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July 21, 2022

Mr. Michael Lane
Environmental, Health & Safety Manager
Office of Court Management/ Facilities Management & Capital Planning Lowell District Court
41 Hurd Street
Lowell, MA 01852

Ref: Indoor Air Quality & Microbial Assessment – Visit 1
Springfield Court Complex
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA &
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA
TRC Project 499949

Dear Mr. Lane:

On July 7, 2022, TRC Environmental Corporation (TRC) conducted a limited indoor air quality and microbial assessment at the above-referenced sites. TRC conducted the following scope of work:

- Visual inspection of up to sixty (60) locations between the two buildings;
- Direct-reading measurements of selected indoor air quality parameters including temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2); airborne particulate as PM_{10} (particles with aerodynamic diameters of approximately 10 microns or less), total volatile organic compounds (TVOC's) and
- Sampling for airborne concentrations of total fungal (mold)[1] spores in eighteen (18) indoor locations.

The site observations, test methods used, results and conclusions, and recommendations are presented below. A copy of the laboratory analytical report and the sample location drawings are included as attachments to this report.

INVESTIGATIVE STRATEGY

Visual Inspection

The readily accessible areas of the above referenced property were visually evaluated for evidence of water staining, water damage, and suspect fungal growth (mold). A reasonable effort was made to identify fungal-impacted building materials.

Carbon Dioxide, Carbon Monoxide, Temperature and Relative Humidity

TRC used a TSI® 7575X Q-Trak to monitor relative humidity, temperature, carbon monoxide (CO), and carbon dioxide (CO_2) levels.

[1] For the purposes of this report, the terms "mold" and "fungi" may be used interchangeably

- *Carbon Dioxide* - Carbon dioxide is exhaled by people and is a useful indicator of adequate make-up (fresh) air and supply per occupant. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 62.1-2019, *Ventilation for Acceptable Indoor Air Quality*, recommends the difference between indoor and outdoor CO_2 concentrations be maintained at 700 parts per million (ppm) or less. Maintaining this condition equates to approximately 15 cubic feet per minute of supply air per occupant. Under this condition, a substantial majority of visitors entering a space will be satisfied with respect to human bioeffluents (body odor). The Massachusetts Department of Public Health (MA DPH) uses a guideline of 800 ppm of CO_2 for publicly occupied buildings[2]. Note that while indoor CO_2 levels are useful for evaluating the outdoor air ventilation provided to a building, these levels are typically well below concentrations that might pose a CO_2-related health risk (greater than 5,000 ppm). Ambient concentrations of CO_2 generally range from 300 - 500 ppm.

- *Carbon Monoxide* - Carbon monoxide is a colorless, odorless gas that can cause fatigue or drowsiness, nausea, headache, and difficulty breathing when present at elevated levels. ASHRAE Standard 62.1-2019 recommends carbon monoxide concentrations less than 9 ppm indoors as an eight-hour average.

- *Temperature and Relative Humidity* - ASHRAE Standard 55-2020, *Thermal Environmental Conditions for Human Occupancy* bases occupant thermal comfort on a combination of metabolic rate, clothing insulation, air temperature (dry bulb temperature as a substitute for operative temperature), radiant temperature, air speed, and humidity. Conditions are considered to be satisfactory when a substantial majority of occupants (80% or more) are not expressing dissatisfaction with thermal comfort.

  ASHRAE standard 62.1-2019 *Ventilation for Acceptable Indoor Air Quality* recommends that the relative humidity be maintained below 65%.

Measurement of Airborne Particulate Matter

A TSI® DustTrak DRX Aerosol Monitor was used to monitor airborne particulate matter of approximately 10 micrometers or less in diameter (PM_{10}).

Airborne particulate in indoor environments originates from various sources including building materials and furnishings, occupant activities, cleaning, construction, and renovation activities, and from outdoors. High concentrations of airborne dust may cause irritation of the eyes, skin, and respiratory tract.

The U.S. EPA has established health-based National Ambient Air Quality Standards (NAAQS) for PM_{10} and $PM_{2.5}$ to evaluate outdoor air quality. These are not intended to evaluate worker exposure but are meant to protect the health of sensitive individuals within the general population. They are based on rolling-24-hour average concentrations over a 3-day period and as such, are not directly comparable to individual PM measurements taken over 48-hour periods during this

[2] MA DPH "Carbon Dioxide and Its Use in Evaluating Adequacy of Ventilation in Buildings", www.mass.gov/eohhs/docs/dph/environmental/iaq/appendices/carbon-dioxide.pdf

assessment; however, they are provided in this report as a benchmark. The NAAQS for PM_{10} and $PM_{2.5}$ are 0.150 mg/m^3 and 0.035 mg/m^3, respectively (both measured as a 24-hour average concentrations).

