



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. 105F 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 19, 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 105F.

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 105F for each of the seven (7) metals that were sampled. Results indicate that all nine (9) air samples collected from Building 105F 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	<2.4	<2.5	10
Barium	<0.46	<0.47	500
Cadmium	<0.46	<0.47	5
Chromium (Total)	<2.4	<2.5	500
Lead	<0.46	<0.47	50
Selenium	<2.4	<2.5	200
Silver	<0.46	<0.47	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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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)" printed in white at 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 105F - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
105F-A-01	1st Floor, N Lobby	Arsenic	< 2.4	µg/m <sup>3</sup>	10
		Barium	< 0.47	µg/m <sup>3</sup>	500
		Cadmium	< 0.47	µg/m <sup>3</sup>	5
		Chromium	< 2.4	µg/m <sup>3</sup>	500
		Lead	< 0.47	µg/m <sup>3</sup>	50
		Selenium	< 2.4	µg/m <sup>3</sup>	200
		Silver	< 0.47	µg/m <sup>3</sup>	10
105F-A-02	1st Floor, NE Office Space	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
105F-A-03	1st Floor, Outside Shop	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
105F-A-04	1st Floor, SE Stairwell	Arsenic	< 2.5	µg/m <sup>3</sup>	10
		Barium	< 0.47	µg/m <sup>3</sup>	500
		Cadmium	< 0.47	µg/m <sup>3</sup>	5
		Chromium	< 2.5	µg/m <sup>3</sup>	500
		Lead	< 0.47	µg/m <sup>3</sup>	50
		Selenium	< 2.5	µg/m <sup>3</sup>	200
		Silver	< 0.47	µg/m <sup>3</sup>	10
105F-A-05	2nd Floor, SW Window	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 105F - Air Sample Data					
Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
105F-A-06	2nd Floor, SW Office Space	Arsenic	< 2.5	µg/m <sup>3</sup>	10
		Barium	< 0.47	µg/m <sup>3</sup>	500
		Cadmium	< 0.47	µg/m <sup>3</sup>	5
		Chromium	< 2.5	µg/m <sup>3</sup>	500
		Lead	< 0.47	µg/m <sup>3</sup>	50
		Selenium	< 2.5	µg/m <sup>3</sup>	200
		Silver	< 0.47	µg/m <sup>3</sup>	10
105F-A-07	2nd Floor, NE Office Space	Arsenic	< 2.5	µg/m <sup>3</sup>	10
		Barium	< 0.47	µg/m <sup>3</sup>	500
		Cadmium	< 0.47	µg/m <sup>3</sup>	5
		Chromium	< 2.5	µg/m <sup>3</sup>	500
		Lead	< 0.47	µg/m <sup>3</sup>	50
		Selenium	< 2.5	µg/m <sup>3</sup>	200
		Silver	< 0.47	µg/m <sup>3</sup>	10
105F-A-08	2nd Floor, NW Stairwell	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
105F-A-09	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: 20-06-02685  
 Received Date: 06/22/2020  
 Reported Date: 06/23/2020

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
20-06-02685-001	105F-A-01	06/22/2020	Arsenic (As)	543.4	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.47	
20-06-02685-002	105F-A-02	06/22/2020	Arsenic (As)	546.7	<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	
20-06-02685-003	105F-A-03	06/22/2020	Arsenic (As)	548.9	<1.3	<2.4	
			Barium (Ba)		<0.25	<0.46	
			Cadmium (Cd)		<0.25	<0.46	



# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-02685

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
			Chromium (Cr)		<1.3	<2.4	
			Lead (Pb)		<0.25	<0.46	
			Selenium (Se)		<1.3	<2.4	
			Silver (Ag)		<0.25	<0.46	
20-06-02685-004I	105F-A-04	06/22/2020	Arsenic (As)	538.1	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.47	
20-06-02685-005I	105F-A-05	06/22/2020	Arsenic (As)	550.3	<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	
20-06-02685-006I	105F-A-06	06/22/2020	Arsenic (As)	537.6	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.47	

# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 20-06-02685

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
20-06-02685-007	105F-A-07	06/22/2020	Arsenic (As)	533.5	<1.3	<2.5	
			Barium (Ba)		<0.25	<0.47	
			Cadmium (Cd)		<0.25	<0.47	
			Chromium (Cr)		<1.3	<2.5	
			Lead (Pb)		<0.25	<0.47	
			Selenium (Se)		<1.3	<2.5	
			Silver (Ag)		<0.25	<0.47	
20-06-02685-008	105F-A-08	06/22/2020	Arsenic (As)	548.9	<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	
20-06-02685-009	105F-A-09	06/22/2020	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: 20-06-02685

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: Brittany Meyer

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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 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 Anlemeyer & Justin Arnold
Turn-Around Time	<input checked="" type="checkbox"/> 3 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 1 DAY <input type="checkbox"/> SAME DAY OR WEEKEND - Must Call Ahead		

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS						Other Metals	PARTICULATES					AIR			WIPES  AREA Circle The Unit of Measurement Used cm or in	
			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	105F-A-01	6/19/2020 0743							Ag, As, Ba, Cd, Cr, Pb, Se						220	2.47	543.4	x	
2	105F-A-02	0744												220	2.49	546.7	x		
3	105F-A-03	0745												226	2.50	548.9	x		
4	105F-A-04	0745												221	2.44	538.1	x		
5	105F-A-05	0746												221	2.49	550.3	x		
6	105F-A-06	0748												219	2.46	537.6	x		
7	105F-A-07	0748												220	2.43	533.5	x		
8	105F-A-08	0749												220	2.50	548.9	x		
9	105F-A-09	0710												NA	NA	NA	x		
10																	x		
11																	x		
12																	x		
13																	x		
14																	x		
15																	x		

Released By: Emily Anlemeyer	Date: 6/19/2020	Time: 4:00 PM
Signature: (b) (6)		

LAB USE ONLY - BELOW THIS LINE

Received By: T Stone

Signature: (b) (6)

Date: 6/22/20 Time: 1:40  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)

20-06-02685

Due Date:  
06/25/2020  
(Thursday)  
EL

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



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

**LEAD OCCUPATION LICENSE REGISTRATION**

Issued to:

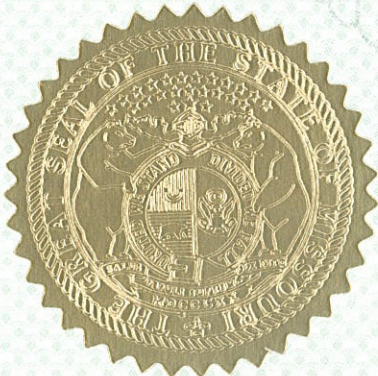
**Justin E. Arnold**

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