July 23, 2020

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 115
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 115 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. 115 was conducted on June 25, 2020 by Emily Ahlemeyer of Burns & McDonnell and Jeff Smith of OCCU-TEC.

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*. ASTM Standard E1728 is consistent with the methodology described in the Housing and Urban Development Guidelines and 40 CRF 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 five (5) of the seven (7) 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.

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	<2.0	<2.0	62
Arsenic	<2.0	<2.0	62
Barium	<2.0	27	3,094
Cadmium	<2.0	9	31
Chromium (Total)	<2.0	11	3,094
Lead	<2.0	67	10 [d]
Selenium	<5.0	<5.0	1,236

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

Two (2) samples exceeded the lead clean area limit. Samples 115-W-05 and 115-W-06 resulted in lead concentrations of 15 and 67 µg/sq. ft, respectively. The remaining target metal sample results were below housekeeping and clean area limits, as recommended and described by OSHA and the Brookhaven Procedure.

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.

Sincerely,

(b) (6)

Matt Shanahan, CHMM
Project Manager

Attachments:
Appendix A – Sample Summary Table
Appendix B – Laboratory Analysis Report
Appendix C – Licenses

APPENDIX A – SAMPLE SUMMARY TABLE

Appendix A

Sample Summary Table

Goodfellow Federal Center - Building # 115 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Clean Area Limit***
115-W-01	Testing Room	Desk surface	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	4.4	µg/ft^2	3,094
			Cadmium	< 2.0	µg/ft^2	31
			Chromium	< 2.0	µg/ft^2	3,094
			Lead	< 2.0	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236
115-W-02	Women's Locker Room	Floor	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	< 2.0	µg/ft^2	3,094
			Cadmium	< 2.0	µg/ft^2	31
			Chromium	< 2.0	µg/ft^2	3,094
			Lead	< 2.0	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236
115-W-03	Men's Locker Room	Floor	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	2.3	µg/ft^2	3,094
			Cadmium	< 2.0	µg/ft^2	31
			Chromium	< 2.0	µg/ft^2	3,094
			Lead	< 2.0	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236

Appendix A

Sample Summary Table

Goodfellow Federal Center - Building # 115 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Clean Area Limit***
115-W-04	Aerobics Studio	West floor	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	5.4	µg/ft^2	3,094
			Cadmium	< 2.0	µg/ft^2	31
			Chromium	< 2.0	µg/ft^2	3,094
			Lead	3.4	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236
115-W-05	Janitors Closet	Floor at top of stairwell to basement	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	20	µg/ft^2	3,094
			Cadmium	< 2.0	µg/ft^2	31
			Chromium	6.0	µg/ft^2	3,094
			Lead	15	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236
115-W-06	South Electrical Closet	Floor	Silver	< 2.0	µg/ft^2	62
			Arsenic	< 2.0	µg/ft^2	62
			Barium	27	µg/ft^2	3,094
			Cadmium	9.0	µg/ft^2	31
			Chromium	11	µg/ft^2	3,094
			Lead	67	µg/ft^2	10
			Selenium	< 5.0	µg/ft^2	1,236

Appendix A
Sample Summary Table

Goodfellow Federal Center - Building # 115 - Wipe Sample Data						
Sample Number	**Location**	**Area Description**	**Analyte**	**Result**	**Units**	**Clean Area Limit***
115-W-07	Field Blank	--	Silver	< 2.0	µg	--
			Arsenic	< 2.0	µg	--
			Barium	< 2.0	µg	--
			Cadmium	< 2.0	µg	--
			Chromium	< 2.0	µg	--
			Lead	< 2.0	µg	--
			Selenium	< 5.0	µg	--

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

Indicates results at or above the Clean Area Limit

APPENDIX B – LABORATORY ANALYSIS REPORT

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Wipe Metals Analysis Report

Client: Burns & McDonnell Engineering
9400 Ward Pkwy.
Kansas City, MO 64114

Report Number: 20-06-03503

Received Date: 06/29/2020
Analyzed Date: 07/01/2020
Reported Date: 07/02/2020

Project/Test Address: 168765; Goodfellow IH Services; 4300 Goodfellow Blvd.

Client Number:
26-3514

Laboratory Results

Fax Number:
816-822-3494

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
20-06-03503-001	115-W-01	Arsenic (As)	1.00	<2.00	<2.0	
		Barium (Ba)	1.00	4.35	4.4	
		Cadmium (Cd)	1.00	<2.00	<2.0	
		Chromium (Cr)	1.00	<2.00	<2.0	
		Lead (Pb)	1.00	<2.00	<2.0	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-002	115-W-02	Arsenic (As)	1.00	<2.00	<2.0	
		Barium (Ba)	1.00	<2.00	<2.0	
		Cadmium (Cd)	1.00	<2.00	<2.0	
		Chromium (Cr)	1.00	<2.00	<2.0	

Client Number: 26-3514 **Report Number:** 20-06-03503

Project/Test Address: 168765; Goodfellow IH Services; 4300 Goodfellow Blvd.

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Lead (Pb)	1.00	<2.00	<2.0	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-003	115-W-03	Arsenic (As)	1.00	<2.00	<2.0	
		Barium (Ba)	1.00	2.27	2.3	
		Cadmium (Cd)	1.00	<2.00	<2.0	
		Chromium (Cr)	1.00	<2.00	<2.0	
		Lead (Pb)	1.00	<2.00	<2.0	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-004	115-W-04	Arsenic (As)	1.00	<2.00	<2.0	
		Barium (Ba)	1.00	5.42	5.4	
		Cadmium (Cd)	1.00	<2.00	<2.0	
		Chromium (Cr)	1.00	<2.00	<2.0	
		Lead (Pb)	1.00	3.38	3.4	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-005	115-W-05	Arsenic (As)	1.00	<2.00	<2.0	

Client Number: 26-3514 **Report Number:** 20-06-03503

Project/Test Address: 168765; Goodfellow IH Services; 4300 Goodfellow Blvd.

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Barium (Ba)	1.00	20.4	20	
		Cadmium (Cd)	1.00	<2.00	<2.0	
		Chromium (Cr)	1.00	6.02	6.0	
		Lead (Pb)	1.00	14.5	15	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-006	115-W-06	Arsenic (As)	1.00	<2.00	<2.0	
		Barium (Ba)	1.00	27.1	27	
		Cadmium (Cd)	1.00	9.05	9.0	
		Chromium (Cr)	1.00	11.4	11	
		Lead (Pb)	1.00	67.0	67	
		Selenium (Se)	1.00	<5.00	<5.0	
		Silver (Ag)	1.00	<2.00	<2.0	
20-06-03503-007	115-W-07	Arsenic (As)		<2.00	---	
		Barium (Ba)		<2.00	---	
		Cadmium (Cd)		<2.00	---	
		Chromium (Cr)		<2.00	---	
		Lead (Pb)		<2.00	---	

Environmental Hazards Services, L.L.C

Client Number: 26-3514 **Report Number:** 20-06-03503

Project/Test Address: 168765; Goodfellow IH Services; 4300 Goodfellow Blvd.

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Selenium (Se)		<5.00	---	
		Silver (Ag)		<2.00	---	

Sample Narratives:

Analyst: Brittany Meyer

Method: Mercury (Hg): EPA SW846 7471B

All other metals: EPA SW846 3050B/6010D

Reviewed By Authorized Signatory: (b) (6) [redacted]

Tasha Eaddy

QA/QC Clerk

Sample Results denoted with a “less than” (<) sign contains less than the reporting limit for each particular metal, based on a 100mL volume. The reporting limit for Mercury is 0.10ug, Aluminum, Iron and Zinc are 50ug, Antimony and Selenium are 5.0ug and 2.0ug for all other metals.

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. EHS sample results do not reflect blank correction. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714.

Legend ug = microgram ug/ft^2 = micrograms per square foot

mL = milliliter ft^2 = square foot

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form

Pg 1 of 1

Company Name	Burns & McDonnell	Account #	26-3514
Company Address	9400 Ward Parkway	City/State/Zip	Kansas City, MO 64114
Phone	816-349-6646	Email	mshanahan@burnsmcd.com
Project Name / Testing Address	Goodfellow IH Services / 4300 Goodfellow Blvd.		
PO Number	168765	Collected By	Jeff Smith
Turn-Around Time	☒ 3 DAY ○ 2 DAY ○ 1 DAY ○ SAME DAY OR WEEKEND - Must Call Ahead		

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS: Pb TCLP	TCLP RCRA 8	RCRA 8 Total	Toxic Metal Profile	Welding Fume Profile	TX 11 TCLP	CA 17 Total	Other Metals	PARTICULATES: Total Nuisance Dust	Respirable Dust	TSP Gravimetric	TSP Pb	PM- 10	AIR: Total Time (Mins.)	Flow Rate (L/min.)	Vol. (Total Liters)	WIPES: AREA Circle The Unit of Measurement Used (cm or in)
1	115-W-01	6/25/2020 1425								Ag, As, Ba, Cd, Cr, Pb, Se									12 x 12
2	115-W-02	1430																	12 x 12
3	115-W-03	1435																	12 x 12
4	115-W-04	1440																	12 x 12
5	115-W-05	1444																	12 x 12
6	115-W-06	1448																	12 x 12
7	115-W-07	—																	NA x NA
8																			x
9																			x
10																			x
11																			x
12																			x
13																			x
14																			x
15																			x

Released By: Emily Ahlemeyer Date: 6/26/2020 Time: 4:00 PM

Signature: (b) (6)

LAB USE ONLY – BELOW THIS LINE

Received By: TStone

Signature: (b) (6)

Date: 6/29/20 Time: 17:27 ☒ AM ☐ PM

☐ Portal Contact Added

20-06-03503

Due Date: 07/02/2020 (Thursday) EL

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

APPENDIX C – LICENSES

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Jeffrey T. Smith

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Risk Assessor
Category of License

Issuance Date:	**3/16/2019**
Expiration Date:	**3/16/2021**
License Number:	**010316-200089640**

(b) (6) [redacted]

Randall W. Williams, MD, FACOG
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102