The OSHA PEL for occupational exposure for total dust is 15 mg/m^3-$TWA_{8\text{-}hr}$ and for the respirable dust fraction (equivalent to PM4) is 5 mg/m^3-$TWA_{8\text{-}hr}$.

The instrument is calibrated approximately annually by the manufacturer and is zeroed prior to use in the field.

Measurement of Volatile Organic Compounds (VOCs)

A ppbRAE Model PGM-7240, ppbRAE 3000 photo-ionizing detector (PID) (or similar instrument) was used to monitor VOCs. VOC measurements were performed to determine if unusually elevated concentrations of this group of air contaminants existed at the monitored locations. VOCs have many sources, including, but not limited to the evaporation of paint solvents; adhesives; and office or personal products that are used in the building, such as cosmetic fragrances, air fresheners and deodorizing and sanitizing products.

Although the VOC instrument used in this study is a useful screening method for detecting indoor VOCs, it provides no information on the identities and relative amounts of individual compounds that may be present. If indoor VOC concentrations are significantly and consistently greater than the outdoor VOC concentration, then one or more indoor VOC sources may be present.

The U.S. Green Building Council Leadership in Energy and Environmental Design (USGBC LEED) for New Construction-2009 requirements specify a maximum VOC concentration of 0.500 milligrams per cubic meter of air (mg/m^3) in newly constructed areas and is used in this report as a guideline for evaluating indoor air quality. Assuming an average VOC molecular weight similar to that of n-hexane, this corresponds to approximately 0.140 ppm VOCs.

The instrument was calibrated prior to use in the field using standard isobutylene calibration gas.

Microbial Sampling – Air Samples

Sampling for airborne concentrations of total fungal spores was conducted using Allergenco-D sampling cassettes. Samples were collected at 15 liters of air per minute for five-minute sampling periods using a high-volume sampling pump. Airborne particulates were drawn through the cassette and directly impacted onto an adhesive collection media. The samples were shipped to Hayes Microbial Consulting of Midlothian, Virginia where they were analyzed to determine the quantity and identity of fungal spore types using bright field microscopy (magnification 300x and 600x). Hayes Microbial participates in the American Industrial Hygiene Association (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP), certification #188863. The Allergenco-D cassette collects both viable and non-viable fungal spores, and the laboratory can identify some of the collected spores down to the genus level.

TRC collected representative air samples in selected indoor locations and also outdoors, for comparison purposes.

There is currently little information available on total airborne fungal spore dose-response relationships, and there are no recommended allowable exposure limits established for airborne spores. The American Conference of Governmental Industrial Hygienists (ACGIH) publication *Bioaerosols: Assessment and Control*, indicates that an exposure may be considered unusual when indoor concentrations are significantly higher than those outdoors, or when the types of mold detected indoors vs. outdoors differ markedly.

RESULTS

Visual Inspection

On the day of this assessment, no suspect fungal growth was observed in any of the areas inspected. Horizontal surfaces appeared to be clean of any dust or debris.

Indoor Air Quality Measurements

Results of the indoor air quality measurements are presented in the table below. The results are presented in the following units: temperature measurements are presented in degrees Fahrenheit (ºF); relative humidity measurements are presented as percent relative humidity (%); the CO_2, CO and VOC measurements are presented in concentration units of parts per million parts of air, by volume (ppm); and PM_{10} measurements are presented in concentration units of milligrams per cubic meter of air (mg/m^3).

