300 Wildwood Ave., Suite 230
Woburn, MA 01801
T 781.933.2555
TRCcompanies.com

August 30, 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 7
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 August 16, 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 (VOC'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 a health-based National Ambient Air Quality Standard (NAAQS) for PM_{10} to evaluate outdoor air quality. This is not intended to evaluate worker exposure but are meant to protect the health of sensitive individuals within the general population. The NAAQS is based on rolling-24-hour average concentrations over a 3-day period and as such, is not directly comparable to individual PM measurements taken during this assessment; however, the NAAQS

[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

is provided in this report as a benchmark. The NAAQS for PM_{10} is 0.150 milligrams per cubic meter of air (mg/m^3) measured as a 24-hour average concentration.

The OSHA Permissible Exposure Limit (PEL) for occupational exposure for total dust is 15 mg/m^3- and for the respirable dust fraction is 5 mg/m^3, both as 8-hour average concentrations.

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

Measurement of Total 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 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 Air-O-Cell 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 Air-O-Cell 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
August 16, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA							
001	435 - Registry of Probate Index Room	74.4	42.9	546	ND (<3)	0.001	ND (<0.020)
002	446C – Office	73.9	44.1	650	ND (<3)	0.002	ND (<0.020)
003	428A – Judges Lobby	73.6	44.0	551	ND (<3)	0.007	ND (<0.020)
004	416A – Judges Lobby	73.5	44.0	514	ND (<3)	0.009	ND (<0.020)
005	411 – Registry of Deeds	72.7	43.6	440	ND (<3)	0.003	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
August 16, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
006	400 – Registry of Deeds, behind counter	73.1	43.7	479	ND (<3)	0.004	ND (<0.020)
007	372 – Unused Office Area	73.4	44.1	548	ND (<3)	0.004	ND (<0.020)
008	Superior Courtroom #6	74.3	46.1	493	ND (<3)	0.004	ND (<0.020)
009	347 – Judges Lobby	74.2	47.1	490	ND (<3)	0.004	ND (<0.020)
010	320 – Judges Lobby	73.6	48.4	540	ND (<3)	0.011	ND (<0.020)
011	Law Library – Between stacks 18 & 19	74.3	46.4	519	ND (<3)	0.003	ND (<0.020)
012	300 – Clerk of the Superior Court	75	47.7	573	ND (<3)	0.004	ND (<0.020)
013	245 – Office	73.2	50.2	598	ND (<3)	0.004	ND (<0.020)
014	246 – Conference Room	72.8	50.1	529	ND (<3)	0.004	ND (<0.020)
015	254 – Chief Court Officer	73.1	46.8	561	ND (<3)	0.008	ND (<0.020)
016	213 - Clerk of District Court Civil	73.8	50.0	580	ND (<3)	0.008	ND (<0.020)
017	210 – Office	73.6	47.7	568	ND (<3)	0.006	ND (<0.020)
018	204 – Office Area	72.8	49.5	594	ND (<3)	0.017	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
August 16, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
019	150 - Office	73.2	48.6	641	ND (<3)	0.008	ND (<0.020)
020	124 – Lock-up	74.4	49.3	609	ND (<3)	0.008	ND (<0.020)
021	121 – Judges Lobby	73.1	49.0	622	ND (<3)	0.006	ND (<0.020)
022	104 – Clerk of District Court Criminal	70.1	51.3	622	ND (<3)	0.005	ND (<0.020)
023	Plaza Level – Main Lobby	72.2	52.9	636	ND (<3)	0.007	ND (<0.020)
024	133 – Office	72.6	50.4	597	ND (<3)	0.005	ND (<0.020)
025	G36	73.8	50.0	673	ND (<3)	0.008	ND (<0.020)
026	G40B – File Room	74.8	49.3	602	ND (<3)	0.004	ND (<0.020)
027	G34 – Janitors Room	75.6	48.0	608	ND (<3)	0.005	ND (<0.020)
028	G27D – Kitchen Mail Room	76.1	44.4	597	ND (<3)	0.005	ND (<0.020)
029	G01 – Office	75.9	46.3	604	ND (<3)	0.013	ND (<0.020)
030	G55 – Office	78.0	42.4	631	ND (<3)	0.009	ND (<0.020)
031	Outdoor – North Entrance 50 State Street	78.2	44.5	393	ND (<3)	0.012	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts August 16, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA							
032	Outdoors - Front 80 State Street	79.3	40.8	398	ND (<3)	0.013	ND (<0.020)
033	307 – Conference Room	71.3	41.4	477	ND (<3)	0.010	ND (<0.020)
034	312 – Common Area	66.7	47.0	475	ND (<3)	0.009	ND (<0.020)
035	320 – Conference Room	61.8	55.2	473	ND (<3)	0.010	ND (<0.020)
036	305 – Office Area	66.1	53.9	468	ND (<3)	0.010	ND (<0.020)
037	201 – Housing Court #2	66.1	56.8	450	ND (<3)	0.008	ND (<0.020)
038	202 – Judges Lobby	69.6	44.1	481	ND (<3)	0.012	ND (<0.020)
039	221 – Waiting Area	70.6	50.7	623	ND (<3)	0.008	ND (<0.020)
040	115 – Office	69.6	44.1	678	ND (<3)	0.009	ND (<0.020)
041	102 – Behind Desk	70.4	36.6	694	ND (<3)	0.008	ND (<0.020)
042	123 – Waiting Area	70.8	47.8	618	ND (<3)	0.010	ND (<0.020)
043	130 – Conference Room	71.7	48.0	570	ND (<3)	0.007	ND (<0.020)
044	142 – Locker Area	72.7	48.1	628	ND (<3)	0.016	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts August 16, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
045	151 – Waiting Area	72.5	44.6	624	ND (<3)	0.010	ND (<0.020)
046	149 – Stairwell	72.1	42.3	604	ND (<3)	0.010	ND (<0.020)
047	337 – Common Area	71.8	44.3	587	ND (<3)	0.016	ND (<0.020)
048	339 – Copy Room	70.8	46.2	601	ND (<3)	0.007	ND (<0.020)
049	323 – Office	71.5	46.0	580	ND (<3)	0.010	ND (<0.020)
050	238 – Common Area	69.8	44.2	574	ND (<3)	0.006	ND (<0.020)
051	236 – Common Area	69.6	44.9	588	ND (<3)	0.008	ND (<0.020)
052	252 – Office	69.9	45.2	618	ND (<3)	0.008	ND (<0.020)
053	254 – Office	70.4	44.6	597	ND (<3)	0.010	ND (<0.020)
054	B47 – Stairwell	69.6	43.3	532	ND (<3)	0.009	ND (<0.020)
055	B72/A3	70.6	44.6	585	ND (<3)	0.007	ND (<0.020)
056	B39	70.5	43.7	545	ND (<3)	0.007	ND (<0.020)
057	B24	68.2	40.2	541	ND (<3)	0.014	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
August 16, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
058	B35 – Office	68.5	41.9	530	ND (<3)	0.008	ND (<0.020)
059	B04 – File Room	67.6	43.3	565	ND (<3)	0.009	ND (<0.020)
060	B32 - Waiting Area	69.8	42.9	578	ND (<3)	0.009	ND (<0.020)
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
ND = non-detect, below reliable limit of quantification or detection

