

**MAIN OFFICE:**

50 Salem Street, Ste. 103B  
Lynnfield, MA 01940  
(781) 213-9198

**BRANCH OFFICES:**

46 Watergate Lane  
W. Barnstable, MA 02668  
(508) 274-5703

10 Diamond Drive  
Derry, NH 03038  
(603) 434-5245

[www.axiomenv.com](http://www.axiomenv.com)

May 23, 2022

Mr. Michael Lane  
Environmental Health & Safety Manager  
Office of Court Management/  
Facilities Management & Court Capital  
Massachusetts Superior Courts  
Lowell Justice Center  
370 Jackson Street  
Lowell, MA 01852

**VIA EMAIL**

AXIOM Project 01275.008

RE: Indoor Air Quality Testing, 80 State Street, Springfield, MA

Dear Mr. Lane,

At your request, Axiom Partners, Inc. (AXIOM) performed indoor air quality (IAQ) testing in the referenced superior courthouse building. The testing was performed on April 25, 2022 by AXIOM Industrial Hygienist, Ryan Burns and consisted of the following:

**I. INDOOR AIR TESTING PROCESS****1. Visual Assessment of Interior Spaces**

AXIOM performed a general inspection of the interior spaces for visible signs of potential water damage or mold/fungal growth. This did not include above ceiling spaces and HVAC equipment.

**2. General Air Quality Testing Parameters**

AXIOM performed testing of IAQ parameters throughout the building using a direct reading Q-Trak® IAQ Monitor which continuously measures and records levels of carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), temperature and relative humidity (rH).

AXIOM positioned the Q-Trak in 29 locations over the course of the day, with run times in each location ranging between 10 and 20 minutes. Locations were chosen to represent general air quality and the locations are documented on the attached floor plans.

Results were compared with established indoor air quality guidelines which are used to assess the adequacy of indoor air quality and ventilation.

**3. Air Testing for Total Volatile Organic Compounds (TVOCs)**

A calibrated TSI GM460 Gas Monitor was used to take real-time spot readings for TVOCs<sup>1</sup> in multiple locations throughout the building. The GM460 is a hand-held device that detects and measures more than 600 of the most common TVOCs and has a lower detection limit of 1.0 ppb.

---

<sup>1</sup> Includes a library of over 600 common VOCs



The screening locations and associated Gas Monitor responses were be recorded on an indoor air sampling form. The locations mimicked the Q-Trak sampling locations.

#### **4. Air Testing for Total Dust**

AXIOM performed dust monitoring throughout the building using a direct-reading SidePak AM520 dust monitor. This portable unit measured and recorded total dust concentrations.

The SidePak™ Personal Aerosol Monitor AM520i is a portable, battery-operated, data-logging, device that provides real-time aerosol mass concentration readings of dusts, fumes, mists, smoke and fog.

AXIOM periodically moved the SidePak units throughout the building mimicking the Q-Trak and Gas Monitor sampling locations.

#### **5. Air Testing for Non-Culturable Mold (Fungi)**

AXIOM also collect air samples for direct optical examination for mold and fungal spores using Allergenco-D air sampling cassettes which are used for the rapid collection and analysis of a wide range of airborne aerosols, including fungal spores, pollen, insect parts, skin cell fragments, fibers, and inorganic particulates. AXIOM collected eight (8) air samples from inside the building and two (2) outdoor baseline/control samples (10 total samples).

The air samples were analyzed by EMSL Analytical, inc. (EMSL) located in Woburn, MA. EMSL is accredited by the American Industrial Hygiene Association (AIHA) for fungal analysis. A chain-of-custody form was used to document sample handling and to specify analytical requirements.

## **II. SUMMARY OF INDOOR AIR TESTING**

### **1. Observations**

During the course of performing the air testing, AXIOM inspected interior spaces in the building and made the following observations:

1. Most areas in the building appeared to be relatively clean.
2. No visible signs and no odors associated with mold/fungi were noted in the building areas investigated.
3. Water damaged ceiling tiles that were observed in previous visits have since been replaced
4. HVAC diffusers appear to have been surface cleaned at the time of ceiling tile replacement.

### **2. General Air Quality Testing Parameters, TVOCs and Total Dust**

Table 1 provides a summary of the Q-Trak, SidePak and GM460 indoor air quality testing. In addition to taking regular measurements and recording them on a field form, the Q-Trak and SidePak units were operated in the data logging mode where each recorded and logged readings every 60 seconds throughout the sampling period. The GM460 is an automatic datalogging device that collects readings every 5 minutes when operational.

**TABLE 1**  
**SUMMARY OF Q-TRAK, SIDEPAK AND GM460 TESTING RESULTS**

AIR QUALITY PARAMETER	MINIMUM / MAXIMUM OF MEASURED VALUES	AVERAGE OF MEASURED VALUES	GUIDELINES
Temperature (T)	69.7 / 76.4 °F	73.4 °F	68 – 75 °F <sup>a,b</sup> 73 – 79 °F (summer)
Relative Humidity (rH)	17.0 / 26.7 %	22.9 %	30 – 60% <sup>a,b</sup>
Carbon Dioxide (CO <sub>2</sub> )	438 / 700 ppm	538 ppm	≤ 800 ppm <sup>b,c</sup>
Carbon Monoxide (CO)	0.0 / 0.2 ppm	0.0 ppm	9 ppm <sup>a,b</sup> /50 ppm <sup>d</sup>
Total Volatile Organic Compounds (TVOC)	0 / 0.192 ppm	0.011 ppm	0.3 ppm <sup>b, e</sup>
Total Airborne Particulate	0.002 / 0.079 mg/m <sup>3</sup>	0.008 mg/m <sup>3</sup>	15.0 mg/m <sup>3</sup> /5 <sup>d</sup>

<sup>a</sup> ASHRAE 55-2013 Std. (American Society of Heating, Refrigerating & Air Conditioning Engineers).

<sup>b</sup> ≤ means less than or equal to, °F = degrees Fahrenheit, % = percent, ppm = parts per million, mg/m<sup>3</sup> = milligrams per cubic meter; TWA = Time Weighted Average over 8-hours

<sup>c</sup> Occupational Safety & Health Administration (OSHA) proposed indoor air quality (IAQ) rule (59 FR 15968).

<sup>d</sup> OSHA (Occupational Safety and Health Administration) Permissible Exposure Limit.

<sup>e</sup> Refer to attached Total VOC summary table in Attachment 6.

Attachment 1 includes the field recording forms. The Q-Trak, SidePak and GM460 data summaries and graphs are provided in Attachment 2.

#### 4. Air Testing for Non-Culturable Mold (Fungi)

Table 2 provides a summary of the spore trap air sampling results and the complete lab report is provided in Attachment 3.

