

7/10/2024

Diane Czarnecki Industrial Hygienist Facilities Management Division GSA Public Buildings Service – Heartland Region 2300 Main Street Kansas City, MO 64108

Re: Goodfellow Federal Center

Metals in Settled Dust Sampling – Building 110

Project No. 121244

Dear Ms. Czarnecki:

Thank you for the opportunity to assist the General Services Administration (GSA) with the metals in settled dust sampling investigation of Building 110 located at the Goodfellow Federal Center (GFC) in St. Louis, Missouri. Burns & McDonnell understands that the purpose of the investigation was to provide additional sampling data of existing environmental conditions that are present at GFC that could adversely impact the health and safety of building occupants as well as workers at the facility. The following report summarizes the sample collection activities and the laboratory analytical results of samples submitted.

INTRODUCTION

Per historical use and previous characterization, Burns & McDonnell was contracted to perform settled dust sampling for the analysis of seven (7) of the Resource Conservation and Recovery Act (RCRA) target metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver) from various surfaces within buildings. The purpose of this testing was to further characterize the presence and concentration of target metals in common tenant-occupied areas of the building.

The proposed sampling scheme, the number of samples, the sample distribution and general methodology was developed by GSA and Burns & McDonnell. Specific sample locations were determined by sampling personnel while on-site.

Settled dust wipe sampling at Bldg. 110 was conducted on June 6, 2024 by Ashley Anstaett of Burns & McDonnell.

METALS IN SETTLED DUST SAMPLING

Metals in settled dust sampling was conducted primarily within tenant-occupied areas. Dust wipe sampling was conducted in accordance with ASTM Standard E1728: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination and ASTM Standard D6966: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Determination of Metals. ASTM Standards E1728 and D6966 are consistent with the methodology described in the Housing and



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Urban Development Guidelines-Appendix 13.1 and 40 CFR 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

Dust wipe sampling for the target metals was conducted on a variety of representative surfaces that have the potential of being disturbed by building occupants. A representative surface area of approximately one square foot (1 SF) was measured and delineated with plastic templates. The dust wipe samples were collected using dedicated dust wipe cloths meeting ASTM E1792 Standard. Each dust wipe cloth was pre-moistened and individually wrapped. Each sample was collected by wiping in a back and forth "S" pattern over a measured sampling area using a clean, disposable glove. Then, the wipe was folded over itself and the area was wiped again in a direction perpendicular to the first wipe orientation. Then, the wipe folded over itself again and the area was wiped around the perimeter. The wipe sample was then placed into a labeled, clean container. Dust wipe samples were submitted to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for Inductively Coupled Plasma (ICP) analysis of metals analysis using Environmental Protection Agency (EPA) method SW846 3050B/6010D. EHS is accredited under the American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (LAP) identification number LAP-100420.

Whereas the Occupational Safety and Health Administration (OSHA) has not established regulatory limits for surface concentrations of metals, the OSHA Technical Manual Section II: Chapter 2 (III.A) describes a method for calculating "housekeeping" standards, as recommended acceptable surface limits. Brookhaven's IH75190 procedure uses the housekeeping standards to derive a lower, "clean area limit" for non-operational areas that can be accessed or contacted without special training or precautions. Burns & McDonnell calculated clean area limits for metals not included in the Brookhaven procedure, specifically barium, chromium (total), selenium and silver. Wipe results were compared to the Brookhaven procedure's clean area limits for each metal.

Results of the dust wipe samples collected from the building indicate that 11 of the 14 samples contained concentrations of target metals above laboratory reporting limits. The following table identifies the range of results for each of the seven metals that were analyzed. Samples with a "<" sign indicate that the results were below the lab's reportable limit.



