KG	1100	
GA-SS-G20-211004	SW6020	ARSENIC	69000		51	210 UG/KG	69000	
GA-SS-G20-211004	SW6020	BARIUM	210000		240	520 UG/KG	210000	
GA-SS-G20-211004	SW6020	BERYLLIUM	770		5.2	52 UG/KG	770	
GA-SS-G20-211004	SW6020	CADMIUM	470		23	210 UG/KG	470	
GA-SS-G20-211004	SW6020	CALCIUM	14000000		18000	100000 UG/KG	14000000	
GA-SS-G20-211004	SW6020	CHROMIUM	11000		570	1000 UG/KG	11000	
GA-SS-G20-211004	SW6020	COBALT	8500		33	520 UG/KG	8500	
GA-SS-G20-211004	SW6020	COPPER	20000		300	2100 UG/KG	20000	
GA-SS-G20-211004	SW6020	IRON	19000000		11000	21000 UG/KG	19000000	
GA-SS-G20-211004	SW6020	LEAD	18000		69	210 UG/KG	18000	
GA-SS-G20-211004	SW6020	MAGNESIUM	4900000		3400	10000 UG/KG	4900000	
GA-SS-G20-211004	SW6020	MANGANESE	320000		400	780 UG/KG	320000	
GA-SS-G20-211004	SW6020	MOLYBDENUM	39000		45	210 UG/KG	39000	
GA-SS-G20-211004	SW6020	NICKEL	18000		460	2100 UG/KG	18000	
GA-SS-G20-211004	SW6020	POTASSIUM	1800000		16000	100000 UG/KG	1800000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G20-211004	SW6020	SELENIUM	2800		210	1000 UG/KG	2800	
GA-SS-G20-211004	SW6020	SILVER	65		8.6	52 UG/KG	65	
GA-SS-G20-211004	SW6020	SODIUM	240000		16000	100000 UG/KG	240000	
GA-SS-G20-211004	SW6020	THALLIUM	200		2.6	10 UG/KG	200	
GA-SS-G20-211004	SW6020	THORIUM	4000		8.3	21 UG/KG	4000	
GA-SS-G20-211004	SW6020	URANIUM	33000		9.9	21 UG/KG	33000	
GA-SS-G20-211004	SW6020	VANADIUM	27000		140	520 UG/KG	27000	
GA-SS-G20-211004	SW6020	ZINC	55000		4300	10000 UG/KG	55000	
GA-SS-G21-211004	704	Pb-210	2.82		0.21	0.21 pCi/g	2.82	
GA-SS-G21-211004	713	Cs-137	-0.052	U	0.188	0.188 pCi/g	0.188	U
GA-SS-G21-211004	713	K-40	16.8		2.4	2.4 pCi/g	16.8	
GA-SS-G21-211004	713	Ra-226	7.41		0.47	0.47 pCi/g	7.41	
GA-SS-G21-211004	713	Ra-228	0.59	U	0.66	0.66 pCi/g	0.66	U
GA-SS-G21-211004	714	Po-210	2.88		0.08	0.08 pCi/g	2.88	
GA-SS-G21-211004	714	Th-230	5.36	M3	0.13	0.13 pCi/g	5.36	
GA-SS-G21-211004	714	Th-232	0.44		0.06	0.06 pCi/g	0.44	
GA-SS-G21-211004	714	U-234	4.87		0.07	0.07 pCi/g	4.87	
GA-SS-G21-211004	714	U-234	4.87		0.07	0.07 pCi/g	4.87	
GA-SS-G21-211004	714	U-235	0.23		0.06	0.06 pCi/g	0.23	
GA-SS-G21-211004	714	U-235	0.23		0.06	0.06 pCi/g	0.23	
GA-SS-G21-211004	714	U-238	4.57		0.06	0.06 pCi/g	4.57	
GA-SS-G21-211004	714	U-238	4.57		0.06	0.06 pCi/g	4.57	
GA-SS-G21-211004	SW6020	ALUMINUM	2400000		6300	15000 UG/KG	2400000	
GA-SS-G21-211004	SW6020	ANTIMONY	120	N	17	97 UG/KG	120	J-
GA-SS-G21-211004	SW6020	ARSENIC	25000	N	47	190 UG/KG	25000	J+
GA-SS-G21-211004	SW6020	BARIUM	290000		220	480 UG/KG	290000	
GA-SS-G21-211004	SW6020	BERYLLIUM	410		4.8	48 UG/KG	410	
GA-SS-G21-211004	SW6020	CADMIUM	210		21	190 UG/KG	210	
GA-SS-G21-211004	SW6020	CALCIUM	15000000		16000	97000 UG/KG	15000000	J
GA-SS-G21-211004	SW6020	CHROMIUM	7100		530	970 UG/KG	7100	
GA-SS-G21-211004	SW6020	COBALT	4700		31	480 UG/KG	4700	
GA-SS-G21-211004	SW6020	COPPER	7600		280	1900 UG/KG	7600	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G21-211004	SW6020	IRON	22000000		11000	19000 UG/KG	22000000	
GA-SS-G21-211004	SW6020	LEAD	5800	N	64	190 UG/KG	5800	J+
GA-SS-G21-211004	SW6020	MAGNESIUM	3000000	N	3200	9700 UG/KG	3000000	J-
GA-SS-G21-211004	SW6020	MANGANESE	560000		370	730 UG/KG	560000	J
GA-SS-G21-211004	SW6020	MOLYBDENUM	13000		42	190 UG/KG	13000	
GA-SS-G21-211004	SW6020	NICKEL	9300		430	1900 UG/KG	9300	
GA-SS-G21-211004	SW6020	POTASSIUM	640000		15000	97000 UG/KG	640000	
GA-SS-G21-211004	SW6020	SELENIUM	1600		190	970 UG/KG	1600	
GA-SS-G21-211004	SW6020	SILVER	46	J	8	48 UG/KG	46	J
GA-SS-G21-211004	SW6020	SODIUM	82000	J	15000	97000 UG/KG	82000	J
GA-SS-G21-211004	SW6020	THALLIUM	81		2.4	9.7 UG/KG	81	
GA-SS-G21-211004	SW6020	THORIUM	2500		7.7	19 UG/KG	2500	
GA-SS-G21-211004	SW6020	URANIUM	12000		9.2	19 UG/KG	12000	
GA-SS-G21-211004	SW6020	VANADIUM	23000	N	130	480 UG/KG	23000	J-
GA-SS-G21-211004	SW6020	ZINC	24000		4000	9700 UG/KG	24000	
GA-SS-G22-211004	SW6020	ALUMINUM	7000000		7500	17000 UG/KG	7000000	
GA-SS-G22-211004	SW6020	ANTIMONY	390		21	120 UG/KG	390	
GA-SS-G22-211004	SW6020	ARSENIC	160000		56	230 UG/KG	160000	
GA-SS-G22-211004	SW6020	BARIUM	220000		260	580 UG/KG	220000	
GA-SS-G22-211004	SW6020	BERYLLIUM	1200		5.8	58 UG/KG	1200	
GA-SS-G22-211004	SW6020	CADMIUM	590		25	230 UG/KG	590	
GA-SS-G22-211004	SW6020	CALCIUM	12000000		20000	120000 UG/KG	12000000	
GA-SS-G22-211004	SW6020	CHROMIUM	12000		630	1200 UG/KG	12000	
GA-SS-G22-211004	SW6020	COBALT	8000		37	580 UG/KG	8000	
GA-SS-G22-211004	SW6020	COPPER	16000		330	2300 UG/KG	16000	
GA-SS-G22-211004	SW6020	IRON	18000000		13000	23000 UG/KG	18000000	
GA-SS-G22-211004	SW6020	LEAD	21000		76	230 UG/KG	21000	
GA-SS-G22-211004	SW6020	MAGNESIUM	3600000		3800	12000 UG/KG	3600000	
GA-SS-G22-211004	SW6020	MANGANESE	380000		440	860 UG/KG	380000	
GA-SS-G22-211004	SW6020	MOLYBDENUM	200000		50	230 UG/KG	200000	
GA-SS-G22-211004	SW6020	NICKEL	19000		510	2300 UG/KG	19000	
GA-SS-G22-211004	SW6020	POTASSIUM	2800000		17000	120000 UG/KG	2800000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G22-211004	SW6020	SELENIUM	6900		230	1200 UG/KG	6900	
GA-SS-G22-211004	SW6020	SILVER	53 J		9.6	58 UG/KG	53 J	
GA-SS-G22-211004	SW6020	SODIUM	640000		17000	120000 UG/KG	640000	
GA-SS-G22-211004	SW6020	THALLIUM	410		2.9	12 UG/KG	410	
GA-SS-G22-211004	SW6020	THORIUM	3100		9.2	23 UG/KG	3100	
GA-SS-G22-211004	SW6020	URANIUM	230000		110	230 UG/KG	230000	
GA-SS-G22-211004	SW6020	VANADIUM	28000		150	580 UG/KG	28000	
GA-SS-G22-211004	SW6020	ZINC	48000		4700	12000 UG/KG	48000	
GA-SS-G22-211004-DUP	SW6020	ALUMINUM	7100000		7100	16000 UG/KG	7100000	
GA-SS-G22-211004-DUP	SW6020	ANTIMONY	480		20	110 UG/KG	480	
GA-SS-G22-211004-DUP	SW6020	ARSENIC	160000		53	220 UG/KG	160000	
GA-SS-G22-211004-DUP	SW6020	BARIUM	220000		250	540 UG/KG	220000	
GA-SS-G22-211004-DUP	SW6020	BERYLLIUM	1300		5.4	54 UG/KG	1300	
GA-SS-G22-211004-DUP	SW6020	CADMIUM	630		24	220 UG/KG	630	
GA-SS-G22-211004-DUP	SW6020	CALCIUM	9200000		18000	110000 UG/KG	9200000	
GA-SS-G22-211004-DUP	SW6020	CHROMIUM	11000		600	1100 UG/KG	11000	
GA-SS-G22-211004-DUP	SW6020	COBALT	7800		35	540 UG/KG	7800	
GA-SS-G22-211004-DUP	SW6020	COPPER	16000		320	2200 UG/KG	16000	
GA-SS-G22-211004-DUP	SW6020	IRON	18000000		12000	22000 UG/KG	18000000	
GA-SS-G22-211004-DUP	SW6020	LEAD	20000		72	220 UG/KG	20000	
GA-SS-G22-211004-DUP	SW6020	MAGNESIUM	2800000		3600	11000 UG/KG	2800000	
GA-SS-G22-211004-DUP	SW6020	MANGANESE	350000		410	820 UG/KG	350000	
GA-SS-G22-211004-DUP	SW6020	MOLYBDENUM	220000		47	220 UG/KG	220000	
GA-SS-G22-211004-DUP	SW6020	NICKEL	19000		480	2200 UG/KG	19000	
GA-SS-G22-211004-DUP	SW6020	POTASSIUM	2800000		16000	110000 UG/KG	2800000	
GA-SS-G22-211004-DUP	SW6020	SELENIUM	7400		220	1100 UG/KG	7400	
GA-SS-G22-211004-DUP	SW6020	SILVER	57		9	54 UG/KG	57	
GA-SS-G22-211004-DUP	SW6020	SODIUM	840000		16000	110000 UG/KG	840000	
GA-SS-G22-211004-DUP	SW6020	THALLIUM	410		2.7	11 UG/KG	410	
GA-SS-G22-211004-DUP	SW6020	THORIUM	3300		8.7	22 UG/KG	3300	
GA-SS-G22-211004-DUP	SW6020	URANIUM	250000		100	220 UG/KG	250000	
GA-SS-G22-211004-DUP	SW6020	VANADIUM	24000		140	540 UG/KG	24000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G22-211004-DUP	SW6020	ZINC	51000		4500	11000 UG/KG	51000	
GA-SS-G23-211004	SW6020	ALUMINUM	6600000		7000	16000 UG/KG	6600000	
GA-SS-G23-211004	SW6020	ANTIMONY	410		19	110 UG/KG	410	
GA-SS-G23-211004	SW6020	ARSENIC	250000		52	210 UG/KG	250000	
GA-SS-G23-211004	SW6020	BARIUM	250000		250	540 UG/KG	250000	
GA-SS-G23-211004	SW6020	BERYLLIUM	1400		5.4	54 UG/KG	1400	
GA-SS-G23-211004	SW6020	CADMIUM	1100		24	210 UG/KG	1100	
GA-SS-G23-211004	SW6020	CALCIUM	4600000		18000	110000 UG/KG	4600000	
GA-SS-G23-211004	SW6020	CHROMIUM	12000		590	1100 UG/KG	12000	
GA-SS-G23-211004	SW6020	COBALT	9100		34	540 UG/KG	9100	
GA-SS-G23-211004	SW6020	COPPER	14000		310	2100 UG/KG	14000	
GA-SS-G23-211004	SW6020	IRON	32000000		12000	21000 UG/KG	32000000	
GA-SS-G23-211004	SW6020	LEAD	17000		71	210 UG/KG	17000	
GA-SS-G23-211004	SW6020	MAGNESIUM	2200000		3500	11000 UG/KG	2200000	
GA-SS-G23-211004	SW6020	MANGANESE	570000		410	800 UG/KG	570000	
GA-SS-G23-211004	SW6020	MOLYBDENUM	200000		46	210 UG/KG	200000	
GA-SS-G23-211004	SW6020	NICKEL	20000		470	2100 UG/KG	20000	
GA-SS-G23-211004	SW6020	POTASSIUM	2300000		16000	110000 UG/KG	2300000	
GA-SS-G23-211004	SW6020	SELENIUM	15000		210	1100 UG/KG	15000	
GA-SS-G23-211004	SW6020	SILVER	52 J		8.9	54 UG/KG	52 J	
GA-SS-G23-211004	SW6020	SODIUM	480000		16000	110000 UG/KG	480000	
GA-SS-G23-211004	SW6020	THALLIUM	510		2.7	11 UG/KG	510	
GA-SS-G23-211004	SW6020	THORIUM	3800		8.6	21 UG/KG	3800	
GA-SS-G23-211004	SW6020	URANIUM	490000		100	210 UG/KG	490000	
GA-SS-G23-211004	SW6020	VANADIUM	33000		140	540 UG/KG	33000	
GA-SS-G23-211004	SW6020	ZINC	53000		4400	11000 UG/KG	53000	
GA-SS-G24-211004	704	Pb-210	56		0	0 pCi/g	56	
GA-SS-G24-211004	713	Cs-137	0.2 U,M,G		1.2	1.2 pCi/g	1.2 UJ	
GA-SS-G24-211004	713	K-40	12.4 G		10.3	10.3 pCi/g	12.4 J	
GA-SS-G24-211004	713	Ra-226	201 M3,G		2	2 pCi/g	201 J	
GA-SS-G24-211004	713	Ra-228	0.7 U,G		3.8	3.8 pCi/g	3.8 UJ	
GA-SS-G24-211004	714	Po-210	62		0.1	0.1 pCi/g	62	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G24-211004	714	Th-230	168	M3	0	0 pCi/g	168	
GA-SS-G24-211004	714	Th-232	1.41		0.02	0.02 pCi/g	1.41	
GA-SS-G24-211004	714	U-234	169	M3	0	0 pCi/g	169	
GA-SS-G24-211004	714	U-235	8.1		0.1	0.1 pCi/g	8.1	
GA-SS-G24-211004	714	U-238	172		0	0 pCi/g	172	
GA-SS-G24-211004	SW6020	ALUMINUM	8400000		7500	17000 UG/KG	8400000	
GA-SS-G24-211004	SW6020	ANTIMONY	550		21	120 UG/KG	550	
GA-SS-G24-211004	SW6020	ARSENIC	440000		57	230 UG/KG	440000	
GA-SS-G24-211004	SW6020	BARIUM	440000		270	580 UG/KG	440000	
GA-SS-G24-211004	SW6020	BERYLLIUM	2800		5.8	58 UG/KG	2800	
GA-SS-G24-211004	SW6020	CADMIUM	2200		25	230 UG/KG	2200	
GA-SS-G24-211004	SW6020	CALCIUM	7700000		20000	120000 UG/KG	7700000	
GA-SS-G24-211004	SW6020	CHROMIUM	11000		640	1200 UG/KG	11000	
GA-SS-G24-211004	SW6020	COBALT	13000		37	580 UG/KG	13000	
GA-SS-G24-211004	SW6020	COPPER	15000		340	2300 UG/KG	15000	
GA-SS-G24-211004	SW6020	IRON	26000000		13000	23000 UG/KG	26000000	
GA-SS-G24-211004	SW6020	LEAD	24000		76	230 UG/KG	24000	
GA-SS-G24-211004	SW6020	MAGNESIUM	2000000		3800	12000 UG/KG	2000000	
GA-SS-G24-211004	SW6020	MANGANESE	370000		440	870 UG/KG	370000	
GA-SS-G24-211004	SW6020	MOLYBDENUM	420000		50	230 UG/KG	420000	
GA-SS-G24-211004	SW6020	NICKEL	38000		510	2300 UG/KG	38000	
GA-SS-G24-211004	SW6020	POTASSIUM	2000000		17000	120000 UG/KG	2000000	
GA-SS-G24-211004	SW6020	SELENIUM	30000		230	1200 UG/KG	30000	
GA-SS-G24-211004	SW6020	SILVER	58		9.6	58 UG/KG	58	
GA-SS-G24-211004	SW6020	SODIUM	1800000		17000	120000 UG/KG	1800000	
GA-SS-G24-211004	SW6020	THALLIUM	520		2.9	12 UG/KG	520	
GA-SS-G24-211004	SW6020	THORIUM	4700		9.3	23 UG/KG	4700	
GA-SS-G24-211004	SW6020	URANIUM	860000		110	230 UG/KG	860000	
GA-SS-G24-211004	SW6020	VANADIUM	42000		150	580 UG/KG	42000	
GA-SS-G24-211004	SW6020	ZINC	56000		4700	12000 UG/KG	56000	
GA-SS-G25-211004	704	Pb-210	33.7		0.3	0.3 pCi/g	33.7	
GA-SS-G25-211004	713	Cs-137	-0.18	U,M,G	0.75	0.75 pCi/g	0.75	UJ

