

ENVIRONMENTAL INVESTIGATION & SAMPLING
AT CROSBY HALL,
UNIVERSITY OF MISSISSIPPI

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ENVIRONMENTAL SAMPLING FOR FUNGI IN CROSBY HALL AT THE UNIVERSITY OF MISSISSIPPI

INTRODUCTION

On September 19 & 25, 2019, ERG Environmental, Inc. (ERGE) conducted air/surface/bulk sampling and conducted a visual inspection for fungi in random areas of Crosby Hall. All samples were properly packaged and sent to EMSL Analytical which holds current AIHA accreditation. Our findings are as follows:

ENVIRONMENTAL AIR SAMPLING FOR FUNGI

This air sampling was conducted using Air-O-Cell Air Sampling Cassettes. This cassette is designed for the rapid collection and analysis of a wide range of airborne aerosols. These include mold spores, pollen, insect parts, skin cell fragments, fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers) and inorganic particulate (e.g. ceramic, fly ash, combustion particles, copy toner).

On September 19, 2019, a total of ten (10) Air-O-Cell samples were collected for analysis. Sample numbers and the area in which each sample was collected are as follows:

Sample 1 - Pre-Sampling Baseline Outside
Sample 2 - Room 146
Sample 3 - Room 225
Sample 4 - Room 622
Sample 5 - Room 702
Sample 6 - Room 849
Sample 7 - Room 301
Sample 8 - Room 453
Sample 9 - Room 606
Sample 10 - Room 846

On September 25, 2019, a total of thirty-eight (38) Air-O-Cell samples were collected for analysis. Sample numbers and the area in which each sample was collected are as follows:

Sample 11 - Pre-Sampling Baseline
Sample 12 - Room 150
Sample 13 - 1st Floor, Main Lobby
Sample 14 - Room 210
Sample 15 - Restroom 235
Sample 16 - Room 301
Sample 17 - 3rd Floor North Hall At Room 350
Sample 18 - Room 328
Sample 19 - Restroom 415
Sample 20 - Room 549
Sample 21 - 5th Floor Lounge
Sample 22 - Room 604

Sample 23 - Room 612
Sample 24 - Room 625
Sample 25 - Room 631
Sample 26 - Room 632
Sample 27 - Room 648
Sample 28 - Restroom 655
Sample 29 - Room 721
Sample 30 - Room 724
Sample 31 - Restroom 735
Sample 32 - Room 745
Sample 33 - 7th Floor, West Hall At Room 701
Sample 34 - Room 808
Sample 35 - Room 809
Sample 36 - Room 810
Sample 37 - Room 811
Sample 38 - Room 821
Sample 39 - Room 822
Sample 40 - Room 826
Sample 41 - Room 830
Sample 42 - Room 831
Sample 43 - Room 845
Sample 44 - Room 848
Sample 45 - Room 849
Sample 46 - Room 853
Sample 47 - Restroom 855
Sample 48 - Post-Sampling Baseline

See Tables No. 1 and No. 2 below which indicate acceptable airborne dust concentration and acceptable total mold spore concentrations for indoor air quality. The analytical results of our sampling can be found in Table #3.

There are no regulatory standards for acceptable levels of fungi or other airborne dust concentrations in the indoor environment. The correlation between the presence of airborne fungi and dust concentrations and health effects has not been clearly established due to the lack of knowledge by the scientific and medical community. It is known, that as concentrations of fungi and dust increase in a building, that some individuals will experience an increase in allergic reactions and extensive mold contamination of a building can cause other health effects.

In evaluating air monitoring analysis for mold spores, pollen, fiber particulate, insect fragments and skin fragments, we generally look for three (3) separate items:

1. We would like to see the mold spores and pollen inside the building at or below what we see in the baseline sample taken outside the building.
2. We normally like to see the same prevalence of mold spores on our inside samples as our outside samples.
3. We generally like to see less than two thousand (2,000) mold spores per meter³ of air inside the building.

Table No. 1

Airborne Dust Concentrations

	Normal (Low)	Moderate	High
Total Mold Spores	<500	500 - 2,000	>2,000
Species Of Mold	<200	200 - 1,000	>1,000
Algal or Fern Spores	<50	50 - 200	>200
Pollen	<30	30 - 100	>100
Skin Cell Fragments	<10,000	10,000 - 20,000	>20,000
Fiberglass Fibers	<20	20 - 100	>100
Cellulosic Fibers	<400	400 - 1,500	>1,500
Insect Parts	<50	50 - 500	>500
Opaque Particles	500 - 5,000	5,000 - 10,000	>10,000
From: The Environmental Institutes <i>“Mold Assessment And Remediation In Buildings”</i>			

Table No. 2

Total Spores - Indoors

“Clean Building”	Less than 2,000 Less than 700 Less than 500	All Spores Penicillium, Aspergillus Outdoor Spores
Possible Indoor Amplification	1,000 - 5,000	Penicillium, Aspergillus, Cladosporium
Indoor Amplification	5,000 - 10,000	Penicillium, Aspergillus, Cladosporium
Chronic Indoor Amplification, Inadequate Cleanup	10,000 - 6,000,000	Penicillium, Aspergillus, Cladosporium, Stachybotrys, Basidiospores
Indoor Demolition Of Contaminated Material	50,000 - 12,000,000	Penicillium, Aspergillus, Cladosporium, Stachybotrys, Basidiospores
Daniel Baxter, Environmental Analysis Associates, Inc. 5290 Soledad Road, San Diego, CA 92109 (858) 272-7747 From: The Environmental Institutes “ <i>Mold Assessment And Remediation In Buildings</i> ”		

