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December 15, 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 22
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 December 1, 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 is 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 to total dust is 15 mg/m^3, and for the respirable dust fraction, 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 molds 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
December 1, 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	Superior Courtroom #1 – 3rd floor	71.1	22.7	426	ND (<3)	0.002	ND (<0.020)
002	District Courtroom #2 – 2nd floor	72.0	21.3	448	ND (<3)	0.006	ND (<0.020)
003	District Courtroom #1 – 1st floor	73.3	20.2	433	ND (<3)	0.003	ND (<0.020)
004	139 – Forensic Health Room	72.4	22.7	473	ND (<3)	0.004	ND (<0.020)
005	Probate Courtroom #1 – 4th floor	71.5	21.1	462	ND (<3)	0.004	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
December 1, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
006	PC3A – Probate Courtroom #3 Conference Room A	71.2	23.0	476	ND (<3)	0.004	ND (<0.020)
007	442 – Office in Probation	71.9	23.4	607	ND (<3)	0.004	ND (<0.020)
008	434 – Office in Secretary Pool	70.9	21.6	580	ND (<3)	0.005	ND (<0.020)
009	445B – Printer Room in Probate	69.8	21.3	536	ND (<3)	0.005	ND (<0.020)
010	420 – Office	69.8	22.1	539	ND (<3)	0.006	ND (<0.020)
011	Clerk of the Superior Court Criminal	74.4	23.9	627	ND (<3)	0.008	ND (<0.020)
012	308 – Vault in Clerk of Sup Ct.	74.8	23.2	537	ND (<3)	0.004	ND (<0.020)
013	313 – Jury Room	71.8	22.6	510	ND (<3)	0.005	ND (<0.020)
014	378 – Grand Jury Room	71.9	23.6	519	ND (<3)	0.005	ND (<0.020)
015	378A – Grand Jury Room	70.7	24.3	489	ND (<3)	0.006	ND (<0.020)
016	204B – Judges Lobby	73.0	24.0	609	ND (<3)	0.006	ND (<0.020)
017	210 – Office	71.8	22.7	596	ND (<3)	0.005	ND (<0.020)
018	226 – Conference Room in Witness Advocate	74.5	20.5	569	ND (<3)	0.007	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts December 1, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
019	246B – Judges Lobby	73.5	25.5	797	ND (<3)	0.010	ND (<0.020)
020	Superior Courtroom #8	73.2	20.4	622	ND (<3)	0.004	ND (<0.020)
021	249B – Judges Lobby	74.3	21.8	593	ND (<3)	0.005	ND (<0.020)
022	149 – Office in District Court of Probation	74.2	22.7	568	ND (<3)	0.005	ND (<0.020)
023	164 – Office in District Court of Probation	75.3	21.4	653	ND (<3)	0.007	ND (<0.020)
024	110A – Police	74.1	22.3	683	ND (<3)	0.007	ND (<0.020)
025	G28 – Mens Locker Room	73.2	23.6	658	ND (<3)	0.007	ND (<0.020)
026	G27A – Mail Room Janitorial Office	71.5	21.8	552	ND (<3)	0.008	ND (<0.020)
027	G01 – Janitorial Office	70.5	22.5	528	ND (<3)	0.012	ND (<0.020)
028	G29 – Parts Room/ Office	72.1	23.9	651	ND (<3)	0.008	ND (<0.020)
029	G39 – Storage	71.8	23.3	546	ND (<3)	0.014	ND (<0.020)
030	G42B – Electrical Shop	72.0	18.9	493	ND (<3)	0.012	ND (<0.020)
031	Outdoor – Front Entrance 50 State Street	44.8	23.3	424	ND (<3)	0.010	ND (<0.020)
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA							

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts December 1, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
032	Outdoor – Front Entrance 80 State Street	42.0	32.4	408	ND (<3)	0.013	ND (<0.020)
033	301 – Conference Room	64.3	29.0	652	ND (<3)	0.010	ND (<0.020)
034	306 – Janitor Closet	67.3	27.1	617	ND (<3)	0.008	ND (<0.020)
035	318 – Entryway to 307	68.1	22.3	601	ND (<3)	0.09	ND (<0.020)
036	204 – Outside 202	69.5	19.9	594	ND (<3)	0.006	ND (<0.020)
037	219 – Outside 216, Before Stairs	69.3	19.6	550	ND (<3)	0.012	ND (<0.020)
038	214 – Waiting Area	71.7	22.8	838	ND (<3)	0.012	ND (<0.020)
039	229 – Stairwell #4 Outside Courtroom	73.4	24.3	765	ND (<3)	0.006	ND (<0.020)
040	244 – Copy Room in Probation	72.4	18.6	580	ND (<3)	0.006	ND (<0.020)
041	248 – Probation Hallway	71.7	20.8	617	ND (<3)	0.006	ND (<0.020)
042	232 – Judges Lobby	72.5	17.6	526	ND (<3)	0.007	ND (<0.020)
043	323 – Office in Court Clinic	74.1	16.8	536	ND (<3)	0.006	ND (<0.020)
044	338 – Cubicle Area in Juvenile/ Clerical	73.5	18.6	622	ND (<3)	0.009	ND (<0.020)