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G25-211004	713	K-40	18.5	G	6	6 pCi/g	18.5	J
GA-SS-G25-211004	713	Ra-226	100	M3,G	1	1 pCi/g	100	J
GA-SS-G25-211004	713	Ra-228	1.1	U,G	1.8	1.8 pCi/g	1.8	UJ
GA-SS-G25-211004	714	Po-210	37		0.1	0.1 pCi/g	37	
GA-SS-G25-211004	714	Th-230	94	M3	0	0 pCi/g	94	
GA-SS-G25-211004	714	Th-232	0.87		0.04	0.04 pCi/g	0.87	
GA-SS-G25-211004	714	U-234	93	M3	0	0 pCi/g	93	
GA-SS-G25-211004	714	U-235	5.2		0	0 pCi/g	5.2	
GA-SS-G25-211004	714	U-238	95		0	0 pCi/g	95	
GA-SS-G25-211004	SW6020	ALUMINUM	6600000		7100	16000 UG/KG	6600000	
GA-SS-G25-211004	SW6020	ANTIMONY	290		20	110 UG/KG	290	
GA-SS-G25-211004	SW6020	ARSENIC	150000		54	220 UG/KG	150000	
GA-SS-G25-211004	SW6020	BARIUM	260000		250	550 UG/KG	260000	
GA-SS-G25-211004	SW6020	BERYLLIUM	1100		5.5	55 UG/KG	1100	
GA-SS-G25-211004	SW6020	CADMIUM	820		24	220 UG/KG	820	
GA-SS-G25-211004	SW6020	CALCIUM	5700000		19000	110000 UG/KG	5700000	
GA-SS-G25-211004	SW6020	CHROMIUM	16000		600	1100 UG/KG	16000	
GA-SS-G25-211004	SW6020	COBALT	8200		35	550 UG/KG	8200	
GA-SS-G25-211004	SW6020	COPPER	25000		320	2200 UG/KG	25000	
GA-SS-G25-211004	SW6020	IRON	23000000		12000	22000 UG/KG	23000000	
GA-SS-G25-211004	SW6020	LEAD	16000		72	220 UG/KG	16000	
GA-SS-G25-211004	SW6020	MAGNESIUM	2700000		3600	11000 UG/KG	2700000	
GA-SS-G25-211004	SW6020	MANGANESE	530000		420	820 UG/KG	530000	
GA-SS-G25-211004	SW6020	MOLYBDENUM	110000		47	220 UG/KG	110000	
GA-SS-G25-211004	SW6020	NICKEL	21000		480	2200 UG/KG	21000	
GA-SS-G25-211004	SW6020	POTASSIUM	2500000		16000	110000 UG/KG	2500000	
GA-SS-G25-211004	SW6020	SELENIUM	9000		220	1100 UG/KG	9000	
GA-SS-G25-211004	SW6020	SILVER	67		9.1	55 UG/KG	67	
GA-SS-G25-211004	SW6020	SODIUM	410000		16000	110000 UG/KG	410000	
GA-SS-G25-211004	SW6020	THALLIUM	390		2.7	11 UG/KG	390	
GA-SS-G25-211004	SW6020	THORIUM	3800		8.8	22 UG/KG	3800	
GA-SS-G25-211004	SW6020	URANIUM	240000		100	220 UG/KG	240000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G25-211004	SW6020	VANADIUM	24000		140	550 UG/KG	24000	
GA-SS-G25-211004	SW6020	ZINC	51000		4500	11000 UG/KG	51000	
GA-SS-G26-211004	SW6020	ALUMINUM	6800000		6700	15000 UG/KG	6800000	
GA-SS-G26-211004	SW6020	ANTIMONY	250		19	100 UG/KG	250	
GA-SS-G26-211004	SW6020	ARSENIC	67000		50	210 UG/KG	67000	
GA-SS-G26-211004	SW6020	BARIUM	250000		240	510 UG/KG	250000	
GA-SS-G26-211004	SW6020	BERYLLIUM	840		5.1	51 UG/KG	840	
GA-SS-G26-211004	SW6020	CADMIUM	590		23	210 UG/KG	590	
GA-SS-G26-211004	SW6020	CALCIUM	4600000		17000	100000 UG/KG	4600000	
GA-SS-G26-211004	SW6020	CHROMIUM	11000		570	1000 UG/KG	11000	
GA-SS-G26-211004	SW6020	COBALT	7900		33	510 UG/KG	7900	
GA-SS-G26-211004	SW6020	COPPER	14000		300	2100 UG/KG	14000	
GA-SS-G26-211004	SW6020	IRON	19000000		11000	21000 UG/KG	19000000	
GA-SS-G26-211004	SW6020	LEAD	15000		68	210 UG/KG	15000	
GA-SS-G26-211004	SW6020	MAGNESIUM	2500000		3400	10000 UG/KG	2500000	
GA-SS-G26-211004	SW6020	MANGANESE	570000		390	770 UG/KG	570000	
GA-SS-G26-211004	SW6020	MOLYBDENUM	47000		44	210 UG/KG	47000	
GA-SS-G26-211004	SW6020	NICKEL	15000		450	2100 UG/KG	15000	
GA-SS-G26-211004	SW6020	POTASSIUM	2900000		15000	100000 UG/KG	2900000	
GA-SS-G26-211004	SW6020	SELENIUM	5400		210	1000 UG/KG	5400	
GA-SS-G26-211004	SW6020	SILVER	48 J		8.5	51 UG/KG	48 J	
GA-SS-G26-211004	SW6020	SODIUM	210000		15000	100000 UG/KG	210000	
GA-SS-G26-211004	SW6020	THALLIUM	260		2.6	10 UG/KG	260	
GA-SS-G26-211004	SW6020	THORIUM	2900		8.2	21 UG/KG	2900	
GA-SS-G26-211004	SW6020	URANIUM	110000		9.8	21 UG/KG	110000	
GA-SS-G26-211004	SW6020	VANADIUM	22000		130	510 UG/KG	22000	
GA-SS-G26-211004	SW6020	ZINC	54000		4200	10000 UG/KG	54000	
GA-SS-G27-211004	704	Pb-210	29.9		0.3	0.3 pCi/g	29.9	
GA-SS-G27-211004	713	Cs-137	-0.13 U,M,G		0.89	0.89 pCi/g	0.89 UJ	
GA-SS-G27-211004	713	K-40	14.9 G		6.8	6.8 pCi/g	14.9 J	
GA-SS-G27-211004	713	Ra-226	100 M3,G		2	2 pCi/g	100 J	
GA-SS-G27-211004	713	Ra-228	0.3 U,G		2.6	2.6 pCi/g	2.6 UJ	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G27-211004	714	Po-210	33.8		0.1	0.1 pCi/g	33.8	
GA-SS-G27-211004	714	Th-230	78	M3	0	0 pCi/g	78	
GA-SS-G27-211004	714	Th-232	0.89		0.07	0.07 pCi/g	0.89	
GA-SS-G27-211004	714	U-234	53.1		0.1	0.1 pCi/g	53.1	
GA-SS-G27-211004	714	U-235	2.83		0.06	0.06 pCi/g	2.83	
GA-SS-G27-211004	714	U-238	54		0.1	0.1 pCi/g	54	
GA-SS-G27-211004	SW6020	ALUMINUM	6200000		7000	16000 UG/KG	6200000	
GA-SS-G27-211004	SW6020	ANTIMONY	460		19	110 UG/KG	460	
GA-SS-G27-211004	SW6020	ARSENIC	160000		52	210 UG/KG	160000	
GA-SS-G27-211004	SW6020	BARIUM	230000		250	540 UG/KG	230000	
GA-SS-G27-211004	SW6020	BERYLLIUM	940		5.4	54 UG/KG	940	
GA-SS-G27-211004	SW6020	CADMIUM	750		24	210 UG/KG	750	
GA-SS-G27-211004	SW6020	CALCIUM	7000000		18000	110000 UG/KG	7000000	
GA-SS-G27-211004	SW6020	CHROMIUM	10000		590	1100 UG/KG	10000	
GA-SS-G27-211004	SW6020	COBALT	8000		34	540 UG/KG	8000	
GA-SS-G27-211004	SW6020	COPPER	15000		310	2100 UG/KG	15000	
GA-SS-G27-211004	SW6020	IRON	21000000		12000	21000 UG/KG	21000000	
GA-SS-G27-211004	SW6020	LEAD	15000		71	210 UG/KG	15000	
GA-SS-G27-211004	SW6020	MAGNESIUM	2900000		3500	11000 UG/KG	2900000	
GA-SS-G27-211004	SW6020	MANGANESE	420000		410	800 UG/KG	420000	
GA-SS-G27-211004	SW6020	MOLYBDENUM	96000		46	210 UG/KG	96000	
GA-SS-G27-211004	SW6020	NICKEL	18000		470	2100 UG/KG	18000	
GA-SS-G27-211004	SW6020	POTASSIUM	2300000		16000	110000 UG/KG	2300000	
GA-SS-G27-211004	SW6020	SELENIUM	8300		210	1100 UG/KG	8300	
GA-SS-G27-211004	SW6020	SILVER	55		8.9	54 UG/KG	55	
GA-SS-G27-211004	SW6020	SODIUM	440000		16000	110000 UG/KG	440000	
GA-SS-G27-211004	SW6020	THALLIUM	320		2.7	11 UG/KG	320	
GA-SS-G27-211004	SW6020	THORIUM	3700		8.6	21 UG/KG	3700	
GA-SS-G27-211004	SW6020	URANIUM	170000		10	21 UG/KG	170000	
GA-SS-G27-211004	SW6020	VANADIUM	22000		140	540 UG/KG	22000	
GA-SS-G27-211004	SW6020	ZINC	51000		4400	11000 UG/KG	51000	
GA-SS-G28-211004	704	Pb-210	44		0	0 pCi/g	44	J-