Table No. 3

Sampling Results From September 19, 2019

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m³)
1	Baseline Outside - September 19, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Fusarium Ganoderma Myxomycetes Pithomyces Acremonium-like Beltrania Cercospora Deightoniella Nigrospora Paecilomyces-like Pestalotia/Pestalotiopsis TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	 660 2400 6900 5800 40 90 10 300 40 300 10 300 10 40 200 <u>40</u> 17140 40 None Detected 40
2	Room 146 - September 19, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	 40 90 90 40 40 <u>40</u> 340 40 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
3	Room 225 - September 19, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	660 440 100 <u>40</u> 1240 90 None Detected None Detected
4	Room 622 - September 19, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 200 40 <u>40</u> 320 40 None Detected None Detected
5	Room 702 - September 19, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	200 200 <u>90</u> 490 40 None Detected 10

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
6	Room 849 - September 19, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Ganoderma Nigrospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 90 90 300 40 <u>10</u> 570 None Detected None Detected None Detected
7	Room 301 - September 19, 2019	Mold Spores - Alternaria (Ulocladium) Aspergillus/Penicillium Basidiospores Bipolaris Cladosporium Curvularia Myxomycetes Pithomyces Nigrospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 660 610 10 1300 10 100 10 <u>40</u> 2750 200 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
8	Room 453 - September 19, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Cercospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	100 90 300 200 50 <u>10</u> 750 None Detected None Detected 10
9	Room 606 - September 19, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Bipolaris Cladosporium Curvularia Ganoderma Myxomycetes Unidentifiable Spores TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	200 300 90 440 10 10 10 <u>40</u> 1100 40 None Detected None Detected
10	Room 846 - September 19, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium Myxomycetes Nigrospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	300 300 400 40 <u>10</u> 1050 None Detected None Detected None Detected

Sampling Results From September 25, 2019

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m³)
11	Pre-Sampling Baseline - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Ganoderma Myxomycetes Cercospora Nigrospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	2600 790 13300 4840 40 200 300 100 30 22200 100 None Detected 30
12	Room 150 - - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Myxomycetes TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 40 200 100 40 40 460 40 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
13	1 st Floor Main Lobby - - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Myxomycetes TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 660 1000 1200 40 <u>30</u> 2970 None Detected None Detected None Detected
14	Room 210 - - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Epicoccum Myxomycetes Pithomyces Scopulariopsis/Microascus TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 100 200 520 440 40 40 40 40 40 <u>40</u> 1500 40 None Detected None Detected
15	Restroom 235 - September 25, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium Ganoderma TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 200 40 <u>40</u> 320 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
16	Room 301 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Chaetomium Cladosporium Curvularia Rust TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 10 100 90 40 100 40 <u>10</u> 400 None Detected None Detected 40
17	3 rd Floor North Hall At Room 350 - September 25, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 90 520 <u>10</u> 660 40 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
18	Room 328 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Epicoccum Myxomycetes Rust Stachybotrys/Memnoniella TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	90 100 830 300 300 50 30 40 30 <u>40</u> 1810 200 None Detected None Detected
19	Restroom 415 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Rust Cercospora Spegazzinia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	400 1700 300 870 40 40 <u>10</u> 3360 30 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
20	Room 549 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Epicoccum Myxomycetes Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 40 700 90 100 40 10 40 <u>10</u> 1040 40 None Detected None Detected
21	5 th Floor Lounge - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Ganoderma Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 30 40 300 290 10 <u>10</u> 690 None Detected None Detected 10

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
22	Room 604 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Epicoccum Myxomycetes TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	100 200 960 1900 40 10 <u>30</u> 3240 100 None Detected None Detected
23	Room 612 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Curvularia Nigrospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 40 300 30 <u>40</u> 450 40 None Detected None Detected
24	Room 625 - September 25, 2019	Mold Spores - Basidiospores Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	100 <u>40</u> 140 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
25	Room 631 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Aspergillus/Penicillium Basidiospores Bipolaris Cladosporium Curvularia Myxomycetes Pithomyces Torula-like TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 200 400 90 100 50 90 10 <u>40</u> 990 40 None Detected None Detected
26	Room 632 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Bipolaris Cladosporium Curvularia Ganoderma Myxomycetes Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 1500 440 40 100 50 40 30 <u>10</u> 2250 90 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
27	Room 648 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Cladosporium Curvularia Pestalotia/Pestalotiopsis TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 40 100 40 <u>40</u> 230 40 None Detected None Detected
28	Restroom 655 - September 25, 2019	Mold Spores - Ascospores Basidiospores Cladosporium Ganoderma TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 200 200 <u>40</u> 450 None Detected None Detected 10
29	Room 721 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Tetraploa TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 40 1500 100 40 10 <u>10</u> 1710 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
30	Room 724 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Bipolaris Cladosporium Curvularia Myxomycetes Pithomyces Spegazzinia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	30 40 100 200 10 90 30 40 10 <u>10</u> 560 30 None Detected 10
31	Restroom 735 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 <u>200</u> 240 None Detected None Detected None Detected
32	Room 745 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 40 <u>90</u> 170 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
33	7 th Floor, West Hall At Room 701 - September 25, 2019	Mold Spores - Aspergillus/Penicillium	<u>100</u>
		TOTAL	100
		OTHER: Hyphal Fragment	None Detected
		Insect Fragment	None Detected
		Pollen	None Detected
34	Room 808 - September 25, 2019	Mold Spores - Ascospores	480
		Aspergillus/Penicillium	300
		Basidiospores	660
		Cladosporium	40
		Curvularia	90
		Pithomyces	10
		Torula-like	<u>10</u>
		TOTAL	1590
		OTHER: Hyphal Fragment	40
		Insect Fragment	None Detected
		Pollen	100
35	Room 809 - September 25, 2019	Mold Spores - Aspergillus/Penicillium	100
		Basidiospores	<u>100</u>
		TOTAL	200
		OTHER: Hyphal Fragment	None Detected
		Insect Fragment	None Detected
		Pollen	10