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
July 7, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA							
001	G42B – Electric Shop	76.1	51.8	495	0	0.009	.001
002	G42 – Mechanical Equipment between AHU 3 & 4	77.2	51.8	502	0	0.020	0
003	G45 - Breakroom	74.2	56.6	512	0	0.016	0
004	G54 – Snack Bar	72.7	55.7	534	0	0.002	0
005	G06 – Lockup, Desk Area	72.8	59.8	693	0	0.006	0.080

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts July 7, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
006	G27C – Conference Room	70.2	59.3	505	0	0.002	0
007	140 – Forensic Health	71.2	58.2	580	0	0.012	0.018
008	131 – Court Officers Lounge	71.0	59.1	580	0	0.002	0.070
009	121A – Judges Lobby	69.9	58.5	569	0	0.010	0
010	110B – Cubicle near Vault 111	69.9	57.7	599	0	0.009	0
011	138B – Bar Association	71.7	59.7	585	0	0.003	0
012	167 – Cubicle Area at Stacks	72.8	57.4	637	0	0.005	0.008
013	204B – Judges Lobby	72.7	54.5	629	0	0.006	0
013A	204A – Judges Lobby	N/A	N/A	N/A	N/A	N/A	N/A
014	District Courtroom #3	73.8	49.2	599	0	0.001	0
015	District Courtroom #11	72.1	55.4	555	0	0.004	0
016	Superior Courtroom #7	72.3	53.9	549	0	0.004	0
017	249A – Judges Lobby	73.6	54.2	578	0	0.000	0

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts July 7, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
018	222 – HCBA Mediation Service	70.3	58.3	586	0	0.006	0
019	Attorneys Lounge	70.6	60.6	577	0	0.011	0
020	337 – Superior Court Probation	72.6	59.6	755	0	0.016	**0.165**
021	366 – DA Cubicle Area	74.1	55.8	570	0	0.003	0
022	376 – Jury Room	75.6	52.0	577	0	0.004	0
023	Superior Courtroom #1	72.8	56.1	934	0	0.010	0
024	Law Library – North Side near stacks 34 & 35	72.4	50.2	579	0	0.007	0
025	Registry of Probate Cubicle Area	74.5	54.6	674	0	0.010	0
026	Probate Courtroom #4	73.6	54.7	624	0	0.005	0
027	Office 422	73.0	54.5	641	0	0.005	0
028	446 – Jury Pool	72.9	54.8	568	0	0.003	0
029	Probate Courtroom #3 Conference Room A	72.1	56.1	596	0	0.010	0
030	450 – Registry of Deeds	71.1	56.9	593	0	0.013	0

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts July 7, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
031	Outdoor – East Courtyard	79.7	51.3	414	0	0.012	0
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA							
032	Vestibule Outside 147	78.6	35.9	589	0	0.007	0
033	152 – Juvenile Courtroom 3	73.4	40.6	765	0	0.003	0
034	151C – Attorneys Room	73.2	51.1	545	0	0.009	0
035	137 – Clerk of Juvenile	72.1	42.5	628	0	0.011	0
036	116 – Housing Court Clerk's Office	71.8	40.6	640	0	0.005	0
037	101 – Head Administrative Assistant	72.6	39.7	639	0	0.015	0.010
038	Hall Outside 115	72.1	43.8	856	0	0.017	0
039	215 – Conference Room	73.9	52.3	474	0	0.012	0
040	202 – Judges Lobby	73.6	52.3	422	0	0.007	0
041	201 – Housing Court #2	71.9	54.0	405	0	0.003	0
042	221 – Judicial Department	71.3	52.7	455	0	0.005	0
043	240 – Judicial Department	70.0	54.0	533	0	0.004	0

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts July 7, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
044	222 – Juvenile Court #1	71.6	59.7	425	0	0.006	0
045	246 - Probation	70.0	51.9	479	0	0.007	0
046	338 – Juvenile/Probation Clerical	72.7	55.4	551	0	0.009	0
047	323 - Court Clinic	72.9	56.0	483	0	0.008	0
048	341 – Office	73.7	54.6	524	0	0.008	0
049	331 – Employee Lounge	73.8	53.6	523	0	0.009	0
050	322 – Chief Housing Specialist	73.7	56.6	490	0	0.007	0
051	301 – Conference Room	73.1	54.6	444	0	0.009	0
052	307 – Employee Lounge	70.8	53.6	450	0	0.005	0
053	B58 – Juvenile Storage	74.2	50.7	671	0	0.005	0
054	B56 – Mechanical	74.8	50.9	584	0	0.014	0
055	B39 – Juvenile Detention	74.8	51.4	509	0	0.004	0
056	B12 – Waiting Area	74.3	51.5	493	0	0.008	0

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
July 7, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM10 (mg/m^3)	Volatile Organic Compounds (ppm)
057	B23 – Office	73.9	50.2	493	0	0.011	0
058	B34 – Office	71.6	48.6	522	0	0.009	0
059	B03 – Storage	71.8	52.9	479	0	0.010	0
060	Outdoor – Corner of E. Columbus and Court	81.8	49.5	387	0	0.010	0
Desired Comfort Range		~67 to 82	Less than 60 to 65	Less than 800 to ~1,150	< 5 to < 9	≤ 0.150	≤ 0.140