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G28-211004	713	Cs-137	-0.54	U,M,G	1.26	1.26 pCi/g	1.26	UJ
GA-SS-G28-211004	713	K-40	11.3	U,G	11.9	11.9 pCi/g	11.9	UJ
GA-SS-G28-211004	713	Ra-226	181	M3,G	2	2 pCi/g	181	J
GA-SS-G28-211004	713	Ra-228	1.3	U,G	2.4	2.4 pCi/g	2.4	UJ
GA-SS-G28-211004	714	Po-210	50.3		0.1	0.1 pCi/g	50.3	
GA-SS-G28-211004	714	Th-230	141	M3	0	0 pCi/g	141	
GA-SS-G28-211004	714	Th-232	1.23		0.06	0.06 pCi/g	1.23	
GA-SS-G28-211004	714	U-234	137	M3	0	0 pCi/g	137	
GA-SS-G28-211004	714	U-235	6.4	M3	0.1	0.1 pCi/g	6.4	
GA-SS-G28-211004	714	U-238	140	M3	0	0 pCi/g	140	
GA-SS-G28-211004	SW6020	ALUMINUM	6100000		7300	17000 UG/KG	6100000	
GA-SS-G28-211004	SW6020	ANTIMONY	580		20	110 UG/KG	580	
GA-SS-G28-211004	SW6020	ARSENIC	230000		55	220 UG/KG	230000	
GA-SS-G28-211004	SW6020	BARIUM	280000		260	560 UG/KG	280000	
GA-SS-G28-211004	SW6020	BERYLLIUM	1100		5.6	56 UG/KG	1100	
GA-SS-G28-211004	SW6020	CADMIUM	920		25	220 UG/KG	920	
GA-SS-G28-211004	SW6020	CALCIUM	4500000		19000	110000 UG/KG	4500000	
GA-SS-G28-211004	SW6020	CHROMIUM	12000		610	1100 UG/KG	12000	
GA-SS-G28-211004	SW6020	COBALT	9000		36	560 UG/KG	9000	
GA-SS-G28-211004	SW6020	COPPER	16000		320	2200 UG/KG	16000	
GA-SS-G28-211004	SW6020	IRON	26000000		12000	22000 UG/KG	26000000	
GA-SS-G28-211004	SW6020	LEAD	20000		74	220 UG/KG	20000	
GA-SS-G28-211004	SW6020	MAGNESIUM	2300000		3700	11000 UG/KG	2300000	
GA-SS-G28-211004	SW6020	MANGANESE	500000		420	840 UG/KG	500000	
GA-SS-G28-211004	SW6020	MOLYBDENUM	180000		48	220 UG/KG	180000	
GA-SS-G28-211004	SW6020	NICKEL	20000		490	2200 UG/KG	20000	
GA-SS-G28-211004	SW6020	POTASSIUM	2400000		17000	110000 UG/KG	2400000	
GA-SS-G28-211004	SW6020	SELENIUM	11000		220	1100 UG/KG	11000	
GA-SS-G28-211004	SW6020	SILVER	50 J		9.3	56 UG/KG	50 J	
GA-SS-G28-211004	SW6020	SODIUM	290000		17000	110000 UG/KG	290000	
GA-SS-G28-211004	SW6020	THALLIUM	340		2.8	11 UG/KG	340	
GA-SS-G28-211004	SW6020	THORIUM	3400		8.9	22 UG/KG	3400	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G28-211004	SW6020	URANIUM	310000		110	220 UG/KG	310000	
GA-SS-G28-211004	SW6020	VANADIUM	37000		150	560 UG/KG	37000	
GA-SS-G28-211004	SW6020	ZINC	56000		4600	11000 UG/KG	56000	
GA-SS-G29-211004	SW6020	ALUMINUM	6900000		7000	16000 UG/KG	6900000	
GA-SS-G29-211004	SW6020	ANTIMONY	240		20	110 UG/KG	240	
GA-SS-G29-211004	SW6020	ARSENIC	30000		53	220 UG/KG	30000	
GA-SS-G29-211004	SW6020	BARIUM	200000		250	540 UG/KG	200000	
GA-SS-G29-211004	SW6020	BERYLLIUM	680		5.4	54 UG/KG	680	
GA-SS-G29-211004	SW6020	CADMIUM	380		24	220 UG/KG	380	
GA-SS-G29-211004	SW6020	CALCIUM	3500000		18000	110000 UG/KG	3500000	
GA-SS-G29-211004	SW6020	CHROMIUM	12000		600	1100 UG/KG	12000	
GA-SS-G29-211004	SW6020	COBALT	7600		35	540 UG/KG	7600	
GA-SS-G29-211004	SW6020	COPPER	14000		310	2200 UG/KG	14000	
GA-SS-G29-211004	SW6020	IRON	17000000		12000	22000 UG/KG	17000000	
GA-SS-G29-211004	SW6020	LEAD	12000		72	220 UG/KG	12000	
GA-SS-G29-211004	SW6020	MAGNESIUM	2600000		3600	11000 UG/KG	2600000	
GA-SS-G29-211004	SW6020	MANGANESE	490000		410	810 UG/KG	490000	
GA-SS-G29-211004	SW6020	MOLYBDENUM	23000		47	220 UG/KG	23000	
GA-SS-G29-211004	SW6020	NICKEL	14000		480	2200 UG/KG	14000	
GA-SS-G29-211004	SW6020	POTASSIUM	2900000		16000	110000 UG/KG	2900000	
GA-SS-G29-211004	SW6020	SELENIUM	2600		220	1100 UG/KG	2600	
GA-SS-G29-211004	SW6020	SILVER	47 J		9	54 UG/KG	47 J	
GA-SS-G29-211004	SW6020	SODIUM	86000 J		16000	110000 UG/KG	86000 J	
GA-SS-G29-211004	SW6020	THALLIUM	190		2.7	11 UG/KG	190	
GA-SS-G29-211004	SW6020	THORIUM	3200		8.7	22 UG/KG	3200	
GA-SS-G29-211004	SW6020	URANIUM	41000		10	22 UG/KG	41000	
GA-SS-G29-211004	SW6020	VANADIUM	21000		140	540 UG/KG	21000	
GA-SS-G29-211004	SW6020	ZINC	48000		4400	11000 UG/KG	48000	
GA-SS-G30-211004	704	Pb-210	12		0.3	0.3 pCi/g	12	
GA-SS-G30-211004	713	Cs-137	0.48 G,NQ		0.48	0.48 pCi/g	0.48 UJ	
GA-SS-G30-211004	713	K-40	10.9 G		4.6	4.6 pCi/g	10.9 J	
GA-SS-G30-211004	713	Ra-226	42.6 M3,G		1.4	1.4 pCi/g	42.6 J	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-G30-211004	713	Ra-228	1.31	U,G	1.95	1.95 pCi/g	1.95	UJ
GA-SS-G30-211004	714	Po-210	13.9		0.1	0.1 pCi/g	13.9	
GA-SS-G30-211004	714	Th-230	25	M3	0.2	0.2 pCi/g	25	
GA-SS-G30-211004	714	Th-232	0.85		0.08	0.08 pCi/g	0.85	
GA-SS-G30-211004	714	U-234	20.1		0.1	0.1 pCi/g	20.1	
GA-SS-G30-211004	714	U-235	1.02		0.03	0.03 pCi/g	1.02	
GA-SS-G30-211004	714	U-238	20.7		0.1	0.1 pCi/g	20.7	
GA-SS-G30-211004	SW6020	ALUMINUM	5100000		6900	16000 UG/KG	5100000	
GA-SS-G30-211004	SW6020	ANTIMONY	280		19	110 UG/KG	280	
GA-SS-G30-211004	SW6020	ARSENIC	35000		52	210 UG/KG	35000	
GA-SS-G30-211004	SW6020	BARIUM	250000		250	530 UG/KG	250000	
GA-SS-G30-211004	SW6020	BERYLLIUM	690		5.3	53 UG/KG	690	
GA-SS-G30-211004	SW6020	CADMIUM	510		23	210 UG/KG	510	
GA-SS-G30-211004	SW6020	CALCIUM	5100000		18000	110000 UG/KG	5100000	
GA-SS-G30-211004	SW6020	CHROMIUM	9400		590	1100 UG/KG	9400	
GA-SS-G30-211004	SW6020	COBALT	5200		34	530 UG/KG	5200	
GA-SS-G30-211004	SW6020	COPPER	14000		310	2100 UG/KG	14000	
GA-SS-G30-211004	SW6020	IRON	13000000		12000	21000 UG/KG	13000000	
GA-SS-G30-211004	SW6020	LEAD	14000		70	210 UG/KG	14000	
GA-SS-G30-211004	SW6020	MAGNESIUM	2000000		3500	11000 UG/KG	2000000	
GA-SS-G30-211004	SW6020	MANGANESE	420000		410	800 UG/KG	420000	
GA-SS-G30-211004	SW6020	MOLYBDENUM	24000		46	210 UG/KG	24000	
GA-SS-G30-211004	SW6020	NICKEL	11000		470	2100 UG/KG	11000	
GA-SS-G30-211004	SW6020	POTASSIUM	2800000		16000	110000 UG/KG	2800000	
GA-SS-G30-211004	SW6020	SELENIUM	2700		210	1100 UG/KG	2700	
GA-SS-G30-211004	SW6020	SILVER	44	J	8.9	53 UG/KG	44	J
GA-SS-G30-211004	SW6020	SODIUM	73000	J	16000	110000 UG/KG	73000	J
GA-SS-G30-211004	SW6020	THALLIUM	150		2.7	11 UG/KG	150	
GA-SS-G30-211004	SW6020	THORIUM	2500		8.5	21 UG/KG	2500	
GA-SS-G30-211004	SW6020	URANIUM	53000		10	21 UG/KG	53000	
GA-SS-G30-211004	SW6020	VANADIUM	15000		140	530 UG/KG	15000	
GA-SS-G30-211004	SW6020	ZINC	61000		4400	11000 UG/KG	61000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS01-211005	704	Pb-210	194		0	0 pCi/g	194	
GA-SS-TS01-211005	713	Cs-137	0.35	U,M,G	1.35	1.35 pCi/g	1.35	UJ
GA-SS-TS01-211005	713	K-40	11.3	G	9.6	9.6 pCi/g	11.3	J
GA-SS-TS01-211005	713	Ra-226	369	M3,G	2	2 pCi/g	369	J
GA-SS-TS01-211005	713	Ra-228	2	U,G	4	4 pCi/g	4	UJ
GA-SS-TS01-211005	714	Po-210	192		0	0 pCi/g	192	
GA-SS-TS01-211005	714	Th-230	284	M3	0	0 pCi/g	284	
GA-SS-TS01-211005	714	Th-232	1.09		0.08	0.08 pCi/g	1.09	
GA-SS-TS01-211005	714	U-234	291	Y2,M3	0	0 pCi/g	291	J-
GA-SS-TS01-211005	714	U-235	14.9	Y2,M3	0.3	0.3 pCi/g	14.9	J-
GA-SS-TS01-211005	714	U-238	293	Y2,M3	0	0 pCi/g	293	J-
GA-SS-TS01-211005	SW6020	ALUMINUM	16000000		7000	16000 UG/KG	16000000	
GA-SS-TS01-211005	SW6020	ANTIMONY	430		19	110 UG/KG	430	
GA-SS-TS01-211005	SW6020	ARSENIC	550000		53	220 UG/KG	550000	
GA-SS-TS01-211005	SW6020	BARIUM	420000		250	540 UG/KG	420000	
GA-SS-TS01-211005	SW6020	BERYLLIUM	2100		5.4	54 UG/KG	2100	
GA-SS-TS01-211005	SW6020	CADMIUM	760		24	220 UG/KG	760	
GA-SS-TS01-211005	SW6020	CALCIUM	6900000		18000	110000 UG/KG	6900000	
GA-SS-TS01-211005	SW6020	CHROMIUM	11000		590	1100 UG/KG	11000	
GA-SS-TS01-211005	SW6020	COBALT	14000		34	540 UG/KG	14000	
GA-SS-TS01-211005	SW6020	COPPER	15000		310	2200 UG/KG	15000	
GA-SS-TS01-211005	SW6020	IRON	41000000		12000	22000 UG/KG	41000000	
GA-SS-TS01-211005	SW6020	LEAD	26000		71	220 UG/KG	26000	
GA-SS-TS01-211005	SW6020	MAGNESIUM	1800000		3500	11000 UG/KG	1800000	
GA-SS-TS01-211005	SW6020	MANGANESE	280000		410	810 UG/KG	280000	
GA-SS-TS01-211005	SW6020	MOLYBDENUM	680000		46	220 UG/KG	680000	
GA-SS-TS01-211005	SW6020	NICKEL	24000		470	2200 UG/KG	24000	
GA-SS-TS01-211005	SW6020	POTASSIUM	3500000		16000	110000 UG/KG	3500000	
GA-SS-TS01-211005	SW6020	SELENIUM	18000		220	1100 UG/KG	18000	
GA-SS-TS01-211005	SW6020	SILVER	66		8.9	54 UG/KG	66	
GA-SS-TS01-211005	SW6020	SODIUM	7900000		16000	110000 UG/KG	7900000	
GA-SS-TS01-211005	SW6020	THALLIUM	1800		2.7	11 UG/KG	1800	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS01-211005	SW6020	THORIUM	4900		8.6	22 UG/KG	4900	
GA-SS-TS01-211005	SW6020	URANIUM	720000		100	220 UG/KG	720000	
GA-SS-TS01-211005	SW6020	VANADIUM	48000		140	540 UG/KG	48000	
GA-SS-TS01-211005	SW6020	ZINC	42000		4400	11000 UG/KG	42000	
GA-SS-TS02-211005	704	Pb-210	118		0	0 pCi/g	118	
GA-SS-TS02-211005	713	Cs-137	-0.21 U,M,G		1.58	1.58 pCi/g	1.58 UJ	
GA-SS-TS02-211005	713	K-40	9.7 U,G		11.3	11.3 pCi/g	11.3 UJ	
GA-SS-TS02-211005	713	Ra-226	253 M3,G		3	3 pCi/g	253 J	
GA-SS-TS02-211005	713	Ra-228	1.2 U,G		4.9	4.9 pCi/g	4.9 UJ	
GA-SS-TS02-211005	714	Po-210	102		0	0 pCi/g	102	
GA-SS-TS02-211005	714	Th-230	186 M3		0	0 pCi/g	186	
GA-SS-TS02-211005	714	Th-232	0.96		0.06	0.06 pCi/g	0.96	
GA-SS-TS02-211005	714	U-234	132 M3		0	0 pCi/g	132	
GA-SS-TS02-211005	714	U-235	6.2 M3		0.2	0.2 pCi/g	6.2	
GA-SS-TS02-211005	714	U-238	135 M3		0	0 pCi/g	135	
GA-SS-TS02-211005	SW6020	ALUMINUM	7200000		6900	16000 UG/KG	7200000	
GA-SS-TS02-211005	SW6020	ANTIMONY	410		19	110 UG/KG	410	
GA-SS-TS02-211005	SW6020	ARSENIC	200000		52	210 UG/KG	200000	
GA-SS-TS02-211005	SW6020	BARIUM	250000		240	530 UG/KG	250000	
GA-SS-TS02-211005	SW6020	BERYLLIUM	1400		5.3	53 UG/KG	1400	
GA-SS-TS02-211005	SW6020	CADMIUM	690		23	210 UG/KG	690	
GA-SS-TS02-211005	SW6020	CALCIUM	12000000		18000	110000 UG/KG	12000000	
GA-SS-TS02-211005	SW6020	CHROMIUM	12000		590	1100 UG/KG	12000	
GA-SS-TS02-211005	SW6020	COBALT	11000		34	530 UG/KG	11000	
GA-SS-TS02-211005	SW6020	COPPER	23000		310	2100 UG/KG	23000	
GA-SS-TS02-211005	SW6020	IRON	26000000		12000	21000 UG/KG	26000000	
GA-SS-TS02-211005	SW6020	LEAD	20000		70	210 UG/KG	20000	
GA-SS-TS02-211005	SW6020	MAGNESIUM	3600000		3500	11000 UG/KG	3600000	
GA-SS-TS02-211005	SW6020	MANGANESE	400000		400	800 UG/KG	400000	
GA-SS-TS02-211005	SW6020	MOLYBDENUM	310000		46	210 UG/KG	310000	
GA-SS-TS02-211005	SW6020	NICKEL	23000		470	2100 UG/KG	23000	
GA-SS-TS02-211005	SW6020	POTASSIUM	3100000		16000	110000 UG/KG	3100000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS02-211005	SW6020	SELENIUM	7400		210	1100 UG/KG	7400	
GA-SS-TS02-211005	SW6020	SILVER	110		8.8	53 UG/KG	110	
GA-SS-TS02-211005	SW6020	SODIUM	980000		16000	110000 UG/KG	980000	
GA-SS-TS02-211005	SW6020	THALLIUM	500		2.7	11 UG/KG	500	
GA-SS-TS02-211005	SW6020	THORIUM	3200		8.5	21 UG/KG	3200	
GA-SS-TS02-211005	SW6020	URANIUM	280000		100	210 UG/KG	280000	
GA-SS-TS02-211005	SW6020	VANADIUM	28000		140	530 UG/KG	28000	
GA-SS-TS02-211005	SW6020	ZINC	67000		4400	11000 UG/KG	67000	
GA-SS-TS03-211005	704	Pb-210	104		0	0 pCi/g	104 J-	
GA-SS-TS03-211005	713	Cs-137	0.3 U,M,G		1.7	1.7 pCi/g	1.7 UJ	
GA-SS-TS03-211005	713	K-40	17.3 G		13.8	13.8 pCi/g	17.3 J	
GA-SS-TS03-211005	713	Ra-226	539 M3,G		4	4 pCi/g	539 J	
GA-SS-TS03-211005	713	Ra-228	0.8 U,G		5.4	5.4 pCi/g	5.4 UJ	
GA-SS-TS03-211005	714	Po-210	127		0	0 pCi/g	127	
GA-SS-TS03-211005	714	Th-230	366 M3		0	0 pCi/g	366	
GA-SS-TS03-211005	714	Th-232	1.98		0.06	0.06 pCi/g	1.98	
GA-SS-TS03-211005	714	U-234	347 Y2,M3		0	0 pCi/g	347 J-	
GA-SS-TS03-211005	714	U-235	17.2 Y2,M3		0.3	0.3 pCi/g	17.2 J-	
GA-SS-TS03-211005	714	U-238	356 Y2,M3		0	0 pCi/g	356 J-	
GA-SS-TS03-211005	SW6020	ALUMINUM	9200000		7600	18000 UG/KG	9200000	
GA-SS-TS03-211005	SW6020	ANTIMONY	370		21	120 UG/KG	370	
GA-SS-TS03-211005	SW6020	ARSENIC	530000		58	240 UG/KG	530000	
GA-SS-TS03-211005	SW6020	BARIUM	380000		270	590 UG/KG	380000	
GA-SS-TS03-211005	SW6020	BERYLLIUM	2900		5.9	59 UG/KG	2900	
GA-SS-TS03-211005	SW6020	CADMIUM	2400		26	240 UG/KG	2400	
GA-SS-TS03-211005	SW6020	CALCIUM	7800000		20000	120000 UG/KG	7800000	
GA-SS-TS03-211005	SW6020	CHROMIUM	13000		650	1200 UG/KG	13000	
GA-SS-TS03-211005	SW6020	COBALT	13000		38	590 UG/KG	13000	
GA-SS-TS03-211005	SW6020	COPPER	17000		340	2400 UG/KG	17000	
GA-SS-TS03-211005	SW6020	IRON	22000000		13000	24000 UG/KG	22000000	
GA-SS-TS03-211005	SW6020	LEAD	29000		78	240 UG/KG	29000	
GA-SS-TS03-211005	SW6020	MAGNESIUM	2500000		3900	12000 UG/KG	2500000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS03-211005	SW6020	MANGANESE	360000		450	880 UG/KG	360000	
GA-SS-TS03-211005	SW6020	MOLYBDENUM	510000		51	240 UG/KG	510000	
GA-SS-TS03-211005	SW6020	NICKEL	32000		520	2400 UG/KG	32000	
GA-SS-TS03-211005	SW6020	POTASSIUM	3000000		18000	120000 UG/KG	3000000	
GA-SS-TS03-211005	SW6020	SELENIUM	43000		240	1200 UG/KG	43000	
GA-SS-TS03-211005	SW6020	SILVER	59 J		9.8	59 UG/KG	59 J	
GA-SS-TS03-211005	SW6020	SODIUM	1700000		18000	120000 UG/KG	1700000	
GA-SS-TS03-211005	SW6020	THALLIUM	880		2.9	12 UG/KG	880	
GA-SS-TS03-211005	SW6020	THORIUM	4600		9.4	24 UG/KG	4600	
GA-SS-TS03-211005	SW6020	URANIUM	1000000		110	240 UG/KG	1000000	
GA-SS-TS03-211005	SW6020	VANADIUM	39000		150	590 UG/KG	39000	
GA-SS-TS03-211005	SW6020	ZINC	60000		4800	12000 UG/KG	60000	
GA-SS-TS04-211005	704	Pb-210	22.1		0.5	0.5 pCi/g	22.1	
GA-SS-TS04-211005	713	Cs-137	0.11 U,M,G		0.6	0.6 pCi/g	0.6 UJ	
GA-SS-TS04-211005	713	K-40	18.6 G		6.9	6.9 pCi/g	18.6 J	
GA-SS-TS04-211005	713	Ra-226	36 M3,G		1.2	1.2 pCi/g	36 J	
GA-SS-TS04-211005	713	Ra-228	1.2 U,G		2	2 pCi/g	2 UJ	
GA-SS-TS04-211005	714	Po-210	19		0.1	0.1 pCi/g	19	
GA-SS-TS04-211005	714	Th-230	33 M3		0.2	0.2 pCi/g	33	
GA-SS-TS04-211005	714	Th-232	0.98 M3		0.15	0.15 pCi/g	0.98	
GA-SS-TS04-211005	714	U-234	25.1		0.1	0.1 pCi/g	25.1	
GA-SS-TS04-211005	714	U-235	1.33		0.06	0.06 pCi/g	1.33	
GA-SS-TS04-211005	714	U-238	25.6		0.1	0.1 pCi/g	25.6	
GA-SS-TS04-211005	SW6020	ALUMINUM	6800000		7300	17000 UG/KG	6800000	
GA-SS-TS04-211005	SW6020	ANTIMONY	210		20	110 UG/KG	210	
GA-SS-TS04-211005	SW6020	ARSENIC	43000		55	220 UG/KG	43000	
GA-SS-TS04-211005	SW6020	BARIUM	200000		260	560 UG/KG	200000	
GA-SS-TS04-211005	SW6020	BERYLLIUM	1100		5.6	56 UG/KG	1100	
GA-SS-TS04-211005	SW6020	CADMIUM	760		25	220 UG/KG	760	
GA-SS-TS04-211005	SW6020	CALCIUM	5400000		19000	110000 UG/KG	5400000	
GA-SS-TS04-211005	SW6020	CHROMIUM	12000		610	1100 UG/KG	12000	
GA-SS-TS04-211005	SW6020	COBALT	8400		36	560 UG/KG	8400	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS04-211005	SW6020	COPPER	19000		320	2200 UG/KG	19000	
GA-SS-TS04-211005	SW6020	IRON	15000000		12000	22000 UG/KG	15000000	
GA-SS-TS04-211005	SW6020	LEAD	18000		74	220 UG/KG	18000	
GA-SS-TS04-211005	SW6020	MAGNESIUM	3100000		3700	11000 UG/KG	3100000	
GA-SS-TS04-211005	SW6020	MANGANESE	350000		420	840 UG/KG	350000	
GA-SS-TS04-211005	SW6020	MOLYBDENUM	32000		48	220 UG/KG	32000	J
GA-SS-TS04-211005	SW6020	NICKEL	17000		490	2200 UG/KG	17000	
GA-SS-TS04-211005	SW6020	POTASSIUM	3200000		17000	110000 UG/KG	3200000	
GA-SS-TS04-211005	SW6020	SELENIUM	6000		220	1100 UG/KG	6000	
GA-SS-TS04-211005	SW6020	SILVER	62		9.3	56 UG/KG	62	
GA-SS-TS04-211005	SW6020	SODIUM	220000		17000	110000 UG/KG	220000	
GA-SS-TS04-211005	SW6020	THALLIUM	300		2.8	11 UG/KG	300	
GA-SS-TS04-211005	SW6020	THORIUM	4100		8.9	22 UG/KG	4100	
GA-SS-TS04-211005	SW6020	URANIUM	200000		11	22 UG/KG	200000	
GA-SS-TS04-211005	SW6020	VANADIUM	21000		150	560 UG/KG	21000	
GA-SS-TS04-211005	SW6020	ZINC	61000		4600	11000 UG/KG	61000	
GA-SS-TS05-211005	704	Pb-210	9.5		0.3	0.3 pCi/g	9.5	J-
GA-SS-TS05-211005	713	Cs-137	-0.16 U,G		0.48	0.48 pCi/g	0.48	UJ
GA-SS-TS05-211005	713	K-40	15.8 G		5.8	5.8 pCi/g	15.8	J
GA-SS-TS05-211005	713	Ra-226	22.5 M3,G		1.1	1.1 pCi/g	22.5	J
GA-SS-TS05-211005	713	Ra-228	0.6 U,G		1.7	1.7 pCi/g	1.7	UJ
GA-SS-TS05-211005	714	Po-210	12.8		0.1	0.1 pCi/g	12.8	
GA-SS-TS05-211005	714	Th-230	16.9 M3		0.2	0.2 pCi/g	16.9	
GA-SS-TS05-211005	714	Th-232	0.82 M3		0.11	0.11 pCi/g	0.82	
GA-SS-TS05-211005	714	U-234	14.9		0.1	0.1 pCi/g	14.9	
GA-SS-TS05-211005	714	U-235	0.76		0.06	0.06 pCi/g	0.76	
GA-SS-TS05-211005	714	U-238	15		0.1	0.1 pCi/g	15	
GA-SS-TS05-211005	SW6020	ALUMINUM	6600000		6700	16000 UG/KG	6600000	
GA-SS-TS05-211005	SW6020	ANTIMONY	500		19	100 UG/KG	500	
GA-SS-TS05-211005	SW6020	ARSENIC	35000		51	210 UG/KG	35000	
GA-SS-TS05-211005	SW6020	BARIUM	220000		240	520 UG/KG	220000	
GA-SS-TS05-211005	SW6020	BERYLLIUM	910		5.2	52 UG/KG	910	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS05-211005	SW6020	CADMIUM	470		23	210 UG/KG	470	
GA-SS-TS05-211005	SW6020	CALCIUM	4700000		18000	100000 UG/KG	4700000	
GA-SS-TS05-211005	SW6020	CHROMIUM	12000		570	1000 UG/KG	12000	
GA-SS-TS05-211005	SW6020	COBALT	7900		33	520 UG/KG	7900	
GA-SS-TS05-211005	SW6020	COPPER	17000		300	2100 UG/KG	17000	
GA-SS-TS05-211005	SW6020	IRON	22000000		11000	21000 UG/KG	22000000	
GA-SS-TS05-211005	SW6020	LEAD	17000		68	210 UG/KG	17000	
GA-SS-TS05-211005	SW6020	MAGNESIUM	3100000		3400	10000 UG/KG	3100000	
GA-SS-TS05-211005	SW6020	MANGANESE	510000		390	780 UG/KG	510000	
GA-SS-TS05-211005	SW6020	MOLYBDENUM	18000		45	210 UG/KG	18000	
GA-SS-TS05-211005	SW6020	NICKEL	16000		460	2100 UG/KG	16000	
GA-SS-TS05-211005	SW6020	POTASSIUM	2600000		16000	100000 UG/KG	2600000	
GA-SS-TS05-211005	SW6020	SELENIUM	2500		210	1000 UG/KG	2500	
GA-SS-TS05-211005	SW6020	SILVER	61		8.6	52 UG/KG	61	
GA-SS-TS05-211005	SW6020	SODIUM	170000		16000	100000 UG/KG	170000	
GA-SS-TS05-211005	SW6020	THALLIUM	190		2.6	10 UG/KG	190	
GA-SS-TS05-211005	SW6020	THORIUM	3700		8.3	21 UG/KG	3700	
GA-SS-TS05-211005	SW6020	URANIUM	39000		9.8	21 UG/KG	39000	
GA-SS-TS05-211005	SW6020	VANADIUM	23000		130	520 UG/KG	23000	
GA-SS-TS05-211005	SW6020	ZINC	59000		4200	10000 UG/KG	59000	
GA-SS-TS06-211005	704	Pb-210	53		0	0 pCi/g	53	
GA-SS-TS06-211005	713	Cs-137	0.33 U,M,G		0.63	0.63 pCi/g	0.63 UJ	
GA-SS-TS06-211005	713	K-40	18.4 G		6.5	6.5 pCi/g	18.4 J	
GA-SS-TS06-211005	713	Ra-226	199 M3,G		2	2 pCi/g	199 J	
GA-SS-TS06-211005	713	Ra-228	1.2 U,G		1.8	1.8 pCi/g	1.8 UJ	
GA-SS-TS06-211005	714	Po-210	58.5		0.1	0.1 pCi/g	58.5	
GA-SS-TS06-211005	714	Th-230	169 M3		0	0 pCi/g	169	
GA-SS-TS06-211005	714	Th-232	1.16		0.03	0.03 pCi/g	1.16	
GA-SS-TS06-211005	714	U-234	147 M3		0	0 pCi/g	147	
GA-SS-TS06-211005	714	U-235	7.3 M3		0.1	0.1 pCi/g	7.3	
GA-SS-TS06-211005	714	U-238	145		0	0 pCi/g	145	
GA-SS-TS06-211005	SW6020	ALUMINUM	5600000		7000	16000 UG/KG	5600000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS06-211005	SW6020	ANTIMONY	280		19	110 UG/KG	280	
GA-SS-TS06-211005	SW6020	ARSENIC	220000		53	210 UG/KG	220000	
GA-SS-TS06-211005	SW6020	BARIUM	160000		250	540 UG/KG	160000	
GA-SS-TS06-211005	SW6020	BERYLLIUM	1200		5.4	54 UG/KG	1200	
GA-SS-TS06-211005	SW6020	CADMIUM	900		24	210 UG/KG	900	
GA-SS-TS06-211005	SW6020	CALCIUM	3500000		18000	110000 UG/KG	3500000	
GA-SS-TS06-211005	SW6020	CHROMIUM	11000		590	1100 UG/KG	11000	
GA-SS-TS06-211005	SW6020	COBALT	8600		34	540 UG/KG	8600	
GA-SS-TS06-211005	SW6020	COPPER	14000		310	2100 UG/KG	14000	
GA-SS-TS06-211005	SW6020	IRON	15000000		12000	21000 UG/KG	15000000	
GA-SS-TS06-211005	SW6020	LEAD	17000		71	210 UG/KG	17000	
GA-SS-TS06-211005	SW6020	MAGNESIUM	2600000		3500	11000 UG/KG	2600000	
GA-SS-TS06-211005	SW6020	MANGANESE	280000		410	800 UG/KG	280000	
GA-SS-TS06-211005	SW6020	MOLYBDENUM	230000		46	210 UG/KG	230000	
GA-SS-TS06-211005	SW6020	NICKEL	19000		470	2100 UG/KG	19000	
GA-SS-TS06-211005	SW6020	POTASSIUM	1800000		16000	110000 UG/KG	1800000	
GA-SS-TS06-211005	SW6020	SELENIUM	15000		210	1100 UG/KG	15000	
GA-SS-TS06-211005	SW6020	SILVER	45 J		8.9	54 UG/KG	45 J	
GA-SS-TS06-211005	SW6020	SODIUM	420000		16000	110000 UG/KG	420000	
GA-SS-TS06-211005	SW6020	THALLIUM	530		2.7	11 UG/KG	530	
GA-SS-TS06-211005	SW6020	THORIUM	3800		8.6	21 UG/KG	3800	
GA-SS-TS06-211005	SW6020	URANIUM	420000		100	210 UG/KG	420000	
GA-SS-TS06-211005	SW6020	VANADIUM	24000		140	540 UG/KG	24000	
GA-SS-TS06-211005	SW6020	ZINC	39000		4400	11000 UG/KG	39000	
GA-SS-TS07-211005	704	Pb-210	60		0	0 pCi/g	60	
GA-SS-TS07-211005	713	Cs-137	0.06 U,M,G		1.11	1.11 pCi/g	1.11 UJ	
GA-SS-TS07-211005	713	K-40	15 G		9.7	9.7 pCi/g	15 J	
GA-SS-TS07-211005	713	Ra-226	176 M3,G		2	2 pCi/g	176 J	
GA-SS-TS07-211005	713	Ra-228	0.9 U,G		3.3	3.3 pCi/g	3.3 UJ	
GA-SS-TS07-211005	714	Po-210	61.2		0.1	0.1 pCi/g	61.2	
GA-SS-TS07-211005	714	Th-230	149 M3		0	0 pCi/g	149	
GA-SS-TS07-211005	714	Th-232	1.24		0.05	0.05 pCi/g	1.24	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL Units	Val Result	Val Qual
GA-SS-TS07-211005	714	U-234	144	M3	0	0 pCi/g	144	
GA-SS-TS07-211005	714	U-235	6.7		0.1	0.1 pCi/g	6.7	
GA-SS-TS07-211005	714	U-238	142	M3	0	0 pCi/g	142	
GA-SS-TS07-211005	SW6020	ALUMINUM	8300000		7600	17000 UG/KG	8300000	
GA-SS-TS07-211005	SW6020	ANTIMONY	390		21	120 UG/KG	390	
GA-SS-TS07-211005	SW6020	ARSENIC	260000		57	230 UG/KG	260000	
GA-SS-TS07-211005	SW6020	BARIUM	270000		270	580 UG/KG	270000	
GA-SS-TS07-211005	SW6020	BERYLLIUM	1500		5.8	58 UG/KG	1500	
GA-SS-TS07-211005	SW6020	CADMIUM	1200		26	230 UG/KG	1200	
GA-SS-TS07-211005	SW6020	CALCIUM	5500000		20000	120000 UG/KG	5500000	
GA-SS-TS07-211005	SW6020	CHROMIUM	13000		640	1200 UG/KG	13000	
GA-SS-TS07-211005	SW6020	COBALT	9000		37	580 UG/KG	9000	
GA-SS-TS07-211005	SW6020	COPPER	17000		340	2300 UG/KG	17000	
GA-SS-TS07-211005	SW6020	IRON	19000000		13000	23000 UG/KG	19000000	
GA-SS-TS07-211005	SW6020	LEAD	20000		77	230 UG/KG	20000	
GA-SS-TS07-211005	SW6020	MAGNESIUM	2700000		3800	12000 UG/KG	2700000	
GA-SS-TS07-211005	SW6020	MANGANESE	400000		440	870 UG/KG	400000	
GA-SS-TS07-211005	SW6020	MOLYBDENUM	190000		50	230 UG/KG	190000	
GA-SS-TS07-211005	SW6020	NICKEL	19000		510	2300 UG/KG	19000	
GA-SS-TS07-211005	SW6020	POTASSIUM	3000000		17000	120000 UG/KG	3000000	
GA-SS-TS07-211005	SW6020	SELENIUM	28000		230	1200 UG/KG	28000	
GA-SS-TS07-211005	SW6020	SILVER	61		9.7	58 UG/KG	61	
GA-SS-TS07-211005	SW6020	SODIUM	770000		17000	120000 UG/KG	770000	
GA-SS-TS07-211005	SW6020	THALLIUM	530		2.9	12 UG/KG	530	
GA-SS-TS07-211005	SW6020	THORIUM	3800		9.3	23 UG/KG	3800	
GA-SS-TS07-211005	SW6020	URANIUM	470000		110	230 UG/KG	470000	
GA-SS-TS07-211005	SW6020	VANADIUM	25000		150	580 UG/KG	25000	
GA-SS-TS07-211005	SW6020	ZINC	54000		4800	12000 UG/KG	54000	

**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Site Name	Griffin Ashing Site	TO/TOLIN No.	2071-83-2108-05
Document Tracking No.	0505	Technical Reviewer (signature and date)	<i>Harry N. Ellis III</i> 9 December 2021
Data Reviewer (signature and date)	<i>Carol Smith</i> 12/6/2021	Laboratory	ALS Environmental – Fort Collins, CO
Laboratory Report No.	2110173		
Analyses	Gamma emitting radionuclides by modified EPA Method 901.1, isotopic lead, isotopic polonium, isotopic thorium, isotopic uranium by ASTM method D3972, and metals by SW-846 Method 6020B		
Samples and Matrix	Twenty-two soil samples		
Collection Date(s)	October 5, 2021		
Field Duplicate Pairs	GA-SS-TS04-211005 (reported in ALS Report No. 2110170) and GA-SS-TS04-211005-DUP		
Field QC Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 2B validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* (May 2021), and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection of the data was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
N	<p>The laboratory noted that there was only one sample container for GA-SS-E05-211005, GA-SS-W05-211005, and GA-SS-N05-211005, however the COC indicated that these samples should be analyzed for both metals and radiological parameters. Upon contacting the project manager, the laboratory was directed to analyze these samples for metals only.</p> <p>The laboratory noted that two containers were present for GA-SS-TS04-211005-DUP and GA-SS-TS08-211005, however the COC indicated these should be analyzed for metals only. Upon contacting the project manager, the laboratory was directed to analyze the samples for both metals and radiological parameters.</p>

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Method blanks:

Within Criteria	Exceedance/Notes
N	The Th-230 and U-234 activity level in the associated method blank was above the instrument minimum detectable concentration (MDC), but below the requested MDC. There was no impact to the associated Th-230 and U-234 results. Uranium was detected in one of the associated method blanks at a concentration greater than the method detection limit (MDL), but less than reporting limit (RL). There was no impact to the associated uranium results.

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
Y	

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
Y	In the isotopic lead analysis, the ICP-AES measurement of lead prior to chemical separation for sample GA-SS-TS04-211005-DUP showed a concentration less than the amount known to have been added to the sample in the form of lead carrier. To minimize the potential for low bias, the laboratory used the known concentration of the carrier in the chemical yield calculations. The reported Pb-210 TPU values for this sample may not reflect the additional uncertainty imparted in the pre-separation ICP measurement. As a result, the Pb-210 result for GA-SS-TS04-211005-DUP was qualified as estimated, potentially biased low (flagged J-).



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MS/MSDs:

Within Criteria	Exceedance/Notes
N	<p><u>GA-SS-S03-211005</u>: The matrix spike (MS) and/or matrix spike duplicate (MSD) percent recoveries (%Rs) for aluminum, arsenic, barium, iron, lead, manganese, molybdenum, potassium, and uranium were outside of acceptance limits. However, qualification of data for these analytes was not required, as the parent sample concentrations were greater than four times (4x) the spike added.</p> <p>The average MS/MSD %Rs for antimony, cobalt, sodium, thallium, and vanadium were below the lower acceptance limit. The detected results for antimony, cobalt, sodium, thallium, and vanadium in the parent sample were qualified as estimated, potentially biased low (flagged J-).</p> <p>The MS/MSD relative percent difference (RPD) for iron was outside of the acceptance criteria. The detected result for iron in the parent sample was qualified as estimated (flagged J).</p>

Post digestion spikes:

Within Criteria	Exceedance/Notes
Y	

Serial dilutions:

Within Criteria	Exceedance/Notes
Y	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	Radionuclide duplicate error ratios (DERs) were within laboratory limits.



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Field duplicates:

Within Criteria	Exceedance/Notes
N	GA-SS-TS04-211005 (reported in ALS Report No. 2110170) and GA-SS-TS04-211005-DUP: The relative percent difference (RPD) between the parent sample result and the field duplicate result for molybdenum was outside acceptance criteria. The molybdenum results for both samples were qualified as estimated (flagged J).