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
36	Room 810 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Myxomycetes Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 90 40 40 200 10 <u>40</u> 430 None Detected None Detected None Detected
37	Room 811 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	90 90 90 <u>90</u> 360 None Detected None Detected None Detected
38	Room 821 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Pestalotia/Pestalotiopsis TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 1000 200 <u>40</u> 1280 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
39	Room 822 - September 25, 2019	Mold Spores - Aspergillus/Penicillium Basidiospores Cladosporium Myxomycetes TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	660 100 1100 <u>10</u> 1870 None Detected None Detected None Detected
40	Room 826 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 <u>90</u> 130 None Detected None Detected None Detected
41	Room 830 - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Pithomyces TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	10 40 520 300 300 40 <u>10</u> 1220 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
42	Room 831 - September 25, 2019	Mold Spores - Ascospores Basidiospores Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	90 40 90 <u>30</u> 250 None Detected None Detected None Detected
43	Room 845 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 40 40 <u>40</u> 160 None Detected None Detected None Detected
44	Room 848 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Stachybotrys/Memnoniella TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	90 200 40 40 <u>200</u> 570 None Detected None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
45	Room 849 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Stachybotrys/Memnoniella TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 24000 40 200 <u>40</u> 24320 90 None Detected None Detected
46	Room 853 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 90 200 40 <u>40</u> 410 None Detected None Detected None Detected
47	Restroom 855 - September 25, 2019	Mold Spores - Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	100 700 200 870 <u>30</u> 1900 40 None Detected None Detected

Sample No.	Location	Particle Identification	Sample Concentration (Counts/m ³)
48	Post-Sampling Baseline - September 25, 2019	Mold Spores - Alternaria (Ulocladium) Ascospores Aspergillus/Penicillium Basidiospores Cladosporium Curvularia Epicoccum Myxomycetes Pithomyces Cercospora TOTAL OTHER: Hyphal Fragment Insect Fragment Pollen	40 1000 100 90 9690 90 10 440 30 <u>1500</u> 12990 None Detected None Detected None Detected

Table No. 1 and Table No. 2 represent typical airborne dust concentrations and total spores typical in the indoor air environment. Table No. 3 represents the sampling results of the sampling conducted on September 19 & 25, 2019.

The Air-O-Cell samples collected from the following areas compare favorably to the baseline sample and all recommendations and are considered to be in the “Clean Building” range:

- Room 146 (September 19, 2019)
- Room 225 (September 19, 2019)
- Room 622 (September 19, 2019)
- Room 702 (September 19, 2019)
- Room 849 (September 19, 2019)
- Room 453 (September 19, 2019)
- Room 606 (September 19, 2019)
- Room 846 (September 19, 2019)
- Room 150 (September 25, 2019)
- Room 210 (September 25, 2019)
- Restroom 235 (September 25, 2019)
- Room 301 (September 25, 2019)
- 3rd Floor North Hall @ Room 350 (September 25, 2019)
- Room 549 (September 25, 2019)
- 5th Floor Lounge (September 25, 2019)
- Room 612 (September 25, 2019)

- Room 625 (September 25, 2019)
- Room 631 (September 25, 2019)
- Room 648 (September 25, 2019)
- Room 655 (September 25, 2019)
- Room 724 (September 25, 2019)
- Room 735 (September 25, 2019)
- Room 745 (September 25, 2019)
- 7th Floor Hall At Room 701 (September 25, 2019)
- Room 808 (September 25, 2019)
- Room 809 (September 25, 2019)
- Room 810 (September 25, 2019)
- Room 811 (September 25, 2019)
- Room 826 (September 25, 2019)
- Room 830 (September 25, 2019)
- Room 831 (September 25, 2019)
- Room 845 (September 25, 2019)
- Room 848 (September 25, 2019)
- Room 853 (September 25, 2019)
- Room 855 (September 25, 2019)

September 19, 2019 Sampling

- The Air-O-Cell sample collected on September 19, 2019 in Room 301 (Sample No. 7) does not compare favorably to the recommendations in Table No. 1 and Table No. 2. This sample shows a higher than recommended mold spore count of Cladosporium (recommended less than 1000) and a higher than recommended total mold spore count (recommended less than 2000). However, the sample does compare favorably to the baseline sample total of 17140 (Room 301 sample shows a total of 2750) and to the same prevalence of spore types. Room 301 sample also compares favorably to the spore type specific to Cladosporium mold spore count of 1300 (Baseline sample shows a Cladosporium mold spore count of 5800).

Based on these analytical results, it would stand to reason that individuals exposed to the indoor environment of Room 301 would have more significant adverse effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

September 25, 2019 Sampling

- The Air-O-Cell samples collected on September 25, 2019 in the 1st Floor Main Lobby (Sample No. 13) and Room 604 (Sample No. 22) do not compare favorably to the recommendations in Table No. 1 and Table No. 2. These samples show a higher than recommended mold spore count of Cladosporium (recommended less than 1000) and a higher than recommended total mold spore count (recommended less than 2000). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Main Lobby sample shows a total of 2970 and Room 604 sample shows 3240) and with similar prevalence of spore types. Both of these inside samples also compare favorably to the baseline samples Cladosporium counts of 4840 & 9690 (Main Lobby sample shows a Cladosporium count of 1200 and Room 604 shows a Cladosporium count of 1900).