See Attachment B – Floor Plan for location of measurements

ppm = parts per million parts of air, by volume mg/m^3 = milligrams per cubic meter of air

REFERENCE VALUES

Carbon Dioxide (CO_2): ASHRAE maximum recommended CO_2 level indicating adequate supply of outdoor air = outdoor concentration + 700 ppm (i.e.,1,100 ppm); MA DPH maximum recommended CO_2 level = 800 ppm

Carbon Monoxide (CO): USGBC LEED (2009) 9 ppm, if outdoor measurement no greater than 2 ppm above outdoors

Temperature range guidelines based on ASHRAE 55-2020, at various levels of relativehumidity:

Relative Humidity	Winter Temperature	Summer Temperature
< 20%	70 to 79 ºF	76 to 83 ºF
20 to 40%	69 to 78 ºF	75 to 82 ºF
40 to 60%	68 to 77 ºF	74 to 81 ºFF

Temperature and Relative Humidity. Temperatures were within recommended comfort ranges for summer occupancy at the observed relative humidity levels. All relative humidity measurements were below 65%. No corrective measures are indicated based on the temperature and relative humidity measurements.

Carbon Dioxide. The average CO_2 concentrations ranged from 387 to 934 ppm with an outdoor concentration of range of 387 to 414 ppm. The average CO_2 concentrations during the current occupancy conditions remained below the ASHRAE guideline (i.e., the outdoor concentration of approximately 400 ppm + 700 ppm).

Overall, the CO_2 measurements represent favorable findings, reflecting efforts to maintain good ventilation within the buildings.

Carbon Monoxide. The CO measurements were non-detect and were within the recommended indoor air quality guidelines. No corrective measures are indicated based on the CO measurements.

Total Volatile Organic Compounds

The average TVOC measurements throughout the buildings ranged from non-detect to 0.165 ppm. A strong cologne/perfume odor was present at the time of the assessment in Office 337 of Superior Court Probation, which could likely be the source of the unit measurement of 0.165 ppm. Although this is slightly above the desired comfort range, this is not level of concern, and no corrective measures are recommended at this time.

Airborne Particulate Matter

The average PM_{10} measurements throughout the buildings ranged from 0.00 to 0.020 mg/m^3 and were within the guideline of 0.150 mg/m^3.

Microbial Sampling

The results of sampling for mold are presented in the table below. The air sampling results are presented in concentration units of spores per cubic meter of air (spores/m^3). The laboratory analytical report is included as Attachment A.

Microbial Sampling Results
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
July 7, 2022

Sample Number	Location	Sample Type	Mold Detected	Interpretation
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA				
4698051	G45 - Breakroom	Air	54 spores/m^3	See Comment 1
4698042	140 – Forensic Health	Air	105 spores/m^3	See Comment 1
4698039	110B – Cubicle near Vault 111	Air	200 spores/m^3	See Comment 1
4697997	204A – Judges Lobby	Air	27 spores/m^3	See Comment 1
4698063	249A – Judges Lobby	Air	66 spores/m^3	See Comment 1
4698028	337 – Superior Court Probation	Air	80 spores/m^3	See Comment 1
4698010	Law Library, North at Stacks 34&35	Air	92 spores/m^3	See Comment 1
4698022	Registry of Probate Cubicle Area	Air	160 spores/m^3	See Comment 1
4698025	450 – Registry of Deeds	Air	147 spores/m^3	See Comment 1
4701948	Outdoor – East Courtyard	Air	413 spores/m^3	-----
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA				
4698041	151C – Attorneys Room	Air	121 spores/m^3	See Comment 1
4698059	137 – Clerk of Juvenile	Air	280 spores/m^3	See Comment 1

Microbial Sampling Results
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
July 7, 2022

Sample Number	Location	Sample Type	Mold Detected	Interpretation
4701933	116 – Housing Court Clerk's Office	Air	26 spores/m^3	See Comment 1
4701900	215 – Conference Room	Air	40 spores/m^3	See Comment 1
4701930	221 – Judicial Department	Air	39 spores/m^3	See Comment 1
4701912	338 – Juvenile/Probation Clerical	Air	53 spores/m^3	See Comment 1
4701938	322 – Chief Housing Specialist	Air	53 spores/m^3	See Comment 1
4697984	B58 – Juvenile Storage	Air	26 spores/m^3	See Comment 1
4701898	B23 - Office	Air	80 spores/m^3	See Comment 1
4698053	Outdoor – Parking Garage Entrance	Air	2,733 spores/m^3	-----
Comment 1 – Indoor concentrations were below the concurrent outdoor concentration, and the types of spores identified were also detected outdoors or are commonly detected outdoors.				