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	The Cs-137, K-40, Ra-226, and Ra-228 results for samples GA-SS-TS04-211005-DUP, GA-SS-TS08-211005, GA-SS-S03-211005, and GA-SS-S05-211005 were qualified “G” by the laboratory to indicate a density more than 15% different in the sample than the LCS. As a result, the Cs-137, K-40, Ra-226, and Ra-228 results for these samples were qualified as estimated (flagged J/UJ).

Sample dilutions:

Within Criteria	Exceedance/Notes
N	<p>According to laboratory practice, all samples analyzed for metals by method SW-846 6020B were analyzed at a 10-fold dilution. Additional dilutions of 100-fold were required for uranium in GA-SS-S01-211005, GA-SS-S02-211005, GA-SS-S04-211005, GA-SS-S05-211005, GA-SS-W01-211005, GA-SS-W03-211005, and GA-SS-W05-211005 due to concentrations exceeding the calibration range of the instrument. MDLs and RLs were adjusted accordingly.</p> <p>Dilution of 100-fold was performed for GA-SS-S03-211005 due to initial uranium concentrations exceeding the calibration range of the instrument. Adequate sample volume was not available for further dilution, and the result from the 100-fold dilution was reported by the laboratory. As a result, the uranium concentration for GA-SS-S03-211005 was qualified as estimated (flagged J).</p>

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	



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Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
N	<p>Metals: Analytes detected at concentrations above the MDL but below the RL were qualified as estimated (flagged J) by the laboratory. Analytes detected at concentrations below the MDL were reported as not detected (flagged U) by the laboratory and were raised to the value of the RL by the data reviewer. MDLs and RLs are provided in the attached analytical data table.</p> <p>Radionuclides and Isotopes: Results are reported according to activity counts for radionuclides and isotopes. The radionuclide and isotope results are reported compared to their minimum detectable concentration (MDC). If the activity concentration in a sample is equal to or greater than the MDC, then there is a 95% chance that radioactive material in the sample will be detected. Radionuclides and isotopes detected at concentrations below the MDC were reported as not detected (flagged U) by the laboratory and were raised to the value of the MDC by the data reviewer. The sample-specific MDCs for the radionuclide and isotope samples are provided in the attached analytical data table in the RL column.</p> <p>The requested MDCs for the following radionuclides and isotopes in the samples listed below were not met, but the reported activity was greater than the reported MDCs:</p> <ul style="list-style-type: none"> • Ra-226 and Th-230 in samples GA-SS-TS04-211005-DUP, GA-SS-TS08-211005, GA-SS-S03-211005, and GA-SS-S05-211005. • U-234, U-235, and U-238 in samples GA-SS-S03-211005 and GA-SS-S05-211005. <p>The requested MDCs for Cs-137 in samples GA-SS-S03-211005, GA-SS-S05-211005, and GA-SS-TS04-211005-DUP were not met, and the reported activity was less than the reported MDCs (flagged U). As a result, the not-detected Cs-137 results in these samples were qualified as estimated (flagged UJ).</p>

Tentatively identified compounds:



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Within Criteria	Exceedance/Notes
NA	

Other [Software quantitation (Ra-228)]:

Within Criteria	Exceedance/Notes
N	The Ra-228 result in GA-SS-TS08-211005 was qualified “NQ” by the laboratory. In cases where there are no peaks found in the search routine, the software performs a net quantification. The lack of energy peaks for Ra-228 indicates that nuclides were not detected at any level above the MDC. As a result, the Ra-228 detect for GA-SS-TS08-211005 was qualified as not-detected (flagged U), and the MDC was raised to the value reported by the net quantification.

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.



GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-E01-211005	SW6020	ALUMINUM	5500000		7100	16000	UG/KG	5500000	
GA-SS-E01-211005	SW6020	ANTIMONY	360		20	110	UG/KG	360	
GA-SS-E01-211005	SW6020	ARSENIC	36000		54	220	UG/KG	36000	
GA-SS-E01-211005	SW6020	BARIUM	190000		250	550	UG/KG	190000	
GA-SS-E01-211005	SW6020	BERYLLIUM	660		5.5	55	UG/KG	660	
GA-SS-E01-211005	SW6020	CADMIUM	510		24	220	UG/KG	510	
GA-SS-E01-211005	SW6020	CALCIUM	10000000		19000	110000	UG/KG	10000000	
GA-SS-E01-211005	SW6020	CHROMIUM	11000		600	1100	UG/KG	11000	
GA-SS-E01-211005	SW6020	COBALT	7000		35	550	UG/KG	7000	
GA-SS-E01-211005	SW6020	COPPER	20000		320	2200	UG/KG	20000	
GA-SS-E01-211005	SW6020	IRON	15000000		12000	22000	UG/KG	15000000	
GA-SS-E01-211005	SW6020	LEAD	42000		72	220	UG/KG	42000	
GA-SS-E01-211005	SW6020	MAGNESIUM	4100000		3600	11000	UG/KG	4100000	
GA-SS-E01-211005	SW6020	MANGANESE	510000		420	820	UG/KG	510000	
GA-SS-E01-211005	SW6020	MOLYBDENUM	21000		47	220	UG/KG	21000	
GA-SS-E01-211005	SW6020	NICKEL	16000		480	2200	UG/KG	16000	
GA-SS-E01-211005	SW6020	POTASSIUM	2500000		16000	110000	UG/KG	2500000	
GA-SS-E01-211005	SW6020	SELENIUM	2700		220	1100	UG/KG	2700	
GA-SS-E01-211005	SW6020	SILVER	170		9.1	55	UG/KG	170	
GA-SS-E01-211005	SW6020	SODIUM	150000		16000	110000	UG/KG	150000	
GA-SS-E01-211005	SW6020	THALLIUM	190		2.7	11	UG/KG	190	
GA-SS-E01-211005	SW6020	THORIUM	2700		8.8	22	UG/KG	2700	
GA-SS-E01-211005	SW6020	URANIUM	35000		10	22	UG/KG	35000	
GA-SS-E01-211005	SW6020	VANADIUM	17000		140	550	UG/KG	17000	
GA-SS-E01-211005	SW6020	ZINC	85000		4500	11000	UG/KG	85000	
GA-SS-E02-211005	SW6020	ALUMINUM	3800000		7200	17000	UG/KG	3800000	
GA-SS-E02-211005	SW6020	ANTIMONY	200		20	110	UG/KG	200	
GA-SS-E02-211005	SW6020	ARSENIC	21000		54	220	UG/KG	21000	
GA-SS-E02-211005	SW6020	BARIUM	140000		250	550	UG/KG	140000	
GA-SS-E02-211005	SW6020	BERYLLIUM	460		5.5	55	UG/KG	460	
GA-SS-E02-211005	SW6020	CADMIUM	370		24	220	UG/KG	370	
GA-SS-E02-211005	SW6020	CALCIUM	13000000		19000	110000	UG/KG	13000000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-E02-211005	SW6020	CHROMIUM	7200		610	1100	UG/KG	7200	
GA-SS-E02-211005	SW6020	COBALT	6400		35	550	UG/KG	6400	
GA-SS-E02-211005	SW6020	COPPER	12000		320	2200	UG/KG	12000	
GA-SS-E02-211005	SW6020	IRON	9800000		12000	22000	UG/KG	9800000	
GA-SS-E02-211005	SW6020	LEAD	26000		73	220	UG/KG	26000	
GA-SS-E02-211005	SW6020	MAGNESIUM	4600000		3600	11000	UG/KG	4600000	
GA-SS-E02-211005	SW6020	MANGANESE	430000		420	830	UG/KG	430000	
GA-SS-E02-211005	SW6020	MOLYBDENUM	22000		48	220	UG/KG	22000	
GA-SS-E02-211005	SW6020	NICKEL	13000		490	2200	UG/KG	13000	
GA-SS-E02-211005	SW6020	POTASSIUM	1700000		17000	110000	UG/KG	1700000	
GA-SS-E02-211005	SW6020	SELENIUM	2200		220	1100	UG/KG	2200	
GA-SS-E02-211005	SW6020	SILVER	50 J		9.2	55	UG/KG	50 J	
GA-SS-E02-211005	SW6020	SODIUM	130000		17000	110000	UG/KG	130000	
GA-SS-E02-211005	SW6020	THALLIUM	150		2.8	11	UG/KG	150	
GA-SS-E02-211005	SW6020	THORIUM	1500		8.8	22	UG/KG	1500	
GA-SS-E02-211005	SW6020	URANIUM	32000		10	22	UG/KG	32000	
GA-SS-E02-211005	SW6020	VANADIUM	12000		140	550	UG/KG	12000	
GA-SS-E02-211005	SW6020	ZINC	57000		4500	11000	UG/KG	57000	
GA-SS-E03-211005	SW6020	ALUMINUM	3100000		6900	16000	UG/KG	3100000	
GA-SS-E03-211005	SW6020	ANTIMONY	130		19	110	UG/KG	130	
GA-SS-E03-211005	SW6020	ARSENIC	12000		52	210	UG/KG	12000	
GA-SS-E03-211005	SW6020	BARIUM	120000		240	530	UG/KG	120000	
GA-SS-E03-211005	SW6020	BERYLLIUM	270		5.3	53	UG/KG	270	
GA-SS-E03-211005	SW6020	CADMIUM	230		23	210	UG/KG	230	
GA-SS-E03-211005	SW6020	CALCIUM	13000000		18000	110000	UG/KG	13000000	
GA-SS-E03-211005	SW6020	CHROMIUM	6900		580	1100	UG/KG	6900	
GA-SS-E03-211005	SW6020	COBALT	5300		34	530	UG/KG	5300	
GA-SS-E03-211005	SW6020	COPPER	9100		310	2100	UG/KG	9100	
GA-SS-E03-211005	SW6020	IRON	9700000		12000	21000	UG/KG	9700000	
GA-SS-E03-211005	SW6020	LEAD	12000		70	210	UG/KG	12000	
GA-SS-E03-211005	SW6020	MAGNESIUM	5400000		3500	11000	UG/KG	5400000	
GA-SS-E03-211005	SW6020	MANGANESE	330000		400	800	UG/KG	330000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-E03-211005	SW6020	MOLYBDENUM	3700		46	210	UG/KG	3700	
GA-SS-E03-211005	SW6020	NICKEL	13000		470	2100	UG/KG	13000	
GA-SS-E03-211005	SW6020	POTASSIUM	1200000		16000	110000	UG/KG	1200000	
GA-SS-E03-211005	SW6020	SELENIUM	860 J		210	1100	UG/KG	860 J	
GA-SS-E03-211005	SW6020	SILVER	32 J		8.8	53	UG/KG	32 J	
GA-SS-E03-211005	SW6020	SODIUM	76000 J		16000	110000	UG/KG	76000 J	
GA-SS-E03-211005	SW6020	THALLIUM	110		2.7	11	UG/KG	110	
GA-SS-E03-211005	SW6020	THORIUM	1700		8.5	21	UG/KG	1700	
GA-SS-E03-211005	SW6020	URANIUM	5900		10	21	UG/KG	5900	
GA-SS-E03-211005	SW6020	VANADIUM	13000		140	530	UG/KG	13000	
GA-SS-E03-211005	SW6020	ZINC	39000		4400	11000	UG/KG	39000	
GA-SS-E04-211005	SW6020	ALUMINUM	3000000		6600	15000	UG/KG	3000000	
GA-SS-E04-211005	SW6020	ANTIMONY	130		18	100	UG/KG	130	
GA-SS-E04-211005	SW6020	ARSENIC	8200		50	200	UG/KG	8200	
GA-SS-E04-211005	SW6020	BARIUM	100000		230	510	UG/KG	100000	
GA-SS-E04-211005	SW6020	BERYLLIUM	270		5.1	51	UG/KG	270	
GA-SS-E04-211005	SW6020	CADMIUM	130 J		22	200	UG/KG	130 J	
GA-SS-E04-211005	SW6020	CALCIUM	6600000		17000	100000	UG/KG	6600000	
GA-SS-E04-211005	SW6020	CHROMIUM	7600		560	1000	UG/KG	7600	
GA-SS-E04-211005	SW6020	COBALT	4200		32	510	UG/KG	4200	
GA-SS-E04-211005	SW6020	COPPER	7300		290	2000	UG/KG	7300	
GA-SS-E04-211005	SW6020	IRON	12000000		11000	20000	UG/KG	12000000	
GA-SS-E04-211005	SW6020	LEAD	8300		67	200	UG/KG	8300	
GA-SS-E04-211005	SW6020	MAGNESIUM	2400000		3300	10000	UG/KG	2400000	
GA-SS-E04-211005	SW6020	MANGANESE	260000		390	760	UG/KG	260000	
GA-SS-E04-211005	SW6020	MOLYBDENUM	3500		44	200	UG/KG	3500	
GA-SS-E04-211005	SW6020	NICKEL	9500		450	2000	UG/KG	9500	
GA-SS-E04-211005	SW6020	POTASSIUM	890000		15000	100000	UG/KG	890000	
GA-SS-E04-211005	SW6020	SELENIUM	830 J		200	1000	UG/KG	830 J	
GA-SS-E04-211005	SW6020	SILVER	21 J		8.4	51	UG/KG	21 J	
GA-SS-E04-211005	SW6020	SODIUM	160000		15000	100000	UG/KG	160000	
GA-SS-E04-211005	SW6020	THALLIUM	82		2.5	10	UG/KG	82	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-E04-211005	SW6020	THORIUM	2100		8.1		20 UG/KG	2100	
GA-SS-E04-211005	SW6020	URANIUM	6900		9.6		20 UG/KG	6900	
GA-SS-E04-211005	SW6020	VANADIUM	14000		130		510 UG/KG	14000	
GA-SS-E04-211005	SW6020	ZINC	23000		4200		10000 UG/KG	23000	
GA-SS-E05-211005	SW6020	ALUMINUM	4300000		6900		16000 UG/KG	4300000	
GA-SS-E05-211005	SW6020	ANTIMONY	190		19		110 UG/KG	190	
GA-SS-E05-211005	SW6020	ARSENIC	13000		52		210 UG/KG	13000	
GA-SS-E05-211005	SW6020	BARIUM	160000		240		530 UG/KG	160000	
GA-SS-E05-211005	SW6020	BERYLLIUM	480		5.3		53 UG/KG	480	
GA-SS-E05-211005	SW6020	CADMIUM	280		23		210 UG/KG	280	
GA-SS-E05-211005	SW6020	CALCIUM	8800000		18000		110000 UG/KG	8800000	
GA-SS-E05-211005	SW6020	CHROMIUM	8400		590		1100 UG/KG	8400	
GA-SS-E05-211005	SW6020	COBALT	5400		34		530 UG/KG	5400	
GA-SS-E05-211005	SW6020	COPPER	12000		310		2100 UG/KG	12000	
GA-SS-E05-211005	SW6020	IRON	13000000		12000		21000 UG/KG	13000000	
GA-SS-E05-211005	SW6020	LEAD	22000		70		210 UG/KG	22000	
GA-SS-E05-211005	SW6020	MAGNESIUM	3600000		3500		11000 UG/KG	3600000	
GA-SS-E05-211005	SW6020	MANGANESE	330000		400		800 UG/KG	330000	
GA-SS-E05-211005	SW6020	MOLYBDENUM	7900		46		210 UG/KG	7900	
GA-SS-E05-211005	SW6020	NICKEL	12000		470		2100 UG/KG	12000	
GA-SS-E05-211005	SW6020	POTASSIUM	1500000		16000		110000 UG/KG	1500000	
GA-SS-E05-211005	SW6020	SELENIUM	1400		210		1100 UG/KG	1400	
GA-SS-E05-211005	SW6020	SILVER	46 J		8.8		53 UG/KG	46 J	
GA-SS-E05-211005	SW6020	SODIUM	640000		16000		110000 UG/KG	640000	
GA-SS-E05-211005	SW6020	THALLIUM	130		2.7		11 UG/KG	130	
GA-SS-E05-211005	SW6020	THORIUM	2900		8.5		21 UG/KG	2900	
GA-SS-E05-211005	SW6020	URANIUM	17000		10		21 UG/KG	17000	
GA-SS-E05-211005	SW6020	VANADIUM	14000		140		530 UG/KG	14000	
GA-SS-E05-211005	SW6020	ZINC	46000		4400		11000 UG/KG	46000	
GA-SS-N01-211005	SW6020	ALUMINUM	6600000		7300		17000 UG/KG	6600000	
GA-SS-N01-211005	SW6020	ANTIMONY	320		20		110 UG/KG	320	
GA-SS-N01-211005	SW6020	ARSENIC	56000		55		220 UG/KG	56000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-N01-211005	SW6020	BARIUM	180000		260	560	UG/KG	180000	
GA-SS-N01-211005	SW6020	BERYLLIUM	750		5.6	56	UG/KG	750	
GA-SS-N01-211005	SW6020	CADMIUM	440		25	220	UG/KG	440	
GA-SS-N01-211005	SW6020	CALCIUM	5000000		19000	110000	UG/KG	5000000	
GA-SS-N01-211005	SW6020	CHROMIUM	11000		620	1100	UG/KG	11000	
GA-SS-N01-211005	SW6020	COBALT	6300		36	560	UG/KG	6300	
GA-SS-N01-211005	SW6020	COPPER	16000		320	2200	UG/KG	16000	
GA-SS-N01-211005	SW6020	IRON	20000000		12000	22000	UG/KG	20000000	
GA-SS-N01-211005	SW6020	LEAD	15000		74	220	UG/KG	15000	
GA-SS-N01-211005	SW6020	MAGNESIUM	2500000		3700	11000	UG/KG	2500000	
GA-SS-N01-211005	SW6020	MANGANESE	420000		430	840	UG/KG	420000	
GA-SS-N01-211005	SW6020	MOLYBDENUM	44000		48	220	UG/KG	44000	
GA-SS-N01-211005	SW6020	NICKEL	14000		490	2200	UG/KG	14000	
GA-SS-N01-211005	SW6020	POTASSIUM	3000000		17000	110000	UG/KG	3000000	
GA-SS-N01-211005	SW6020	SELENIUM	3000		220	1100	UG/KG	3000	
GA-SS-N01-211005	SW6020	SILVER	49 J		9.3	56	UG/KG	49 J	
GA-SS-N01-211005	SW6020	SODIUM	100000 J		17000	110000	UG/KG	100000 J	
GA-SS-N01-211005	SW6020	THALLIUM	170		2.8	11	UG/KG	170	
GA-SS-N01-211005	SW6020	THORIUM	2800		9	22	UG/KG	2800	
GA-SS-N01-211005	SW6020	URANIUM	89000		11	22	UG/KG	89000	
GA-SS-N01-211005	SW6020	VANADIUM	22000		150	560	UG/KG	22000	
GA-SS-N01-211005	SW6020	ZINC	60000		4600	11000	UG/KG	60000	
GA-SS-N02-211005	SW6020	ALUMINUM	6100000		7000	16000	UG/KG	6100000	
GA-SS-N02-211005	SW6020	ANTIMONY	220		19	110	UG/KG	220	
GA-SS-N02-211005	SW6020	ARSENIC	44000		53	220	UG/KG	44000	
GA-SS-N02-211005	SW6020	BARIUM	170000		250	540	UG/KG	170000	
GA-SS-N02-211005	SW6020	BERYLLIUM	670		5.4	54	UG/KG	670	
GA-SS-N02-211005	SW6020	CADMIUM	430		24	220	UG/KG	430	
GA-SS-N02-211005	SW6020	CALCIUM	4000000		18000	110000	UG/KG	4000000	
GA-SS-N02-211005	SW6020	CHROMIUM	9600		590	1100	UG/KG	9600	
GA-SS-N02-211005	SW6020	COBALT	5800		34	540	UG/KG	5800	
GA-SS-N02-211005	SW6020	COPPER	14000		310	2200	UG/KG	14000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-N02-211005	SW6020	IRON	13000000		12000	22000	UG/KG	13000000	
GA-SS-N02-211005	SW6020	LEAD	14000		71	220	UG/KG	14000	
GA-SS-N02-211005	SW6020	MAGNESIUM	2400000		3600	11000	UG/KG	2400000	
GA-SS-N02-211005	SW6020	MANGANESE	420000		410	810	UG/KG	420000	
GA-SS-N02-211005	SW6020	MOLYBDENUM	32000		46	220	UG/KG	32000	
GA-SS-N02-211005	SW6020	NICKEL	11000		470	2200	UG/KG	11000	
GA-SS-N02-211005	SW6020	POTASSIUM	2900000		16000	110000	UG/KG	2900000	
GA-SS-N02-211005	SW6020	SELENIUM	2700		220	1100	UG/KG	2700	
GA-SS-N02-211005	SW6020	SILVER	45 J		8.9	54	UG/KG	45 J	
GA-SS-N02-211005	SW6020	SODIUM	72000 J		16000	110000	UG/KG	72000 J	
GA-SS-N02-211005	SW6020	THALLIUM	160		2.7	11	UG/KG	160	
GA-SS-N02-211005	SW6020	THORIUM	2500		8.6	22	UG/KG	2500	
GA-SS-N02-211005	SW6020	URANIUM	78000		10	22	UG/KG	78000	
GA-SS-N02-211005	SW6020	VANADIUM	17000		140	540	UG/KG	17000	
GA-SS-N02-211005	SW6020	ZINC	50000		4400	11000	UG/KG	50000	
GA-SS-N03-211005	SW6020	ALUMINUM	5900000		7400	17000	UG/KG	5900000	
GA-SS-N03-211005	SW6020	ANTIMONY	490		21	110	UG/KG	490	
GA-SS-N03-211005	SW6020	ARSENIC	69000		56	230	UG/KG	69000	
GA-SS-N03-211005	SW6020	BARIUM	190000		260	570	UG/KG	190000	
GA-SS-N03-211005	SW6020	BERYLLIUM	730		5.7	57	UG/KG	730	
GA-SS-N03-211005	SW6020	CADMIUM	470		25	230	UG/KG	470	
GA-SS-N03-211005	SW6020	CALCIUM	4700000		19000	110000	UG/KG	4700000	
GA-SS-N03-211005	SW6020	CHROMIUM	9400		630	1100	UG/KG	9400	
GA-SS-N03-211005	SW6020	COBALT	5900		37	570	UG/KG	5900	
GA-SS-N03-211005	SW6020	COPPER	14000		330	2300	UG/KG	14000	
GA-SS-N03-211005	SW6020	IRON	17000000		13000	23000	UG/KG	17000000	
GA-SS-N03-211005	SW6020	LEAD	14000		76	230	UG/KG	14000	
GA-SS-N03-211005	SW6020	MAGNESIUM	2400000		3800	11000	UG/KG	2400000	
GA-SS-N03-211005	SW6020	MANGANESE	450000		440	860	UG/KG	450000	
GA-SS-N03-211005	SW6020	MOLYBDENUM	40000		49	230	UG/KG	40000	
GA-SS-N03-211005	SW6020	NICKEL	12000		500	2300	UG/KG	12000	
GA-SS-N03-211005	SW6020	POTASSIUM	3000000		17000	110000	UG/KG	3000000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-N03-211005	SW6020	SELENIUM	3800		230	1100	UG/KG	3800	
GA-SS-N03-211005	SW6020	SILVER	41 J		9.5	57	UG/KG	41 J	
GA-SS-N03-211005	SW6020	SODIUM	130000		17000	110000	UG/KG	130000	
GA-SS-N03-211005	SW6020	THALLIUM	170		2.9	11	UG/KG	170	
GA-SS-N03-211005	SW6020	THORIUM	2500		9.2	23	UG/KG	2500	
GA-SS-N03-211005	SW6020	URANIUM	89000		11	23	UG/KG	89000	
GA-SS-N03-211005	SW6020	VANADIUM	21000		150	570	UG/KG	21000	
GA-SS-N03-211005	SW6020	ZINC	49000		4700	11000	UG/KG	49000	
GA-SS-N04-211005	SW6020	ALUMINUM	5800000		7300	17000	UG/KG	5800000	
GA-SS-N04-211005	SW6020	ANTIMONY	240		20	110	UG/KG	240	
GA-SS-N04-211005	SW6020	ARSENIC	18000		55	230	UG/KG	18000	
GA-SS-N04-211005	SW6020	BARIUM	130000		260	560	UG/KG	130000	
GA-SS-N04-211005	SW6020	BERYLLIUM	550		5.6	56	UG/KG	550	
GA-SS-N04-211005	SW6020	CADMIUM	410		25	230	UG/KG	410	
GA-SS-N04-211005	SW6020	CALCIUM	4700000		19000	110000	UG/KG	4700000	
GA-SS-N04-211005	SW6020	CHROMIUM	10000		620	1100	UG/KG	10000	
GA-SS-N04-211005	SW6020	COBALT	5300		36	560	UG/KG	5300	
GA-SS-N04-211005	SW6020	COPPER	14000		330	2300	UG/KG	14000	
GA-SS-N04-211005	SW6020	IRON	14000000		12000	23000	UG/KG	14000000	
GA-SS-N04-211005	SW6020	LEAD	15000		74	230	UG/KG	15000	
GA-SS-N04-211005	SW6020	MAGNESIUM	2500000		3700	11000	UG/KG	2500000	
GA-SS-N04-211005	SW6020	MANGANESE	480000		430	840	UG/KG	480000	
GA-SS-N04-211005	SW6020	MOLYBDENUM	18000		48	230	UG/KG	18000	
GA-SS-N04-211005	SW6020	NICKEL	11000		500	2300	UG/KG	11000	
GA-SS-N04-211005	SW6020	POTASSIUM	3100000		17000	110000	UG/KG	3100000	
GA-SS-N04-211005	SW6020	SELENIUM	1900		230	1100	UG/KG	1900	
GA-SS-N04-211005	SW6020	SILVER	36 J		9.4	56	UG/KG	36 J	
GA-SS-N04-211005	SW6020	SODIUM	65000 J		17000	110000	UG/KG	65000 J	
GA-SS-N04-211005	SW6020	THALLIUM	160		2.8	11	UG/KG	160	
GA-SS-N04-211005	SW6020	THORIUM	2200		9	23	UG/KG	2200	
GA-SS-N04-211005	SW6020	URANIUM	31000		11	23	UG/KG	31000	
GA-SS-N04-211005	SW6020	VANADIUM	15000		150	560	UG/KG	15000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-N04-211005	SW6020	ZINC	56000		4600	11000	UG/KG	56000	
GA-SS-N05-211005	SW6020	ALUMINUM	6100000		7300	17000	UG/KG	6100000	
GA-SS-N05-211005	SW6020	ANTIMONY	330		20	110	UG/KG	330	
GA-SS-N05-211005	SW6020	ARSENIC	14000		55	230	UG/KG	14000	
GA-SS-N05-211005	SW6020	BARIUM	180000		260	570	UG/KG	180000	
GA-SS-N05-211005	SW6020	BERYLLIUM	550		5.7	57	UG/KG	550	
GA-SS-N05-211005	SW6020	CADMIUM	490		25	230	UG/KG	490	
GA-SS-N05-211005	SW6020	CALCIUM	18000000		19000	110000	UG/KG	18000000	
GA-SS-N05-211005	SW6020	CHROMIUM	11000		620	1100	UG/KG	11000	
GA-SS-N05-211005	SW6020	COBALT	5500		36	570	UG/KG	5500	
GA-SS-N05-211005	SW6020	COPPER	19000		330	2300	UG/KG	19000	
GA-SS-N05-211005	SW6020	IRON	15000000		12000	23000	UG/KG	15000000	
GA-SS-N05-211005	SW6020	LEAD	37000		75	230	UG/KG	37000	
GA-SS-N05-211005	SW6020	MAGNESIUM	4200000		3700	11000	UG/KG	4200000	
GA-SS-N05-211005	SW6020	MANGANESE	570000		430	850	UG/KG	570000	
GA-SS-N05-211005	SW6020	MOLYBDENUM	7900		49	230	UG/KG	7900	
GA-SS-N05-211005	SW6020	NICKEL	11000		500	2300	UG/KG	11000	
GA-SS-N05-211005	SW6020	POTASSIUM	4000000		17000	110000	UG/KG	4000000	
GA-SS-N05-211005	SW6020	SELENIUM	1700		230	1100	UG/KG	1700	
GA-SS-N05-211005	SW6020	SILVER	59		9.4	57	UG/KG	59	
GA-SS-N05-211005	SW6020	SODIUM	91000 J		17000	110000	UG/KG	91000 J	
GA-SS-N05-211005	SW6020	THALLIUM	150		2.8	11	UG/KG	150	
GA-SS-N05-211005	SW6020	THORIUM	2000		9	23	UG/KG	2000	
GA-SS-N05-211005	SW6020	URANIUM	15000		11	23	UG/KG	15000	
GA-SS-N05-211005	SW6020	VANADIUM	16000		150	570	UG/KG	16000	
GA-SS-N05-211005	SW6020	ZINC	88000		4600	11000	UG/KG	88000	
GA-SS-S01-211005	SW6020	ALUMINUM	7700000		6800	16000	UG/KG	7700000	
GA-SS-S01-211005	SW6020	ANTIMONY	430		19	110	UG/KG	430	
GA-SS-S01-211005	SW6020	ARSENIC	140000		51	210	UG/KG	140000	
GA-SS-S01-211005	SW6020	BARIUM	230000		240	530	UG/KG	230000	
GA-SS-S01-211005	SW6020	BERYLLIUM	1100		5.3	53	UG/KG	1100	
GA-SS-S01-211005	SW6020	CADMIUM	660		23	210	UG/KG	660	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-S01-211005	SW6020	CALCIUM	3500000		18000	110000	UG/KG	3500000	
GA-SS-S01-211005	SW6020	CHROMIUM	13000		580	1100	UG/KG	13000	
GA-SS-S01-211005	SW6020	COBALT	9000		34	530	UG/KG	9000	
GA-SS-S01-211005	SW6020	COPPER	14000		300	2100	UG/KG	14000	
GA-SS-S01-211005	SW6020	IRON	21000000		12000	21000	UG/KG	21000000	
GA-SS-S01-211005	SW6020	LEAD	17000		69	210	UG/KG	17000	
GA-SS-S01-211005	SW6020	MAGNESIUM	2200000		3500	11000	UG/KG	2200000	
GA-SS-S01-211005	SW6020	MANGANESE	440000		400	790	UG/KG	440000	
GA-SS-S01-211005	SW6020	MOLYBDENUM	150000		45	210	UG/KG	150000	
GA-SS-S01-211005	SW6020	NICKEL	16000		460	2100	UG/KG	16000	
GA-SS-S01-211005	SW6020	POTASSIUM	2500000		16000	110000	UG/KG	2500000	
GA-SS-S01-211005	SW6020	SELENIUM	9700		210	1100	UG/KG	9700	
GA-SS-S01-211005	SW6020	SILVER	44 J		8.7	53	UG/KG	44 J	
GA-SS-S01-211005	SW6020	SODIUM	1300000		16000	110000	UG/KG	1300000	
GA-SS-S01-211005	SW6020	THALLIUM	510		2.6	11	UG/KG	510	
GA-SS-S01-211005	SW6020	THORIUM	3900		8.4	21	UG/KG	3900	
GA-SS-S01-211005	SW6020	URANIUM	200000		100	210	UG/KG	200000	
GA-SS-S01-211005	SW6020	VANADIUM	26000		140	530	UG/KG	26000	
GA-SS-S01-211005	SW6020	ZINC	46000		4300	11000	UG/KG	46000	
GA-SS-S02-211005	SW6020	ALUMINUM	7800000		7000	16000	UG/KG	7800000	
GA-SS-S02-211005	SW6020	ANTIMONY	300		20	110	UG/KG	300	
GA-SS-S02-211005	SW6020	ARSENIC	290000		53	220	UG/KG	290000	
GA-SS-S02-211005	SW6020	BARIUM	300000		250	540	UG/KG	300000	
GA-SS-S02-211005	SW6020	BERYLLIUM	1500		5.4	54	UG/KG	1500	
GA-SS-S02-211005	SW6020	CADMIUM	1100		24	220	UG/KG	1100	
GA-SS-S02-211005	SW6020	CALCIUM	5200000		18000	110000	UG/KG	5200000	
GA-SS-S02-211005	SW6020	CHROMIUM	11000		600	1100	UG/KG	11000	
GA-SS-S02-211005	SW6020	COBALT	9800		35	540	UG/KG	9800	
GA-SS-S02-211005	SW6020	COPPER	14000		310	2200	UG/KG	14000	
GA-SS-S02-211005	SW6020	IRON	21000000		12000	22000	UG/KG	21000000	
GA-SS-S02-211005	SW6020	LEAD	18000		72	220	UG/KG	18000	
GA-SS-S02-211005	SW6020	MAGNESIUM	2300000		3600	11000	UG/KG	2300000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-S02-211005	SW6020	MANGANESE	400000		410	810	UG/KG	400000	
GA-SS-S02-211005	SW6020	MOLYBDENUM	340000		47	220	UG/KG	340000	
GA-SS-S02-211005	SW6020	NICKEL	20000		480	2200	UG/KG	20000	
GA-SS-S02-211005	SW6020	POTASSIUM	2600000		16000	110000	UG/KG	2600000	
GA-SS-S02-211005	SW6020	SELENIUM	19000		220	1100	UG/KG	19000	
GA-SS-S02-211005	SW6020	SILVER	38 J		9	54	UG/KG	38 J	
GA-SS-S02-211005	SW6020	SODIUM	1800000		16000	110000	UG/KG	1800000	
GA-SS-S02-211005	SW6020	THALLIUM	640		2.7	11	UG/KG	640	
GA-SS-S02-211005	SW6020	THORIUM	3900		8.7	22	UG/KG	3900	
GA-SS-S02-211005	SW6020	URANIUM	380000		100	220	UG/KG	380000	
GA-SS-S02-211005	SW6020	VANADIUM	32000		140	540	UG/KG	32000	
GA-SS-S02-211005	SW6020	ZINC	45000		4400	11000	UG/KG	45000	
GA-SS-S03-211005		704 Pb-210	81		0	0	pCi/g	81	
GA-SS-S03-211005		713 Cs-137	-0.05 U,M,G		1.16	1.16	pCi/g	1.16 UJ	
GA-SS-S03-211005		713 K-40	12.9 G		8.8	8.8	pCi/g	12.9 J	
GA-SS-S03-211005		713 Ra-226	202 M3,G		2	2	pCi/g	202 J	
GA-SS-S03-211005		713 Ra-228	2.5 U,G		3.7	3.7	pCi/g	3.7 UJ	
GA-SS-S03-211005		714 Po-210	84		0	0	pCi/g	84	
GA-SS-S03-211005		714 Th-230	171 M3		0	0	pCi/g	171	
GA-SS-S03-211005		714 Th-232	1.35		0.04	0.04	pCi/g	1.35	
GA-SS-S03-211005		714 U-234	189 M3		0	0	pCi/g	189	
GA-SS-S03-211005		714 U-235	10 M3		0.2	0.2	pCi/g	10	
GA-SS-S03-211005		714 U-238	193 M3		0	0	pCi/g	193	
GA-SS-S03-211005	SW6020	ALUMINUM	7400000		6800	16000	UG/KG	7400000	
GA-SS-S03-211005	SW6020	ANTIMONY	930 N		19	110	UG/KG	930 J-	
GA-SS-S03-211005	SW6020	ARSENIC	330000		52	210	UG/KG	330000	
GA-SS-S03-211005	SW6020	BARIUM	350000		240	530	UG/KG	350000	
GA-SS-S03-211005	SW6020	BERYLLIUM	1700		5.3	53	UG/KG	1700	
GA-SS-S03-211005	SW6020	CADMIUM	1500		23	210	UG/KG	1500	
GA-SS-S03-211005	SW6020	CALCIUM	5200000		18000	110000	UG/KG	5200000	
GA-SS-S03-211005	SW6020	CHROMIUM	11000		580	1100	UG/KG	11000	
GA-SS-S03-211005	SW6020	COBALT	16000 N		34	530	UG/KG	16000 J-	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-S03-211005	SW6020	COPPER	15000		300	2100	UG/KG	15000	
GA-SS-S03-211005	SW6020	IRON	41000000		12000	21000	UG/KG	41000000	J
GA-SS-S03-211005	SW6020	LEAD	26000		69	210	UG/KG	26000	
GA-SS-S03-211005	SW6020	MAGNESIUM	2200000		3500	11000	UG/KG	2200000	
GA-SS-S03-211005	SW6020	MANGANESE	660000		400	790	UG/KG	660000	
GA-SS-S03-211005	SW6020	MOLYBDENUM	380000		45	210	UG/KG	380000	
GA-SS-S03-211005	SW6020	NICKEL	28000		460	2100	UG/KG	28000	
GA-SS-S03-211005	SW6020	POTASSIUM	4000000		16000	110000	UG/KG	4000000	
GA-SS-S03-211005	SW6020	SELENIUM	26000 N		210	1100	UG/KG	26000	
GA-SS-S03-211005	SW6020	SILVER	62		8.7	53	UG/KG	62	
GA-SS-S03-211005	SW6020	SODIUM	2800000 N		16000	110000	UG/KG	2800000	J-
GA-SS-S03-211005	SW6020	THALLIUM	810 N		2.6	11	UG/KG	810	J-
GA-SS-S03-211005	SW6020	THORIUM	4200		8.4	21	UG/KG	4200	
GA-SS-S03-211005	SW6020	URANIUM	550000 E		100	210	UG/KG	550000	J
GA-SS-S03-211005	SW6020	VANADIUM	41000 N		140	530	UG/KG	41000	J-
GA-SS-S03-211005	SW6020	ZINC	79000		4300	11000	UG/KG	79000	
GA-SS-S04-211005	SW6020	ALUMINUM	6700000		7000	16000	UG/KG	6700000	
GA-SS-S04-211005	SW6020	ANTIMONY	770		19	110	UG/KG	770	
GA-SS-S04-211005	SW6020	ARSENIC	210000		53	210	UG/KG	210000	
GA-SS-S04-211005	SW6020	BARIUM	240000		250	540	UG/KG	240000	
GA-SS-S04-211005	SW6020	BERYLLIUM	1300		5.4	54	UG/KG	1300	
GA-SS-S04-211005	SW6020	CADMIUM	1000		24	210	UG/KG	1000	
GA-SS-S04-211005	SW6020	CALCIUM	4200000		18000	110000	UG/KG	4200000	
GA-SS-S04-211005	SW6020	CHROMIUM	13000		590	1100	UG/KG	13000	
GA-SS-S04-211005	SW6020	COBALT	12000		34	540	UG/KG	12000	
GA-SS-S04-211005	SW6020	COPPER	16000		310	2100	UG/KG	16000	
GA-SS-S04-211005	SW6020	IRON	29000000		12000	21000	UG/KG	29000000	
GA-SS-S04-211005	SW6020	LEAD	18000		71	210	UG/KG	18000	
GA-SS-S04-211005	SW6020	MAGNESIUM	2400000		3500	11000	UG/KG	2400000	
GA-SS-S04-211005	SW6020	MANGANESE	570000		410	800	UG/KG	570000	
GA-SS-S04-211005	SW6020	MOLYBDENUM	220000		46	210	UG/KG	220000	
GA-SS-S04-211005	SW6020	NICKEL	21000		470	2100	UG/KG	21000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-S04-211005	SW6020	POTASSIUM	2600000		16000	110000	UG/KG	2600000	
GA-SS-S04-211005	SW6020	SELENIUM	14000		210	1100	UG/KG	14000	
GA-SS-S04-211005	SW6020	SILVER	50 J		8.9	54	UG/KG	50 J	
GA-SS-S04-211005	SW6020	SODIUM	670000		16000	110000	UG/KG	670000	
GA-SS-S04-211005	SW6020	THALLIUM	380		2.7	11	UG/KG	380	
GA-SS-S04-211005	SW6020	THORIUM	3800		8.6	21	UG/KG	3800	
GA-SS-S04-211005	SW6020	URANIUM	300000		100	210	UG/KG	300000	
GA-SS-S04-211005	SW6020	VANADIUM	34000		140	540	UG/KG	34000	
GA-SS-S04-211005	SW6020	ZINC	66000		4400	11000	UG/KG	66000	
GA-SS-S05-211005		704 Pb-210	58		0	0	pCi/g	58	
GA-SS-S05-211005		713 Cs-137	0.29 U,M,G		0.94	0.94	pCi/g	0.94 UJ	
GA-SS-S05-211005		713 K-40	23.9 G		8.4	8.4	pCi/g	23.9 J	
GA-SS-S05-211005		713 Ra-226	188 M3,G		2	2	pCi/g	188 J	
GA-SS-S05-211005		713 Ra-228	1.9 U,G		2.9	2.9	pCi/g	2.9 UJ	
GA-SS-S05-211005		714 Po-210	59.6		0.1	0.1	pCi/g	59.6	
GA-SS-S05-211005		714 Th-230	161 M3		0	0	pCi/g	161	
GA-SS-S05-211005		714 Th-232	1.48		0.01	0.01	pCi/g	1.48	
GA-SS-S05-211005		714 U-234	171 M3		0	0	pCi/g	171	
GA-SS-S05-211005		714 U-235	8.7 M3		0.1	0.1	pCi/g	8.7	
GA-SS-S05-211005		714 U-238	178 M3		0	0	pCi/g	178	
GA-SS-S05-211005	SW6020	ALUMINUM	6100000		6600	15000	UG/KG	6100000	
GA-SS-S05-211005	SW6020	ANTIMONY	390		18	100	UG/KG	390	
GA-SS-S05-211005	SW6020	ARSENIC	260000		50	200	UG/KG	260000	
GA-SS-S05-211005	SW6020	BARIUM	180000		230	510	UG/KG	180000	
GA-SS-S05-211005	SW6020	BERYLLIUM	1100		5.1	51	UG/KG	1100	
GA-SS-S05-211005	SW6020	CADMIUM	930		22	200	UG/KG	930	
GA-SS-S05-211005	SW6020	CALCIUM	3200000		17000	100000	UG/KG	3200000	
GA-SS-S05-211005	SW6020	CHROMIUM	12000		560	1000	UG/KG	12000	
GA-SS-S05-211005	SW6020	COBALT	9500		33	510	UG/KG	9500	
GA-SS-S05-211005	SW6020	COPPER	14000		300	2000	UG/KG	14000	
GA-SS-S05-211005	SW6020	IRON	18000000		11000	20000	UG/KG	18000000	
GA-SS-S05-211005	SW6020	LEAD	18000		67	200	UG/KG	18000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-S05-211005	SW6020	MAGNESIUM	2400000		3400	10000	UG/KG	2400000	
GA-SS-S05-211005	SW6020	MANGANESE	410000		390	760	UG/KG	410000	
GA-SS-S05-211005	SW6020	MOLYBDENUM	200000		44	200	UG/KG	200000	
GA-SS-S05-211005	SW6020	NICKEL	18000		450	2000	UG/KG	18000	
GA-SS-S05-211005	SW6020	POTASSIUM	2500000		15000	100000	UG/KG	2500000	
GA-SS-S05-211005	SW6020	SELENIUM	16000		200	1000	UG/KG	16000	
GA-SS-S05-211005	SW6020	SILVER	47 J		8.5	51	UG/KG	47 J	
GA-SS-S05-211005	SW6020	SODIUM	700000		15000	100000	UG/KG	700000	
GA-SS-S05-211005	SW6020	THALLIUM	390		2.5	10	UG/KG	390	
GA-SS-S05-211005	SW6020	THORIUM	4000		8.2	20	UG/KG	4000	
GA-SS-S05-211005	SW6020	URANIUM	450000		97	200	UG/KG	450000	
GA-SS-S05-211005	SW6020	VANADIUM	28000		130	510	UG/KG	28000	
GA-SS-S05-211005	SW6020	ZINC	44000		4200	10000	UG/KG	44000	
GA-SS-TS04-211005-DUP		704 Pb-210	21.2		0.3	0.3	pCi/g	21.2 J-	
GA-SS-TS04-211005-DUP		713 Cs-137	0.06 U,M,G		0.87	0.87	pCi/g	0.87 UJ	
GA-SS-TS04-211005-DUP		713 K-40	23.7 G		7.4	7.4	pCi/g	23.7 J	
GA-SS-TS04-211005-DUP		713 Ra-226	56.9 M3,G		1.4	1.4	pCi/g	56.9 J	
GA-SS-TS04-211005-DUP		713 Ra-228	1.7 U,G		2.6	2.6	pCi/g	2.6 UJ	
GA-SS-TS04-211005-DUP		714 Po-210	23.5		0.1	0.1	pCi/g	23.5	
GA-SS-TS04-211005-DUP		714 Th-230	46.9 M3		0.1	0.1	pCi/g	46.9	
GA-SS-TS04-211005-DUP		714 Th-232	0.88		0.01	0.01	pCi/g	0.88	
GA-SS-TS04-211005-DUP		714 U-234	44		0.1	0.1	pCi/g	44	
GA-SS-TS04-211005-DUP		714 U-235	2.17		0.07	0.07	pCi/g	2.17	
GA-SS-TS04-211005-DUP		714 U-238	43.9		0	0	pCi/g	43.9	
GA-SS-TS04-211005-DUP	SW6020	ALUMINUM	5600000		6800	16000	UG/KG	5600000	
GA-SS-TS04-211005-DUP	SW6020	ANTIMONY	150		19	100	UG/KG	150	
GA-SS-TS04-211005-DUP	SW6020	ARSENIC	23000		51	210	UG/KG	23000	
GA-SS-TS04-211005-DUP	SW6020	BARIUM	190000		240	520	UG/KG	190000	
GA-SS-TS04-211005-DUP	SW6020	BERYLLIUM	790		5.2	52	UG/KG	790	
GA-SS-TS04-211005-DUP	SW6020	CADMIUM	510		23	210	UG/KG	510	
GA-SS-TS04-211005-DUP	SW6020	CALCIUM	4700000		18000	100000	UG/KG	4700000	
GA-SS-TS04-211005-DUP	SW6020	CHROMIUM	11000		570	1000	UG/KG	11000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-TS04-211005-DUP	SW6020	COBALT	7000		33	520	UG/KG	7000	
GA-SS-TS04-211005-DUP	SW6020	COPPER	15000		300	2100	UG/KG	15000	
GA-SS-TS04-211005-DUP	SW6020	IRON	13000000		11000	21000	UG/KG	13000000	
GA-SS-TS04-211005-DUP	SW6020	LEAD	16000		69	210	UG/KG	16000	
GA-SS-TS04-211005-DUP	SW6020	MAGNESIUM	2900000		3400	10000	UG/KG	2900000	
GA-SS-TS04-211005-DUP	SW6020	MANGANESE	340000		400	780	UG/KG	340000	
GA-SS-TS04-211005-DUP	SW6020	MOLYBDENUM	15000		45	210	UG/KG	15000	J
GA-SS-TS04-211005-DUP	SW6020	NICKEL	15000		460	2100	UG/KG	15000	
GA-SS-TS04-211005-DUP	SW6020	POTASSIUM	2500000		16000	100000	UG/KG	2500000	
GA-SS-TS04-211005-DUP	SW6020	SELENIUM	3400		210	1000	UG/KG	3400	
GA-SS-TS04-211005-DUP	SW6020	SILVER	54		8.6	52	UG/KG	54	
GA-SS-TS04-211005-DUP	SW6020	SODIUM	220000		16000	100000	UG/KG	220000	
GA-SS-TS04-211005-DUP	SW6020	THALLIUM	250		2.6	10	UG/KG	250	
GA-SS-TS04-211005-DUP	SW6020	THORIUM	3400		8.3	21	UG/KG	3400	
GA-SS-TS04-211005-DUP	SW6020	URANIUM	100000		9.9	21	UG/KG	100000	
GA-SS-TS04-211005-DUP	SW6020	VANADIUM	17000		140	520	UG/KG	17000	
GA-SS-TS04-211005-DUP	SW6020	ZINC	53000		4300	10000	UG/KG	53000	
GA-SS-TS08-211005		704 Pb-210	15.7		0.3	0.3	pCi/g	15.7	
GA-SS-TS08-211005		713 Cs-137	0.37	G	0.3	0.3	pCi/g	0.37	J
GA-SS-TS08-211005		713 K-40	14.3	G	4.7	4.7	pCi/g	14.3	J
GA-SS-TS08-211005		713 Ra-226	37.1	M3,G	1.1	1.1	pCi/g	37.1	J
GA-SS-TS08-211005		713 Ra-228	1.62	G,NQ	1.62	1.62	pCi/g	1.62	UJ
GA-SS-TS08-211005		714 Po-210	17		0.1	0.1	pCi/g	17	
GA-SS-TS08-211005		714 Th-230	29.4	M3	0.1	0.1	pCi/g	29.4	
GA-SS-TS08-211005		714 Th-232	0.95		0.05	0.05	pCi/g	0.95	
GA-SS-TS08-211005		714 U-234	26.6		0.1	0.1	pCi/g	26.6	
GA-SS-TS08-211005		714 U-235	1.35		0.03	0.03	pCi/g	1.35	
GA-SS-TS08-211005		714 U-238	27.1		0.1	0.1	pCi/g	27.1	
GA-SS-TS08-211005	SW6020	ALUMINUM	6400000		7600	18000	UG/KG	6400000	
GA-SS-TS08-211005	SW6020	ANTIMONY	330		21	120	UG/KG	330	
GA-SS-TS08-211005	SW6020	ARSENIC	26000		58	240	UG/KG	26000	
GA-SS-TS08-211005	SW6020	BARIUM	200000		270	590	UG/KG	200000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-TS08-211005	SW6020	BERYLLIUM	860		5.9	59	UG/KG	860	
GA-SS-TS08-211005	SW6020	CADMIUM	630		26	240	UG/KG	630	
GA-SS-TS08-211005	SW6020	CALCIUM	6500000		20000	120000	UG/KG	6500000	
GA-SS-TS08-211005	SW6020	CHROMIUM	11000		650	1200	UG/KG	11000	
GA-SS-TS08-211005	SW6020	COBALT	5200		38	590	UG/KG	5200	
GA-SS-TS08-211005	SW6020	COPPER	59000		340	2400	UG/KG	59000	
GA-SS-TS08-211005	SW6020	IRON	15000000		13000	24000	UG/KG	15000000	
GA-SS-TS08-211005	SW6020	LEAD	52000		78	240	UG/KG	52000	
GA-SS-TS08-211005	SW6020	MAGNESIUM	2700000		3900	12000	UG/KG	2700000	
GA-SS-TS08-211005	SW6020	MANGANESE	290000		450	880	UG/KG	290000	
GA-SS-TS08-211005	SW6020	MOLYBDENUM	17000		51	240	UG/KG	17000	
GA-SS-TS08-211005	SW6020	NICKEL	14000		520	2400	UG/KG	14000	
GA-SS-TS08-211005	SW6020	POTASSIUM	3100000		18000	120000	UG/KG	3100000	
GA-SS-TS08-211005	SW6020	SELENIUM	3400		240	1200	UG/KG	3400	
GA-SS-TS08-211005	SW6020	SILVER	71		9.8	59	UG/KG	71	
GA-SS-TS08-211005	SW6020	SODIUM	120000 J		18000	120000	UG/KG	120000 J	
GA-SS-TS08-211005	SW6020	THALLIUM	220		2.9	12	UG/KG	220	
GA-SS-TS08-211005	SW6020	THORIUM	3000		9.4	24	UG/KG	3000	
GA-SS-TS08-211005	SW6020	URANIUM	93000		11	24	UG/KG	93000	
GA-SS-TS08-211005	SW6020	VANADIUM	16000		150	590	UG/KG	16000	
GA-SS-TS08-211005	SW6020	ZINC	120000		4800	12000	UG/KG	120000	
GA-SS-W01-211005	SW6020	ALUMINUM	6000000		7000	16000	UG/KG	6000000	
GA-SS-W01-211005	SW6020	ANTIMONY	360		19	110	UG/KG	360	
GA-SS-W01-211005	SW6020	ARSENIC	270000		53	220	UG/KG	270000	
GA-SS-W01-211005	SW6020	BARIUM	210000		250	540	UG/KG	210000	
GA-SS-W01-211005	SW6020	BERYLLIUM	880		5.4	54	UG/KG	880	
GA-SS-W01-211005	SW6020	CADMIUM	790		24	220	UG/KG	790	
GA-SS-W01-211005	SW6020	CALCIUM	3000000		18000	110000	UG/KG	3000000	
GA-SS-W01-211005	SW6020	CHROMIUM	11000		600	1100	UG/KG	11000	
GA-SS-W01-211005	SW6020	COBALT	7100		35	540	UG/KG	7100	
GA-SS-W01-211005	SW6020	COPPER	12000		310	2200	UG/KG	12000	
GA-SS-W01-211005	SW6020	IRON	18000000		12000	22000	UG/KG	18000000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-W01-211005	SW6020	LEAD	13000		71	220	UG/KG	13000	
GA-SS-W01-211005	SW6020	MAGNESIUM	2000000		3600	11000	UG/KG	2000000	
GA-SS-W01-211005	SW6020	MANGANESE	440000		410	810	UG/KG	440000	
GA-SS-W01-211005	SW6020	MOLYBDENUM	220000		47	220	UG/KG	220000	
GA-SS-W01-211005	SW6020	NICKEL	16000		480	2200	UG/KG	16000	
GA-SS-W01-211005	SW6020	POTASSIUM	2100000		16000	110000	UG/KG	2100000	
GA-SS-W01-211005	SW6020	SELENIUM	9900		220	1100	UG/KG	9900	
GA-SS-W01-211005	SW6020	SILVER	61		9	54	UG/KG	61	
GA-SS-W01-211005	SW6020	SODIUM	180000		16000	110000	UG/KG	180000	
GA-SS-W01-211005	SW6020	THALLIUM	390		2.7	11	UG/KG	390	
GA-SS-W01-211005	SW6020	THORIUM	3200		8.7	22	UG/KG	3200	
GA-SS-W01-211005	SW6020	URANIUM	380000		100	220	UG/KG	380000	
GA-SS-W01-211005	SW6020	VANADIUM	23000		140	540	UG/KG	23000	
GA-SS-W01-211005	SW6020	ZINC	46000		4400	11000	UG/KG	46000	
GA-SS-W02-211005	SW6020	ALUMINUM	6900000		7400	17000	UG/KG	6900000	
GA-SS-W02-211005	SW6020	ANTIMONY	200		20	110	UG/KG	200	
GA-SS-W02-211005	SW6020	ARSENIC	57000		56	230	UG/KG	57000	
GA-SS-W02-211005	SW6020	BARIUM	200000		260	570	UG/KG	200000	
GA-SS-W02-211005	SW6020	BERYLLIUM	670		5.7	57	UG/KG	670	
GA-SS-W02-211005	SW6020	CADMIUM	360		25	230	UG/KG	360	
GA-SS-W02-211005	SW6020	CALCIUM	3600000		19000	110000	UG/KG	3600000	
GA-SS-W02-211005	SW6020	CHROMIUM	9600		620	1100	UG/KG	9600	
GA-SS-W02-211005	SW6020	COBALT	5800		36	570	UG/KG	5800	
GA-SS-W02-211005	SW6020	COPPER	10000		330	2300	UG/KG	10000	
GA-SS-W02-211005	SW6020	IRON	19000000		12000	23000	UG/KG	19000000	
GA-SS-W02-211005	SW6020	LEAD	10000		75	230	UG/KG	10000	
GA-SS-W02-211005	SW6020	MAGNESIUM	1900000		3700	11000	UG/KG	1900000	
GA-SS-W02-211005	SW6020	MANGANESE	400000		430	850	UG/KG	400000	
GA-SS-W02-211005	SW6020	MOLYBDENUM	55000		49	230	UG/KG	55000	
GA-SS-W02-211005	SW6020	NICKEL	12000		500	2300	UG/KG	12000	
GA-SS-W02-211005	SW6020	POTASSIUM	2100000		17000	110000	UG/KG	2100000	
GA-SS-W02-211005	SW6020	SELENIUM	3500		230	1100	UG/KG	3500	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-W02-211005	SW6020	SILVER	58		9.4	57	UG/KG	58	
GA-SS-W02-211005	SW6020	SODIUM	240000		17000	110000	UG/KG	240000	
GA-SS-W02-211005	SW6020	THALLIUM	190		2.8	11	UG/KG	190	
GA-SS-W02-211005	SW6020	THORIUM	3200		9.1	23	UG/KG	3200	
GA-SS-W02-211005	SW6020	URANIUM	110000		11	23	UG/KG	110000	
GA-SS-W02-211005	SW6020	VANADIUM	22000		150	570	UG/KG	22000	
GA-SS-W02-211005	SW6020	ZINC	39000		4600	11000	UG/KG	39000	
GA-SS-W03-211005	SW6020	ALUMINUM	5700000		7500	17000	UG/KG	5700000	
GA-SS-W03-211005	SW6020	ANTIMONY	380		21	110	UG/KG	380	
GA-SS-W03-211005	SW6020	ARSENIC	230000		56	230	UG/KG	230000	
GA-SS-W03-211005	SW6020	BARIUM	220000		260	570	UG/KG	220000	
GA-SS-W03-211005	SW6020	BERYLLIUM	960		5.7	57	UG/KG	960	
GA-SS-W03-211005	SW6020	CADMIUM	730		25	230	UG/KG	730	
GA-SS-W03-211005	SW6020	CALCIUM	4000000		19000	110000	UG/KG	4000000	
GA-SS-W03-211005	SW6020	CHROMIUM	11000		630	1100	UG/KG	11000	
GA-SS-W03-211005	SW6020	COBALT	8100		37	570	UG/KG	8100	
GA-SS-W03-211005	SW6020	COPPER	13000		330	2300	UG/KG	13000	
GA-SS-W03-211005	SW6020	IRON	24000000		13000	23000	UG/KG	24000000	
GA-SS-W03-211005	SW6020	LEAD	16000		76	230	UG/KG	16000	
GA-SS-W03-211005	SW6020	MAGNESIUM	2100000		3800	11000	UG/KG	2100000	
GA-SS-W03-211005	SW6020	MANGANESE	440000		440	860	UG/KG	440000	
GA-SS-W03-211005	SW6020	MOLYBDENUM	200000		49	230	UG/KG	200000	
GA-SS-W03-211005	SW6020	NICKEL	16000		500	2300	UG/KG	16000	
GA-SS-W03-211005	SW6020	POTASSIUM	2300000		17000	110000	UG/KG	2300000	
GA-SS-W03-211005	SW6020	SELENIUM	10000		230	1100	UG/KG	10000	
GA-SS-W03-211005	SW6020	SILVER	55 J		9.5	57	UG/KG	55 J	
GA-SS-W03-211005	SW6020	SODIUM	200000		17000	110000	UG/KG	200000	
GA-SS-W03-211005	SW6020	THALLIUM	400		2.9	11	UG/KG	400	
GA-SS-W03-211005	SW6020	THORIUM	3200		9.2	23	UG/KG	3200	
GA-SS-W03-211005	SW6020	URANIUM	390000		110	230	UG/KG	390000	
GA-SS-W03-211005	SW6020	VANADIUM	26000		150	570	UG/KG	26000	
GA-SS-W03-211005	SW6020	ZINC	47000		4700	11000	UG/KG	47000	