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 ºF

Temperature and Relative Humidity. Temperatures were generally within or slightly below recommended comfort ranges for summer occupancy at the observed relative humidity levels.

None of the relative humidity measurements collected in the Roderick L. Ireland this week were above 65%. The outdoor weather on this date was less humid than in recent prior weeks, which may have influenced the indoor relative humidity measurements. In addition, dehumidifying units that had been deployed at various locations throughout the courthouse continued to operate.

Based on weeks prior, TRC recommends continued operation of the dehumidifying units to improve occupant comfort and for optimum building conditions and maintenance.

All relative humidity measurements in the Housing and Juvenile Courthouse were below 65%, therefore no corrective measures are required based on the temperature and relative humidity measurements in these buildings.

Carbon Dioxide. The average CO_2 concentrations throughout the buildings ranged from 440 to 678 ppm with outdoor concentrations ranging from 393 to 398 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).

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

Carbon Monoxide. The CO measurements were non-detect (< 3 ppm) and were within the recommended indoor air quality guideline. No corrective measures are indicated based on the CO measurements.

Total Volatile Organic Compounds (VOCs)

The VOC measurements throughout the buildings were all non-detect (<0.020 ppm). Based on these sampling results, no corrective measures are recommended at this time. Note that hand sanitizers and sanitizing wipes can result in a temporary increase in VOC concentrations.

Airborne Particulate Matter

The average PM_{10} measurements throughout the buildings ranged from 0.001 to 0.017 mg/m^3 and were within the guideline of 0.150 mg/m^3. No corrective measures are indicated based on the PM_{10} measurements.