**TABLE 2**  
**SUMMARY OF AIRBORNE FUNGAL SPORE TESTING RESULTS**

SAMPLE NUMBER	LOCATION	TOTAL FUNGI (S/m <sup>3</sup> ) <sup>1</sup>	MOLD SPORE TYPE
4541413	3 <sup>rd</sup> Floor, Meeting Room 301	60	Aspergillus/Penicillium, Basidiospores
4541494	3 <sup>rd</sup> Floor, Office 341	20	Aspergillus/Penicillium
4541520	2 <sup>nd</sup> Floor, Probation Office 242	20	Cladosporium
4541457	2 <sup>nd</sup> Floor, Conference Room A 220	130	Aspergillus/Penicillium, Myxomycetes
4541521	1 <sup>st</sup> Floor, Office 126	80	Basidiospores, Myxomycetes
4541533	1 <sup>st</sup> Floor, Juvenile Court Room #3	160	Aspergillus/Penicillium, Basidiospores, Cladosporium, Myxomycetes
4541506	Basement, Juvenile Detention A	40	Myxomycetes
4541437	Basement, Basement Storage B15	40	Myxomycetes
4541422	Building Exterior, Housing Entrance	120	Ascospores, Basidiospores, Myxomycetes
4541435	Building Exterior, Juvenile Entrance	1,710	Ascospores, Aspergillus/Penicillium, Basidiospores, Myxomycetes

<sup>1</sup>S/m<sup>3</sup> = spore counts per cubic meter of air

Airborne fungi below 250 S/m<sup>3</sup> are normally not a concern for indoor environments<sup>2</sup>. Airborne levels outdoors are normally between 500 and 1,000 S/m<sup>3</sup>, but, can easily exceed 10,000 S/m<sup>3</sup> during the spring and summer months. Indoor airborne levels between 250 and 1,000 S/m<sup>3</sup> are typically considered to be moderate and levels that exceed 1,000 S/m<sup>3</sup> are often considered elevated<sup>3</sup> and may result in active mold growth.

It is important to note that bioaerosols (fungi/mold) are always present and it is the excess quantity of microorganisms that can be of concern. By comparing the microbiological profiles of indoor sample results to outside samples, it is often possible to determine if amplification of microorganisms is occurring within the building.

Comparing the microbial profiles of the air samples, AXIOM has concluded that the airborne fungal spore levels on the days of the sampling were not elevated and amplification was not occurring.

### III. CONCLUSIONS

In summary, based on the results of the air quality testing described herein, AXIOM did not identify any air quality conditions or levels for measured parameters that were significantly outside acceptable levels of indoor air quality, however the relative humidity measurements were slightly below the ASHRAE guidelines during this visit. It is not uncommon to see low humidity levels during seasonal transitions particularly when heating systems are operating during cooler nights followed by warmer daytime temperatures. Prolonged exposure to low-humidity environments may cause eye irritation, dry skin and other negative effects.

Although the TVOC levels are considered acceptable, it should be noted that as a result of increased cleaning and sanitizing inside building due to Covid-19, reports of higher-than-normal levels of TVOCs inside buildings have been seen.

Please do not hesitate to contact us if you have any questions.

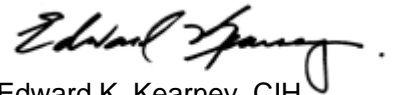
Sincerely,



Evan MacArthur  
Project Manager/Sr. IH



Stephen E. Minassian  
Principal



Edward K. Kearney, CIH  
Principal

Attachments: A1, Field data forms  
A2, Direct Read Instrument Reports  
A3, Fungi/mold testing report  
A4, Sample location floor plans  
A5, TVOC reference table

---

<sup>2</sup> New York Committee for Occupational Safety and Health

<sup>3</sup> Occupational Safety and Health Administration Technical Manual, Section III, Chapter 2, § IV (c)

**ATTACHMENT 1**

**FIELD DATA FORMS**

## IAQ READINGS

Date: 04/25/22  
 Project No.: 01275.008  
 Industrial Hygienist(s): Ryan Burns

Location: 80 State St, Springfield, MA  
 Project Name: Indoor Air Quality Investigation

TIME	LOCATION	TEMP (°F)	RH (%)	CO <sub>2</sub> (PPM)	CO (PPM)	VOCs (PPB)	PART. (MG/M <sup>3</sup> )
8:50	3 <sup>rd</sup> Floor, Employee Break Room 307	73.2	25.7	550	0	N/A	0.01
9:03	3 <sup>rd</sup> Floor Meeting Room 301	71.6	26	577	0	N/A	0.01
9:15	3 <sup>rd</sup> Floor, Peck Library & Conference Room 321	72.2	25.8	578	0	N/A	0.008
9:28	3 <sup>rd</sup> Floor, Office 305	72.6	24.2	564	0	N/A	0.008
9:30	3 <sup>rd</sup> Floor, Juvenile Probation Department Room 338	71	27.7	542	0	N/A	0.012
9:40	3 <sup>rd</sup> Floor, Office 341	74.9	22.8	511	0	N/A	0.008
9:54	3 <sup>rd</sup> Floor, Employee Break Room 336	72.7	24.1	546	0	N/A	0.001
10:06	3 <sup>rd</sup> Floor, Elevator Lobby by Court Clinic 328	73	23.5	488	0	N/A	0.006
10:20	2 <sup>nd</sup> Floor, Probation Office 242	72.9	22.4	595	0	N/A	0.003
10:33	2 <sup>nd</sup> Floor, Probation Office 253	72.1	21.2	444	0	N/A	0.012
10:47	2 <sup>nd</sup> Floor, Hall by Judicial Department Office 227	71.5	24	529	0	N/A	0.002
11:02	2 <sup>nd</sup> Floor, Housing Court Room #1	72.8	21.7	497	0	N/A	0.009
11:15	2 <sup>nd</sup> Floor, Hall by Housing Court Room #2	72	19.6	446	0	N/A	0.01
11:31	2 <sup>nd</sup> Floor, Conference Room A 220	74.5	21.5	517	0	N/A	0.003
11:44	2 <sup>nd</sup> Floor, Stairs 210	74.2	23.1	645	0	N/A	0.005
11:58	1 <sup>st</sup> Floor, Hall by Bathrooms 114	74.1	23.3	549	0	N/A	0
12:13	1 <sup>st</sup> Floor, Housing Court Clerks Office	74.1	23.7	564	0	N/A	0
12:25	1 <sup>st</sup> Floor, Office 126	75.4	22.7	605	0	N/A	0.003
12:38	1 <sup>st</sup> Floor, Hallway by Juvenile Court Room #2	75.8	22.4	666	0	N/A	0.003
12:51	1 <sup>st</sup> Floor, Juvenile Court Room #3	74.9	23.3	575	0	N/A	0.003
13:03	1 <sup>st</sup> Floor, Public Waiting Room 155	76.2	21.6	627	0	N/A	0.001
13:15	1 <sup>st</sup> Floor, Clerk Magistrate's Office	75	22.2	500	0	N/A	0.004
13:30	Basement, Juvenile Detention A	69.6	26	556	0	N/A	0.002
13:43	Basement, Juvenile Detention B	72	23.9	513	0	N/A	0
13:57	Basement, DA Waiting Room B12	73.6	22.8	504	0	N/A	0.001