In all the test locations, the air samples indicated total mold spore concentrations were below the concurrent outdoor concentration, and the types of mold detected indoors were similar to spore types detected outdoors or that are commonly detected outdoors. Thus, no indoor mold source was indicated in these areas.

It is important to note that construction materials, personal belongings, and indoor environments (including indoor air) are normally not sterile. Therefore, no structure can be completely free of microbial organisms including mold. However, under normal circumstances, commonly accepted industry guidelines suggest that the levels of fungi in the indoor environment should be generally similar to (or lower than) the outdoor air outside of the property. It should be understood that natural dust deposition also contains some amount of fungal spores.

RECOMMENDATIONS

Based on the findings of this assessment, TRC recommends the following for consideration:

1. No corrective measures are indicated based on measurements of temperature, relative humidity, carbon dioxide, carbon monoxide, PM_{10}, or TVOC's.

2. Continue to operate ventilation equipment to introduce the greatest amount of outdoor air feasible based on the equipment parameters and seasonal conditions. This will provide the greatest safety for building occupants and will also help to quickly dilute the air when disinfectant wipes, cleaners and hand sanitizers are used. Routine preventative maintenance of heating, ventilating and air-conditioning equipment should also be emphasized.

CONDITIONS AND LIMITATIONS

The visual inspection performed by TRC is limited to representative areas that were accessible at the time of inspection. Destructive and/or invasive inspections were not within the scope of our investigation. The sampling results reflect conditions at the time of sampling.

TRC has performed the tasks set forth above in a thorough and professional manner consistent with industry standards. TRC cannot guarantee and does not warrant that this limited assessment has revealed all potential adverse environmental conditions affecting the site.

No expressed or implied representation or warranty is included in this report except that the services were performed within the limits of the scope of work authorized by the client and the encountered site conditions.

TRC appreciates the opportunity to provide you with consulting services. If you have any questions or comments, please contact us. We look forward to working with you on future endeavors.

Very Truly Yours,
TRC

Olivia Smaracko
Senior Industrial Hygienist

Robert King, CIH, CSP
Senior EHS Engineer

Enc.: Attachment A – Laboratory Results and Chain of Custody
Attachment B – Sample Location Drawings

ATTACHMENT A – LABORATORY RESULTS AND CHAIN OF CUSTODY

HAYES MICROBIAL CONSULTING

#22025666

Analysis Report prepared for

TRC Companies

814 Broad Street
Weymouth, MA 02189

Phone: **(781) 337-0016**

499949
Springfield District Court
50 and 80 State Street
Springfield, MA

Collected: **July 7, 2022**
Received: **July 11, 2022**
Reported: **July 11, 2022**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 20 samples by FedEx in good condition for this project on July 11th, 2022.

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. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

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

EPA Laboratory ID: VA01419

Lab ID: #188863

DPH License: #PH-0198

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499949
Springfield District Court
50 and 80 State Street
Springfield, MA

#22025666

Spore Trap
SOP - HMC#101

Sample Number	1	4698042		2	4698042		3	4698039		4	4698063	
Sample Name	**G45 Breakroom**			**140 - Forensic Health**			**110B - Cubicle Near Vault 111**			**249A - Judges Lobby**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	3			3			3			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores				3	40	37.5%	3	40	20.0%	2	27	100.0%
Aspergillus|Penicillium							4	53	26.7%			
Basidiospores	2	27	50.0%	1	13	12.5%						
Bipolaris|Drechslera												
Chaetomium				1	13	12.5%						
Cladosporium	2	27	50.0%				8	107	53.3%			
Curvularia				1	13	12.5%						
Epicoccum				1	13	12.5%						
Fusarium												
Memnoniella												
Myxomycetes				1	13	12.5%						
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	4	54	100%	8	105	100%	15	200	100%	2	27	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Jul 7, 2022** Received: **Jul 11, 2022** Reported: **Jul 11, 2022**