Based on analytical results, it would stand to reason that individuals exposed to the indoor environment of the 1st Floor Main Lobby and Room 604 would have more significant adverse effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

- The Air-O-Cell samples collected on September 25, 2019 in Room 328 (Sample No. 18), Room 721 (Sample No. 29) and Room 821 (Sample No. 38) do not compare favorably to the recommendations in Table No. 2. These samples show a higher than recommended mold spore count of Aspergillus/Penicillium (recommended less than 700). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Room 328 sample shows a total of 1810, Room 721 sample shows a total of 1710 and Room 821 sample shows a total of 1280) and with similar prevalence of spore types. These inside samples are slightly higher than the baseline samples Aspergillus/Penicillium spore counts of 790 & 100 (Room 328 shows a Aspergillus/Penicillium count of 830, Room 721 shows a count of 1500 and Room 821 shows a count of 1000).

Based on these analytical results for these rooms, it would stand to reason that individuals exposed to the indoor environment would have similar effects from exposure to the outside ambient environment (outside total spore counts are much higher than inside spore counts).

- The Air-O-Cell samples collected on September 25, 2019 in Restroom 415 (Sample No. 19) and Room 632 (Sample No. 26) do not compare favorably to the recommendations in Table No. 1 and Table No. 2. These samples show a higher than recommended mold spore count of Aspergillus/Penicillium (recommended less than 700) and a higher than recommended total mold spore count (recommended less than 2000). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Restroom 415 sample shows a total count of 3360 and Room 632 sample shows a total count of 2250) and with similar prevalence of spore types. These inside samples are slightly higher than the baseline samples Aspergillus/Penicillium counts of 790 & 100 (Restroom 415 shows a Aspergillus/Penicillium count of 1700 and Room 632 shows a count of 1500).

Based on these analytical results for these rooms, it would stand to reason that individuals exposed to the indoor environment would have similar effects from exposure to the outside ambient environment (outside total spore counts are much higher than inside spore counts).

- The Air-O-Cell sample collected on September 25, 2019 in Room 822 (Sample No. 39) does not compare favorably to the recommendations in Table No. 2. This sample shows a higher than recommended mold spore count of Cladosporium (recommended less than 1000). However, this sample does compare favorably to the baseline samples total of 22200 & 12990 (Room 822 sample shows a total of 1870) and with similar prevalence of spore types. This inside sample does compare favorably to the baseline samples Cladosporium counts of 4840 & 9690 (Room 822 sample shows a Cladosporium count of 1100).

Based on analytical results, it would stand to reason that individuals exposed to the indoor environment of Room 822 would have more significant adverse effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

- The Air-O-Cell sample collected on September 25, 2019 in Room 849 (Sample No. 45) does not compare favorably to the recommendations in Table No. 1 and Table No. 2. This sample shows a Aspergillus/Penicillium spore count of 24000 (baseline samples show a Aspergillus/Penicillium spore counts of 790 & 100) which is higher than the recommended mold spore count of Aspergillus/Penicillium (recommended less than 700). The sample also shows a total mold spore count of 24320 (baseline total spore count shows 22200 & 12990) which is higher than the recommended total mold spore count (recommended less than 2000).

On September 19, 2019, a Air-O-Cell sample was also collected in Room 849 and was determined to have a total mold spore count of 570 and an Aspergillus/Penicillium spore count of 90.

There is a significant difference in air spore counts between these samples. The unit was unoccupied on both sampling dates. Visual, moisture and thermal observations did not present any significant difference on each occasion. Although there was no visual difference, analytical air results would indicate something changing in the unit from September 19 to September 25, 2019.

ENVIRONMENTAL SURFACE SAMPLING

On September 19, 2019, ERG Environmental, Inc. (ERGE) conducted environmental surface sampling from the following locations:

Sample No. 1S -	Room 146 - Ceiling
Sample No. 2S -	Room 225 - Ceiling
Sample No. 3S -	Room 622 - Desk B
Sample No. 4S -	Room 702 - Ceiling
Sample No. 5S -	Room 849 - Ceiling
Sample No. 6S -	Room 301 - Desk A
Sample No. 7S -	Room 453 - Ceiling
Sample No. 8S -	Room 606 - Night Stand
Sample No. 9S -	Room 606 - Ceiling
Sample No. 10S -	Room 849 - Ceiling Perimeter
Sample No. 11S -	Room 846 - Ceiling

On September 25, 2019, ERG Environmental, Inc. (ERGE) conducted environmental surface sampling from the following locations:

Sample No. 12S -	Room 150 - Ceiling Perimeter
Sample No. 13S -	Room 301 - Ceiling Discoloration (Middle Of Room)
Sample No. 14S -	Room 301 - Ceiling Perimeter
Sample No. 15S -	Restroom 415 - Shower Grout
Sample No. 16S -	Room 549 - Ceiling Perimeter
Sample No. 17S -	Room 612 - Ceiling Perimeter
Sample No. 18S -	Room 632 - Ceiling Perimeter
Sample No. 19S -	Restroom 655 - Shower Grout
Sample No. 20S -	Room 721 - Ceiling Perimeter
Sample No. 21S -	Room 821 - Ceiling Perimeter
Sample No. 22S -	Room 848 - Ceiling Perimeter

Also on September 25, 2019, ERG Environmental, Inc. (ERGE) conducted environmental bulk sampling from the following location:

Sample No. 49 -	Bulk Sample Of Ceiling Perimeter (Discoloration) From Room 849
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All samples was properly collected, packaged and shipped to EMSL Analytical Inc. for analysis by Microscopic Examination Of Fungal Spores, Fungal Structures, Hyphae & Other Particulates (Direct Exam) for fungi.