°F = degrees Fahrenheit; % = percent; ppm = parts per million, mg/m<sup>3</sup> = milligrams per cubic meter

## IAQ READINGS

Date: 04/25/22  
Project No.: 01275.008  
Industrial Hygienist(s): Ryan Burns

Location: 80 State St, Springfield, MA  
Project Name: Indoor Air Quality Investigation

[illegible]

°F = degrees Fahrenheit; % = percent; ppm = parts per million, mg/m<sup>3</sup> = milligrams per cubic meter

## **ATTACHMENT 2**

**Q-TRAK REPORT & GRAPH,  
SIDEPAK PARTICULATE REPORT & GRAPH  
GM460 REPORT & GRAPH**



# Test 003

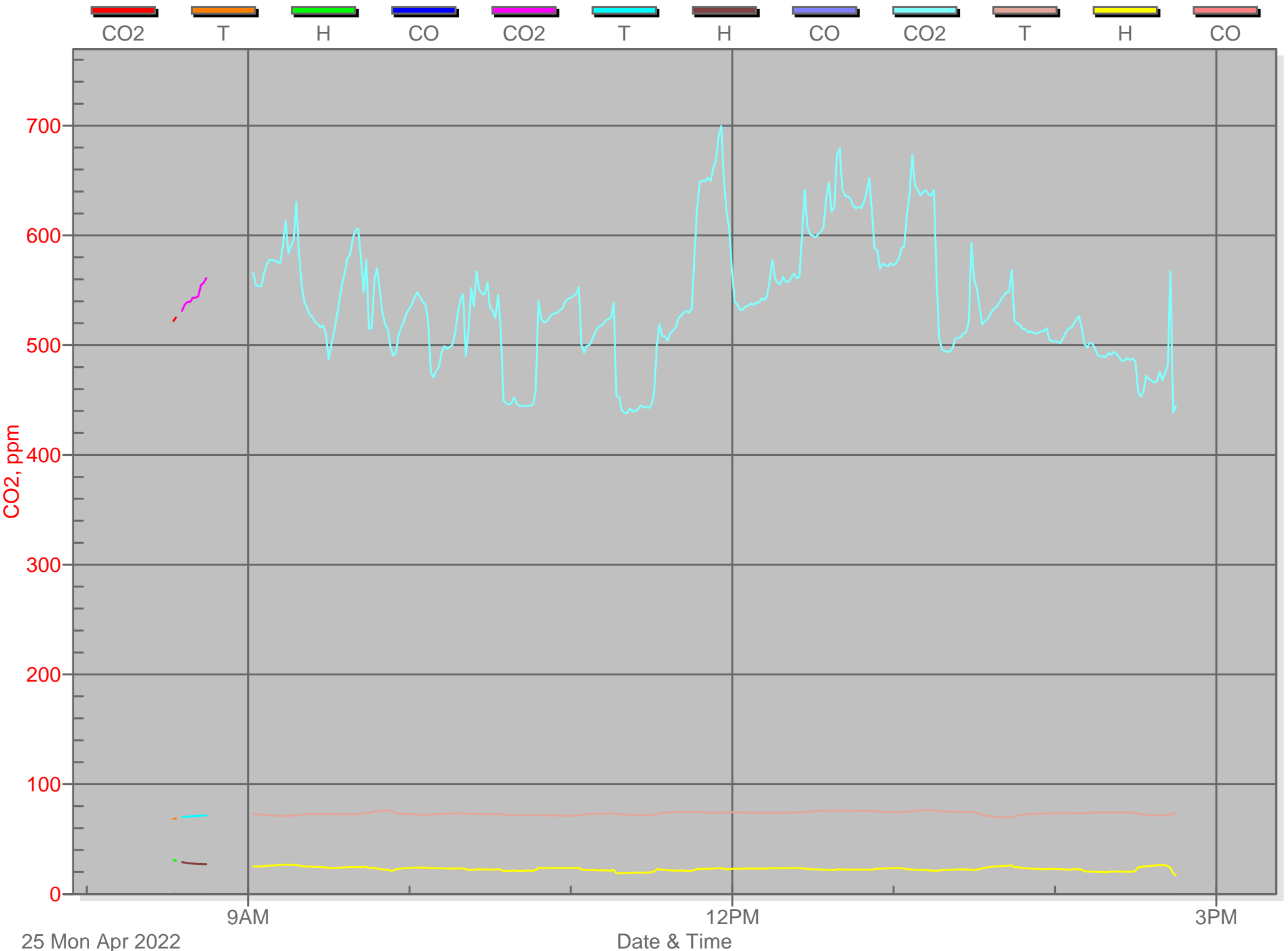
Test 003

Instrument		Data Properties	
Model	VelociCalc/Q-Trak 7575	Start Date	04/25/2022
Meter S/N	7575X1910009	Start Time	09:00:56
Probe Model	982	Stop Date	04/25/2022
Probe S/N	P19140039	Stop Time	14:44:56
Meter Cal Date	03/21/2022	Total Time	0:05:44:00
		Logging Interval	60 seconds

Statistics				
	CO2	T	H	CO
Avg	538 ppm	73.4 deg F	22.9 %rh	0.0 ppm
Max	700 ppm	76.4 deg F	26.7 %rh	0.1 ppm
Max Date	04/25/2022	04/25/2022	04/25/2022	04/25/2022
Max Time	11:55:56	13:14:56	09:13:56	09:01:56
Min	438 ppm	69.7 deg F	17.0 %rh	0.0 ppm
Min Date	04/25/2022	04/25/2022	04/25/2022	04/25/2022
Min Time	11:20:56	13:42:56	14:44:56	13:44:56
TWA (8 hr)	385			0.0
TWA Start Date	04/25/2022			04/25/2022
TWA Start Time	09:00:56			09:00:56
TWA End Time	14:44:56			14:44:56