Project Analyst: Connor Gailliot, BS Date: **07 - 11 - 2022**

Reviewed By: Steve Hayes, BSMT Date: **07 - 11 - 2022**

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3005 East Boundary Terrace, Suite F. Midlothian, VA. 23112 (804) 562-3435 contact@hayesmicrobial.com

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499949
Springfield District Court
50 and 80 State Street
Springfield, MA

#22025666

Spore Trap
SOP - HMC#101

Sample Number	5	4697997		6	46988028		7	4698010		8	4698022	
Sample Name	**204A - Judges Lobby**			**337 - Superior Court Probation**			**Law Library - North Side Between Stacks 34 and 35**			**Registry of Probate Cubicle Area**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	2			3			2			3		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**
Alternaria							1	13	14.3%	1	13	8.3%
Ascospores										2	27	16.7%
Aspergillus|Penicillium												
Basidiospores	1	13	20.0%	3	40	50.0%				1	13	8.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	4	53	80.0%	3	40	50.0%	4	53	57.1%	6	80	50.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							1	13	14.3%	2	27	16.7%
Pithomyces							1	13	14.3%			
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	5	66	100%	6	80	100%	7	92	100%	12	160	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Jul 7, 2022** Received: **Jul 11, 2022** Reported: **Jul 11, 2022**

Project Analyst: Connor Gailliot, BS Date: **07 - 11 - 2022**

Reviewed By: Steve Hayes, BSMT Date: **07 - 11 - 2022**

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TRC Companies
814 Broad Street
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499949
Springfield District Court
50 and 80 State Street
Springfield, MA

#22025666

Spore Trap
SOP - HMC#101

Sample Number	9	4698025		10	4701948		11	4698041		12	4698059	
Sample Name	**450 - Registry of Deeds**			**Outdoor - East Courtyard**			**151C - Attorneys Room**			**137 - Clerk of Juvenile**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	3			2			3			3		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**
Alternaria												
Ascospores				8	107	25.8%				5	67	23.8%
Aspergillus|Penicillium	5	67	45.5%	4	53	12.9%	2	27	22.2%	4	53	19.0%
Basidiospores				19	253	61.3%	2	27	22.2%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	6	80	54.5%				5	67	55.6%	11	147	52.4%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes										1	13	4.8%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	11	147	100%	31	413	100%	9	121	100%	21	280	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Jul 7, 2022** Received: **Jul 11, 2022** Reported: **Jul 11, 2022**

Project Analyst: Connor Gailliot, BS Date: **07 - 11 - 2022**

Reviewed By: Steve Hayes, BSMT Date: **07 - 11 - 2022**

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Spore Trap
SOP - HMC#101

Sample Number	13	4701933		14	4701900		15	4701930		16	4701912	
Sample Name	**116 - Housing Court Clerks Office**			**215 - Conference Room**			**227 - Judicial Department**			**338 - Juvenile / Probation Clerical**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	3			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores							1	13	33.3%			
Aspergillus|Penicillium												
Basidiospores										4	53	100.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	1	13	50.0%	3	40	100.0%	1	13	33.3%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	50.0%				1	13	33.3%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	3	40	100%	3	39	100%	4	53	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Jul 7, 2022** Received: **Jul 11, 2022** Reported: **Jul 11, 2022**

Project Analyst: Connor Gailliot, BS Date: **07 - 11 - 2022**

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Spore Trap
SOP - HMC#101

Sample Number	17	4701938		18	4697984		19	4701898		20	4698053	
Sample Name	**322 - Chief Housing Specialist**			**B58 - Juvenile Storage**			**B23 - Office**			**Outdoor - Corner of E. Columbus and Court**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**	**Raw Count**	**Count / m^3**	**% of Total**
Alternaria												
Ascospores	1	13	25.0%							64	853	31.2%
Aspergillus|Penicillium												
Basidiospores				1	13	50.0%	1	13	16.7%	138	1840	67.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	3	40	75.0%	1	13	50.0%	5	67	83.3%	2	27	<1%
Curvularia										1	13	<1%
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	4	53	100%	2	26	100%	6	80	100%	205	2733	100%

Water Damage Indicator | Common Allergen | Slightly Higher than Baseline | Significantly Higher than Baseline | Ratio Abnormality