Although counts of non-culturable fungi in surface swab/dust/bulk/wipe samples should be interpreted with caution, EMSL Analytical Inc. offers the following for swab/bulk/tape/wipe sample results based on their experience:

Semi-Quantitative Rating Scale

Rare:	1 to 10 count
Low:	11 - 100 count
Medium:	101 - 1,000 count
High:	>1,000 count

The following samples were determined to have no mold spores detected:

- Room 146 - Ceiling (Sample 1S) (September 19, 2019)
- Room 622 - Desk B (Sample 3S) (September 19, 2019)
- Room 702 - Ceiling (Sample 4S) (September 19, 2019)
- Room 301 - Desk A (Sample 6S) (September 19, 2019)
- Room 453 - Ceiling (Sample 7S) (September 19, 2019)
- Room 606 - Night Stand (Sample 8S) (September 19, 2019)
- Room 849 - Ceiling Perimeter (Sample 10S) (September 19, 2019)
- Room 846 - Ceiling (Sample 11S) (September 19, 2019)
- Room 150 - Ceiling Perimeter (Sample No. 12S) (September 25, 2019)
- Room 301 - Ceiling Discoloration (Sample No. 13S) (September 25, 2019)
- Room 721 - Ceiling Perimeter (Sample No. 20 S) (September 25, 2019)
- Room 821 - Ceiling Perimeter (Sample No. 21S) (September 25, 2019)

Surface Sampling On September 19, 2019

- The surface sample collected on September 19, 2019 in Room 225 from the ceiling (Sample No. 2S) was determined to have a “Rare” concentration of Cladosporium, Curvularia and Pithomyces mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 19, 2019 in Room 849 from the ceiling (Sample No. 5S) was determined to have a “Rare” concentration of Aspergillus/Penicillium mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 19, 2019 in Room 606 from the ceiling (Sample No. 9S) was determined to have a “Rare” concentration of Aspergillus/Penicillium and Cladosporium mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.

Surface Sampling On September 25, 2019

- The surface sample collected on September 25, 2019 in Room 301 from the ceiling perimeter (Sample No. 14S) was determined to have a “Rare” concentration of Basidiospores and Cladosporium mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 25, 2019 in Restroom 415 from the ceramic shower grout (Sample No. 15S) was determined to have a “Rare” concentration of Aspergillus/Penicillium and a “Medium” concentration of Acremonium-like and Arthrospores mold spores. The concentration of Acremonium-like mold spores do show fruiting structures and/or hyphae associated with the spores which simply means the sample is actively growing. Minor suspect visible mold (<10 SF) was observed and a surface sample was collected from this area. This analytical results would be expected.
- The surface sample collected on September 25, 2019 in Room 549 from the ceiling perimeter (Sample No. 16S) was determined to have a “Rare” concentration of Basidiospores mold spores, a “Medium” concentration of Acremonium-like mold spores and a “High” concentration of Arthrospores mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 25, 2019 in Room 612 from the ceiling perimeter (Sample No. 17S) was determined to have a “Rare” concentration of Basidiospores mold spores. This concentration does not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 25, 2019 in Room 632 from the ceiling perimeter (Sample No. 18S) was determined to have a “Low” concentration of Aspergillus/Penicillium mold spores. This concentration does not show fruiting structures and/or hyphae associated with the spores which simply means the sample is not actively growing.
- The surface sample collected on September 25, 2019 in Restroom 655 from the shower grout (Sample No. 19S) was determined to have a “Low” concentration of Arthrospores mold spores and a “Medium” concentration of Aspergillus/Penicillium mold spores. The concentration of Aspergillus/Penicillium does show fruiting structures and/or hyphae associated with the spores which simply means the sample is actively growing. Minor suspect visible mold (<10 SF) was observed and a surface sample was collected from this area. This analytical results would be expected.

- The surface sample collected on September 25, 2019 in Room 848 from the ceiling perimeter (Sample No. 22S) was determined to have a “Medium” concentration of Aspergillus/Penicillium and Stachbotrys/Memnoniella mold spores. These concentrations do show fruiting structures and/or hyphae associated with the spores which simply means the sample is actively growing.

Bulk Sampling On September 25, 2019

- The bulk sample collected on September 25, 2019 from the dark stains on the ceiling perimeter from Room 849 (Sample No. 49) was determined to have a “Low” concentration of Aspergillus/Penicillium. This concentration does show fruiting structures and/or hyphae associated with the spores which simply means the sample is actively growing.

ENVIRONMENTAL INVESTIGATION

On September 19, 2019, ERGE conducted a visual inspection in areas where air/surface samples were collected. Our findings are as follows:

Room 146 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 71° with a relative humidity of approximately 46%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 225 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 301 (September 19, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 75° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 453 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 74° with a relative humidity of approximately 44%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).

Room 622 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 50%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 606 (September 19, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).

Room 702 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 71° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).

Room 849 (September 19, 2019)

- This room is currently vacant.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 44%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 846 (September 19, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 46%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

9th Floor Halls (Not occupied at time of investigation) (September 19, 2019)

- On this day, the temperature was approximately 74° with a relative humidity of approximately 46%.
- Water stained ceiling tiles were observed in the following areas:
 - Ceiling Tile At Room 904 - It appears this is caused by sweating of the duct. Not active at the time of the investigation.
 - Ceiling Tile At Stairs By Room 954 - It appears this is caused by the TSI above. The TSI shows water stains on the insulation. Not active at the time of the investigation.
 - 2 Ceiling Tiles At Room 949 - It appears this is caused by the TSI and duct above. Not active at the time of the investigation.
 - Ceiling Tile At Room 946 - It appears this is caused by the TSI above. Not active at the time of the investigation.