# Main Title

Sub Title





UNDERSTANDING, ACCELERATED

## Test 2 Report

**Name:** Test 2

**Description:** None

**Location:** Unknown

**Instrument Name:** SidePak Aerosol Monitor

**Device Model Number:** AM520

**Device Serial Number:** 5201912003

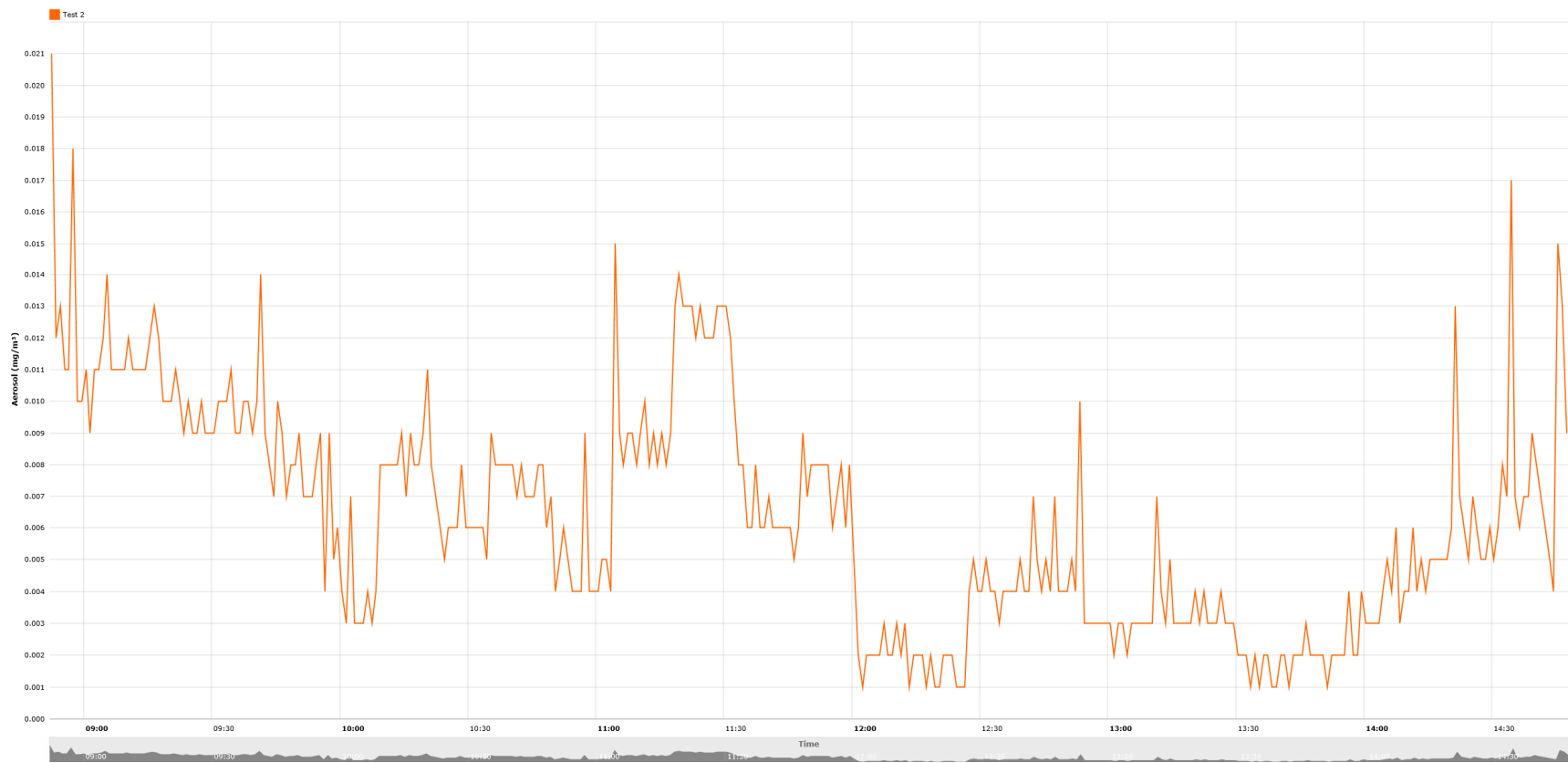
**Firmware Version:** A.08

**Last Factory Calibration:** 3/23/2022

Data Properties	
Start Date	4/25/2022
Start Time	8:51 AM
End Date	4/25/2022
End Time	2:47 PM
Test Length	00:05:56:00
Logging Interval	60 second(s)
Number of Data Points	356

Additional Information	
Threshold Alarms	1
STEL event(s)	True

Test Statistics					
Channel	Average	Minimum	Maximum	Cal Factor	TWA
Aerosol (mg/m <sup>3</sup> )	0.006	0.001 04/25/2022 01:51:04	0.021 04/25/2022 08:52:04	1 Factory 03/30/2022	0.004



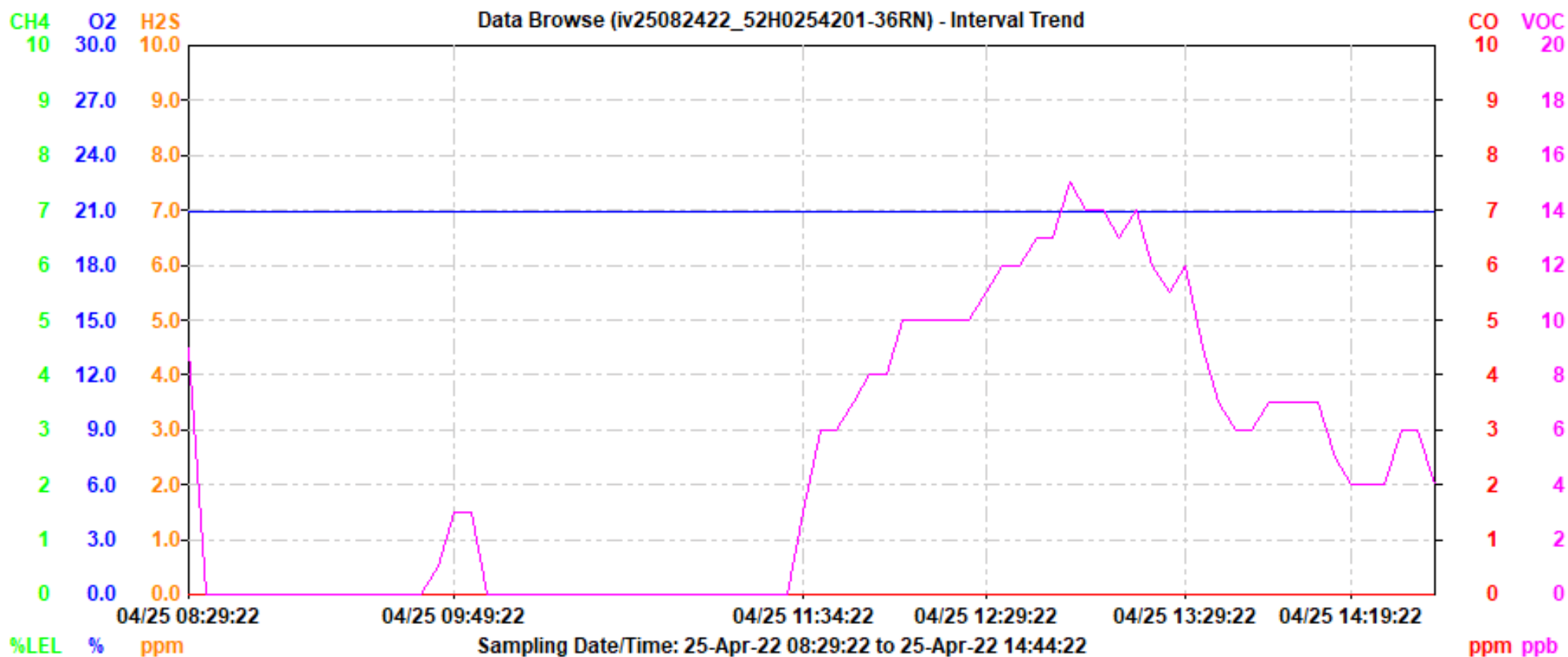
# GM460 Data Sample (Interval Trend)