Collected: **Jul 7, 2022** Received: **Jul 11, 2022** Reported: **Jul 11, 2022**

Project Analyst: Connor Gailliot, BS Date: **07 - 11 - 2022**

Reviewed By: Steve Hayes, BSMT Date: **07 - 11 - 2022**

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Spore Trap Information

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.
Blanks	Results have not been corrected for field or laboratory blanks.
Background	The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows: **NBD:** No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD) **1 :** <5% of field occluded. No spores will be uncountable. **2 :** 5-25% of field occluded. **3 :** 25-75% of field occluded. **4 :** 75-90% of field occluded. **5 :** >90% of field occluded. Suggested recollection of sample.
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.
Control Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.
Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality	**Blue:** These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem. **Green:** Although all molds are potential allergens, these are the most common allergens that may be found indoors. **Orange:** The spore count is slightly higher than the outside count and may or may not indicate a source of contamination. **Red:** The spore count is significantly higher than the baseline count and probably indicates a source of contamination. **Violet:** The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.
Color Coding	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.

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Organism Descriptions

Alternaria

Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.

Effects: A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.

Ascospores

Habitat: A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.

Effects: Health affects are poorly studied, but many are likely to be allergenic.

Aspergillus|Penicillium

Habitat: The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.

Effects: This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.

Basidiospores

Habitat: A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.

Effects: Common allergens and are also associated with hypersensitivity pneumonitis.

Chaetomium

Habitat: Ascomycete fungus, commonly isolated from soil and decaying plant materials. It is cellulolytic and grows well indoors on damp sheetrock and other paper substrates. It is often found growing with Stachybotrys.

Effects: It is reported to be allergenic and may produce toxins.

Cladosporium

Habitat: One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.

Effects: A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

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Organism Descriptions

Curvularia

Habitat: They exist in soil and plant debris, and are plant pathogens.

Effects: They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and desseminated infection, primarily in the immunocompromised.

Epicoccum

Habitat: It is found in soil and plant litter and is a plant pathogen. It can grow indoors on a variety of substrates, including paper and textiles and is commonly found on wet drywall.

Effects: It is a common allergen. No cases of infection have been reported in humans.

Myxomycetes

Habitat: Found on decaying plant material and as a plant pathogen.

Effects: Some allergenic properties reported, but generally pose no health concerns to humans.

Pithomyces

Habitat: Common fungus isolated from soil, decaying plant material. Rarely found indoors.

Effects: Allergenic properties are poorly studied. No cases of infection in humans.

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SHIP: FEDEX - PAK SO
DATE: 07-11-2022

8170 3738 6903

MOLD

22025666

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA
or: Olivia Smaracko	le: (781) 789-2985 Email: osmaracko@trccompanies.co
Date Collected: 7/7/2022	Note:

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

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#	Number	Sample	Analysis	Volume	Notes
1	4690851	G45 Breakroom	S	75 L	
2	4698042	140 - Forensic Health	S	75 L	
3	4698039	110B - Cubicle near Vault 111	S	75 L	
4	4698063	249A - Judges Lobby	S	75 L	
5	4697997	204A - Judges Lobby	S	75 L	
6	4698028	337 - Superior Court Probation	S	75 L	
7	4698010	Law Library - North Side between Stacks 34 & 35	S	75 L	
8	4698022	Registry of Probate Cubicle Area	S	75 L	
9	4698025	450 - Registry of Deeds	S	75 L	
10	4701948	Outdoor - East Courtyard	S	75 L	
11	4698041	151C - Attorneys Room	S	75 L	
12	4698059	137 - Clerk of Juvenile	S	75 L	
13	4701933	116 - Housing Court Clerks Office	S	75 L	
14	4701900	215 - Conference Room	S	75 L	
15	4701930	227 - Judicial Department	S	75 L	
16	4701912	338 - Juvenile/Probation Clerical	S	75 L	

Released by: Olivia Smaracko	Date: 7/7/2022	Received By: MG	Date: 7/11/22

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MOLD

22025666

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA	e: (781) 789-2985	Email: osmaracko@trccompanies.co
r: Olivia Smaracko		Note:	
Date Collected: 7/7/2022			

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

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#	Number	Sample	Analysis	Volume	Notes
1	4701938	322 - Chief Housing Specialist	S	75 L	
2	4697984	B58 - Juvenile Storage	S	75 L	
3	4701898	B23 - Office	S	75 L	
4	4698053	Outdoor - Corner of E. Columbus and Court	S	75 L	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Released by: Olivia Smaracko	Date: 7/7/2022	Received By: MO	Date: 7/11/22