HAYES
MICROBIAL CONSULTING
3005 East Boundary Terrace, #F
Midlothian, VA 23112, USA
804.562.3435 Fax: 804.447.5562

contact@hayesmicrobial.com
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Analysis Report prepared for

S&R Environmental Consulting

5801 Logan St. Suite 200
Denver, CO. 80216
Phone: (303) 297-1645

Job Number:	**018013**
Job Name:	**Boots Const. EPA**
Date Sampled:	**02-22-2018**
Date Analyzed:	**02-23-2018**
Report Date:	**02-23-2018**

EPA Laboratory ID# VA01419

AIHA EMPAT Lab ID# 188863 Mold License: LAB1021 License: #PH-0198

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HMC #18005820

S&R Environmental Consulting
5801 Logan St.
Suite 200
Denver, CO80216

February 23, 2018

Client Job Number: 018013
Client Job Name: Boots Const. EPA

Dear S&R Environmental Consulting,

We would like to thank you for trusting Hayes Microbial for your analytical needs. On February 23, 2018 we received 2 samples by FedEx for the job referenced above. 2 samples were received in good condition.

The results in this analysis pertain only to this job, collected on the stated date and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial Consulting. In no event, shall Hayes Microbial Consulting or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of your use of the test results.

Stephen N. Hayes

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC

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Particle Analysis
SOP #HMC114

HMC #18005820

Job Number:	**018013**	Job Name:	**Boots Const. EPA**	Date Collected:	**02/22/2018**
Collected by:	**Tom**			Date Received:	**02/23/2018**
Email:	**tom@srenvironmentalconsulting.com**			Date Reported:	**02/23/2018**

HMC ID Number	18005820 - 1			18005820 - 2				
Sample ID#	2283720			2283697				
Sample Name	Fourth Floor Southwest Corner			First Floor Lobby				
Sample Volume	74 liters			74 liters				
Reporting Limit	13 Particles / m3			13 Particles / m3				
Particle	Raw Count	Count / m3	% of Total	Raw Count	Count / m3	% of Total		
Dander	20	268	39.2%	18	241	50.2%		
Cellulose Fibers	2	27	3.9%	1	13	2.7%		
Synthetic Fibers				2	27	5.6%		
Fiberglass Fibers								
Wood Fibers								
Animal Hair								
Plant Hair								
Human Hair								
Dust Mites, Parts								
Carpet Beetle larvae parts								
Insect Parts								
Insect Frass (Feces)								
Feather Barbule								
Pollen								
Gypsum								
Opaque Particles				1	13	2.7%		
Talc	25	335	49.0%	11	147	30.6%		
Silicates	2	27	3.9%	1	13	2.7%		
Mineral Salts								
Ash-like Soot				1	13	2.7%		
Char-like Soot	2	27	3.9%	1	13	2.7%		
Aciniform-like Soot								
Total	51	684		36	480			

Signature: Stephen Enders **Date:** **02/23/2018** **Reviewed by:** Stephen N. Hayes **Date:** **02/23/2018**

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Particle Information

HMC #18005820

Particle Analysis Hayes Microbial Consulting Particle Analysis test is based on the initial screening procedures from ASTM #D6602. HMC only does light, polarized light, and phase contrast microscopy. No SEM or X-ray defraction is done. Below are some guidelines to help you figure out the totals for the dander, fibers, pollen, and other particle counts by light microscopy.
*Estimated Normal Ranges are based on experience only. There are no standard ranges for this type of testing.

Particle		* Estimated Normal Range	
		Air	Surface
Dander	Home (Carpeted Areas)	1,000-6,000 / M3	10,000-16,000 / cm2
	Home (Hard Surface Areas)	500-5,000 / M3	5,000-16,000 / cm2
	Office or Classroom (Carpeted)	4,000-12,000 / M3	14,000-24,000 / cm2
	Office or Classroom (Hard Surface Areas)	3,000-10,000 / M3	12,000-20,000 / cm2
Cellulose Fibers		0-250 / M3	0-1,600 / cm2
Synthetic Fibers		0-250 / M3	0-1,600 / cm2
Fiberglass Fibers		0-60 / M3	0-400 / cm2
Gypsum Fibers		0-400 / M3	0-1,800 / cm2
Talc		0-250 / M3	0-2,000 / cm2
Dust Mites (parts)		0-30 / M3	0-200 / cm2
Insect Parts		0-30 / M3	0-200 / cm2
Animal Hair		0-30 / M3	0-200 / cm2
Wood Fibers		0-60 / M3	0-200 / cm2
Plant Hairs		0-60 / M3	0-200 / cm2
Human Hair		0-60 / M3	0-200 / cm2
Carpet Beetle Larvae		0-40 / M3	0-200 / cm2
Insect Frass		0-40 / M3	0-400 / cm2
Feather Barbules		0-40 / M3	0-200 / cm2
Opaque Particles		0-100 / M3	0-600 / cm2
Starch		0-40 / M3	0-200 / cm2
Ash-like Soot		0-60 / M3	0-400 / cm2
Char-like Soot		0-60 / M3	0-200 / cm2
Aciniform-like Soot		0-100 / M3	0-800 / cm2
Silicates	(Varies greatly depending on area)	0-500 / M3	0-2,800 / cm2
Pollen	Varies with outdoor pollen levels and whether there are live indoor plants.		
		M3 = per cubic meter	cm2 = per sq. centimeter

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Particle Descriptions

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Ash-like Soot

Description: Ash-like soot is formed from the combustion of wood products.

Sources: Sources are wood fireplaces, house fires, forest fires, and burning of leaves and other yard debris.

Cellulose Fibers

Description: Cellulose fibers are natural fibers from plant material.

Sources: Sources of cellulose fibers are paper, cardboard, insulation material.

Char-like Soot

Description: Char-like soot comes from the incomplete combustion of wood products.

Sources: Sources are wood fireplaces, house fires, forest fires, and burning of leaves and other yard debris.

Dander

Description: Dander is dead skin cells. The average person sheds about 600,000 skin cells per day.

Sources: Sources are people and animals.

Opaque Particles

Description: Particles that are not characteristic of other opaque particles that can be identified such as soot. If significant amounts are present, further analysis by SEM and Xray Diffraction are suggested to help determine the makeup and possible sources.

Sources: Unknown until characterization is determined.

Silicates

Description: Silicates comprise the majority of the Earth's crust. Sand, Portland cement, and thousands of minerals are examples of silicates.

Sources: Sources are sand and cement.

Synthetic Fibers

Description: Synthetic fibers are man-made fibers such as nylon, polyester, and polyolefin.

Sources: Sources of synthetic fibers are carpet, upholstery and clothing.

Talc

Description: Talc is a mineral composed of hydrated magnesium silicate

Sources: Sources of talc are powder, personal hygiene and cosmetics products, and in powdered laundry detergents and carpet cleaners.