Property Value  
 Name iv25082422\_52H0254201-36RN  
 Sampling Date/Time 2022/04/25 08:24:22 to 2022/04/25 14:46:10  
 Serial No. 52H0254201-36RN  
 Station ID STATION\_ID\_001  
 User ID USER\_ID\_001

Data Count 76  
 Interval Time (sec) 300

Gas(FullScale)	Avg	Max	Max Date/Time	Min	Min Date/Time	Warning	Alarm	STEL	TWA
CH4(100%LEL)	0 %LEL	0 %LEL	4/25/2022 8:24	*****	*****	10 %LEL	50 %LEL	*****	*****
O2(40.0%)	20.90%	21.20%	4/25/2022 11:23	20.90%	4/25/2022 8:24	19.50%	23.50%	*****	*****
H2S(100.0ppm)	0.0 ppm	0.0 ppm	4/25/2022 8:24	*****	*****	5.0 ppm	30.0 ppm	5.0 ppm	1.0 ppm
CO(500ppm)	0 ppm	0 ppm	4/25/2022 8:24	*****	*****	25 ppm	50 ppm	200 ppm	25 ppm
VOC(50000ppb)	4 ppb	201 ppb	4/25/2022 8:24	*****	*****	5000 ppb	10000 ppb	*****	*****
----(---)	----	----	----	----	----	----	----	----	----

No	Date/Time	CH4(100% O2(40.0%)	H2S(100.0 CO(500ppm)	VOC(50000(----(---)
1	4/25/2022 8:29	0 %LEL	20.90% 0.0 ppm	0 ppm 9 ppb
2	4/25/2022 8:34	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
3	4/25/2022 8:39	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
4	4/25/2022 8:44	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
5	4/25/2022 8:49	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
6	4/25/2022 8:54	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
7	4/25/2022 8:59	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
8	4/25/2022 9:04	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
9	4/25/2022 9:09	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
10	4/25/2022 9:14	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
11	4/25/2022 9:19	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
12	4/25/2022 9:24	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
13	4/25/2022 9:29	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
14	4/25/2022 9:34	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
15	4/25/2022 9:39	0 %LEL	20.90% 0.0 ppm	0 ppm 0 ppb
16	4/25/2022 9:44	0 %LEL	20.90% 0.0 ppm	0 ppm 1 ppb



**ATTACHMENT 3**

**EMSL MOLD AIR SAMPLING  
LABORATORY REPORT**



# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801

Tel/Fax: (781) 933-8411 / (781) 933-8412

<http://www.EMSL.com> / [bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 132202969

Customer ID: AXIO80

Customer PO:

Project ID:

**Attention:** Evan MacArthur  
Axiom Partners, Inc.  
50B Salem Street, Suite 103  
Lynnfield, MA 01940

**Phone:** (781) 213-9198

**Fax:** (781) 213-6992

**Collected Date:** 04/25/2022

**Received Date:** 04/28/2022

**Analyzed Date:** 05/05/2022

**Project:** 01275.008 / Hampden Superior Court

## Test Report: Allergenco-D(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	132202969-0001 4541413 150 3rd Floor, Meeting Room 301			132202969-0002 4541494 150 3rd Floor, Office 341			132202969-0003 4541520 150 2nd Floor, Probation Office 242		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	2	40	66.7	1	20	100	-	-	-
Basidiospores	1	20	33.3	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	1	20	100
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Helicoma	-	-	-	-	-	-	-	-	-
Total Fungi	3	60	100	1	20	100	1	20	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*- Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC-EMLAP Accredited #180179

Initial report from: 05/05/2022 09:23 AM

Steve Grise, Laboratory Manager  
or other Approved Signatory

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)





# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com> / [bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 132202969

Customer ID: AXIO80

Customer PO:

Project ID:

**Attention:** Evan MacArthur  
Axiom Partners, Inc.  
50B Salem Street, Suite 103  
Lynnfield, MA 01940

**Phone:** (781) 213-9198

**Fax:** (781) 213-6992

**Collected Date:** 04/25/2022

**Received Date:** 04/28/2022

**Analyzed Date:** 05/05/2022

**Project:** 01275.008 / Hampden Superior Court

## Test Report: Allergenco-D™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	132202969-0004 4541457 75 2nd Floor, Conference Room A 220			132202969-0005 4541521 75 1st Floor, Office 126			132202969-0006 4541533 75 1st Floor, Juvenile Court Room #3		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	2	90	69.2	-	-	-	1	40	25
Basidiospores	-	-	-	1	40	50	1	40	25
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	1	40	25
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	30.8	1	40	50	1	40	25
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Helicoma	-	-	-	-	-	-	-	-	-
Total Fungi	3	130	100	2	80	100	4	160	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*- Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC-EMLAP Accredited #180179

Initial report from: 05/05/2022 09:23 AM

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
 Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com> / [bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 132202969

Customer ID: AXIO80

Customer PO:

Project ID:

**Attention:** Evan MacArthur  
 Axiom Partners, Inc.  
 50B Salem Street, Suite 103  
 Lynnfield, MA 01940

**Phone:** (781) 213-9198

**Fax:** (781) 213-6992

**Collected Date:** 04/25/2022

**Received Date:** 04/28/2022

**Analyzed Date:** 05/05/2022

**Project:** 01275.008 / Hampden Superior Court

## Test Report: Allergenco-D™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	132202969-0007 4541506 75 Basement, Juvenile Detention A			132202969-0008 4541437 75 Basement, Storage Room B15			132202969-0009 4541422 150 Building Exterior at Housing Court		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	1	20	16.7
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-	2	40	33.3
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	100	1	40	100	3	60	50
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Helicoma	-	-	-	-	-	-	-	-	-
Total Fungi	1	40	100	1	40	100	6	120	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	1	20	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	21	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*- Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC-EMLAP Accredited #180179