Indoor Air Quality Measurements Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts December 1, 2022							
Test #	**Location**	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
045	339 – Copy Room next to Juvenile/ Clerical	72.5	18.2	543	ND (<3)	0.006	ND (<0.020)
046	346 – Office of Chief Probation Officer	71.1	18.6	615	ND (<3)	0.008	ND (<0.020)
047	155 – Public Waiting	73.1	25.3	658	ND (<3)	0.010	ND (<0.020)
048	151A – Conference Room	74.3	24.8	689	ND (<3)	0.010	ND (<0.020)
049	133 – Office of Clerk Magistrate	74.2	23.7	672	ND (<3)	0.010	ND (<0.020)
050	137 – Office in Off Clerk Magistrate	73.3	23.7	692	ND (<3)	0.010	ND (<0.020)
051	136 – Stairwell #3	72.1	19.2	589	ND (<3)	0.007	ND (<0.020)
052	126 – Office with Cubicles	73.5	23.4	660	ND (<3)	0.007	ND (<0.020)
053	110 – Waiting Area	75.0	23.7	766	ND (<3)	0.009	ND (<0.020)
054	B72 – Lock-up	77.6	23.5	699	ND (<3)	0.005	ND (<0.020)
055	BB13 – Cubicle Area	76.6	18.8	580	ND (<3)	0.007	ND (<0.020)
056	B30 – Conference Room	73.7	22.9	611	ND (<3)	0.008	ND (<0.020)
057	B28 – Office	72.4	23.6	604	ND (<3)	0.007	ND (<0.020)

Indoor Air Quality Measurements
Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts
December 1, 2022

Test #	Location	Temp (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Airborne PM_{10} (mg/m^3)	Volatile Organic Compounds (ppm)
058	B34 – Office	70.4	25.4	585	ND (<3)	0.007	ND (<0.020)
059	B35 – Office	70.6	26.2	673	ND (<3)	0.007	ND (<0.020)
060	B15 – Files/ Janitor Storage	71.6	24.8	494	ND (<3)	0.007	ND (<0.020)
Desired Comfort Range		~67 to 82	Less than 60 to 65	Less than 800 to ~1,100	< 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 the recommended comfort ranges for seasonal occupancy at the observed relative humidity levels.

All relative humidity measurements collected in the Roderick L. Ireland Courthouse were below 65% and ranged from about 17 to 29% in both buildings. The use of dehumidifying equipment

and actions to reduce indoor humidity levels throughout the building is not currently necessary, as outdoor relative humidity levels and temperatures are lower during the heating season.

With all the relative humidity measurements below the acceptable range, no corrective measures are required based on the temperature and relative humidity measurements in this building.

Carbon Dioxide.

The average CO_2 concentrations throughout the buildings ranged from 426 to 838 ppm and outdoor concentrations ranged from 408 to 424 ppm. All 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), with all being below the more stringent MA DPH guideline (800 ppm). All the 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).

All VOC measurements throughout the buildings were non-detect (<0.020 ppm). All VOC measurements were below the recommended comfort limit, and no corrective measures are recommended at this time. Note that hand sanitizers and sanitizing wipes may be a source of temporary increases in VOC concentrations.

Airborne Particulate Matter.

