



July 22, 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 – Bldg. 103E 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 buildings 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 pre-existing conditions noted in the investigation reports previously prepared for the facility. The following report summarizes the sample collection activities and the laboratory analytical results of the samples submitted.

#### **METHODOLOGY**

On June 17, 2020, Emily Ahlemeyer of Burns & McDonnell and Justin Arnold of OCCU-TEC conducted 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 103E.

The proposed sampling scheme, the 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 sampling for RCRA metals was 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) sampling methodology. Samples were collected in a method sufficient to collect a minimum sample volume of 300 liters. Air samples were submitted under chain-of-custody to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for independence analysis of 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 103E for each of the seven (7) metals that were sampled. Results indicate that all eight (8) air samples collected from Building 103E contained concentrations of RCRA metals below the OSHA Permissible Exposure Limit (PEL).

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

Analyte	Lowest Concentration <sup>(a)</sup> (µg/m <sup>3</sup> ) <sup>(b)</sup>	Highest Concentration <sup>(a)</sup> (µg/m <sup>3</sup> ) <sup>(b)</sup>	Permissible Exposure Limit (PEL) (µg/m <sup>3</sup> ) <sup>(b)</sup>
Arsenic	<1.9	<2.4	10
Barium	<0.35	<0.46	500
Cadmium	<0.35	<0.46	5
Chromium (Total)	<1.9	<2.4	500
Lead	<0.35	<0.46	50
Selenium	<1.9	<2.4	200
Silver	<0.35	<0.46	10

Notes:

- (a) Samples with a “<” sign indicate that the results were below the reportable limit.
- (b) µg/m<sup>3</sup> = 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. The air sampling professional’s Missouri Lead license is included in Appendix C.

**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, samples were only analyzed for a select number of potential contaminants likely to affect the air quality at the site. Burns & McDonnell is not responsible for potential contaminants not identified in this report. This report was prepared for the sole use of GSA.

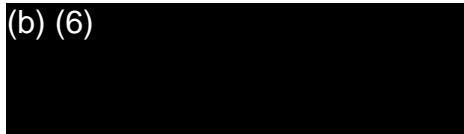


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Facilities Management Division  
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Burns & McDonnell appreciates the opportunity to work with the General Services Administration on this project. Please contact us if you have any questions regarding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

Sincerely,

(b) (6)

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

Matt Shanahan, CHMM  
Project Manager

Attachments:

- Appendix A – Results Summary by Location
- Appendix B – Air Sample Laboratory Report
- Appendix C – Qualifications and Licenses

**APPENDIX A – RESULTS SUMMARY BY LOCATION**

# Appendix A

## Results Summary by Location

Goodfellow Federal Center - Building 103E - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
103E-A-01	1st Floor, N Office	Arsenic	< 2.0	µg/m <sup>3</sup>	10
		Barium	< 0.38	µg/m <sup>3</sup>	500
		Cadmium	< 0.38	µg/m <sup>3</sup>	5
		Chromium	< 2.0	µg/m <sup>3</sup>	500
		Lead	< 0.38	µg/m <sup>3</sup>	50
		Selenium	< 2.0	µg/m <sup>3</sup>	200
		Silver	< 0.38	µg/m <sup>3</sup>	10
103E-A-02	1st Floor, S Conference Room	Arsenic	< 2.0	µg/m <sup>3</sup>	10
		Barium	< 0.38	µg/m <sup>3</sup>	500
		Cadmium	< 0.38	µg/m <sup>3</sup>	5
		Chromium	< 2.0	µg/m <sup>3</sup>	500
		Lead	< 0.38	µg/m <sup>3</sup>	50
		Selenium	< 2.0	µg/m <sup>3</sup>	200
		Silver	< 0.38	µg/m <sup>3</sup>	10
103E-A-03	1st Floor, TCJ8	Arsenic	< 2.0	µg/m <sup>3</sup>	10
		Barium	< 0.38	µg/m <sup>3</sup>	500
		Cadmium	< 0.38	µg/m <sup>3</sup>	5
		Chromium	< 2.0	µg/m <sup>3</sup>	500
		Lead	< 0.38	µg/m <sup>3</sup>	50
		Selenium	< 2.0	µg/m <sup>3</sup>	200
		Silver	< 0.38	µg/m <sup>3</sup>	10
103E-A-04	2nd Floor, N Stairwell	Arsenic	< 1.9	µg/m <sup>3</sup>	10
		Barium	< 0.35	µg/m <sup>3</sup>	500
		Cadmium	< 0.35	µg/m <sup>3</sup>	5
		Chromium	< 1.9	µg/m <sup>3</sup>	500
		Lead	< 0.35	µg/m <sup>3</sup>	50
		Selenium	< 1.9	µg/m <sup>3</sup>	200
		Silver	< 0.35	µg/m <sup>3</sup>	10
103E-A-05	2nd Floor, 13 Office	Arsenic	< 2.4	µg/m <sup>3</sup>	10
		Barium	< 0.46	µg/m <sup>3</sup>	500
		Cadmium	< 0.46	µg/m <sup>3</sup>	5
		Chromium	< 2.4	µg/m <sup>3</sup>	500
		Lead	< 0.46	µg/m <sup>3</sup>	50
		Selenium	< 2.4	µg/m <sup>3</sup>	200
		Silver	< 0.46	µg/m <sup>3</sup>	10