Initial report from: 05/05/2022 09:23 AM

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com> / [bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 132202969

Customer ID: AXIO80

Customer PO:

Project ID:

**Attention:** Evan MacArthur  
Axiom Partners, Inc.  
50B Salem Street, Suite 103  
Lynnfield, MA 01940

**Phone:** (781) 213-9198  
**Fax:** (781) 213-6992  
**Collected Date:** 04/25/2022  
**Received Date:** 04/28/2022  
**Analyzed Date:** 05/05/2022

**Project:** 01275.008 / Hampden Superior Court

## Test Report: Allergenco-D™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

<b>Lab Sample Number:</b>	132202969-0010				
<b>Client Sample ID:</b>	4541435				
<b>Volume (L):</b>	75				
<b>Sample Location:</b>	Building Exterior at Juvenile Court				
<b>Spore Types</b>	<b>Raw Count</b>	<b>Count/m³</b>	<b>% of Total</b>		
Alternaria (Ulocladium)	-	-	-		
Ascospores	18	770	45		
Aspergillus/Penicillium	1	40	2.3		
Basidiospores	18	770	45		
Bipolaris++	-	-	-		
Chaetomium++	-	-	-		
Cladosporium	-	-	-		
Curvularia	-	-	-		
Epicoccum	-	-	-		
Fusarium++	-	-	-		
Ganoderma	-	-	-		
Myxomycetes++	2	90	5.3		
Pithomyces++	-	-	-		
Rust	-	-	-		
Scopulariopsis/Microascus	-	-	-		
Stachybotrys/Memnoniella	-	-	-		
Unidentifiable Spores	-	-	-		
Zygomycetes	-	-	-		
Helicoma	1	40	2.3		
<b>Total Fungi</b>	<b>40</b>	<b>1710</b>	<b>100</b>		
Hyphal Fragment	-	-	-		
Insect Fragment	-	-	-		
Pollen	8	300	-		
Analyt. Sensitivity 600x	-	43	-		
Analyt. Sensitivity 300x	-	13*	-		
Skin Fragments (1-4)	-	-	-		
Fibrous Particulate (1-4)	-	1	-		
Background (1-5)	-	1	-		

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC-EMLAP Accredited #180179

Initial report from: 05/05/2022 09:23 AM

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)





EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

132202969

EMSL ANALYTICAL, INC.  
5 CONSTITUTION WAY, UNIT A  
WOBURN, MA 01801

PHONE: (781) 933-8411

FAX: (781) 933-8412

Company Name: Axiom Environmental Partners			EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**				
Street: 50B Salem St			Third Party Billing requires written authorization from third party				
City: Lynnfield	State/Province: MA 01940		Zip/Postal Code:		Country:		
Report To (Name): Evan MacArthur			Telephone #:				
Email Address: emacarthur@axiomenv.com			Fax #:		Purchase Order:		
Project Name/Number: #01275.008 / Hampden Superior Ct			Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email				
U.S. State Samples Taken: MA		Zip Code Sample Taken:		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> Residential			
*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements							
Sterile, Sodium Thiosulfate Preserved Bottle Used: <input type="checkbox"/> Biocide Used in Source (specify): <input type="checkbox"/>							
Public Water Supply Samples: <input type="checkbox"/> Note: All results may automatically be reported to DOH if required by state.							
Turnaround Time (TAT) Options * - Please Check							
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input checked="" type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
Microbiology Test Codes							
<b>M001</b> Air-O-Cell <b>M030</b> Micro 5 <b>M041</b> Fungal Direct Examination <b>M168</b> Pollen ID & Enumeration <b>M280</b> Dust Characterization Level-1 <b>M281</b> Dust Characterization Level-2 <b>M005</b> Viable Fungi- Air Samples (Genus ID & Count) <b>M006</b> Viable Fungi- Air Samples (Includes <i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i> , <i>Stachybotrys</i> Species ID & Count) <b>M007</b> Culturable fungi - Surface Samples (Genus ID & Count) <b>M008</b> Culturable fungi - Surface Samples (Includes <i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i> , <i>Stachybotrys</i> Species ID & Count) <b>M009</b> Bacteria Culture Gram Stain & Count <b>M010</b> Bacteria Count & ID - 3 Most Prominent <b>M011</b> Bacteria Count & ID - 5 Most Prominent <b>M012</b> <i>Pseudomonas aeruginosa</i> (P/A***)		<b>M174</b> MoldSnap <b>M032</b> Allergenco-D <b>M024</b> <i>Pseudomonas aeruginosa</i> (MFT*) <b>M015</b> Heterotrophic Plate Count <b>M017</b> Total Coliform & <i>E. coli</i> (Colilert P/A***) <b>M018</b> Total Coliform & <i>E. coli</i> (MFT*) <b>M114</b> Total Coliform & <i>E. coli</i> Enumeration (Colilert MPN**) <b>M019</b> Fecal Coliform (MFT*) <b>M020</b> Fecal Streptococcus (MFT*) <b>M029</b> Enterococci (MFT*) <b>M129</b> Enterococci (Enterolert P/A***) <b>M180</b> Real Time qPCR-ERMI 36 Panel <b>M025</b> Sewage Screen -Water (MFT*)		<b>M115</b> Sewage Screen - Water (P/A***) <b>M116</b> Sewage Screen - Water (MPN**) <b>M117</b> Sewage Screen - Swab (P/A***) <b>M013</b> Sewage Screen - Swab (MFT*) <b>M133</b> Methicillin-resistant <i>Staph. aureus</i> (MRSA) <b>M031</b> Rapid-growing non-TB Mycobacteria Detection & Enumeration <b>M014</b> Endotoxin Analysis <b>M044</b> Group Allergen (Cat, Dog, Cockroach, Dust Mite) Other See Analytical Price Guide <b>Legionella Analysis</b> Please use EMSL Legionella COC			
*MFT= Membrane Filtration Technique **MPN= Most Probable Number ***P/A= Presence/Absence							
Name of Sampler: Ryan Burns			Signature of Sampler:				
Sample #	Sample Location/Description	Sample Type	Potable/NonPotable (only for waters)	Test Code	Volume/Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
Example A1	Kitchen Sink/Tap	Water	<input type="checkbox"/> P <input type="checkbox"/> NP	M017	100 mL	9/1/13 4:00 PM	
4541413	3rd Floor, Meeting Room 301	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	150 mL	4/25/22	
4541494	3rd Floor, Office 341	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	150 mL	4/25/22	
4541520	2nd Floor, Probation Office 242	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	150 mL	4/25/22	
4541457	2nd Floor, Conference Room A 220	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	75 mL	4/25/22	
4541521	1st Floor, Office 126	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	75 mL	4/25/22	
4541533	1st Floor, Juvenile Court Room #3	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M032	75 mL	4/25/22	
Client Sample # (s): -		Total # of Samples: 10		Samples Received Chilled? Yes / No			
Relinquished (Client):		Date: 4/25/22		Time: 13:30			
Received (Lab):		Date:		Time:			
Comments/Special Instructions:							

