LIMITED INDOOR AIR QUALITY INVESTIGATION AT

LEXINGTON POLICE HEADQUARTERS

150 East Main Street
Lexington, KY

Prepared For:
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Lexington Fayette Urban County Government
1555 Old Frankfort Pike
Lexington, KY 40504

Testing Performed By:

Michael B. McGonigle

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THE AMERICAN BOARD OF INDUSTRIAL HYGIENE INCORPORATED
CERTIFICATION NUMBER 10354 CP
EXPIRES 12-1-2023
PENNSYLVANIA-1980
BRUCE N. FERGUSSON, CIH

Report Date: September 14, 2023
ASTI Project # PC542

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Executive Summary

Within the limits of the observations and testing conducted, corrective action is needed to address issues identified at the Lexington Police Headquarters 4th Floor. Airborne mold samples were relatively low when compared to outdoors but did indicate indoor amplification of Penicillium/Aspergillus group mold species. This is consistent with observed conditions of elevated humidity, water damage to drywall ceiling and drop ceiling tiles, and visible suspect mold growth on storage room items & HVAC supply vents. Roof leaks and roof drain leaks appear to be the cause of water-damaged drywall ceiling and drop ceiling tiles noted during the inspection. No mold odors were noted at the time of inspection. Ceiling drywall compound was analyzed and identified as asbestos-containing. Immediately install temporary dehumidifiers with condensate pumps (to exhaust to plumbing drains) to reduce humidity to normal levels.

Recommendations are made to address potential air quality and health issues.

Revision Notes: This is the initial report dated September 14, 2023.

Introduction

Scott Kelsey, of LFUCG, contacted ***Air Source Technology, Inc.*** **(ASTI)**, to conduct limited indoor air quality testing at the Lexington Police Headquarters 4th Floor, 150 East Main Street in Lexington, Kentucky. Michael McGonigle and Matt Biven, of ASTI, conducted a site visit and sampling on September 11, 2023. Prior to sampling, Mr. McGonigle spoke briefly with Mr. Kelsey, to discuss the history of complaints, sampling protocol, and report expectations. Mr. Kelsey reported occupants concerns about possible mold growth. Mr. Kelsey desired inspection and testing to determine if air quality parameters and building conditions were within normal and acceptable guidelines. The Scope of Work included the following monitoring: Real-time IAQ meter tests for common ventilation parameters (temperature, and relative humidity); airborne fungi (mold spore) samples; and building material measurements for moisture content. Damaged drywall ceiling was sampled above drop ceiling for asbestos content analysis. Digital images were also collected to document sample locations and building conditions. The air samples and field data were collected from approximately 10:00 am to 2:00 pm.

A Note Regarding ASTI Diagnostic Services: In determining the causes of Indoor Air Quality (IAQ) problems, ASTI may provide analyses of building characteristics and may present documents that describe building construction methods. These analyses may potentially provide IAQ solutions, including structural diagrams and construction techniques. These documents are no substitute for professional consultation regarding Heating Ventilation and Air Conditioning (HVAC) or various building construction issues. ASTI always recommends the use of a duly licensed professional engineer, contractor, or architect whenever such structural or HVAC solutions are presented. This report is intended to document site survey results and to provide the owner with information and options, which will enable them to make an informed decision whether professional assistance is needed or desired. A formal mold remediation specification/plan may be required by a professional remediation contractor. Also, for legal and professional reasons, the remediation contractor may require additional testing/sampling. The information and recommendations in this report supersede all other communications. Amendments and revisions to this report will be issued if required.

Sampling Protocols

INDOOR AIR QUALITY METER – KESTREL MODEL 5000 SERIES

The Kestrel 5000 Series Indoor Air Quality Meters measure ambient Temperature and Relative Humidity (%RH) and several other parameters, depending on the particular model. Readings can be logged by the meter and later transferred to a PC using the RS-232 interface.