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Table 1. Summary of Dust Wipe Results

Analyte	Lowest Concentration ^(a) (µg/sq. ft) ^(b)	Highest Concentration ^(a) (μg/sq. ft) ^(b)	Clean Area Limit (c) µg/sq. ft (b)
Silver	< 0.5	4.4	62
Arsenic	<2.5	9.0	62
Barium	< 0.5	330.0	3,094
Cadmium	<0.1	46.0	31
Chromium (Total)	<1.0	490.0	3,094
Lead	< 0.5	270.0	10 ^(d)
Selenium	<2.5	<2.5	1,236

- (a) Samples with a "<" sign indicate that the results were below the laboratory's reporting limit.
- (b) μ g/sq. ft = micrograms per square foot of surface area.
- (c) Clean Area Limit per Brookhaven IH75190=OSHA Housekeeping Limit [[PEL $(\mu g/m^3)$ x 10 $m^3/100cm^2$] x 929cm²/sq.ft.] / 15.
- (d) Lead clean area limit: Brookhaven references EPA/HUD limit for floors, set at 10 µg/sq. ft. as of January 2020.

Of the 11 samples that had detectable levels of one or more analytes, 3 of them exceeded the clean area limit. 2 of the samples exceeded the Clean Area Limit for lead and 1 sample exceeded the Clean Area Limit for both lead and cadmium.

- 1. A sample taken in the warehouse from the floor in front of the south mechanical room had 260 $\mu g/ft^2$ of lead.
- 2. A sample taken from the top of a metal work bench at the south end of the warehouse had 46 $\mu g/ft^2$ of cadmium and 170 $\mu g/ft^2$ of lead.
- 3. A sample taken from the top of the recycling bin on the southeast end of the warehouse near the dock door had a 270 μ g/ft² of lead.

Burns & McDonnell appreciates the opportunity to work with the GSA on this project. Please contact us if you have any questions regarding this report or if we may be of any additional service.



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Sincerely,

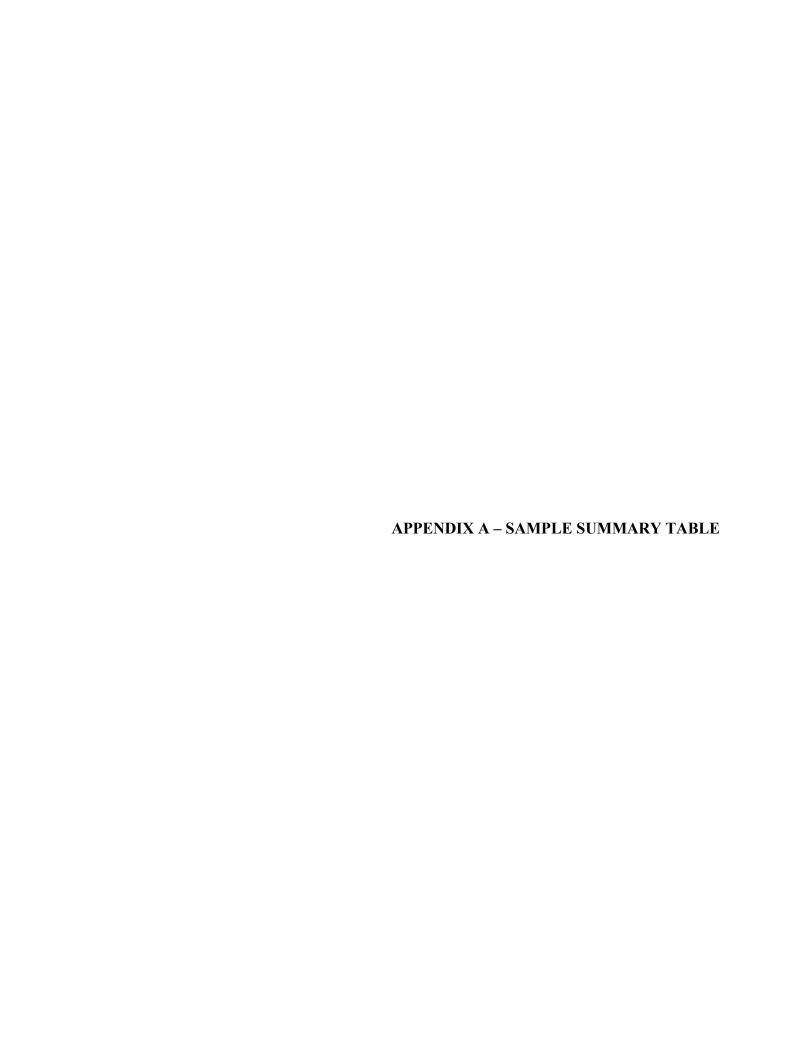


Matt Shanahan, CHMM Project Manager

Attachments:

Appendix A – Sample Summary Table Appendix B – Laboratory Analysis Report

Information in Appendices A and B is not accessible for people using screen reader technology. If this information is required, it can be furnished upon request by contacting 816-223-6198 or reenvironmental@gsa.gov.



Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
110-W-01	Office entrance	Top of desk on east wall	Arsenic	< 2.5	μg/ft ²	62
			Barium	1.2	μg/ft ²	3,094
			Cadmium	0.20	μg/ft²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	1.2	μg/ft ²	10
			Selenium	< 2.5	μg/ft²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-02	Nothwest office entrance	Floor	Arsenic	< 2.5	μg/ft²	62
			Barium	3.4	μg/ft ²	3,094
			Cadmium	0.12	μg/ft²	31
			Chromium	1.1	μg/ft ²	3,094
			Lead	7.3	μg/ft²	10
			Selenium	< 2.5	μg/ft²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-03	West office	Top of southeast desk	Arsenic	< 2.5	μg/ft ²	62
			Barium	1.0	μg/ft²	3,094
			Cadmium	< 0.10	μg/ft²	31
			Chromium	< 1.0	μg/ft²	3,094
			Lead	0.84	μg/ft²	10
			Selenium	< 2.5	μg/ft²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-04	Conference room	Top of long table	Arsenic	< 2.5	μg/ft ²	62
			Barium	0.62	μg/ft²	3,094
			Cadmium	< 0.10	μg/ft²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	< 0.50	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	< 0.50	μg/ft ²	62

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
110-W-05	Field blank		Arsenic	< 2.50	μg	
			Barium	< 0.500	μg	
			Cadmium	< 0.100	μg	
			Chromium		μg	
			Lead	< 0.500	μg	
			Selenium	< 2.50	μg	
			Silver	< 0.500	μg	
110-W-06	Conference room	Floor near north wall	Arsenic	< 2.5	μg/ft ²	62
			Barium	< 0.50	μg/ft ²	3,094
			Cadmium	< 0.10	μg/ft²	31
			Chromium	< 1.0	μg/ft²	3,094
			Lead	< 0.50	μg/ft²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-07	Break room	Top of microwave	Arsenic	< 2.5	μg/ft ²	62
			Barium	0.95	μg/ft ²	3,094
			Cadmium	1.8	μg/ft²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	1.2	μg/ft²	10
			Selenium	< 2.5	μg/ft²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-08	East office	Top of table on west wall	Arsenic	< 2.5	μg/ft ²	62
			Barium	0.64	μg/ft ²	3,094
			Cadmium	< 0.10	μg/ft ²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	0.62	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	< 0.50	μg/ft ²	62

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
110-W-09	Storage room in east office	Top of microwave	Arsenic	< 2.5	μg/ft ²	62
			Barium	5.4	μg/ft ²	3,094
			Cadmium	0.14	μg/ft ²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	3.4	μg/ft ²	10
			Selenium	< 2.5	μg/ft²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-10	Warehouse	Top of orange chair near mezzanine	Arsenic	< 2.5	μg/ft ²	62
			Barium	1.4	μg/ft ²	3,094
			Cadmium	0.13	μg/ft ²	31
			Chromium	< 1.0	μg/ft ²	3,094
			Lead	3.5	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	< 0.50	μg/ft ²	62
110-W-11	Field blank		Arsenic	< 2.50	μg	
			Barium	< 0.500	μg	
			Cadmium	< 0.100	μg	
			Chromium		μg	
			Lead	< 0.500	μg	
			Selenium Silver	< 2.50 < 0.500	μg μg	
110-W-12	Warehouse, near south mechanical room	Floor	Arsenic	5.9	μg/ft ²	
			Barium	92	μg/ft ²	3,094
			Cadmium	2.6	μg/ft ²	31
			Chromium	39	μg/ft ²	
			Lead	260	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	
			Silver	1.9	μg/ft ²	62