REC'D  
EMSL  
fx 2724-9075 (1/2)  
5238

**ATTACHMENT 4**

**SAMPLE LOCATION FLOOR PLANS**



LEGEND

IAQ Sample Location

Mold Sample Location

Monthly IAQ Survey  
Round 9  
April 25, 2022

1 HAMPDEN SUP CT  
BASEMENT FLOOR PLAN

PLAN NOT FOR  
CONSTRUCTION

NORTH

80 State Street, Springfield MA

AXIOM PARTNERS, INC.  
50 B Salem St., Suite 103  
LynnField, MA 01940  
(781) 213-9198  
www.axiomenv.com

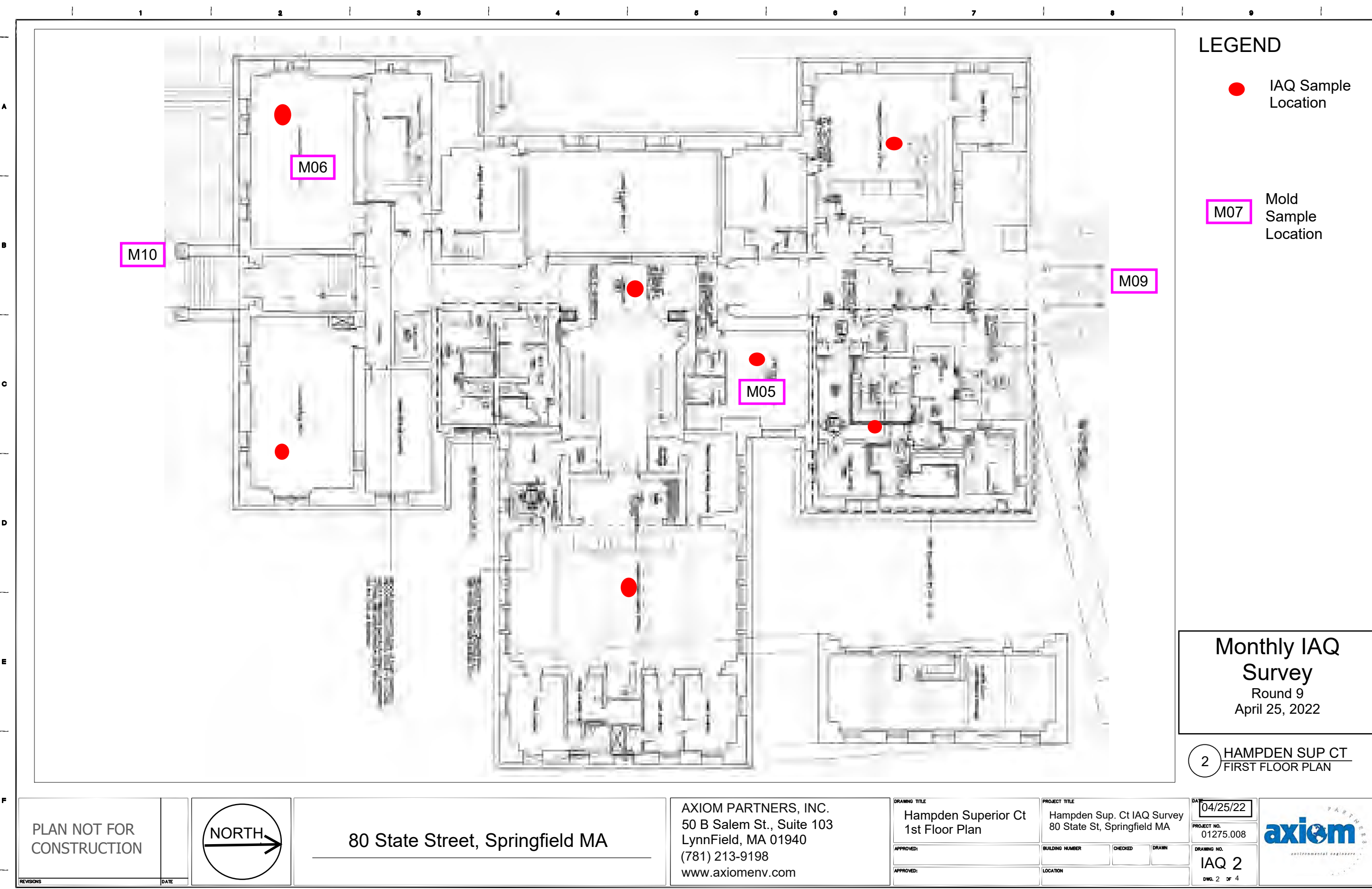
DRAWING TITLE  
Hampden Superior Ct  
Basement Floor Plan

PROJECT TITLE  
Hampden Sup. Ct IAQ Survey  
80 State St, Springfield MA

DATE  
04/25/22  
PROJECT NO.  
01275.008

DRAWING NO.  
IAQ 1  
DWG. 1 OF 4





LEGEND

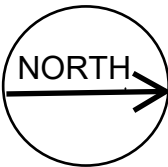
● IAQ Sample Location

M07 Mold Sample Location

Monthly IAQ Survey  
Round 9  
April 25, 2022

2 HAMPDEN SUP CT  
FIRST FLOOR PLAN

PLAN NOT FOR  
CONSTRUCTION



80 State Street, Springfield MA

AXIOM PARTNERS, INC.  
50 B Salem St., Suite 103  
LynnField, MA 01940  
(781) 213-9198  
www.axiomenv.com

DRAWING TITLE  
Hampden Superior Ct  
1st Floor Plan

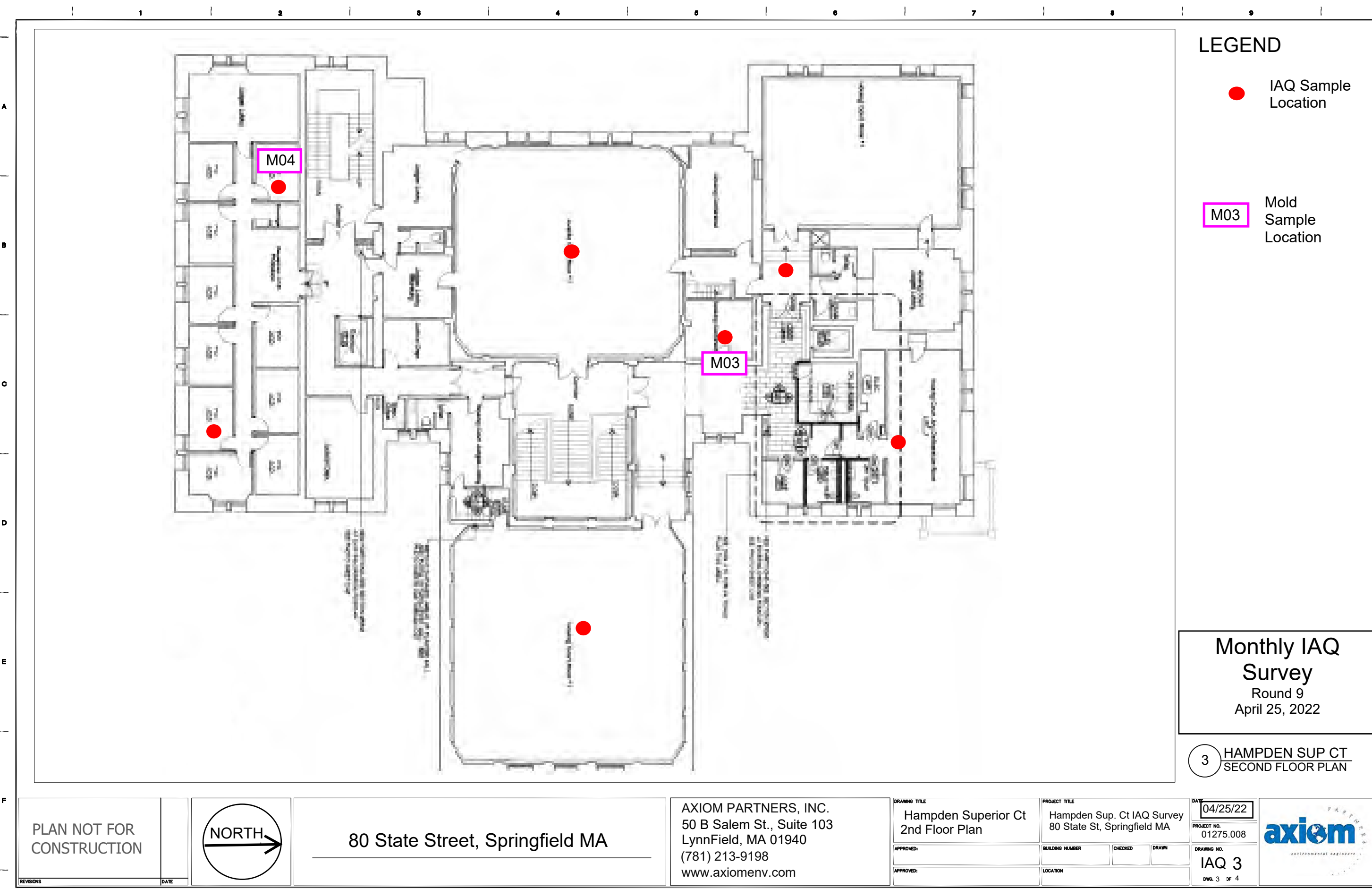
APPROVED:  
APPROVED:

PROJECT TITLE  
Hampden Sup. Ct IAQ Survey  
80 State St, Springfield MA

BUILDING NUMBER  
LOCATION

DATE  
04/25/22  
PROJECT NO.  
01275.008  
DRAWING NO.  
IAQ 2  
DWG. 2 OF 4





LEGEND

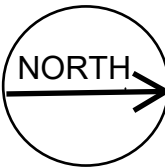
● IAQ Sample Location

M03 Mold Sample Location

Monthly IAQ Survey  
Round 9  
April 25, 2022

3 HAMPDEN SUP CT  
SECOND FLOOR PLAN

PLAN NOT FOR  
CONSTRUCTION



80 State Street, Springfield MA

AXIOM PARTNERS, INC.  
50 B Salem St., Suite 103  
LynnField, MA 01940  
(781) 213-9198  
www.axiomenv.com

DRAWING TITLE  
Hampden Superior Ct  
2nd Floor Plan

APPROVED:  
APPROVED:

PROJECT TITLE  
Hampden Sup. Ct IAQ Survey  
80 State St, Springfield MA

BUILDING NUMBER  
CHECKED  
DRAWN  
LOCATION

DATE  
04/25/22  
PROJECT NO.  
01275.008  
DRAWING NO.  
IAQ 3  
DWG. 3 OF 4







## LEGEND

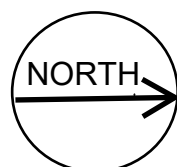
● IAQ Sample Location

M01 Mold Sample Location

Monthly IAQ Survey  
Round 9  
April 25, 2022

4 HAMPDEN SUP CT  
THIRD FLOOR PLAN

PLAN NOT FOR  
CONSTRUCTION



80 State Street, Springfield MA

AXIOM PARTNERS, INC.  
50 B Salem St., Suite 103  
Lynnfield, MA 01940  
(781) 213-9198  
[www.axiomenv.com](http://www.axiomenv.com)

DRAWING TITLE  
Hampden Superior Ct  
3rd Floor Plan

APPROVED:

APPROVED:

PROJECT TITLE  
Hampden Sup. Ct IAQ Survey  
80 State St, Springfield MA

BUILDING NUMBER

CHECKED

DRAWN

LOCATION

DATE  
04/25/22

PROJECT NO.  
01275.008

DRAWING NO.  
IAQ 4  
DWG. 4 OF 4



**ATTACHMENT 5**

**TVOC CONCENTRATION REFERENCE TABLE**

## TVOC INDOOR AIR CONCENTRATION REFERENCE GUIDE

TVOC Level ug/m3	Level of Concern	Symptoms	Comments
<300 (0.3 ppm)	Low	No irritation or discomfort is expected	There is a low likelihood that specific VOC sources are present
300 to 500 (0.3 to 0.5 ppm)	Acceptable	Occasional irritation or discomfort may be possible with sensitive individuals	There is a low to moderate likelihood that specific VOC sources are present
500 to 1,000 (0.5 to 1.0 ppm)	Marginal	Complaints about irritation and discomfort are possible in sensitive individuals	A moderate likelihood that specific VOC sources are it is recommended that steps be taken to identify the sources
1,000 to 3,000 (1.0 to 3.0 ppm)	High	Irritation and discomfort are very likely	A high likelihood that specific VOC sources are present and it is highly recommended that steps be taken to identify them
>3,000 (>3.0 ppm)	Very High	Irritation and discomfort are very possible	These levels are usually found in an industrial environment where workers are exposed to chemicals