



January 9, 2022

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

Re: Goodfellow Federal Center – Bldg. 107 Air Sampling  
Project No. 121244

Dear Ms. Czarnecki:

Thank you for the opportunity to provide the General Services Administration (GSA) with the Resource Conservation and Recovery Act (RCRA) metals air sampling investigation of the above referenced building located at the Goodfellow Federal Complex, in St. Louis, Missouri. Burns & McDonnell understands that the purpose of the investigation was to provide sampling data regarding existing conditions to supplement previous investigation reports prepared for the facility. The following report summarizes air-sample collection activities and the laboratory analytical results of the samples submitted.

#### **METHODOLOGY**

On December 6, 2022, Abiodun Akinola of Burns & McDonnell conducted area air-sampling for the presence of seven (7) of the RCRA metals including arsenic, barium, cadmium, chromium, lead, selenium, and silver. Sampling was conducted in various locations throughout Building 107.

The sampling plan, number of samples, sample distribution, and general methodology was developed based on previous investigation methodology and in coordination with the GSA. Sample locations and samples collected from discretionary locations were determined by sampling personnel while on-site.

Air samples for RCRA metals were collected on 37-millimeter (mm) cassettes with 0.8 micrometer ( $\mu\text{m}$ ) mixed cellulose ester (MCE) filters, using powered air sampling pumps, in accordance with the National Institute for Occupational Safety and Health (NIOSH) Method 7300. The sampling strategy included collecting a minimum sample volume of 500 liters based on the calibrated pump flow rate and sample duration. Air samples were submitted under chain-of-custody to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for independent analysis of 7 RCRA metals according to NIOSH method 7300. EHS is accredited under the American Industrial Hygiene Association (AIHA) Industrial Hygiene Laboratory Accreditation Program (IHLAP) program, identification number LAP-100420.

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**RESULTS AND DISCUSSION**

Results of the air sampling are summarized in the table below by identifying the range of results for Building 107 for each of the seven (7) metals that were sampled. Results indicate that all 7 air samples collected from Building 107 and analyzed for RCRA metals were below their respective OSHA Permissible Exposure Limit (PEL), as based on a time-weighted-average.

**Table 1. Summary of Air Sampling Results**

Analyte	Lowest Concentration <sup>(a)</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>(b)</sup>	Highest Concentration <sup>(a)</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>(b)</sup>	Permissible Exposure Limit (PEL) ( $\mu\text{g}/\text{m}^3$ ) <sup>(b)</sup>
Arsenic	<0.26	<0.28	10
Barium	<0.26	<0.28	500
Cadmium	<0.052	<0.055	5
Chromium (Total)	<1.3	<1.4	500
Lead	<0.26	<0.28	1
Selenium	<1.3	<1.4	200
Silver	<0.26	<0.28	10

Notes:

- (a) Samples with a “<” sign indicate that the results were below the laboratory’s reporting limit, which varies based on sample air volume.
- (b)  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter of air.

GSA may choose to compare results with guidance limits from additional organizations for risk evaluation, including but not limited to the American Conference of Governmental Industrial Hygienists (ACGIH) and/or the World Health Organization (WHO).

A summary table of all sampling results by location is included in Appendix A. The complete laboratory report for the air sampling from EHS is attached in Appendix B.

**LIMITATIONS**

The scope of this assessment was limited as follows. Burns & McDonnell collected samples from a select number of locations in an effort to minimize cost while providing a general overview of the air quality at the site. Sample locations do not encompass every indoor space at the site. Additionally, based on previous sampling history, samples were only analyzed for a select number of potential contaminants likely to affect the air quality at the site. Burns &



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McDonnell is not responsible for potential contaminants not identified in this report. This report was prepared for the sole use of GSA.

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)

A large black rectangular redaction box covers the signature area, with the text "(b) (6)" in red at the top left corner.

Matt Shanahan, CHMM  
Project Manager

Attachments:

- Appendix A – Results Summary by Location
- Appendix B – Air Sample Laboratory 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 [r6environmental@gsa.gov](mailto:r6environmental@gsa.gov).

**APPENDIX A – RESULTS SUMMARY BY LOCATION**

## Appendix A

### Results Summary by Location

Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
107-A-01	1st floor, room 102, records room	Arsenic	< 0.27	µg/m <sup>3</sup>	10
		Barium	< 0.27	µg/m <sup>3</sup>	500
		Cadmium	< 0.053	µg/m <sup>3</sup>	5
		Chromium	< 1.4	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.27	µg/m <sup>3</sup>	1
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
107-A-02	1st floor, room 106, desk on east wall	Arsenic	< 0.27	µg/m <sup>3</sup>	10
		Barium	< 0.27	µg/m <sup>3</sup>	500
		Cadmium	< 0.054	µg/m <sup>3</sup>	5
		Chromium	< 1.4	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.27	µg/m <sup>3</sup>	1
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
107-A-03	1st floor, room 104, desk on west wall	Arsenic	< 0.26	µg/m <sup>3</sup>	10
		Barium	< 0.26	µg/m <sup>3</sup>	500
		Cadmium	< 0.052	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.26	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.26	µg/m <sup>3</sup>	10
107-A-04	1st floor, room 100, top of black cabinet	Arsenic	< 0.27	µg/m <sup>3</sup>	10
		Barium	< 0.27	µg/m <sup>3</sup>	500
		Cadmium	< 0.054	µg/m <sup>3</sup>	5
		Chromium	< 1.4	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.27	µg/m <sup>3</sup>	1
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
107-A-05	1st floor, hallway by janitorial closet	Arsenic	< 0.27	µg/m <sup>3</sup>	10
		Barium	< 0.27	µg/m <sup>3</sup>	500
		Cadmium	< 0.054	µg/m <sup>3</sup>	5
		Chromium	< 1.4	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.27	µg/m <sup>3</sup>	1
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10

## Appendix A

### Results Summary by Location

Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
107-A-06	1st floor, room 134, conference room table	Arsenic	< 0.28	µg/m <sup>3</sup>	10
		Barium	< 0.28	µg/m <sup>3</sup>	500
		Cadmium	< 0.055	µg/m <sup>3</sup>	5
		Chromium	< 1.4	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.28	µg/m <sup>3</sup>	1
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.28	µg/m <sup>3</sup>	10
107-A-07	Field blank	Arsenic	< 0.15	µg	--
		Barium	< 0.15	µg	--
		Cadmium	< 0.030	µg	--
		Chromium	< 0.75	µg	--
		Lead <sup>2</sup>	< 0.15	µg	--
		Selenium	< 0.75	µg	--
		Silver	< 0.15	µg	--

Notes:

<sup>1</sup>Limits equal to the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs)

<sup>2</sup>Limits equal to the World Health organization (WHO) Ambient Air Limit

**APPENDIX B – AIR SAMPLE LABORATORY REPORT**



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

## Air Metals Analysis Report

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

Report Number: 22-12-01584  
 Received Date: 12/12/2022  
 Reported Date: 12/19/2022

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd; Bldg 107

Client Number:  
26-3514

Fax Number:  
816-822-3494

# Laboratory Results

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m <sup>3</sup> )	Narrative ID
22-12-01584-001	107-A-01	12/13/2022	Arsenic (As)	566.7	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.053	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
22-12-01584-002	107-A-02	12/13/2022	Arsenic (As)	557	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
22-12-01584-003	107-A-03	12/13/2022	Arsenic (As)	580	<0.15	<0.26	
			Barium (Ba)		<0.15	<0.26	
			Cadmium (Cd)		<0.030	<0.052	



# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 22-12-01584

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd; Bldg 107

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m <sup>3</sup> )	Narrative ID
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.26	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.26	
22-12-01584-004	107-A-04	12/13/2022	Arsenic (As)	564.5	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
22-12-01584-005	107-A-05	12/13/2022	Arsenic (As)	557.5	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
22-12-01584-006	107-A-06	12/13/2022	Arsenic (As)	549.7	<0.15	<0.28	
			Barium (Ba)		<0.15	<0.28	
			Cadmium (Cd)		<0.030	<0.055	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.28	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.28	

# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 22-12-01584

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd; Bldg 107

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m <sup>3</sup> )	Narrative ID
22-12-01584-007	107-A-07	12/13/2022	Arsenic (As)	0	<0.15	---	
			Barium (Ba)		<0.15	---	
			Cadmium (Cd)		<0.030	---	
			Chromium (Cr)		<0.75	---	
			Lead (Pb)		<0.15	---	
			Selenium (Se)		<0.75	---	
			Silver (Ag)		<0.15	---	

## Sample Narratives:

Method: NIOSH 7300M

Analyst: Max Dichek

(b) (6)

Reviewed By Authorized Signatory:

*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 15mL volume. The reporting limit is 0.03ug for Cadmium, 0.15ug for Arsenic, Barium, Lead and Silver, and 0.75ug for Chromium and Selenium.

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. NY ELAP #11714.

LEGEND      ug = microgram      ug/m<sup>3</sup> = micrograms per cubic meter  
                 mL = milliliter      L = Liters

# 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	314-302-4661	Email	alanstaett@burnsmcd.com
Project Name / Testing Address	GFC / 4300 Goodfellow Blvd - Bldg 107		
PO Number	168765	Collected By	Abiodun Akintola
Turn-Around Time	<input checked="" type="radio"/> 5 DAY <input type="radio"/> 3 DAY <input type="radio"/> 2 DAY <input type="radio"/> 1 DAY <input type="radio"/> SAME DAY OR WEEKEND - Must Call Ahead		

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS							Other Metals	PARTICULATES					AIR			WIPES
			Pb TCLP	TCLP RCRA & RCRA & Total	Toxic Metal Profile	Welding Fume Profile	TX 11 TCLP	CA 17 Total	Total Nuisance Dust		Respirable Dust	TSP Gravimetric	TSP Pb	PM-10	Total Time	Flow Rate	Vol.	AREA	
		AM								Ag, As, Ba, Cd, Cr, Pb, Se						Mins.	L/min.	Total Liters	Circle The Unit of Measurement Used cm or in
1	107-A-01	12/6/22 7:27														22.4	2.53	566.7	N/A x
2	107-A-02	✓ 7:32								} ↓						22.3	2.50	557	✓ x
3	107-A-03	✓ 7:34														22.8	2.54	580	✓ x
4	107-A-04	✓ 7:39														22.4	2.52	564.5	✓ x
5	107-A-05	✓ 7:42														22.3	2.50	563	✓ x
6	107-A-06	✓ 7:47														21.9	2.51	549.7	✓ x
7	107-A-07	✓ 8:00														-	-	-	x
8																			x
9																		x	
10																		x	
11																		x	
12																		x	
13																		x	
14																		x	
15																		x	

Released By:	Abiodun Akintola	Date:	12/9/22	Time:	1300
Signature:	(b) (6)				

LAB USE ONLY - BELOW THIS LINE

Received By: Thoburn

Signature: (b) (6)

Date: 12/12/22 Time: 11:15  AM  PM

Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010  
 RESULTS VIA CLIENT PORTAL AVAILABLE @ [www.leadlab.com](http://www.leadlab.com)

22-12-01584

Due Date:  
12/19/2022  
(Monday)  
EL MM-L