The average PM_{10} measurements throughout the buildings ranged from 0.002 mg/m^3 to 0.014 mg/m^3 and were below 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
December 1, 2022

Sample Number	Location	Sample Type	Mold Detected (spores/m^3)	Interpretation
Roderick L. Ireland Courthouse, 50 State Street, Springfield, MA				
35242572	Superior Courtroom # 1 - 3rd Floor	Air	13	See Comment 1

Microbial Sampling Results Springfield Court Complex, 50 & 80 State Street, Springfield, Massachusetts December 1, 2022				
Sample Number	**Location**	**Sample Type**	**Mold Detected (spores/m³)**	**Interpretation**
35246221	District Courtroom # 2 - 1st Floor	Air	27	See Comment 1
35242697	District Courtroom # 1 - 1st Floor	Air	13	See Comment 1
35242706	Probate Courtroom # 1 - 4th Floor	Air	27	See Comment 1
35242699	434 – Office in Secretary Pool	Air	13	See Comment 1
35242517	Clerk Of Superior Court Criminal	Air	13	See Comment 1
35242582	226 - Conference Room, Witness Advocate	Air	26	See Comment 1
35242515	Superior Court Room # 8 – 2nd Floor	Air	13	See Comment 1
35242573	G28 - Men's Locker Room	Air	40	See Comment 1
35246205	Outdoors, Front 50 State Street	Air	279	-----
Springfield Housing & Juvenile Courthouse, 80 State Street, Springfield, MA				
35246215	Outdoors, Front 80 State Street	Air	493	-----
35246216	318 - Entryway to 305	Air	13	See Comment 1
35246213	229 - Top of Stairwell # 4	Air	26	See Comment 1
35242509	244 - Copy Room in Probation	Air	13	See Comment 1
35246211	338 - Cubicle Area in Jury/ Probation Clerical	Air	13	See Comment 1
35242564	346 – Office of the Chief Probation Officer	Air	27	See Comment 1
34922228	133 - Office of the Clerk Magistrate	Air	13	See Comment 1
35242585	126 - Office with Cubicles	Air	27	See Comment 1
35246217	B72 - Lock-up	Air	160	See Comment 1
35242523	B28 - Office	Air	13	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 molds detected indoors were similar to spore types that were 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. TRC will continue to observe relative humidity through the fall season and will alert building management if any unusual levels are noted. Efforts to maintain relative humidity to levels below 65% are no longer necessary this season, given the lower outdoor temperature and relative humidity conditions.

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 (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

#22048322

Analysis Report prepared for

TRC Companies

814 Broad Street
Weymouth, MA 02189

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

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

Collected: **December 1, 2022**
Received: **December 2, 2022**
Reported: **December 2, 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 December 2nd, 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. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

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 & 80 State Street
Springfield, MA

#22048322

Spore Trap
SOP - HMC#101

Sample Number	1	35242572		2	35246221		3	35242697		4	35242706	
Sample Name	**Superior Courtroom # 1 - 3rd Floor**			**District Courtroom # 2 - 1st Floor**			**District Courtroom # 1 - 1st Floor**			**Probate Courtroom # 1 - 4th Floor**		
Sample Volume	75 liter			75 liter			75 liter			75 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	1			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	100.0%	2	27	100.0%	1	13	100.0%	2	27	100.0%
Aspergillus|Penicillium												
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	27	100%	1	13	100%	2	27	100%

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

Collected: **Dec 1, 2022** Received: **Dec 2, 2022** Reported: **Dec 2, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **12 - 02 - 2022**

Reviewed By: Tammy Poole, T Poole Date: **12 - 02 - 2022**

HAYES MICROBIAL CONSULTING
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Spore Trap
SOP - HMC#101

Sample Number	5	35242699		6	35242517		7	352425852		8	35242515	
Sample Name	**434 - Office Security Pool**			**Clerk Of Superior Court Criminal**			**226 - Conference Room, Witness Advocate**			**Superior Court Room # 8 - 2nd Floor**		
Sample Volume	75 liter			75 liter			75 liter			75 liter		
Reporting Limit	13 spores/m^3			13 spores/m^3			13 spores/m^3			13 spores/m^3		
Background	2			2			2			1		
Fragments	ND			ND			ND			13/m^3		
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	100.0%	1	13	50.0%	1	13	100.0%
Aspergillus|Penicillium												
Basidiospores	1	13	100.0%									
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							1	13	50.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	1	13	100%	2	26	100%	1	13	100%

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

Collected: **Dec 1, 2022** Received: **Dec 2, 2022** Reported: **Dec 2, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **12 - 02 - 2022**

Reviewed By: Tammy Poole, T Poole Date: **12 - 02 - 2022**

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50 & 80 State Street
Springfield, MA