## Appendix A

### Results Summary by Location

Goodfellow Federal Center - Building 103E - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
103E-A-06	2nd Floor, Room 200	Arsenic	< 2.4	µg/m <sup>3</sup>	10
		Barium	< 0.46	µg/m <sup>3</sup>	500
		Cadmium	< 0.46	µg/m <sup>3</sup>	5
		Chromium	< 2.4	µg/m <sup>3</sup>	500
		Lead	< 0.46	µg/m <sup>3</sup>	50
		Selenium	< 2.4	µg/m <sup>3</sup>	200
		Silver	< 0.46	µg/m <sup>3</sup>	10
103E-A-07	2nd Floor, Room 300	Arsenic	< 2.4	µg/m <sup>3</sup>	10
		Barium	< 0.46	µg/m <sup>3</sup>	500
		Cadmium	< 0.46	µg/m <sup>3</sup>	5
		Chromium	< 2.4	µg/m <sup>3</sup>	500
		Lead	< 0.46	µg/m <sup>3</sup>	50
		Selenium	< 2.4	µg/m <sup>3</sup>	200
		Silver	< 0.46	µg/m <sup>3</sup>	10
103E-A-08	Field Blank	Arsenic	< 1.3	µg	--
		Barium	< 0.25	µg	--
		Cadmium	< 0.25	µg	--
		Chromium	< 1.3	µg	--
		Lead	< 0.25	µg	--
		Selenium	< 1.3	µg	--
		Silver	< 0.25	µg	--

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: 20-06-02487  
 Received Date: 06/19/2020  
 Reported Date: 06/22/2020

Project/Test Address: 168765; Goodfellow IH Services; 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
20-06-02487-001	103E-A-01	06/20/2020	Arsenic (As)	667.8	<1.3	<2.0	
			Barium (Ba)		<0.25	<0.38	
			Cadmium (Cd)		<0.25	<0.38	
			Chromium (Cr)		<1.3	<2.0	
			Lead (Pb)		<0.25	<0.38	
			Selenium (Se)		<1.3	<2.0	
			Silver (Ag)		<0.25	<0.38	
20-06-02487-002	103E-A-02	06/20/2020	Arsenic (As)	661.3	<1.3	<2.0	
			Barium (Ba)		<0.25	<0.38	
			Cadmium (Cd)		<0.25	<0.38	
			Chromium (Cr)		<1.3	<2.0	
			Lead (Pb)		<0.25	<0.38	
			Selenium (Se)		<1.3	<2.0	
			Silver (Ag)		<0.25	<0.38	
20-06-02487-003	103E-A-03	06/20/2020	Arsenic (As)	665.3	<1.3	<2.0	
			Barium (Ba)		<0.25	<0.38	
			Cadmium (Cd)		<0.25	<0.38	



# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-02487

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

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m³)	Narrative ID
			Chromium (Cr)		<1.3	<2.0	
			Lead (Pb)		<0.25	<0.38	
			Selenium (Se)		<1.3	<2.0	
			Silver (Ag)		<0.25	<0.38	
20-06-02487-004I	103E-A-04	06/20/2020	Arsenic (As)	722.2	<1.3	<1.9	
			Barium (Ba)		<0.25	<0.35	
			Cadmium (Cd)		<0.25	<0.35	
			Chromium (Cr)		<1.3	<1.9	
			Lead (Pb)		<0.25	<0.35	
			Selenium (Se)		<1.3	<1.9	
			Silver (Ag)		<0.25	<0.35	
20-06-02487-005I	103E-A-05	06/20/2020	Arsenic (As)	553.4	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.46	
			Cadmium (Cd)		<0.25	<0.46	
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.46	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.46	
20-06-02487-006I	103E-A-06	06/20/2020	Arsenic (As)	545.8	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.46	
			Cadmium (Cd)		<0.25	<0.46	
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.46	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.46	

# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-02487

Project/Test Address: 168765; Goodfellow IH Services; 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
20-06-02487-007	103E-A-07	06/20/2020	Arsenic (As)	546.8	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.46	
			Cadmium (Cd)		<0.25	<0.46	
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.46	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.46	
20-06-02487-008	103E-A-08	06/20/2020	Arsenic (As)	0	<1.3	---	
			Barium (Ba)		<0.25	---	
			Cadmium (Cd)		<0.25	---	
			Chromium (Cr)		<1.3	---	
			Lead (Pb)		<0.25	---	
			Selenium (Se)		<1.3	---	
			Silver (Ag)		<0.25	---	

# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-02487

Project/Test Address: 168765; Goodfellow IH Services; 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
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Sample Narratives:

Method: NIOSH 7300M  
Analyst: Anthony Dee

(b) (6)

Reviewed By Authorized Signatory:

*Missy Kanode*  
QA/QC Clerk

Sample Results denoted with a "less than" (<) sign contains less than the reporting limit for each particular metal, based on a 25mL volume. The reporting limit is 0.05ug for Beryllium, 25ug for Aluminum, Calcium, Iron and Zinc, 1.3ug for Arsenic, Chromium, Magnesium, Antimony and Selenium, and 0.25ug 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/m<sup>3</sup> = micrograms per cubic meter  
                                  mL = milliliter                    L= Liters

# ENVIRONMENTAL HAZARDS SERVICES, LLC

## Metals Chain of Custody Form

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		Emily Ahlemeyer & Justin Arnold										
Turn-Around Time		<input checked="" 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 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
													Mins.	L/min.	Total Liters	AREA Circle The Unit of Measurement Used cm or in	
1	103E-A-01	06-17-2020 1230							Ag, As, Cd, Cr Co, Pb, Se								X
2	103E-A-02	1230															X
3	103E-A-03	1231															X
4	103E-A-04	1301															X
5	103E-A-05	1259															X
6	103E-A-06	1259															X
7	103E-A-07	1259															X
8	103E-A-08	0800															X
9																	X
10																	X
11																	X
12																	X
13																	X
14																	X
15																	X
Released By:		Emily Ahlemeyer			Date:		6/18/2020			Time:		4:00 PM					
Signature:		(b) (6)															

LAB USE ONLY - BELOW THIS LINE

Received By: T. Hanna

Signature: (b) (6)


Date: 6/19/20 Time: 12:15  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)

20-06-02487



Due Date:  
**06/24/2020**  
(Wednesday)  
EL

## **APPENDIX C – QUALIFICATIONS AND LICENSES**

**STATE OF MISSOURI**  
**DEPARTMENT OF HEALTH AND SENIOR SERVICES**

**LEAD OCCUPATION LICENSE REGISTRATION**

Issued to:

**Justin E. Arnold**

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: **6/11/2020**  
Expiration Date: **6/11/2022**  
License Number: **120611-300003622**

(b) (6)



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

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