10th Floor Halls (Not occupied at time of investigation) (September 19, 2019)

- On this day, the temperature was approximately 75° with a relative humidity of approximately 49%.
- Water stained ceiling tiles were observed in the following areas:
 - Ceiling Tile At Janitors Closet - It appears this is caused by duct condensation above. There was a minor active water leak at the time of the investigation.
 - Ceiling Tile At Room 1029 - It appears this is caused by the TSI above. Not active at the time of the investigation.
- The ceiling tiles adjacent to the exterior hall wall in the elevator lobby indicated minor sagging. There is a void in the brick mortar above the ceiling tile in this area.

On September 25, 2019, ERGE conducted a visual inspection in areas where air/surface samples were collected. Our findings are as follows:

Room 150 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 42%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

1st Floor Main Lobby (September 25, 2019)

- On this day, the temperature was approximately 74° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces, ceiling tiles & HVAC supply/registers.

Room 210 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).

Restroom 235

- On this day, the temperature was approximately 72° with a relative humidity of approximately 49%.
- No suspect visible mold was observed.

Room 301 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 74° with a relative humidity of approximately 44%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

3rd Floor North Hall (September 25, 2019)

- On this day, the temperature was approximately 72° with a relative humidity of approximately 46%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and on ceiling tiles.

Room 328 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Restroom 415 (September 25, 2019)

- On this day, the temperature was approximately 72° with a relative humidity of approximately 57%.
- Minor suspect visible mold (<10 SF) was observed in several showers on the tile grout.

Room 549 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

5th Floor Lounge (September 25, 2019)

- On this day, the temperature was approximately 74° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces.

Room 604 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 75° with a relative humidity of approximately 49%. The window in this room was open at the time of the investigation. The HVAC vents were closed and there was visible condensation on the HVAC supply vent.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 612 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 44%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 625 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 70° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 631 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 54%. The window in this room was open at the time of the investigation.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.

Room 632 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 50%. The window in this room was open at the time of the investigation.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 648 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 44%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Restroom 655 (September 25, 2019)

- On this day, the temperature was approximately 70° with a relative humidity of approximately 50%.
- Minor suspect visible mold (<10 SF) was observed in several showers on the tile grout.

Room 721 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 70° with a relative humidity of approximately 50%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 724 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 70° with a relative humidity of approximately 53%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 745 (September 25, 2019)

- This room is currently unoccupied.
- On this day, the temperature was approximately 71° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Restroom 735 (September 25, 2019)

- On this day, the temperature was approximately 70° with a relative humidity of approximately 51%.
- Minor suspect visible mold (<10 SF) was observed in the shower on the tile grout.

7th Floor West Hallway At Room 701 (September 25, 2019)

- On this day, the temperature was approximately 73° with a relative humidity of approximately 47%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the ceiling tiles.

Room 808 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 46%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 809 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 810 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 71° with a relative humidity of approximately 49%.
- No suspect visible mold was observed.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 811 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 71° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 821 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 52%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 822 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 52%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 826 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).
- The ceiling in this room has been painted within the last year.

Room 830 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 50%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 831 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 50%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).
- **There is evidence that an animal is present in this room (hamster cage present with food, open food on shelving (bread), hamster ball, etc.).**

Room 845 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 49%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 848 (September 25, 2019)

- This room is currently unoccupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).
- There is separation/crack along the ceiling perimeter on the exterior wall.

Room 849 (September 25, 2019)

- This room is currently unoccupied.
- On this day, the temperature was approximately 72° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Minor dust was observed on horizontal surfaces. Visible dust was observed on the textured ceiling (small dust bunnies).
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Room 853 (September 25, 2019)

- This room is currently occupied.
- On this day, the temperature was approximately 73° with a relative humidity of approximately 45%.
- No suspect visible mold was observed.
- Typical dust was observed on horizontal surfaces and the textured ceiling.
- There is a dark line at the ceiling/wall intersection (ceiling perimeter).

Restroom 855 (September 25, 2019)

- On this day, the temperature was approximately 71° with a relative humidity of approximately 48%.
- No suspect visible mold was observed.

CONCLUSIONS & RECOMMENDATIONS

Air-O-Cell Sampling

- The Air-O-Cell sample collected on September 19, 2019 in Room 146, Room 225, Room 622, Room 702, Room 849, Room 453, Room 606 and Room 846 are considered to be in the “Clean Building” range.
- The Air-O-Cell sample collected on September 25, 2019 in Room 150, Room 210, Restroom 235, Room 301, 3rd Floor North Hall at Room 350, Room 549, 5th Floor Lounge, Room 612, Room 625, Room 631, Room 648, Room 655, Room 724, Room 735, Room 745, 7th Floor Hall at Room 701, Room 808, Room 809, Room 810, Room 811, Room 826, Room 830, Room 831, Room 845, Room 848, Room 853 and Room 855 are considered to be in the “Clean Building” range.
- The Air-O-Cell sample collected on September 19, 2019 in Room 301 (Sample No. 7) does not compare favorably to the recommendations in Table No. 1 and Table No. 2. This sample shows a higher than recommended mold spore count of Cladosporium (recommended less than 1000) and a higher than recommended total mold spore count (recommended less than 2000). However, the sample does compare favorably to the baseline sample total of 17140 (Room 301 sample shows a total of 2750) and to the same prevalence of spore types. Room 301 sample also compares favorably to the spore type specific to Cladosporium mold spore count of 1300 (Baseline sample shows a Cladosporium mold spore count of 5800). Based on analytical results, it would stand to reason that individuals exposed to the indoor environment of Room 301 would have similar effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

It is recommended that general housekeeping procedures be utilized on a regular basis by occupants. Once unoccupied, the procedures should be conducted by staff when units are unoccupied and/or prior to occupied status.