Microbial Sampling

The results of air 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
August 16, 2022

Sample Number	Location	Sample Type	Mold Detected (spores/m^3)	Interpretation
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA				
34545770	446C - Office	Air	80	See Comment 1
34545694	416A – Judges Lobby	Air	80	See Comment 1
34545682	320 – Judges Lobby	Air	40	See Comment 1

Microbial Sampling Results Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts August 16, 2022				
Sample Number	**Location**	**Sample Type**	**Mold Detected (spores/m³)**	**Interpretation**
34545683	Law Library between stacks 18 & 19	Air	13	See Comment 1
34545692	254 – Chief Court Officer	Air	27	See Comment 1
34545703	213 – Clerk of District Court Civil	Air	40	See Comment 1
34545701	150 – Office DCP	Air	53	See Comment 1
34545721	104 – Office DCC	Air	13	See Comment 1
34545691	FMD – G27D	Air	13	See Comment 1
34545740	Outdoors, Front 50 State Street	Air	441	See Comment 1
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA				
34545705	Outdoors, Front 80 State Street	Air	453	See Comment 1
34545759	320 – Conference Room	Air	27	See Comment 1
34545789	201 – Housing Court #2	Air	13	See Comment 1
34545685	115 – Office	Air	26	See Comment 1
34545686	102 – Behind Desk	Air	13	See Comment 1
34545773	123 – Common Area	Air	26	See Comment 1
34545736	339 – Copy Room	Air	27	See Comment 1
34545848	252 - Office	Air	53	See Comment 1
34545742	A3/ B72 – Lock-up	Air	26	See Comment 1
34545722	B35 - Office	Air	40	See Comment 1
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. These results are not suggestive of an indoor mold source.				

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

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 required based on measurements of temperature, carbon dioxide, carbon monoxide, PM_{10}, or TVOC's.

2. Corrective actions should be taken in the Roderick L. Ireland Courthouse to improve dehumidification. TRC will continue to observe relative humidity measurements throughout the summer months and will alert building management if any unusual levels are noted.

3. 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

Denise Houseman

Denise Houseman
Industrial Hygienist

Robert King

Robert King, CSP, CIH (retired)
(1982 – 2021)
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

#22032131

Analysis Report prepared for

TRC Companies

814 Broad Street
Weymouth, MA 02189

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

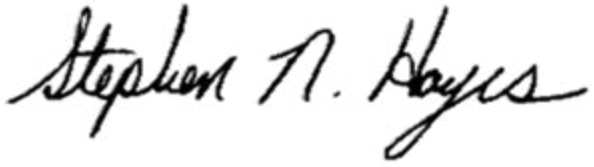
Springfield District Court
50 & 80 State Street
Springfield, MA

Collected: **August 16, 2022**
Received: **August 22, 2022**
Reported: **August 23, 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 August 22nd, 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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Spore Trap
SOP - HMC#101

Sample Number	1	34545770		2	34545694		3	34545682		4	34545683	
Sample Name	**446C Office**			**416A Judges Lobby**			**320 Judges Lobby**			**Law Library Between 18 & 19**		
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	4	53	66.7%	2	27	33.3%	2	27	66.7%			
Aspergillus|Penicillium	2	27	33.3%	1	13	16.7%				1	13	100.0%
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				3	40	50.0%	1	13	33.3%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	6	80	100%	6	80	100%	3	40	100%	1	13	100%

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

Collected: **Aug 16, 2022** Received: **Aug 22, 2022** Reported: **Aug 23, 2022**

HAYES MICROBIAL CONSULTING

Project Analyst: Steve Hayes, BSMT — Date: **08 - 23 - 2022**

Reviewed By: Ramesh Poluri, PhD — Date: **08 - 23 - 2022**

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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Spore Trap
SOP - HMC#101

Sample Number	5	34545692		6	34545703		7	34545701		8	34545721	
Sample Name	**254 Chief Officer Court**			**213 Clerk of District Court Civil**			**150 Office DCP**			**104 Office Clerk DCC**		
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	2	27	100.0%	2	27	66.7%	3	40	75.0%	1	13	100.0%
Aspergillus|Penicillium												
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				1	13	33.3%						
Curvularia							1	13	25.0%			
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	3	40	100%	4	53	100%	1	13	100%

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

Collected: **Aug 16, 2022** Received: **Aug 22, 2022** Reported: **Aug 23, 2022**

HAYES MICROBIAL CONSULTING

Project Analyst: Steve Hayes, BSMT — Date: **08 - 23 - 2022**

Reviewed By: Ramesh Poluri, PhD — Date: **08 - 23 - 2022**

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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Spore Trap
SOP - HMC#101

Sample Number	9	34545691		10	34545740		11	34545705		12	34545805	
Sample Name	FMD G27D			Outdoors Front 50 State St			Outdoors Front 80 State St.			320 Conference Room		
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			13/m^3			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				17	227	51.5%	20	267	58.8%	2	27	100.0%
Aspergillus|Penicillium	1	13	100.0%	2	27	6.1%						
Basidiospores				3	40	9.1%	4	53	11.8%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				11	147	33.3%	9	120	26.5%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							1	13	2.9%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	33	441	100%	34	453	100%	2	27	100%