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
110-W-13	Warehouse, south end	Top of metal work bench	Arsenic	9.0	μg/ft ²	62
			Barium	330	μg/ft ²	3,094
			Cadmium	46	μg/ft ²	31
			Chromium	490	μg/ft ²	3,094
			Lead	170	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	4.4	μg/ft ²	62
110-W-14	Warehouse, near dock door	Top of recylcing bin	Arsenic	8.3	μg/ft ²	62
			Barium	160	μg/ft ²	3,094
			Cadmium	2.2	μg/ft ²	31
			Chromium	29	μg/ft ²	3,094
			Lead	270	μg/ft ²	10
			Selenium	< 2.5	μg/ft ²	1,236
			Silver	0.62	μg/ft ²	62

^{*} Clean Area Limit per Brookhaven IH75190=OSHA Housekeeping Limit [[PEL $(\mu g/m^3) \times 10 \text{ m}^3/100\text{cm}^2$] $\times 929\text{cm}^2/\text{sq. ft.}$] / 15. Lead clean area limit: Brookhaven references EPA/HUD limit for floors, set at 10 $\mu g/\text{sq. ft.}$ as of January 2020.

^{**} Indicates results at or above the Clean Area Limit





7469 Whitepine Rd North Chesterfield, VA 23237 Telephone: 800.347.4010

Wipe Metals Analysis Report

Client: Burns & McDonnell Engineering

9400 Ward Pkwy.

Kansas City, MO 64114

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Report Number: 24-06-01665

Received Date: 06/11/2024 Analyzed Date: 06/14/2024

Reported Date: 06/18/2024

Client Number:

Laboratory Results 26-3514

Fax Number:

816-822-3494

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
24-06-01665-001	110-W-01	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	1.18	1.2	L01
		Cadmium (Cd)	1.00	0.195	0.20	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	1.15	1.2	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-002	110-W-02	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	3.45	3.4	L01
		Cadmium (Cd)	1.00	0.115	0.12	L01
		Chromium (Cr)	1.00	1.12	1.1	L01

Client Number:

26-3514

Report Number:

24-06-01665

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
		Lead (Pb)	1.00	7.30	7.3	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-003	110-W-03	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	1.02	1.0	L01
		Cadmium (Cd)	1.00	<0.100	<0.10	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	0.840	0.84	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-004	110-W-04	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	0.615	0.62	L01
		Cadmium (Cd)	1.00	<0.100	<0.10	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	<0.500	<0.50	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-005	110-W-05	Arsenic (As)		<2.50		L01
		Barium (Ba)		<0.500		L01

Client Number:

26-3514

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Report Number:

24-06-01665

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
		Cadmium (Cd)		<0.100		L01
		Chromium (Cr)		<1.00		L01
		Lead (Pb)		<0.500		L01
		Selenium (Se)		<2.50		L01
		Silver (Ag)		<0.500		L01
24-06-01665-006	110-W-06	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	<0.500	<0.50	L01
		Cadmium (Cd)	1.00	<0.100	<0.10	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	<0.500	<0.50	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-007	110-W-07	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	0.950	0.95	L01
		Cadmium (Cd)	1.00	1.78	1.8	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	1.18	1.2	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01

Client Number:

26-3514

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Report Number:

24-06-01665

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
24-06-01665-008	110-W-08	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	0.645	0.64	L01
		Cadmium (Cd)	1.00	<0.100	<0.10	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	0.625	0.62	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-009	110-W-09	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	5.38	5.4	L01
		Cadmium (Cd)	1.00	0.135	0.14	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	3.36	3.4	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-010	110-W-10	Arsenic (As)	1.00	<2.50	<2.5	L01
		Barium (Ba)	1.00	1.38	1.4	L01
		Cadmium (Cd)	1.00	0.130	0.13	L01
		Chromium (Cr)	1.00	<1.00	<1.0	L01
		Lead (Pb)	1.00	3.52	3.5	L01

Client Number:

26-3514

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Report Number:

24-06-01665

L01

46

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	<0.500	<0.50	L01
24-06-01665-011	110-W-11	Arsenic (As)		<2.50		L01
		Barium (Ba)		<0.500		L01
		Cadmium (Cd)		<0.100		L01
		Chromium (Cr)		<1.00		L01
		Lead (Pb)		<0.500		L01
		Selenium (Se)		<2.50		L01
		Silver (Ag)		<0.500		L01
24-06-01665-012	110-W-12	Arsenic (As)	1.00	5.90	5.9	L01
		Barium (Ba)	1.00	91.8	92	L01
		Cadmium (Cd)	1.00	2.58	2.6	L01
		Chromium (Cr)	1.00	38.8	39	L01
		Lead (Pb)	1.00	260	260	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	1.90	1.9	L01
24-06-01665-013	110-W-13	Arsenic (As)	1.00	9.00	9.0	L01
		Barium (Ba)	1.00	325	330	L01

1.00

46.2

Cadmium (Cd)

Client Number:

26-3514

Report Number:

24-06-01665

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft²)	Total Metal (ug)	Concentration (ug/ft²)	Narrative ID
		Chromium (Cr)	1.00	493	490	L01
		Lead (Pb)	1.00	166	170	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	4.41	4.4	L01
24-06-01665-014	110-W-14	Arsenic (As)	1.00	8.30	8.3	L01
		Barium (Ba)	1.00	158	160	L01
		Cadmium (Cd)	1.00	2.25	2.2	L01
		Chromium (Cr)	1.00	29.4	29	L01
		Lead (Pb)	1.00	271	270	L01
		Selenium (Se)	1.00	<2.50	<2.5	L01
		Silver (Ag)	1.00	0.615	0.62	L01

Client Number: 26-3514 Report Number: 24-06-01665

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Lab Sample **Client Sample** Analyte: Wipe Area **Total Metal** Concentration **Narrative** Number Number (ft²) (ug/ft²) ID (ug)

Sample Narratives:

L01: LCS and LCSD percent recovery for Se were outside of acceptance limits.

Analyst: Carlos Gonzalez

Method: EPA SW846 3050B/6010D

Reviewed By Authorized Signatory:

Tasha Eaddy

QA/QC Clerk

Sample Results denoted with a "less than" (<) sign contains less than the reporting limit based on a 50mL volume. The reporting limit for Lead is 0.5ug.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Unless otherwise noted, samples are reported without a dry weight correction. Sample location, description, area, volume, etc., was provided by the client. If the report does not contain the result for a field blank, it is due to the fact that the client did not include a field blank with their samples. These sample results do not reflect blank correction. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

Legend ug/ft2 = micrograms per square foot ug = microgram

> mL = milliliter ft2 = square foot

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form 26-3514 Company Name : Burns & McDonnell City/State/Zip Kansas City, MO 64114 Company Address 9400 Ward Parkway Email alanstaett@burnsmcd.com Phone 314-302-4661 Project Name / Testing Address | GFC / 4300 Goodfellow Blvd Collected By A. Anstalt PO Number | 168765 Turn-Argund Time X S DAY SAME DAY OR WEEKEND - Must Call Ahead 2 DAY I DAY 3 DAY METALS velding Funie Prafile oxic Metal Profile Respirable Dust SP Grawmetrik Client FCLP RCRA 8 RCRM 8 Total AREA Sample ID Date & Time Ag. As, Ba, Cd, Cr Pb, Se 110-W-01 0/6 0939 12:12 12 12 0942 110-W-02 12 12 110-W-03 6945 12:12 110-W-04 0951 ·NA NA 0950 110-W-05 110-W-00 0954 12 0450 110-W-07 110-W-08 0959 110-W-09 1003 12 1007 110-W-10 NA 1009 110-W-11 10 1017 110-W-12 1013 12 · 110-W-13 1017 12 12 110-W-14 6/7/24 1400 Anstalt Released By: Signature: LAB USE ONLY - BELOW THIS LINE Received By: Signature 24-06-01665 / all Time _ Due Date: Portal Contact Added 06/18/2024 § 7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010 (Tuesday) LI RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com MM-L EL