- The Air-O-Cell samples collected on September 25, 2019 in the 1st Floor Main Lobby (Sample No. 13) and Room 604 (Sample No. 22) do not compare favorably to the recommendations in Table No. 1 and Table No. 2. These samples show a higher than recommended mold spore count of Cladosporium (recommended less than 1000) and a higher than recommended total mold spore count (recommended less than 2000). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Main Lobby sample shows a total of 2970 and Room 604 sample shows 3240) and with similar prevalence of spore types. Both of these inside samples also compare favorably to the baseline samples Cladosporium counts of 4840 & 9690 (Main Lobby sample shows a Cladosporium count of 1200 and Room 604 shows a Cladosporium count of 1900). Based on analytical results, it would stand to reason that individuals exposed to the indoor environment of the 1st Floor Main Lobby and Room 604 would have more significant adverse effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

It is recommended that general housekeeping procedures be utilized on a regular basis by occupants. Once unoccupied, the procedures should be conducted by staff when the space/unit are unoccupied and/or prior to occupied status.

- The Air-O-Cell samples collected on September 25, 2019 in Room 328 (Sample No. 18), Room 721 (Sample No. 29) and Room 821 (Sample No. 38) do not compare favorably to the recommendations in Table No. 2. These samples show a higher than recommended mold spore count of *Aspergillus/Penicillium* (recommended less than 700). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Room 328 sample shows a total of 1810, Room 721 sample shows a total of 1710 and Room 821 sample shows a total of 1280) and with similar prevalence of spore types. These inside samples are slightly higher than the baseline samples *Aspergillus/Penicillium* spore counts of 790 & 100 (Room 328 shows a *Aspergillus/Penicillium* count of 830, Room 721 shows a count of 1500 and Room 821 shows a count of 1000). Based on these analytical results for these rooms, it would stand to reason that individuals exposed to the indoor environment would have similar effects from exposure to the outside ambient environment (outside total spore counts are much higher than inside spore counts).

It is recommended that general housekeeping procedures be utilized on a regular basis by occupants. Once unoccupied, the procedures should be conducted by staff when the units are unoccupied and/or prior to occupied status.

- The Air-O-Cell samples collected on September 25, 2019 in Restroom 415 (Sample No. 19) and Room 632 (Sample No. 26) do not compare favorably to the recommendations in Table No. 1 and Table No. 2. These samples show a higher than recommended mold spore count of *Aspergillus/Penicillium* (recommended less than 700) and a higher than recommended total mold spore count (recommended less than 2000). However, these samples do compare favorably to the baseline samples total of 22200 & 12990 (Restroom 415 sample shows a total count of 3360 and Room 632 sample shows a total count of 2250) and with similar prevalence of spore types. These inside samples are slightly higher than the baseline samples *Aspergillus/Penicillium* counts of 790 & 100 (Restroom 415 shows a *Aspergillus/Penicillium* count of 1700 and Room 632 shows a count of 1500). Based on these analytical results for these rooms, it would stand to reason that individuals exposed to the indoor environment would have similar effects from exposure to the outside ambient environment (outside total spore counts are much higher than inside spore counts).

It is recommended that general housekeeping procedures be utilized on a regular basis by occupants of Room 632. Once unoccupied, the procedures should be conducted by staff when the units are unoccupied and/or prior to occupied status.

Minor suspect visible mold (<10 SF) was observed in showers on the ceramic tile grout. Housekeeping should be informed and all shower areas should be properly cleaned using general housekeeping procedures on a routine basis.

- The Air-O-Cell sample collected on September 25, 2019 in Room 822 (Sample No. 39) does not compare favorably to the recommendations in Table No. 2. This sample shows a higher than recommended mold spore count of Cladosporium (recommended less than 1000). However, this sample does compare favorably to the baseline samples total of 22200 & 12990 (Room 822 sample shows a total of 1870) and with similar prevalence of spore types. This inside sample does compare favorably to the baseline samples Cladosporium counts of 4840 & 9690 (Room 822 sample shows a Cladosporium count of 1100). Based on analytical results, it would stand to reason that individuals exposed to the indoor environment of Room 822 would have more significant adverse effects from exposure to the ambient environment (outside). Ambient air quality can not be controlled.

It is recommended that general housekeeping procedures be utilized on a regular basis by occupants. Once unoccupied, the procedures should be conducted by staff when units are unoccupied and/or prior to occupied status.

- The Air-O-Cell sample collected on September 25, 2019 in Room 849 (Sample No. 45) does not compare favorably to the recommendations in Table No. 1 and Table No. 2. This sample shows a Aspergillus/Penicillium spore count of 24000 (baseline samples show a Aspergillus/Penicillium spore counts of 790 & 100) which is higher than the recommended mold spore count of Aspergillus/Penicillium (recommended less than 700). The sample also shows a total mold spore count of 24320 (baseline total spore count shows 22200 & 12990) which is higher than the recommended total mold spore count (recommended less than 2000).

On September 19, 2019, a Air-O-Cell sample was also collected in Room 849 and was determined to have a total mold spore count of 570 and an Aspergillus/Penicillium spore count of 90.

There is a significant difference in air spore counts between these samples. The unit was unoccupied on both sampling dates. Visual, moisture and thermal observations did not present any significant difference on each occasion. Although there was no visual difference, analytical air results would indicate something changing in the unit from September 19 to September 25, 2019.

It is recommended that further investigation be conducted. The investigation should include staff interviews to determine if any obvious events have occurred that would have an impact on sampling results, activity within the room, further visual investigation, etc. Additional air sampling would also be recommended.