#22048322

Spore Trap
SOP - HMC#101

Sample Number	9	35242573		10	35246205		11	35246215		12	35246216	
Sample Name	G 28 - Men's Locker Room			Outdoors - Front 50 State Street			Outdoors - Front 80 State Street			318 - Entryway to 305		
Sample Volume	75 liter			75 liter			75 liter			75 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			13/m^3			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	2	27	66.7%	13	173	61.9%	10	133	27.0%	1	13	100.0%
Aspergillus|Penicillium												
Basidiospores	1	13	33.3%	7	93	33.3%	4	53	10.8%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				1	13	4.8%	21	280	56.8%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							2	27	5.4%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	3	40	100%	21	279	100%	37	493	100%	1	13	100%

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

Collected: **Dec 1, 2022** Received: **Dec 2, 2022** Reported: **Dec 2, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **12 - 02 - 2022**

Reviewed By: Tammy Poole, T Poole Date: **12 - 02 - 2022**

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Spore Trap
SOP - HMC#101

Sample Number	13	35246213		14	35242509		15	35246211		16	35242564	
Sample Name	**229 - Top Of Stairwell # 4**			**244 - Copy Room, Probation**			**338 - Cubicle Area In Jury Prob. Clerical**			**346 - Office, Chief Probation Officer**		
Sample Volume	75 liter			75 liter			75 liter			75 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	50.0%	1	13	100.0%	1	13	100.0%	2	27	100.0%
Aspergillus|Penicillium												
Basidiospores	1	13	50.0%									
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	1	13	100%	1	13	100%	2	27	100%

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

Collected: **Dec 1, 2022** Received: **Dec 2, 2022** Reported: **Dec 2, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **12 - 02 - 2022**

Reviewed By: Tammy Poole, T Poole Date: **12 - 02 - 2022**

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Spore Trap
SOP - HMC#101

Sample Number	17	34922228		18	35242585		19	35246217		20	35242523	
Sample Name	**133 - Office Clerk Magistrate**			**126 - Office W/ Cubicles**			**B72 - Lock - Up**			**B28 - Office**		
Sample Volume	75 liter			75 liter			75 liter			75 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	100.0%	2	27	100.0%				1	13	100.0%
Aspergillus|Penicillium												
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							12	160	100.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	27	100%	12	160	100%	1	13	100%

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

Collected: **Dec 1, 2022** Received: **Dec 2, 2022** Reported: **Dec 2, 2022**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **12 - 02 - 2022**

Reviewed By: Tammy Poole, T Poole Date: **12 - 02 - 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

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.
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.
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.

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DATE: 12-02-2022
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MOLD
22048322

Job Number: 499949
Job Name: Springfield District Court
50 & 80 State Street
Springfield, MA
or: ~~Olivia Smaracko~~ Denise Housman
Date Collected: 12/01/22
le: (781) 789-2985
Email: osmaracko@trccompanies.co
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	35242572	Superior Courtroom #1 - 3rd floor	S	75 L	
2	35246221	District Courtroom #2 - 1st floor	S	75 L	
3	35242697	District Courtroom #1 - 1st floor	S	75 L	
4	35242706	Probate Courtroom #1 - 4th floor	S	75 L	
5	35242699	434 - office in Secretary Pool			
6	35242517	Clerk of Superior Court Criminal			
7	35242582	226 - Conference Rm, Witness Advocate			
8	35242515	Superior Courtroom #8 - 2nd floor			
9	35242573	G-28 - Mens Locker Room			
10	35246205	Outdoors - Front 50 State St			
11	35246215	Outdoors - Front 80 State St			
12	35246216	318 - ~~Entryway~~ to 305			
13	35246213	229 - Top of Stairwell #4			
14	35242509	244 - Copy Room, Probation			
15	35246211	338 - Cubicle Area in Juv/Prob Clerical			
16	35242564	346 - Office, Chief Probation Officer			

Released by: [signature] Date: 12/01/22
Received By: YH Date: 12/2

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814 Broad Street
Weymouth, MA 02189

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SHIP: FEDEX - BOX SO
DATE: 12-02-2022

8123 4351 7782

MOLD

22048322

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:	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

#	Number	Sample	Analysis	Volume	Notes
1	34922228	133 - Office Clerk magistrate	S	75 L	
2	35242585	126 - Office w/ cubicles	S	75 L	
3	35246217	B72 - Lock-up	S	75 L	
4	35242523	B28 - Office	S	75 L	
5			S	75 L	
6	(2585)		S	75 L	
7			S	75 L	
8			S	75 L	
9			S	75 L	
10			S	75 L	
11			S	75 L	
12			S	75 L	
13			S	75 L	
14			S	75 L	
15			S	75 L	
16			S	75 L	

Released by:	Date:	Received By:	Date: 12/2