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Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-W04-211005	SW6020	ALUMINUM	6100000		7200	17000	UG/KG	6100000	
GA-SS-W04-211005	SW6020	ANTIMONY	310		20	110	UG/KG	310	
GA-SS-W04-211005	SW6020	ARSENIC	68000		55	220	UG/KG	68000	
GA-SS-W04-211005	SW6020	BARIUM	200000		260	560	UG/KG	200000	
GA-SS-W04-211005	SW6020	BERYLLIUM	650		5.6	56	UG/KG	650	
GA-SS-W04-211005	SW6020	CADMIUM	430		25	220	UG/KG	430	
GA-SS-W04-211005	SW6020	CALCIUM	3400000		19000	110000	UG/KG	3400000	
GA-SS-W04-211005	SW6020	CHROMIUM	11000		610	1100	UG/KG	11000	
GA-SS-W04-211005	SW6020	COBALT	7100		36	560	UG/KG	7100	
GA-SS-W04-211005	SW6020	COPPER	13000		320	2200	UG/KG	13000	
GA-SS-W04-211005	SW6020	IRON	20000000		12000	22000	UG/KG	20000000	
GA-SS-W04-211005	SW6020	LEAD	12000		74	220	UG/KG	12000	
GA-SS-W04-211005	SW6020	MAGNESIUM	2200000		3700	11000	UG/KG	2200000	
GA-SS-W04-211005	SW6020	MANGANESE	490000		420	840	UG/KG	490000	
GA-SS-W04-211005	SW6020	MOLYBDENUM	47000		48	220	UG/KG	47000	
GA-SS-W04-211005	SW6020	NICKEL	14000		490	2200	UG/KG	14000	
GA-SS-W04-211005	SW6020	POTASSIUM	1800000		17000	110000	UG/KG	1800000	
GA-SS-W04-211005	SW6020	SELENIUM	4400		220	1100	UG/KG	4400	
GA-SS-W04-211005	SW6020	SILVER	42 J		9.3	56	UG/KG	42 J	
GA-SS-W04-211005	SW6020	SODIUM	85000 J		17000	110000	UG/KG	85000 J	
GA-SS-W04-211005	SW6020	THALLIUM	200		2.8	11	UG/KG	200	
GA-SS-W04-211005	SW6020	THORIUM	3500		8.9	22	UG/KG	3500	
GA-SS-W04-211005	SW6020	URANIUM	110000		11	22	UG/KG	110000	
GA-SS-W04-211005	SW6020	VANADIUM	25000		140	560	UG/KG	25000	
GA-SS-W04-211005	SW6020	ZINC	46000		4600	11000	UG/KG	46000	
GA-SS-W05-211005	SW6020	ALUMINUM	5400000		7300	17000	UG/KG	5400000	
GA-SS-W05-211005	SW6020	ANTIMONY	580		20	110	UG/KG	580	
GA-SS-W05-211005	SW6020	ARSENIC	440000		55	220	UG/KG	440000	
GA-SS-W05-211005	SW6020	BARIUM	240000		260	560	UG/KG	240000	
GA-SS-W05-211005	SW6020	BERYLLIUM	1300		5.6	56	UG/KG	1300	
GA-SS-W05-211005	SW6020	CADMIUM	1100		25	220	UG/KG	1100	
GA-SS-W05-211005	SW6020	CALCIUM	4800000		19000	110000	UG/KG	4800000	

GRIFFIN ASHING SOIL ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110173

Sample ID	Method	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL Qual
GA-SS-W05-211005	SW6020	CHROMIUM	12000		620	1100	UG/KG	12000	
GA-SS-W05-211005	SW6020	COBALT	8000		36	560	UG/KG	8000	
GA-SS-W05-211005	SW6020	COPPER	16000		320	2200	UG/KG	16000	
GA-SS-W05-211005	SW6020	IRON	31000000		12000	22000	UG/KG	31000000	
GA-SS-W05-211005	SW6020	LEAD	18000		74	220	UG/KG	18000	
GA-SS-W05-211005	SW6020	MAGNESIUM	2000000		3700	11000	UG/KG	2000000	
GA-SS-W05-211005	SW6020	MANGANESE	480000		430	840	UG/KG	480000	
GA-SS-W05-211005	SW6020	MOLYBDENUM	430000		48	220	UG/KG	430000	
GA-SS-W05-211005	SW6020	NICKEL	20000		490	2200	UG/KG	20000	
GA-SS-W05-211005	SW6020	POTASSIUM	2100000		17000	110000	UG/KG	2100000	
GA-SS-W05-211005	SW6020	SELENIUM	24000		220	1100	UG/KG	24000	
GA-SS-W05-211005	SW6020	SILVER	49 J		9.3	56	UG/KG	49 J	
GA-SS-W05-211005	SW6020	SODIUM	290000		17000	110000	UG/KG	290000	
GA-SS-W05-211005	SW6020	THALLIUM	630		2.8	11	UG/KG	630	
GA-SS-W05-211005	SW6020	THORIUM	4000		9	22	UG/KG	4000	
GA-SS-W05-211005	SW6020	URANIUM	910000		110	220	UG/KG	910000	
GA-SS-W05-211005	SW6020	VANADIUM	43000		150	560	UG/KG	43000	
GA-SS-W05-211005	SW6020	ZINC	47000		4600	11000	UG/KG	47000	



January 7, 2022,

Shun-Ping Chau
Contracting Officer Representative
U.S. Environmental Protection Agency, Region 8
Superfund and Emergency Management Division
1595 Wynkoop Street
Denver, CO 80202

**Subject: Data Validation Report
Griffin Ashing DV
EPA Contract No.: 68HERH20D0015
Task Order/Technical Direction No.: 2071-2108-05
Document Tracking No. 0505a**

Dear Ms. Chau:

Tetra Tech, Inc. (Tetra Tech) is submitting this data validation report for 17 tissue samples (including one field duplicate sample) collected at the Griffin Ashing site. The samples were collected on October 4 and 5, 2021, and were analyzed for ICP-MS metals by ALS Environmental, Fort Collins, Colorado. The final laboratory data package was received on October 25, 2021.

Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review*.

No rejection of results was required for this data package. The results may be used as qualified based on the findings of this validation effort.

If you have any questions regarding this data validation report, please call me at (303) 312-8843.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Tisdale'.

Rob Tisdale
Chemist

Enclosure

cc: Kevin Scott, Tetra Tech Program Manager
Ann Weise, Tetra Tech Project Manager
Clayton Longest, Tetra Tech Project Document Control Coordinator

ATTACHMENT

**DATA VALIDATION REPORT
ALS ENVIRONMENTAL, FORT COLLINS, CO
REPORT NO 2110159**

**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Site Name	Griffin Ashing Site	TO/TOLIN No.	2071-2108-05
Document Tracking No.	0505	Technical Reviewer (signature and date)	<i>Harry N. Ellis III</i> 5 January 2022
Data Reviewer (signature and date)	<i>Carol Smith</i> 12/23/2021	Laboratory	ALS Environmental – Fort Collins, CO
Laboratory Report No.	2110159		
Analyses	Metals by SW-846 Method 6020B		
Samples and Matrix	Seventeen plant tissue samples, including one field duplicate sample		
Collection Date(s)	October 4 th , and 5 th , 2021		
Field Duplicate Pairs	GA-PT-G27-211004 and GA-PT-G27-211004-DUP		
Field QC Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 2B validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Programmatic Quality Assurance Project Plan for Emergency Response and Site Assessment Task Orders, Superfund Technical Assessment and Response Team (START V), EPA Region 8, Revision 4* (May 2021), and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection of the data was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Y	



**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
N	Antimony, copper, lead, and thallium were detected in the associated continuing calibration blanks (CCBs) at a concentration greater than the method detection limit (MDL), but less than reporting limit (RL). There was no impact to the associated sample results.

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
Y	



**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
N	The ICSAB percent recovery (%R) for thorium was above the upper acceptance criteria. All detected results for thorium were qualified as estimated, potentially biased high (flagged J+).

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
NA	

MS/MSDs:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	



**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
N	GA-PT-G27-211004 and GA-PT-G27-211004-DUP: The relative percent differences (RPD) between the parent results and the field duplicate results for calcium, iron, magnesium, molybdenum, and selenium were greater than 70%. One result for iron was below the RL, but the difference between the parent result and field duplicate result for iron was greater than the RL. The calcium, iron, magnesium, molybdenum, and selenium results for both samples were qualified as estimated (flagged J).

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	According to laboratory practice, all samples analyzed for metals by method SW-846 6020B were analyzed at a 10-fold dilution. MDLs and RLs were adjusted accordingly.



**DATA VALIDATION CHECKLIST – STAGE 2B
EPA REGION 8 START CONTRACT**

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	Analytes detected at concentrations above the MDL but below the RL were qualified as estimated (flagged J) by the laboratory. Analytes detected at concentrations below the MDL were reported as not detected (flagged U) by the laboratory and were raised to the value of the RL. MDLs and RLs are provided in the attached analytical data table.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

Other [Specify]:

Within Criteria	Exceedance/Notes
NA	



DATA VALIDATION CHECKLIST – STAGE 2B EPA REGION 8 START CONTRACT

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.



GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY

ALS REPORT NO. 2110159

Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-E01-211005	SW6020	ALUMINUM	11000	J	6200	14000	UG/KG	11000	J
GA-PT-E01-211005	SW6020	ANTIMONY	58	J	17	95	UG/KG	58	J
GA-PT-E01-211005	SW6020	ARSENIC	90	J	47	190	UG/KG	90	J
GA-PT-E01-211005	SW6020	BARIUM	7000		220	480	UG/KG	7000	
GA-PT-E01-211005	SW6020	BERYLLIUM	48	U	4.8	48	UG/KG	48	U
GA-PT-E01-211005	SW6020	CADMIUM	190	U	21	190	UG/KG	190	U
GA-PT-E01-211005	SW6020	CALCIUM	1600000		16000	95000	UG/KG	1600000	
GA-PT-E01-211005	SW6020	CHROMIUM	950	U	520	950	UG/KG	950	U
GA-PT-E01-211005	SW6020	COBALT	480	U	31	480	UG/KG	480	U
GA-PT-E01-211005	SW6020	COPPER	1800	J	280	1900	UG/KG	1800	J
GA-PT-E01-211005	SW6020	IRON	29000		10000	19000	UG/KG	29000	
GA-PT-E01-211005	SW6020	LEAD	190	U	63	190	UG/KG	190	U
GA-PT-E01-211005	SW6020	MAGNESIUM	600000		3100	9500	UG/KG	600000	
GA-PT-E01-211005	SW6020	MANGANESE	10000		360	720	UG/KG	10000	
GA-PT-E01-211005	SW6020	MOLYBDENUM	5200		41	190	UG/KG	5200	
GA-PT-E01-211005	SW6020	NICKEL	1900	U	420	1900	UG/KG	1900	U
GA-PT-E01-211005	SW6020	POTASSIUM	8200000		14000	95000	UG/KG	8200000	
GA-PT-E01-211005	SW6020	SELENIUM	330	J	190	950	UG/KG	330	J
GA-PT-E01-211005	SW6020	SILVER	48	U	7.9	48	UG/KG	48	U
GA-PT-E01-211005	SW6020	SODIUM	95000	U	14000	95000	UG/KG	95000	U
GA-PT-E01-211005	SW6020	THALLIUM	9.5	U	2.4	9.5	UG/KG	9.5	U
GA-PT-E01-211005	SW6020	THORIUM	19	U	7.6	19	UG/KG	19	U
GA-PT-E01-211005	SW6020	URANIUM	30		9.1	19	UG/KG	30	
GA-PT-E01-211005	SW6020	VANADIUM	480	U	120	480	UG/KG	480	U
GA-PT-E01-211005	SW6020	ZINC	6800	J	3900	9500	UG/KG	6800	J
GA-PT-G01-211004	SW6020	ALUMINUM	46000		6200	14000	UG/KG	46000	
GA-PT-G01-211004	SW6020	ANTIMONY	96	U	17	96	UG/KG	96	U
GA-PT-G01-211004	SW6020	ARSENIC	170	J	47	190	UG/KG	170	J
GA-PT-G01-211004	SW6020	BARIUM	29000		220	480	UG/KG	29000	
GA-PT-G01-211004	SW6020	BERYLLIUM	48	U	4.8	48	UG/KG	48	U
GA-PT-G01-211004	SW6020	CADMIUM	190	U	21	190	UG/KG	190	U
GA-PT-G01-211004	SW6020	CALCIUM	1700000		16000	96000	UG/KG	1700000	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110159

Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G01-211004	SW6020	CHROMIUM	960 U		530		960 UG/KG	960 U	
GA-PT-G01-211004	SW6020	COBALT	42 J		31		480 UG/KG	42 J	
GA-PT-G01-211004	SW6020	COPPER	1300 J		280		1900 UG/KG	1300 J	
GA-PT-G01-211004	SW6020	IRON	98000		11000		19000 UG/KG	98000	
GA-PT-G01-211004	SW6020	LEAD	140 J		63		190 UG/KG	140 J	
GA-PT-G01-211004	SW6020	MAGNESIUM	480000		3200		9600 UG/KG	480000	
GA-PT-G01-211004	SW6020	MANGANESE	16000		360		720 UG/KG	16000	
GA-PT-G01-211004	SW6020	MOLYBDENUM	23000		41		190 UG/KG	23000	
GA-PT-G01-211004	SW6020	NICKEL	1900 U		420		1900 UG/KG	1900 U	
GA-PT-G01-211004	SW6020	POTASSIUM	2500000		14000		96000 UG/KG	2500000	
GA-PT-G01-211004	SW6020	SELENIUM	1600		190		960 UG/KG	1600	
GA-PT-G01-211004	SW6020	SILVER	48 U		8		48 UG/KG	48 U	
GA-PT-G01-211004	SW6020	SODIUM	96000 U		14000		96000 UG/KG	96000 U	
GA-PT-G01-211004	SW6020	THALLIUM	9.6 U		2.4		9.6 UG/KG	9.6 U	
GA-PT-G01-211004	SW6020	THORIUM	19		7.7		19 UG/KG	19 J+	
GA-PT-G01-211004	SW6020	URANIUM	39		9.1		19 UG/KG	39	
GA-PT-G01-211004	SW6020	VANADIUM	130 J		120		480 UG/KG	130 J	
GA-PT-G01-211004	SW6020	ZINC	8500 J		3900		9600 UG/KG	8500 J	
GA-PT-G10-211004	SW6020	ALUMINUM	25000		6300		15000 UG/KG	25000	
GA-PT-G10-211004	SW6020	ANTIMONY	22 J		17		97 UG/KG	22 J	
GA-PT-G10-211004	SW6020	ARSENIC	320		48		190 UG/KG	320	
GA-PT-G10-211004	SW6020	BARIUM	16000		220		490 UG/KG	16000	
GA-PT-G10-211004	SW6020	BERYLLIUM	49 U		4.9		49 UG/KG	49 U	
GA-PT-G10-211004	SW6020	CADMIUM	190 U		21		190 UG/KG	190 U	
GA-PT-G10-211004	SW6020	CALCIUM	6200000		17000		97000 UG/KG	6200000	
GA-PT-G10-211004	SW6020	CHROMIUM	970 U		530		970 UG/KG	970 U	
GA-PT-G10-211004	SW6020	COBALT	490 U		31		490 UG/KG	490 U	
GA-PT-G10-211004	SW6020	COPPER	1300 J		280		1900 UG/KG	1300 J	
GA-PT-G10-211004	SW6020	IRON	56000		11000		19000 UG/KG	56000	
GA-PT-G10-211004	SW6020	LEAD	84 J		64		190 UG/KG	84 J	
GA-PT-G10-211004	SW6020	MAGNESIUM	1800000		3200		9700 UG/KG	1800000	
GA-PT-G10-211004	SW6020	MANGANESE	16000		370		730 UG/KG	16000	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110159

Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G10-211004	SW6020	MOLYBDENUM	140000		42	190	UG/KG	140000	
GA-PT-G10-211004	SW6020	NICKEL	1900	U	430	1900	UG/KG	1900	U
GA-PT-G10-211004	SW6020	POTASSIUM	2600000		15000	97000	UG/KG	2600000	
GA-PT-G10-211004	SW6020	SELENIUM	5700		190	970	UG/KG	5700	
GA-PT-G10-211004	SW6020	SILVER	49	U	8.1	49	UG/KG	49	U
GA-PT-G10-211004	SW6020	SODIUM	97000	U	15000	97000	UG/KG	97000	U
GA-PT-G10-211004	SW6020	THALLIUM	9.7	U	2.4	9.7	UG/KG	9.7	U
GA-PT-G10-211004	SW6020	THORIUM	17	J	7.8	19	UG/KG	17	J+
GA-PT-G10-211004	SW6020	URANIUM	100		9.2	19	UG/KG	100	
GA-PT-G10-211004	SW6020	VANADIUM	490	U	130	490	UG/KG	490	U
GA-PT-G10-211004	SW6020	ZINC	7100	J	4000	9700	UG/KG	7100	J
GA-PT-G11-211004	SW6020	ALUMINUM	28000		6400	15000	UG/KG	28000	
GA-PT-G11-211004	SW6020	ANTIMONY	32	J	18	98	UG/KG	32	J
GA-PT-G11-211004	SW6020	ARSENIC	100	J	48	200	UG/KG	100	J
GA-PT-G11-211004	SW6020	BARIUM	27000		220	490	UG/KG	27000	
GA-PT-G11-211004	SW6020	BERYLLIUM	49	U	4.9	49	UG/KG	49	U
GA-PT-G11-211004	SW6020	CADMIUM	200	U	22	200	UG/KG	200	U
GA-PT-G11-211004	SW6020	CALCIUM	1700000		17000	98000	UG/KG	1700000	
GA-PT-G11-211004	SW6020	CHROMIUM	980	U	540	980	UG/KG	980	U
GA-PT-G11-211004	SW6020	COBALT	490	U	31	490	UG/KG	490	U
GA-PT-G11-211004	SW6020	COPPER	950	J	280	2000	UG/KG	950	J
GA-PT-G11-211004	SW6020	IRON	29000		11000	20000	UG/KG	29000	
GA-PT-G11-211004	SW6020	LEAD	200	U	65	200	UG/KG	200	U
GA-PT-G11-211004	SW6020	MAGNESIUM	620000		3200	9800	UG/KG	620000	
GA-PT-G11-211004	SW6020	MANGANESE	78000		370	730	UG/KG	78000	
GA-PT-G11-211004	SW6020	MOLYBDENUM	38000		42	200	UG/KG	38000	
GA-PT-G11-211004	SW6020	NICKEL	2000	U	430	2000	UG/KG	2000	U
GA-PT-G11-211004	SW6020	POTASSIUM	5000000		15000	98000	UG/KG	5000000	
GA-PT-G11-211004	SW6020	SELENIUM	2800		200	980	UG/KG	2800	
GA-PT-G11-211004	SW6020	SILVER	49	U	8.1	49	UG/KG	49	U
GA-PT-G11-211004	SW6020	SODIUM	98000	U	15000	98000	UG/KG	98000	U
GA-PT-G11-211004	SW6020	THALLIUM	9.8	U	2.4	9.8	UG/KG	9.8	U

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
ALS REPORT NO. 2110159

Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G11-211004	SW6020	THORIUM	7.8 J		7.8		20 UG/KG	7.8 J+	
GA-PT-G11-211004	SW6020	URANIUM	24		9.3		20 UG/KG	24	
GA-PT-G11-211004	SW6020	VANADIUM	490 U		130		490 UG/KG	490 U	
GA-PT-G11-211004	SW6020	ZINC	12000		4000		9800 UG/KG	12000	
GA-PT-G13-211004	SW6020	ALUMINUM	23000		6300		15000 UG/KG	23000	
GA-PT-G13-211004	SW6020	ANTIMONY	25 J		17		97 UG/KG	25 J	
GA-PT-G13-211004	SW6020	ARSENIC	160 J		48		190 UG/KG	160 J	
GA-PT-G13-211004	SW6020	BARIUM	16000		220		490 UG/KG	16000	
GA-PT-G13-211004	SW6020	BERYLLIUM	49 U		4.9		49 UG/KG	49 U	
GA-PT-G13-211004	SW6020	CADMIUM	190 U		21		190 UG/KG	190 U	
GA-PT-G13-211004	SW6020	CALCIUM	4700000		17000		97000 UG/KG	4700000	
GA-PT-G13-211004	SW6020	CHROMIUM	970 U		530		970 UG/KG	970 U	
GA-PT-G13-211004	SW6020	COBALT	490 U		31		490 UG/KG	490 U	
GA-PT-G13-211004	SW6020	COPPER	800 J		280		1900 UG/KG	800 J	
GA-PT-G13-211004	SW6020	IRON	50000		11000		19000 UG/KG	50000	
GA-PT-G13-211004	SW6020	LEAD	67 J		64		190 UG/KG	67 J	
GA-PT-G13-211004	SW6020	MAGNESIUM	1100000		3200		9700 UG/KG	1100000	
GA-PT-G13-211004	SW6020	MANGANESE	35000		370		730 UG/KG	35000	
GA-PT-G13-211004	SW6020	MOLYBDENUM	41000		42		190 UG/KG	41000	
GA-PT-G13-211004	SW6020	NICKEL	1900 U		430		1900 UG/KG	1900 U	
GA-PT-G13-211004	SW6020	POTASSIUM	3100000		15000		97000 UG/KG	3100000	
GA-PT-G13-211004	SW6020	SELENIUM	880 J		190		970 UG/KG	880 J	
GA-PT-G13-211004	SW6020	SILVER	49 U		8.1		49 UG/KG	49 U	
GA-PT-G13-211004	SW6020	SODIUM	97000 U		15000		97000 UG/KG	97000 U	
GA-PT-G13-211004	SW6020	THALLIUM	9.7 U		2.4		9.7 UG/KG	9.7 U	
GA-PT-G13-211004	SW6020	THORIUM	12 J		7.8		19 UG/KG	12 J+	
GA-PT-G13-211004	SW6020	URANIUM	39		9.2		19 UG/KG	39	
GA-PT-G13-211004	SW6020	VANADIUM	490 U		130		490 UG/KG	490 U	
GA-PT-G13-211004	SW6020	ZINC	4900 J		4000		9700 UG/KG	4900 J	
GA-PT-G14-211004	SW6020	ALUMINUM	10000 J		6300		14000 UG/KG	10000 J	
GA-PT-G14-211004	SW6020	ANTIMONY	32 J		17		97 UG/KG	32 J	
GA-PT-G14-211004	SW6020	ARSENIC	190 U		47		190 UG/KG	190 U	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G14-211004	SW6020	BARIUM	27000		220	480	UG/KG	27000	
GA-PT-G14-211004	SW6020	BERYLLIUM	48	U	4.8	48	UG/KG	48	U
GA-PT-G14-211004	SW6020	CADMIUM	190	U	21	190	UG/KG	190	U
GA-PT-G14-211004	SW6020	CALCIUM	1500000		16000	97000	UG/KG	1500000	
GA-PT-G14-211004	SW6020	CHROMIUM	970	U	530	970	UG/KG	970	U
GA-PT-G14-211004	SW6020	COBALT	480	U	31	480	UG/KG	480	U
GA-PT-G14-211004	SW6020	COPPER	870	J	280	1900	UG/KG	870	J
GA-PT-G14-211004	SW6020	IRON	27000		11000	19000	UG/KG	27000	
GA-PT-G14-211004	SW6020	LEAD	64	J	64	190	UG/KG	64	J
GA-PT-G14-211004	SW6020	MAGNESIUM	340000		3200	9700	UG/KG	340000	
GA-PT-G14-211004	SW6020	MANGANESE	59000		370	720	UG/KG	59000	
GA-PT-G14-211004	SW6020	MOLYBDENUM	9900		42	190	UG/KG	9900	
GA-PT-G14-211004	SW6020	NICKEL	1900	U	430	1900	UG/KG	1900	U
GA-PT-G14-211004	SW6020	POTASSIUM	3300000		14000	97000	UG/KG	3300000	
GA-PT-G14-211004	SW6020	SELENIUM	400	J	190	970	UG/KG	400	J
GA-PT-G14-211004	SW6020	SILVER	48	U	8	48	UG/KG	48	U
GA-PT-G14-211004	SW6020	SODIUM	97000	U	14000	97000	UG/KG	97000	U
GA-PT-G14-211004	SW6020	THALLIUM	9.7	U	2.4	9.7	UG/KG	9.7	U
GA-PT-G14-211004	SW6020	THORIUM	7.7	J	7.7	19	UG/KG	7.7	J+
GA-PT-G14-211004	SW6020	URANIUM	11	J	9.2	19	UG/KG	11	J
GA-PT-G14-211004	SW6020	VANADIUM	480	U	130	480	UG/KG	480	U
GA-PT-G14-211004	SW6020	ZINC	5400	J	4000	9700	UG/KG	5400	J
GA-PT-G17-211004	SW6020	ALUMINUM	39000		6500	15000	UG/KG	39000	
GA-PT-G17-211004	SW6020	ANTIMONY	57	J	18	100	UG/KG	57	J
GA-PT-G17-211004	SW6020	ARSENIC	170	J	49	200	UG/KG	170	J
GA-PT-G17-211004	SW6020	BARIUM	36000		230	500	UG/KG	36000	
GA-PT-G17-211004	SW6020	BERYLLIUM	50	U	5	50	UG/KG	50	U
GA-PT-G17-211004	SW6020	CADMIUM	32	J	22	200	UG/KG	32	J
GA-PT-G17-211004	SW6020	CALCIUM	2200000		17000	100000	UG/KG	2200000	
GA-PT-G17-211004	SW6020	CHROMIUM	1000	U	550	1000	UG/KG	1000	U
GA-PT-G17-211004	SW6020	COBALT	500	U	32	500	UG/KG	500	U
GA-PT-G17-211004	SW6020	COPPER	1100	J	290	2000	UG/KG	1100	J

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G17-211004	SW6020	IRON	76000		11000	20000	UG/KG	76000	
GA-PT-G17-211004	SW6020	LEAD	110 J		66	200	UG/KG	110 J	
GA-PT-G17-211004	SW6020	MAGNESIUM	790000		3300	10000	UG/KG	790000	
GA-PT-G17-211004	SW6020	MANGANESE	110000		380	750	UG/KG	110000	
GA-PT-G17-211004	SW6020	MOLYBDENUM	61000		43	200	UG/KG	61000	
GA-PT-G17-211004	SW6020	NICKEL	2000 U		440	2000	UG/KG	2000 U	
GA-PT-G17-211004	SW6020	POTASSIUM	3500000		15000	100000	UG/KG	3500000	
GA-PT-G17-211004	SW6020	SELENIUM	1100		200	1000	UG/KG	1100	
GA-PT-G17-211004	SW6020	SILVER	50 U		8.3	50	UG/KG	50 U	
GA-PT-G17-211004	SW6020	SODIUM	100000 U		15000	100000	UG/KG	100000 U	
GA-PT-G17-211004	SW6020	THALLIUM	10 U		2.5	10	UG/KG	10 U	
GA-PT-G17-211004	SW6020	THORIUM	18 J		8	20	UG/KG	18 J+	
GA-PT-G17-211004	SW6020	URANIUM	37		9.5	20	UG/KG	37	
GA-PT-G17-211004	SW6020	VANADIUM	500 U		130	500	UG/KG	500 U	
GA-PT-G17-211004	SW6020	ZINC	13000		4100	10000	UG/KG	13000	
GA-PT-G19-211004	SW6020	ALUMINUM	16000		6000	14000	UG/KG	16000	
GA-PT-G19-211004	SW6020	ANTIMONY	41 J		17	92	UG/KG	41 J	
GA-PT-G19-211004	SW6020	ARSENIC	180 J		45	180	UG/KG	180 J	
GA-PT-G19-211004	SW6020	BARIUM	15000		210	460	UG/KG	15000	
GA-PT-G19-211004	SW6020	BERYLLIUM	46 U		4.6	46	UG/KG	46 U	
GA-PT-G19-211004	SW6020	CADMIUM	180 U		20	180	UG/KG	180 U	
GA-PT-G19-211004	SW6020	CALCIUM	4000000		16000	92000	UG/KG	4000000	
GA-PT-G19-211004	SW6020	CHROMIUM	920 U		510	920	UG/KG	920 U	
GA-PT-G19-211004	SW6020	COBALT	460 U		30	460	UG/KG	460 U	
GA-PT-G19-211004	SW6020	COPPER	1600 J		270	1800	UG/KG	1600 J	
GA-PT-G19-211004	SW6020	IRON	46000		10000	18000	UG/KG	46000	
GA-PT-G19-211004	SW6020	LEAD	180 U		61	180	UG/KG	180 U	
GA-PT-G19-211004	SW6020	MAGNESIUM	2500000		3000	9200	UG/KG	2500000	
GA-PT-G19-211004	SW6020	MANGANESE	110000		350	690	UG/KG	110000	
GA-PT-G19-211004	SW6020	MOLYBDENUM	37000		40	180	UG/KG	37000	
GA-PT-G19-211004	SW6020	NICKEL	1800 U		410	1800	UG/KG	1800 U	
GA-PT-G19-211004	SW6020	POTASSIUM	5000000		14000	92000	UG/KG	5000000	

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G19-211004	SW6020	SELENIUM	3400		180	920	UG/KG	3400	
GA-PT-G19-211004	SW6020	SILVER	46 U		7.7	46	UG/KG	46 U	
GA-PT-G19-211004	SW6020	SODIUM	92000 U		14000	92000	UG/KG	92000 U	
GA-PT-G19-211004	SW6020	THALLIUM	4.6 J		2.3	9.2	UG/KG	4.6 J	
GA-PT-G19-211004	SW6020	THORIUM	11 J		7.4	18	UG/KG	11 J+	
GA-PT-G19-211004	SW6020	URANIUM	25		8.8	18	UG/KG	25	
GA-PT-G19-211004	SW6020	VANADIUM	460 U		120	460	UG/KG	460 U	
GA-PT-G19-211004	SW6020	ZINC	11000		3800	9200	UG/KG	11000	
GA-PT-G22-211004	SW6020	ALUMINUM	18000		6000	14000	UG/KG	18000	
GA-PT-G22-211004	SW6020	ANTIMONY	33 J		16	92	UG/KG	33 J	
GA-PT-G22-211004	SW6020	ARSENIC	770		45	180	UG/KG	770	
GA-PT-G22-211004	SW6020	BARIUM	5300		210	460	UG/KG	5300	
GA-PT-G22-211004	SW6020	BERYLLIUM	46 U		4.6	46	UG/KG	46 U	
GA-PT-G22-211004	SW6020	CADMIUM	180 U		20	180	UG/KG	180 U	
GA-PT-G22-211004	SW6020	CALCIUM	6600000		16000	92000	UG/KG	6600000	
GA-PT-G22-211004	SW6020	CHROMIUM	920 U		500	920	UG/KG	920 U	
GA-PT-G22-211004	SW6020	COBALT	460 U		29	460	UG/KG	460 U	
GA-PT-G22-211004	SW6020	COPPER	2100		270	1800	UG/KG	2100	
GA-PT-G22-211004	SW6020	IRON	42000		10000	18000	UG/KG	42000	
GA-PT-G22-211004	SW6020	LEAD	66 J		60	180	UG/KG	66 J	
GA-PT-G22-211004	SW6020	MAGNESIUM	1800000		3000	9200	UG/KG	1800000	
GA-PT-G22-211004	SW6020	MANGANESE	22000		350	690	UG/KG	22000	
GA-PT-G22-211004	SW6020	MOLYBDENUM	91000		39	180	UG/KG	91000	
GA-PT-G22-211004	SW6020	NICKEL	1800 U		400	1800	UG/KG	1800 U	
GA-PT-G22-211004	SW6020	POTASSIUM	3900000		14000	92000	UG/KG	3900000	
GA-PT-G22-211004	SW6020	SELENIUM	3100		180	920	UG/KG	3100	
GA-PT-G22-211004	SW6020	SILVER	46 U		7.6	46	UG/KG	46 U	
GA-PT-G22-211004	SW6020	SODIUM	92000 U		14000	92000	UG/KG	92000 U	
GA-PT-G22-211004	SW6020	THALLIUM	9.2 U		2.3	9.2	UG/KG	9.2 U	
GA-PT-G22-211004	SW6020	THORIUM	10 J		7.3	18	UG/KG	10 J+	
GA-PT-G22-211004	SW6020	URANIUM	49		8.7	18	UG/KG	49	
GA-PT-G22-211004	SW6020	VANADIUM	460 U		120	460	UG/KG	460 U	

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G22-211004	SW6020	ZINC	5200	J	3800	9200	UG/KG	5200	J
GA-PT-G25-211004	SW6020	ALUMINUM	48000		6400	15000	UG/KG	48000	
GA-PT-G25-211004	SW6020	ANTIMONY	44	J	18	98	UG/KG	44	J
GA-PT-G25-211004	SW6020	ARSENIC	490		48	200	UG/KG	490	
GA-PT-G25-211004	SW6020	BARIUM	25000		230	490	UG/KG	25000	
GA-PT-G25-211004	SW6020	BERYLLIUM	49	U	4.9	49	UG/KG	49	U
GA-PT-G25-211004	SW6020	CADMIUM	36	J	22	200	UG/KG	36	J
GA-PT-G25-211004	SW6020	CALCIUM	1400000		17000	98000	UG/KG	1400000	
GA-PT-G25-211004	SW6020	CHROMIUM	980	U	540	980	UG/KG	980	U
GA-PT-G25-211004	SW6020	COBALT	36	J	31	490	UG/KG	36	J
GA-PT-G25-211004	SW6020	COPPER	960	J	280	2000	UG/KG	960	J
GA-PT-G25-211004	SW6020	IRON	100000		11000	20000	UG/KG	100000	
GA-PT-G25-211004	SW6020	LEAD	130	J	65	200	UG/KG	130	J
GA-PT-G25-211004	SW6020	MAGNESIUM	490000		3200	9800	UG/KG	490000	
GA-PT-G25-211004	SW6020	MANGANESE	72000		370	730	UG/KG	72000	
GA-PT-G25-211004	SW6020	MOLYBDENUM	64000		42	200	UG/KG	64000	
GA-PT-G25-211004	SW6020	NICKEL	2000	U	430	2000	UG/KG	2000	U
GA-PT-G25-211004	SW6020	POTASSIUM	2900000		15000	98000	UG/KG	2900000	
GA-PT-G25-211004	SW6020	SELENIUM	1300		200	980	UG/KG	1300	
GA-PT-G25-211004	SW6020	SILVER	49	U	8.1	49	UG/KG	49	U
GA-PT-G25-211004	SW6020	SODIUM	98000	U	15000	98000	UG/KG	98000	U
GA-PT-G25-211004	SW6020	THALLIUM	9.8	U	2.4	9.8	UG/KG	9.8	U
GA-PT-G25-211004	SW6020	THORIUM	24		7.8	20	UG/KG	24	J+
GA-PT-G25-211004	SW6020	URANIUM	48		9.3	20	UG/KG	48	
GA-PT-G25-211004	SW6020	VANADIUM	140	J	130	490	UG/KG	140	J
GA-PT-G25-211004	SW6020	ZINC	6500	J	4000	9800	UG/KG	6500	J
GA-PT-G26-211004	SW6020	ALUMINUM	28000		6200	14000	UG/KG	28000	
GA-PT-G26-211004	SW6020	ANTIMONY	53	J	17	96	UG/KG	53	J
GA-PT-G26-211004	SW6020	ARSENIC	510		47	190	UG/KG	510	
GA-PT-G26-211004	SW6020	BARIUM	16000		220	480	UG/KG	16000	
GA-PT-G26-211004	SW6020	BERYLLIUM	48	U	4.8	48	UG/KG	48	U
GA-PT-G26-211004	SW6020	CADMIUM	190	U	21	190	UG/KG	190	U

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G26-211004	SW6020	CALCIUM	4700000		16000	96000	UG/KG	4700000	
GA-PT-G26-211004	SW6020	CHROMIUM	960	U	530	960	UG/KG	960	U
GA-PT-G26-211004	SW6020	COBALT	480	U	31	480	UG/KG	480	U
GA-PT-G26-211004	SW6020	COPPER	2000		280	1900	UG/KG	2000	
GA-PT-G26-211004	SW6020	IRON	76000		11000	19000	UG/KG	76000	
GA-PT-G26-211004	SW6020	LEAD	81	J	63	190	UG/KG	81	J
GA-PT-G26-211004	SW6020	MAGNESIUM	1200000		3200	9600	UG/KG	1200000	
GA-PT-G26-211004	SW6020	MANGANESE	34000		360	720	UG/KG	34000	
GA-PT-G26-211004	SW6020	MOLYBDENUM	42000		41	190	UG/KG	42000	
GA-PT-G26-211004	SW6020	NICKEL	1900	U	420	1900	UG/KG	1900	U
GA-PT-G26-211004	SW6020	POTASSIUM	4200000		14000	96000	UG/KG	4200000	
GA-PT-G26-211004	SW6020	SELENIUM	2800		190	960	UG/KG	2800	
GA-PT-G26-211004	SW6020	SILVER	48	U	7.9	48	UG/KG	48	U
GA-PT-G26-211004	SW6020	SODIUM	96000	U	14000	96000	UG/KG	96000	U
GA-PT-G26-211004	SW6020	THALLIUM	9.6	U	2.4	9.6	UG/KG	9.6	U
GA-PT-G26-211004	SW6020	THORIUM	16	J	7.7	19	UG/KG	16	J+
GA-PT-G26-211004	SW6020	URANIUM	50		9.1	19	UG/KG	50	
GA-PT-G26-211004	SW6020	VANADIUM	480	U	120	480	UG/KG	480	U
GA-PT-G26-211004	SW6020	ZINC	7900	J	3900	9600	UG/KG	7900	J
GA-PT-G27-211004	SW6020	ALUMINUM	10000	J	6400	15000	UG/KG	10000	J
GA-PT-G27-211004	SW6020	ANTIMONY	53	J	18	98	UG/KG	53	J
GA-PT-G27-211004	SW6020	ARSENIC	93	J	48	200	UG/KG	93	J
GA-PT-G27-211004	SW6020	BARIUM	30000		230	490	UG/KG	30000	
GA-PT-G27-211004	SW6020	BERYLLIUM	49	U	4.9	49	UG/KG	49	U
GA-PT-G27-211004	SW6020	CADMIUM	200	U	22	200	UG/KG	200	U
GA-PT-G27-211004	SW6020	CALCIUM	1200000		17000	98000	UG/KG	1200000	J
GA-PT-G27-211004	SW6020	CHROMIUM	980	U	540	980	UG/KG	980	U
GA-PT-G27-211004	SW6020	COBALT	490	U	31	490	UG/KG	490	U
GA-PT-G27-211004	SW6020	COPPER	950	J	280	2000	UG/KG	950	J
GA-PT-G27-211004	SW6020	IRON	20000	J	11000	20000	UG/KG	20000	J
GA-PT-G27-211004	SW6020	LEAD	200	U	65	200	UG/KG	200	U
GA-PT-G27-211004	SW6020	MAGNESIUM	560000		3200	9800	UG/KG	560000	J

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G27-211004	SW6020	MANGANESE	73000		370	740	UG/KG	73000	
GA-PT-G27-211004	SW6020	MOLYBDENUM	21000		42	200	UG/KG	21000	J
GA-PT-G27-211004	SW6020	NICKEL	2000	U	430	2000	UG/KG	2000	U
GA-PT-G27-211004	SW6020	POTASSIUM	4500000		15000	98000	UG/KG	4500000	
GA-PT-G27-211004	SW6020	SELENIUM	1300		200	980	UG/KG	1300	J
GA-PT-G27-211004	SW6020	SILVER	49	U	8.2	49	UG/KG	49	U
GA-PT-G27-211004	SW6020	SODIUM	98000	U	15000	98000	UG/KG	98000	U
GA-PT-G27-211004	SW6020	THALLIUM	9.8	U	2.5	9.8	UG/KG	9.8	U
GA-PT-G27-211004	SW6020	THORIUM	20	U	7.9	20	UG/KG	20	U
GA-PT-G27-211004	SW6020	URANIUM	9.8	J	9.3	20	UG/KG	9.8	J
GA-PT-G27-211004	SW6020	VANADIUM	490	U	130	490	UG/KG	490	U
GA-PT-G27-211004	SW6020	ZINC	17000		4000	9800	UG/KG	17000	
GA-PT-G27-211004-DUP	SW6020	ALUMINUM	23000		6500	15000	UG/KG	23000	
GA-PT-G27-211004-DUP	SW6020	ANTIMONY	57	J	18	100	UG/KG	57	J
GA-PT-G27-211004-DUP	SW6020	ARSENIC	280		49	200	UG/KG	280	
GA-PT-G27-211004-DUP	SW6020	BARIUM	22000		230	500	UG/KG	22000	
GA-PT-G27-211004-DUP	SW6020	BERYLLIUM	50	U	5	50	UG/KG	50	U
GA-PT-G27-211004-DUP	SW6020	CADMIUM	200	U	22	200	UG/KG	200	U
GA-PT-G27-211004-DUP	SW6020	CALCIUM	2700000		17000	100000	UG/KG	2700000	J
GA-PT-G27-211004-DUP	SW6020	CHROMIUM	1000	U	550	1000	UG/KG	1000	U
GA-PT-G27-211004-DUP	SW6020	COBALT	500	U	32	500	UG/KG	500	U
GA-PT-G27-211004-DUP	SW6020	COPPER	1700	J	290	2000	UG/KG	1700	J
GA-PT-G27-211004-DUP	SW6020	IRON	48000		11000	20000	UG/KG	48000	J
GA-PT-G27-211004-DUP	SW6020	LEAD	200	U	66	200	UG/KG	200	U
GA-PT-G27-211004-DUP	SW6020	MAGNESIUM	1300000		3300	10000	UG/KG	1300000	J
GA-PT-G27-211004-DUP	SW6020	MANGANESE	67000		380	750	UG/KG	67000	
GA-PT-G27-211004-DUP	SW6020	MOLYBDENUM	46000		43	200	UG/KG	46000	J
GA-PT-G27-211004-DUP	SW6020	NICKEL	2000	U	440	2000	UG/KG	2000	U
GA-PT-G27-211004-DUP	SW6020	POTASSIUM	6200000		15000	100000	UG/KG	6200000	
GA-PT-G27-211004-DUP	SW6020	SELENIUM	3100		200	1000	UG/KG	3100	J
GA-PT-G27-211004-DUP	SW6020	SILVER	50	U	8.3	50	UG/KG	50	U
GA-PT-G27-211004-DUP	SW6020	SODIUM	100000	U	15000	100000	UG/KG	100000	U

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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-G27-211004-DUP	SW6020	THALLIUM	10 U		2.5		10 UG/KG	10 U	
GA-PT-G27-211004-DUP	SW6020	THORIUM	11 J		8		20 UG/KG	11 J+	
GA-PT-G27-211004-DUP	SW6020	URANIUM	18 J		9.5		20 UG/KG	18 J	
GA-PT-G27-211004-DUP	SW6020	VANADIUM	500 U		130		500 UG/KG	500 U	
GA-PT-G27-211004-DUP	SW6020	ZINC	11000		4100		10000 UG/KG	11000	
GA-PT-G28-211004	SW6020	ALUMINUM	14000		5900		14000 UG/KG	14000	
GA-PT-G28-211004	SW6020	ANTIMONY	53 J		16		91 UG/KG	53 J	
GA-PT-G28-211004	SW6020	ARSENIC	290		45		180 UG/KG	290	
GA-PT-G28-211004	SW6020	BARIUM	26000		210		450 UG/KG	26000	
GA-PT-G28-211004	SW6020	BERYLLIUM	45 U		4.5		45 UG/KG	45 U	
GA-PT-G28-211004	SW6020	CADMIUM	180 U		20		180 UG/KG	180 U	
GA-PT-G28-211004	SW6020	CALCIUM	2400000		15000		91000 UG/KG	2400000	
GA-PT-G28-211004	SW6020	CHROMIUM	910 U		500		910 UG/KG	910 U	
GA-PT-G28-211004	SW6020	COBALT	450 U		29		450 UG/KG	450 U	
GA-PT-G28-211004	SW6020	COPPER	1200 J		260		1800 UG/KG	1200 J	
GA-PT-G28-211004	SW6020	IRON	36000		10000		18000 UG/KG	36000	
GA-PT-G28-211004	SW6020	LEAD	180 U		60		180 UG/KG	180 U	
GA-PT-G28-211004	SW6020	MAGNESIUM	1100000		3000		9100 UG/KG	1100000	
GA-PT-G28-211004	SW6020	MANGANESE	66000		350		680 UG/KG	66000	
GA-PT-G28-211004	SW6020	MOLYBDENUM	73000		39		180 UG/KG	73000	
GA-PT-G28-211004	SW6020	NICKEL	1800 U		400		1800 UG/KG	1800 U	
GA-PT-G28-211004	SW6020	POTASSIUM	5800000		14000		91000 UG/KG	5800000	
GA-PT-G28-211004	SW6020	SELENIUM	840 J		180		910 UG/KG	840 J	
GA-PT-G28-211004	SW6020	SILVER	45 U		7.5		45 UG/KG	45 U	
GA-PT-G28-211004	SW6020	SODIUM	91000 U		14000		91000 UG/KG	91000 U	
GA-PT-G28-211004	SW6020	THALLIUM	9.1 U		2.3		9.1 UG/KG	9.1 U	
GA-PT-G28-211004	SW6020	THORIUM	8.2 J		7.3		18 UG/KG	8.2 J+	
GA-PT-G28-211004	SW6020	URANIUM	78		8.6		18 UG/KG	78	
GA-PT-G28-211004	SW6020	VANADIUM	450 U		120		450 UG/KG	450 U	
GA-PT-G28-211004	SW6020	ZINC	5800 J		3700		9100 UG/KG	5800 J	
GA-PT-N01-211005	SW6020	ALUMINUM	6500 J		6300		15000 UG/KG	6500 J	
GA-PT-N01-211005	SW6020	ANTIMONY	54 J		18		98 UG/KG	54 J	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-N01-211005	SW6020	ARSENIC	55 J		48		200 UG/KG	55 J	
GA-PT-N01-211005	SW6020	BARIUM	3000		220		490 UG/KG	3000	
GA-PT-N01-211005	SW6020	BERYLLIUM	49 U		4.9		49 UG/KG	49 U	
GA-PT-N01-211005	SW6020	CADMIUM	200 U		21		200 UG/KG	200 U	
GA-PT-N01-211005	SW6020	CALCIUM	2100000		17000		98000 UG/KG	2100000	
GA-PT-N01-211005	SW6020	CHROMIUM	980 U		540		980 UG/KG	980 U	
GA-PT-N01-211005	SW6020	COBALT	490 U		31		490 UG/KG	490 U	
GA-PT-N01-211005	SW6020	COPPER	910 J		280		2000 UG/KG	910 J	
GA-PT-N01-211005	SW6020	IRON	22000		11000		20000 UG/KG	22000	
GA-PT-N01-211005	SW6020	LEAD	200 U		64		200 UG/KG	200 U	
GA-PT-N01-211005	SW6020	MAGNESIUM	560000		3200		9800 UG/KG	560000	
GA-PT-N01-211005	SW6020	MANGANESE	44000		370		730 UG/KG	44000	
GA-PT-N01-211005	SW6020	MOLYBDENUM	5000		42		200 UG/KG	5000	
GA-PT-N01-211005	SW6020	NICKEL	2000 U		430		2000 UG/KG	2000 U	
GA-PT-N01-211005	SW6020	POTASSIUM	6400000		15000		98000 UG/KG	6400000	
GA-PT-N01-211005	SW6020	SELENIUM	980 U		200		980 UG/KG	980 U	
GA-PT-N01-211005	SW6020	SILVER	49 U		8.1		49 UG/KG	49 U	
GA-PT-N01-211005	SW6020	SODIUM	98000 U		15000		98000 UG/KG	98000 U	
GA-PT-N01-211005	SW6020	THALLIUM	9.8 U		2.4		9.8 UG/KG	9.8 U	
GA-PT-N01-211005	SW6020	THORIUM	20 U		7.8		20 UG/KG	20 U	
GA-PT-N01-211005	SW6020	URANIUM	20 J		9.3		20 UG/KG	20 J	
GA-PT-N01-211005	SW6020	VANADIUM	490 U		130		490 UG/KG	490 U	
GA-PT-N01-211005	SW6020	ZINC	8100 J		4000		9800 UG/KG	8100 J	
GA-PT-S01-211005	SW6020	ALUMINUM	33000		6300		15000 UG/KG	33000	
GA-PT-S01-211005	SW6020	ANTIMONY	69 J		18		98 UG/KG	69 J	
GA-PT-S01-211005	SW6020	ARSENIC	270		48		200 UG/KG	270	
GA-PT-S01-211005	SW6020	BARIUM	12000		220		490 UG/KG	12000	
GA-PT-S01-211005	SW6020	BERYLLIUM	49 U		4.9		49 UG/KG	49 U	
GA-PT-S01-211005	SW6020	CADMIUM	200 U		21		200 UG/KG	200 U	
GA-PT-S01-211005	SW6020	CALCIUM	4300000		17000		98000 UG/KG	4300000	
GA-PT-S01-211005	SW6020	CHROMIUM	980 U		540		980 UG/KG	980 U	
GA-PT-S01-211005	SW6020	COBALT	51 J		31		490 UG/KG	51 J	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-S01-211005	SW6020	COPPER	3300		280	2000	UG/KG	3300	
GA-PT-S01-211005	SW6020	IRON	77000		11000	20000	UG/KG	77000	
GA-PT-S01-211005	SW6020	LEAD	86 J		64	200	UG/KG	86 J	
GA-PT-S01-211005	SW6020	MAGNESIUM	1500000		3200	9800	UG/KG	1500000	
GA-PT-S01-211005	SW6020	MANGANESE	13000		370	730	UG/KG	13000	
GA-PT-S01-211005	SW6020	MOLYBDENUM	22000		42	200	UG/KG	22000	
GA-PT-S01-211005	SW6020	NICKEL	480 J		430	2000	UG/KG	480 J	
GA-PT-S01-211005	SW6020	POTASSIUM	5800000		15000	98000	UG/KG	5800000	
GA-PT-S01-211005	SW6020	SELENIUM	3200		200	980	UG/KG	3200	
GA-PT-S01-211005	SW6020	SILVER	49 U		8.1	49	UG/KG	49 U	
GA-PT-S01-211005	SW6020	SODIUM	92000 J		15000	98000	UG/KG	92000 J	
GA-PT-S01-211005	SW6020	THALLIUM	9.8 U		2.4	9.8	UG/KG	9.8 U	
GA-PT-S01-211005	SW6020	THORIUM	18 J		7.8	20	UG/KG	18 J+	
GA-PT-S01-211005	SW6020	URANIUM	360		9.3	20	UG/KG	360	
GA-PT-S01-211005	SW6020	VANADIUM	490 U		130	490	UG/KG	490 U	
GA-PT-S01-211005	SW6020	ZINC	8300 J		4000	9800	UG/KG	8300 J	
GA-PT-W01-211005	SW6020	ALUMINUM	20000		5900	14000	UG/KG	20000	
GA-PT-W01-211005	SW6020	ANTIMONY	63 J		16	91	UG/KG	63 J	
GA-PT-W01-211005	SW6020	ARSENIC	510		45	180	UG/KG	510	
GA-PT-W01-211005	SW6020	BARIUM	23000		210	460	UG/KG	23000	
GA-PT-W01-211005	SW6020	BERYLLIUM	46 U		4.6	46	UG/KG	46 U	
GA-PT-W01-211005	SW6020	CADMIUM	180 U		20	180	UG/KG	180 U	
GA-PT-W01-211005	SW6020	CALCIUM	2000000		15000	91000	UG/KG	2000000	
GA-PT-W01-211005	SW6020	CHROMIUM	910 U		500	910	UG/KG	910 U	
GA-PT-W01-211005	SW6020	COBALT	460 U		29	460	UG/KG	460 U	
GA-PT-W01-211005	SW6020	COPPER	1400 J		260	1800	UG/KG	1400 J	
GA-PT-W01-211005	SW6020	IRON	52000		10000	18000	UG/KG	52000	
GA-PT-W01-211005	SW6020	LEAD	70 J		60	180	UG/KG	70 J	
GA-PT-W01-211005	SW6020	MAGNESIUM	730000		3000	9100	UG/KG	730000	
GA-PT-W01-211005	SW6020	MANGANESE	37000		350	680	UG/KG	37000	
GA-PT-W01-211005	SW6020	MOLYBDENUM	150000		39	180	UG/KG	150000	
GA-PT-W01-211005	SW6020	NICKEL	1800 U		400	1800	UG/KG	1800 U	

GRIFFIN ASHING TISSUE ANALYTICAL RESULTS SUMMARY
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Sample ID	Method	Analyte	Lab Resut	Lab Qual	MDL	RL	Units	Val Result	Val Qual
GA-PT-W01-211005	SW6020	POTASSIUM	5900000		14000	91000	UG/KG	5900000	
GA-PT-W01-211005	SW6020	SELENIUM	2800		180	910	UG/KG	2800	
GA-PT-W01-211005	SW6020	SILVER	46 U		7.6	46	UG/KG	46 U	
GA-PT-W01-211005	SW6020	SODIUM	91000 U		14000	91000	UG/KG	91000 U	
GA-PT-W01-211005	SW6020	THALLIUM	9.1 U		2.3	9.1	UG/KG	9.1 U	
GA-PT-W01-211005	SW6020	THORIUM	13 J		7.3	18	UG/KG	13 J+	
GA-PT-W01-211005	SW6020	URANIUM	330		8.7	18	UG/KG	330	
GA-PT-W01-211005	SW6020	VANADIUM	460 U		120	460	UG/KG	460 U	
GA-PT-W01-211005	SW6020	ZINC	7000 J		3700	9100	UG/KG	7000 J	