Surface Sampling

- The surface samples collected on September 19, 2019 in Room 146, Room 622, Room 702, Room 301, Room 453, Room 606, Room 849 (ceiling perimeter) and Room 846 were determined to have no mold spores detected.
- The surface samples collected on September 25, 2019 in Room 150, Room 301, Room 721 and Room 821 were determined to have no mold spores detected.
- The surface samples collected on September 19, 2019 in Room 225 and Room 849 (ceiling) were determined to have a “Rare” or “Low” concentrations of mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the samples are not actively growing. This indicates normal conditions and the lowest detectable level under analytical scale.
- The surface samples collected on September 25, 2019 in Room 301 (Sample No. 14S), Room 612 (Sample No. 17S) and Room 632 (Sample No. 18S) were determined to have a “Rare” or “Low” concentrations of mold spores. These concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the samples are not actively growing. This indicates normal conditions and the lowest detectable level under analytical scale.
- The surface samples collected on September 25, 2019 in Restroom 415 (Sample 15S) and Restroom 655 (Sample No. 19S) of suspect visible mold on the shower ceramic tile grout were determined to have a “Rare”, “Low” & “Medium” concentrations of various mold spores. Some concentrations do show fruiting structures and/or hyphae associated with the spores which simply means the samples are not actively growing. Minor suspect visible mold (<10 SF) was observed and a surface sample was collected from each area. This analytical results would be expected.

Housekeeping should be informed and all shower areas should be properly cleaned using general housekeeping procedures on a routine basis.

- The surface sample collected on September 25, 2019 in Room 549 (Sample No. 16S) from the ceiling perimeter was determined to have a “Rare”, “Medium” and “High” concentrations of mold spores. However, these concentrations do not show fruiting structures and/or hyphae associated with the spores which simply means the samples are not actively growing.

The surface samples collected on September 25, 2019 in Room 848 (Sample No. 22S) from the ceiling perimeter was determined to have a “Medium” concentration of mold spores. These concentrations do show fruiting structures and/or hyphae associated with the spores which simply means the samples are actively growing.

You should understand that surface samples are collected from a 1" x 1" area. These surface samples were collected from areas of concern (dark areas at ceiling perimeter). Additional surface samples from these dark areas, in other locations of Crosby Hall, were collected and indicated either no or normal mold growth. Therefore, extreme caution should be utilized when interpreting these results.

Air sampling conducted on September 25, 2019 in Room 549 (Sample No. 20) and Room 848 (Sample No. 44) indicated mold spores in the "Clean Building" range.

It is recommended that when areas become vacant, the space should be properly cleaned.

Bulk Sampling

- The bulk sample collected on September 25, 2019 from the dark stains on the ceiling perimeter from Room 849 (Sample No. 49) was determined to have a "Low" concentration of *Aspergillus/Penicillium*. This concentration does show fruiting structures and/or hyphae associated with the spores which simply means the sample is actively growing

Visual Investigation

- Minor suspect visible mold (<10 SF) was observed on tile grout in the showers of Restroom 415, Restroom 655 & Restroom 735. This is not unusual. Housekeeping should be informed and all shower areas should be properly cleaned using general housekeeping procedures.
- Visible minor dust accumulation was present on the textured ceilings in the Room 150, Room 210, Room 453, Room 606, Room 702, Room 811, Room 849 & Room 846. Typical dust was observed in the other areas inspected. It is recommended that general housekeeping procedures be utilized on a regular basis by occupants and by staff when units are unoccupied and/or prior to occupied status.
- There were visible stains at the ceiling perimeter of the rooms in Room 150, Room 328, Room 549, Room 612, Room 632, Room 648, Room 721, Room 724, Room 745, Room 808, Room 809, Room 810, Room 811, Room 821, Room 822, Room 826, Room 830, Room 831, Room 845, Room 846, Room 848, Room 849 & Room 853. It is recommended that when areas become vacant, the space should be properly cleaned.
- All temperature and relative humidity readings were within acceptable ranges.
- Water stained ceiling tiles were observed in the 9th & 10th Floor halls. Water stained ceiling tiles should be removed and replaced. The new ceiling tile should be dated on the back side for future reference.

- There was one active leak observed from above by the Janitors Closet on 10th Floor. This leak should be addressed.
- There is a void in the brick mortar above the ceiling tile at the perimeter of the Elevator Lobby on 10th Floor. This void should be addressed.
- Overall observations of occupant housekeeping procedures appear to be acceptable. However, there are some rooms where housekeeping procedures should be improved. All occupants should be advised as to the level of cleanliness expected and provided information as to how to conduct and maintain good housekeeping.

ROUTINE PROCEDURES

The following is recommended on a routine basis:

- When units become unoccupied, deep cleaning procedures should be conducted throughout the unit. This would include cleaning **all surfaces**. Please take into consideration that due to the type of ceiling material that exists, there is the potential of the ceiling being damaged during cleaning procedures. Common areas (restrooms, lounges, halls, etc.) should be cleaned regularly. Areas of high moisture (showers, etc.) should be inspected daily to ensure cleaning procedures are properly conducted and adequate.
- Advise all occupants as to the level of cleanliness expected and provide information as to how to conduct and maintain good housekeeping.
- The HVAC filters be changed on a routine basis. The HVAC systems should be cleaned as scheduled or needed. This cleaning should take place when the unit(s) are not in operation. Visually inspect the filters, fan and fan motor compartment and cooling coils. All surfaces within the unit should be thoroughly cleaned in accordance with the National Air Duct Cleaners Association's document ACR 2013.
- Active sources of moisture should be priority and corrected as soon as possible.
- General housekeeping measures should be conducted on a regular basis by the occupant when occupied.
- Consideration should be given to implementing an ongoing routine visual inspection of ceiling tiles in hallways, etc. Stained ceiling tiles should be replaced as soon as possible and the new tile dated on the back side for future reference. Areas above replaced tiles should be visually inspected for moisture source and an appropriate response taken.
- Low indoor humidity, below 60% relative humidity (RH), ideally 30 – 50%, if possible, should be maintained.

APPENDIX A

Chain Of Custody & Analytical Results