Features:

MEASUREMENTS	Icon	5000 Environmental	5100 Racing	5200 Professional	5500 Weather
Wind Speed | Air Speed (mph | fpm | Bft | m/s | km/h | kt)		•	•	•	•
Temperature (°F | °C)		•	•	•	•
Wind Chill (°F | °C)		•	•	•	•
Relative Humidity (%)		•	•	•	•
Heat Stress Index (°F | °C)	HI	•	•	•	•
Dewpoint Temp (°F | °C)	DP	•	•	•	•
Wet Bulb Temp (°F | °C)	WB	•	•	•	•
Station Pressure (inHg | hPA | psi | mb)		•	•	•	•
Barometric Pressure (inHg | hPA | psi | mb)		•	•	•	•
Altitude(m | ft)		•	•	•	•
Density Altitude (m | ft)	D	•	•	•	•
Wind Direction (Cardinal Points, Degrees)					•
Crosswind (mph | fpm | Bft | m/s | km/h | kt)					•
Headwind | Tailwind (mph | fpm | Bft | m/s | km/h | kt)					•

Temperature & Humidity Specifications:

	Accuracy	Resolution	Range
Temperature	±0.5°C, ±0.9°F	0.1°C, 0.1°F	-29C to +70°C / -20F to +158F
Relative Humidity	±2%RH @ 25°C(77°F), 10~90%RH)	0.1%RH	10% to 90%RH.
Wind Speed / Air Flow	Larger of 3% of reading, least significant digit or 20 ft/min.	1 ft/min	118 to 7,874 ft/min

BIOAEROSOL SAMPLES: Non-Viable Airborne Fungal Sampling:

Sampling was conducted by drawing approximately 15 liters of air per minute for five minutes through a Zefon Air-O-Cell disposable cassette that may be used for identification of molds, pollens, insect parts, skin cell fragments, fibers and inorganic particulate. The high volume vacuum pump (Buck BioAire®) was calibrated before and after sampling with a calibrated rotometer. Outdoor samples were collected before and after indoor sampling for comparison with the indoor samples.

The Air-O-Cell is a unique air sampling cassette specifically designed for the rapid collection of a wide range of airborne aerosols including mold spores, pollen, insect parts, skin cell fragments, fibers and inorganic particulate. The Air-O-Cell collects both viable and non-viable sample specimens, providing a much broader overview of potential allergens and contaminants than conventional sampling techniques.

Aerobiology Laboratory Associates, Inc., a lab accredited by the American Industrial Hygiene Association (AIHA) in Environmental Microbiology, conducted the lab analysis. The Aerobiology staff includes Environmental Microbiologists that are experienced in microbiology and are certified by the American Society of Clinical Pathologists (ASCP).

GENERAL INFORMATION: AIRBORNE MOLD SAMPLING IN INDOOR SETTINGS

The following is an excerpt from the California Department of Public Health's (CDPH) *Statement on Building Dampness, Mold, and Health*:

"CDPH has concluded that the presence of water damage, dampness, visible mold, or mold odor in schools, workplaces, residences, and other indoor environments is unhealthy. We recommend against measuring indoor microorganisms or using the presence of specific microorganisms to determine the level of health hazard or the need for urgent remediation. Rather, we strongly recommend addressing water damage, dampness, visible mold, and mold odor by (a) identification and correction of the source of water that may allow microbial growth or contribute to other problems, (b) the rapid drying or removal of damp materials, and (c) the cleaning or removal of mold and moldy

materials, as rapidly and safely as possible, to protect the health and well-being of building occupants, especially children.

Similarly, the following is an excerpt from the NIOSH Alert (Publication No. 2013–102) *Preventing Occupational Respiratory Disease from Exposures Caused by Dampness in Office Buildings, Schools, and Other Nonindustrial Buildings*:
"NIOSH does not recommend routine air sampling for mold in damp building evaluations because air concentrations of molds or spores cannot be interpreted with regard to health risk and they are highly variable over time. Instead, NIOSH encourages detection by thorough visual inspections and detection via musty or moldy odors.

Per the CDC [1] "Standards for judging what is an acceptable, tolerable or normal quantity of mold have not been established…The results of samples taken in your unique situation cannot be interpreted without physical inspection of the contaminated area or without considering the building's characteristics and the factors that led to the present condition."

For our perspective on mold testing, consider that the conditions conducive to mold growth of species that are not considered "dangerous" by some "authorities" are also conditions that would support the growth of known pathogenic species. Consequently, observing suspect visible growth in areas with conditions that also indicate inadequate water/moisture control is sufficient reason to recommend correcting the water problem without incurring the expense of mold testing prior to action. Mold testing by an independent third party testing authority, formally known as an Indoor Environmental Professional (IEP) in remediation guidance standards, may occur following remediation to confirm satisfactory action and to prevent the appearance of a conflict of interest. This is the common sense approach preferred by ASTI unless legal and health circumstances warrant more rigorous methods for documentation and diagnostic purposes.

VISUAL SURVEY PROTOCOL

The onsite limited visual survey generally followed a protocol as outlined by the IICRC S520 Standard and Reference Guide for Professional Mold Remediation, 2nd Edition. No formal questionnaires were distributed, but informal occupant interviews were conducted. Building conditions were noted for visible signs of past or present water damage, visible filamentous fungal growth, poor housekeeping, poor ventilation, and

inadequate filtration. Only selected areas inside the building envelope were examined. Possible sources of water intrusion were noted. If observed, conditions that warrant action or surveillance were documented during the visual survey. Other potential irritants and sources of emission were examined to determine the need for further evaluation.

DELMHORST INSTRUMENT COMPANY MOISTURE METER MODEL BD-2100

Moisture samples were collected using the Delmhorst Instrument Company Moisture Meter Model BD-2100. The BD-2100 is a portable handheld moisture meter designed to check moisture levels in wood, concrete, EIFS, sheetrock, and other materials. The moisture meter has three scales as follows:

Substrate	Green	Yellow	Red
Wood Scale	6%-15%	15%-17%	>17%
Gypsum Scale	0%-0.5%	0.5%-1%	>1%
Masonry Scale	0-85	85-95	>95

Readings that activate the green light indicate a sufficiently dry moisture level, those that activate the yellow light indicate a borderline situation, and those that activate the red light indicate material that is too wet for painting or wallpaper. A factory-supplied field-calibration reference is used to field verify the accuracy of the instrument prior to each use.

PHOTOGRAPHS

Photographs were collected using the Nikon Coolpix S7000. The S7000 model is a 16.0 Mega-pixel camera with a 20X optical digital zoom. It has a built-in flash and several features to enhance images in various shooting situations. The S7000 provides Nikon's latest advanced technologies including image processing so both still images and movies are rendered with fine detail and luminous clarity. Raw digital images are archived separately, with only copies of the original raw digital images processed as appropriate for clarity in the report.

Discussion of Results

OBSERVATIONS

The following observations were noted during the September 11, 2023 sampling:

1. No musty odors were noted at the time of inspection.
2. Several dirty/moldy HVAC supply vents (metal) were noted throughout the 4th floor area.
3. Multiple items (leather carrier, door, shelves, etc.) were noted with suspect mold growth in the storage room. Suspect growth patterns are typical in areas with chronic elevated humidity.
4. Water damaged drop ceiling tiles were noted along with damaged ceiling drywall above drop ceiling. Some of the damaged locations were moist or wet. There is reported history of roof and roof drain leaks along with repair attempts. A roof replacement project is reportedly scheduled for the building.
5. Where ceiling tiles and drywall are currently moist, it appears to be from roof or roof drain leaks.

TEMPERATURE AND RELATIVE HUMIDITY SUMMARY
KESTREL IAQ METER

The American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) have published guidelines describing thermal environmental conditions, (ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy). These guidelines are intended to achieve thermal conditions in a given environment that at least 80% of the persons who occupy that environment will find acceptable or "comfortable." ASHRAE recommendations suggest when a building environment is occupied by sedentary or slightly active persons, and when the relative humidity is at 50%: The operating temperature to achieve thermal acceptability (comfort zone) should be 68° to 74° F in winter and 73° to 79° F in summer. If the operating temperature is outside this range, (at either end-point), then more than 20% of healthy people occupying the area are likely to experience some degree of discomfort.

ASHRAE recommendations suggest that relative humidity ranges from 20-60% present a comfort zone considered to be both comfortable and healthful. ASHRAE's recommended design conditions are an effective temperature and dry bulb temperature

of 76° F (24.5° C), a relative humidity of 40 percent, and an air circulation rate of less than 45 feet per minute. Relative humidity levels below 20 percent are associated with increased discomfort and drying of the mucous membranes, which brings about coughing, itching, and sore throats. High humidity may possibly provide a growth medium for bacteria and fungi.

KESTREL IAQ METER		
Location	**Temp. (°F)**	**Rel. Hum. (%)**
Outdoors (9:52 am)	73.2	71.5
Room 403	68.9	71.3
Reception Area	68.7	71.0
Center of Cubicle Work Area	68.6	71.4
Left Hallway Cubicle Work Area	68.5	71.6
Outdoors (2:00 pm)	76.5	60.4
IAQ Guidelines	**68-76**	**20-60**

Relative humidity was elevated indoors at the time of inspection.

BIOAEROSOLS

There are no "official standards of guidelines" for fungal or bacterial bioaerosols or combinations of both. A general regulatory standard or recommended guideline for bioaerosols is not scientifically supportable because: a) culturable microorganisms and countable biological particles do not comprise a single entity (they are complex mixtures); b) human responses to bioaerosols range from innocuous effects to serious depending on the specific agent and the occupants susceptibility to it; c) it is not possible to collect and evaluate all bioaerosol components using a single method; and d) at present, information relating culturable or countable bioaerosol concentrations to health effects is generally insufficient to describe exposure-response relationships. If visible microbial growth is seen it should be addressed and corrected.

Airborne Fungi		
Sample ID	**Sample Location**	**Total Fungi (Spores/M³)**
3429	Outdoors (9:52 am)	14,160
3427	Room 403	307
3453	Reception Area	293
3459	Center of Cubicle Work Area	520
3458	Left Hallway Cubicle Work Area	253
3423	Outdoors (2:00 pm)	12,480

Note: See Appendix A: Laboratory Analysis Results, for specific species and concentrations.

Relatively low levels of airborne fungi were identified indoors when compared to outdoor levels. While levels were low overall, indoor versus outdoor comparison of species and concentrations indicates indoor amplification of Penicillium/Aspergillus group of molds. The Penicillium/Aspergillus group is about 1% of outdoor samples versus 13 to 59% indoors. This is consistent with conditions observed at the time of sampling.

Keep in mind this test was a snapshot and represents the day of testing only. Airborne fungal levels vary due to numerous factors, including sporulation of the fungal colonies, air patterns within the building, diurnal sporulation cycles of certain fungal species, etc.

ASBESTOS

Asbestos is a naturally occurring mineral and is distinguished from other minerals by the fact that it crystals form into long, thin fibers. It is admired for its soft and pliant properties and its ability to withstand heat. Common uses for asbestos include spray applied fireproofing, thermal system insulation, floor tile, ceiling tile, and many other materials. Because asbestos is sometimes found in drywall compound and the drywall ceiling above the drop ceiling tile on the 4th floor has physical and water damage, it was sampled and analyzed for asbestos content (see next page for results).

The following table summarizes the suspect asbestos samples collected and laboratory results:

Summary of Sampling Results		
Sample ID	**Description of Suspect ACM**	**Asbestos Content**
A-1	Water damaged ceiling sheetrock	No asbestos detected
A-2	Water damaged ceiling sheetrock	No asbestos detected
A-3	Water damaged drywall compound	2% Chrysotile
A-4	Drywall compound – Lab Instructed to Stop at 1st Positive – Not Analyzed	

Note: Greater than 1% asbestos content is defined as asbestos-containing material (ACM) by the Environmental Protection Agency (EPA).

Drywall compound was found to be asbestos-containing material. Care should be taken to avoid disturbing this material without proper training.

Conclusions

Within the limits of the observations and testing conducted, corrective action is needed to address issues identified at the Lexington Police Headquarters 4th Floor. Airborne mold samples were relatively low when compared to outdoors but did indicate indoor amplification of Penicillium/Aspergillus group mold species. This is consistent with observed conditions of elevated humidity, water damage to drywall ceiling and drop ceiling tiles, and visible suspect mold growth on storage room items & HVAC supply vents. Roof leaks and roof drain leaks appear to be the cause of water-damaged drywall ceiling and drop ceiling tiles noted during the inspection. No mold odors were noted at the time of inspection. Ceiling drywall compound was analyzed and identified as asbestos-containing. Immediately install temporary dehumidifiers with condensate pumps (to exhaust to plumbing drains) to reduce humidity to normal levels.

In general, Air Source Technology, Inc. makes the following recommendations to improve potential air quality and address occupant concerns:

A. With the common occurrence of mold growth and the inevitable problems with building envelopes and plumbing, we highly recommend that the maintenance staff become familiar with the EPA document, *Mold Remediation in Schools and Commercial Buildings*. Most problems can be handled at low cost, if managed promptly. This document provides guidance to allow most moisture and mold problems to be properly and safely handled in-house.

B. When water intrusion or water leaks are discovered, dry the affected building materials as quickly as possible to minimize potential mold growth.

C. If dealing with mold (suspect or confirmed) always use the proper Personal Protective Equipment (PPE). According to Reference No. 3, EPA's mold remediation guidelines, this includes at least a N95 respirator, rubber gloves, and goggles. Refer to Reference No. 3, the EPA mold remediation document, for guidance in determining if professional assistance might be warranted or desired.

D. As discovered, replace materials or clean any visible microbial contamination with a detergent, biocide and/or mild bleach solution (1 part bleach to 10 parts water), depending on the surface. Refer to Reference Numbers 3 & 4 (both are government-sponsored documents, which are available free from the Internet) for additional information regarding remediation techniques and about how to determine the need for professional assistance.

For this building, Air Source Technology, Inc. makes the following recommendations to address potential indoor air quality concerns:

A. First and foremost, additional humidity control is needed during the cooling season.

   a. Consult with an HVAC engineer to determine necessary changes to the HVAC system for the area.

   b. As interim measures, monitor humidity levels and add dehumidifiers in the area during the cooling season with condensate directed to drains so human intervention is not required to empty tanks. This will no longer be needed when the heating season begins. This should occur immediately; airborne mold levels be reduced by simply reducing the elevated humidity.

   c. Even though airborne mold spore levels measured relatively low, also add temporary portable air filtration units to reduce airborne contamination.

B. Repair the roof and roof drain leaks as soon as possible.

C. Following EPA guidance for the safety of occupants and maintenance staff, clean HVAC supply vents throughout the 4th floor. Clean or dispose of moldy items in the storage room.

D. Replace water damaged drop ceiling tiles throughout the 4th floor.

E. Address water damaged drywall ceiling above drop ceiling using a licensed asbestos abatement contractor. Clearance air samples for asbestos should be collected following abatement to document the area air quality is within EPA clearance criteria (<0.01 fibers per cubic centimeter).

F. Conduct follow-up inspection and testing to confirm corrective actions.

REFERENCES

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3. Mold Remediation in Schools and Commercial Buildings, (EPA Document 402-K-01-001, September 2008 edition). Environmental Protection Agency (EPA)
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22. Adkins, C. K., Fergusson, B.N., *Alternative Approaches to Post Remediation Verification*, 2012, Presented at the 2012 Indoor Air Quality Association, Las Vegas, Indoor Air Quality Association

23. Fergusson, B.N., *Moisture Migration Within and Through the Building Envelope*, 2012, Presented at the 2012 Indoor Air Quality Association, Las Vegas, Indoor Air Quality Association

24. Statement on Building Dampness, Mold, and Health, September 2011, California Department of Public Health

25. Fergusson, B.N., *Airborne Mold Sampling: Practical Applications*, 2014, Proceedings of the 17th Annual Meeting and Indoor Air Expo, Nashville, