



January 11, 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. 110 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, 2021, Emily Pulcher and Jeff Smith of Burns & McDonnell and OCCU-TEC 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 110.

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.

Diane Czarnecki  
 Facilities Management Division  
 January 11, 2022  
 Page 2

## RESULTS AND DISCUSSION

Results of the air sampling are summarized in the table below by identifying the range of results for Building 110 for each of the seven (7) metals that were sampled. Results indicate that all 9 air samples collected from Building 110 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	50
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 &



Diane Czarnecki  
Facilities Management Division  
January 11, 2022  
Page 3

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 General Services Administration 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 black rectangular redaction box covers the signature area, with the text "(b) (6)" written in red to the left of the box.

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>
110-A-01	1st floor, break area table, column E16	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	< 0.27	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
110-A-02	Warehouse, bookshelf, east end	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	< 0.28	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.28	µg/m <sup>3</sup>	10
110-A-03	Warehouse, filing cabinet outside housekeeping office	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	< 0.27	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
110-A-04	Warehouse, table, north break area	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	< 0.28	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.28	µg/m <sup>3</sup>	10
110-A-05	Maintenance office, conference room table	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	< 0.26	µg/m <sup>3</sup>	50
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.26	µg/m <sup>3</sup>	10

**Appendix A**  
**Results Summary by Location**

Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
110-A-06	Maintenance office, reception area	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	< 0.28	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.28	µg/m <sup>3</sup>	10
110-A-07	Housekeeping vending area	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	< 0.27	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
110-A-08	Housekeeping office area	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	< 0.27	µg/m <sup>3</sup>	50
		Selenium	< 1.4	µg/m <sup>3</sup>	200
		Silver	< 0.27	µg/m <sup>3</sup>	10
110-A-09	Field blank	Arsenic	< 0.15	µg	10
		Barium	< 0.15	µg	500
		Cadmium	< 0.030	µg	5
		Chromium	< 0.75	µg	500
		Lead	< 0.15	µg	50
		Selenium	< 0.75	µg	200
		Silver	< 0.15	µg	10

Notes:

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

**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: 21-12-01821  
 Received Date: 12/13/2021  
 Reported Date: 12/20/2021

Project/Test Address: GFC; 4300 Goodfellow Blvd.

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
21-12-01821-001	110-A-01	12/17/2021	Arsenic (As)	562	<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	
21-12-01821-002	110-A-02	12/17/2021	Arsenic (As)	548	<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	
21-12-01821-003	110-A-03	12/17/2021	Arsenic (As)	559	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	



# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 21-12-01821

Project/Test Address: GFC; 4300 Goodfellow Blvd.

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	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
21-12-01821-004	110-A-04	12/17/2021	Arsenic (As)	551	<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	
21-12-01821-005	110-A-05	12/17/2021	Arsenic (As)	577	<0.15	<0.26	
			Barium (Ba)		<0.15	<0.26	
			Cadmium (Cd)		<0.030	<0.052	
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.26	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.26	
21-12-01821-006	110-A-06	12/17/2021	Arsenic (As)	555	<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: 21-12-01821

Project/Test Address: GFC; 4300 Goodfellow Blvd.

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m <sup>3</sup> )	Narrative ID
21-12-01821-007	110-A-07	12/17/2021	Arsenic (As)	569	<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	
21-12-01821-008	110-A-08	12/17/2021	Arsenic (As)	564	<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	
21-12-01821-009	110-A-09	12/17/2021	Arsenic (As)	--	<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	---	



# 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		eapulcher@burnsmcd.com			
Project Name / Testing Address		GFC / 4300 Goodfellow Blvd									
PO Number		168765				Collected By		Emily Pulcher & Jeff Smith			
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 AREA <small>Circle The Unit of Measurement Used cm or in</small>
			Pb TCLP	TCLP RCRA 8	RCRA 8 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.	
																Mins.	L/min.	Total Liters	
1	110-A-01	12/6/21 0732							Ag, As, Ba, Cd, Cr, Pb, Se						216	2.6	562	x	
2	110-A-02	0735												215	2.6	548	x		
3	110-A-03	0736												215	2.6	559	x		
4	110-A-04	0736												216	2.6	551	x		
5	110-A-05	0739												222	2.6	577	x		
6	110-A-06	0739												222	2.5	555	x		
7	110-A-07	0740												223	2.6	569	x		
8	110-A-08	0742												221	2.6	564	x		
9	110-A-09	0755												NA	NA	NA	x		
10																	x		
11																	x		
12																	x		
13																	x		
14																	x		
15																	x		

  

Released By:	Emily Pulcher				Date:	12/9/21		Time:	1600		
Signature:	(b) (6)										

LAB USE ONLY - BELOW THIS LINE

Received By: T Stone

Signature: (b) (6)

Date: 12/13/21 Time: 12:47  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)

21-12-01821

Due Date:  
12/20/2021  
(Monday)  
EL MM-L