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

Collected: **Aug 16, 2022** Received: **Aug 22, 2022** Reported: **Aug 23, 2022**

Project Analyst: Steve Hayes, BSMT — Date: **08 - 23 - 2022**

Reviewed By: Ramesh Poluri, PhD — Date: **08 - 23 - 2022**

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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Spore Trap
SOP - HMC#101

Sample Number	13	34545759		14	34545789		15	34545685		16	34545686	
Sample Name	**201 Housing Court #2**			**115 Office**			**102 Middle of Room**			**123 Common Area**		
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	2			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	50.0%				1	13	50.0%
Aspergillus|Penicillium				1	13	50.0%	1	13	100.0%	1	13	50.0%
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	1	13	100.0%									
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	26	100%	1	13	100%	2	26	100%

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

Collected: **Aug 16, 2022** Received: **Aug 22, 2022** Reported: **Aug 23, 2022**

Project Analyst: Steve Hayes, BSMT — Date: **08 - 23 - 2022**

Reviewed By: Ramesh Poluri, PhD — Date: **08 - 23 - 2022**

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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Spore Trap
SOP - HMC#101

Sample Number	17	34545736		18	34545848		19	34545742		20	34545722	
Sample Name	339 Copier			252 Office			A3 / B72 Lock - Up			B35 Office		
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	2			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	2	27	100.0%	3	40	75.0%	1	13	50.0%	1	13	33.3%
Aspergillus|Penicillium				1	13	25.0%				2	27	66.7%
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							1	13	50.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	4	53	100%	2	26	100%	3	40	100%

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

Collected: **Aug 16, 2022** Received: **Aug 22, 2022** Reported: **Aug 23, 2022**

HAYES MICROBIAL CONSULTING

Project Analyst: Steve Hayes, BSMT — Date: **08 - 23 - 2022**

Reviewed By: Ramesh Poluri, PhD — Date: **08 - 23 - 2022**

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

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

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.

Denise Houseman
TRC Companies
814 Broad Street
Weymouth, MA 02189
(781) 337-0016

Springfield District Court
50 & 80 State Street
Springfield, MA

#22032131

Organism Descriptions

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.

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.

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.

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.

HAYES MICROBIAL CONSULTING

TRC Companies
814 Broad Street
Weymouth, MA 02189

N

SHIP: FEDEX - BOX SO
DATE: 08-22-2022

8170 3738 6800

MOLD

22032131

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA
or: ~~Olivia Smaracko~~ Denise Hausman	e: (781) 789-2985 Email: osmaracko@trccompanies.co
Date Collected: 8/16/22	Note: dhausman@trccompanies.com

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

#	Number 34545682(3)	Sample	Analysis	Volume	Notes
1	34545770	446C Office	S	75 L	
2	34545694	416A Judges Lobby	S	75 L	
3	~~34545671~~	~~Attorneys Lounge~~ 320 Judges Lobby	S	75 L	Attorney's Lge Last Wk Sampled
4	34545683	Law Library btwn 18&19	S	75 L	
5	34545692	254 Chief Officer Court	S	75 L	
6	34545703	213 Clerk of District Court Civil	S	75 L	
7	34545701	120 Office DCP	S	75 L	
8	34545721	104 Office Clerk DCC	S	75 L	
9	34545691	FMD G-27	S	75 L	
10	34545740	Outdoors Front 50 State St	S	75 L	
11	34545705	Outdoors Front 80 State St	S	75 L	
12	34545805	320 Conference Room	S	75 L	
13	34545759	201 Housing Court #2	S	75 L	
14	34545789	115 Office	S	75 L	
15	34545685	102 Middle of Room	S	75 L	
16	34545686	123 Common Area	S	75 L	

AOC

Released by:	Date: 8/16/22	Received By:	Date: 8-22-22

HAYES MICROBIAL CONSULTING

TRC Companies
814 Broad Street
Weymouth, MA 02189

N

SHIP: FEDEX - BOX SO
DATE: 08-22-2022

8170 3738 6800

MOLD
22032131

Job Number: 499949	Job Name: Springfield District Court 50 & 80 State Street Springfield, MA
or: Olivia Smaracko	e: (781) 789-2985 Email: osmaracko@trccompanies.co
Date Collected: 8/16/22	Note: dhousman@trccompanies.com

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

#	Number	Sample	Analysis	Volume	Notes
1	34545736	339 Copier	S	75 L	
2	34545848	252 Office	S	75 L	
3	34545742	A3/B72 Lock-Up	S	75 L	
4	34545722	B35 Office	S	75 L	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Released by:	Date: 8/16/22	Received By:	Date: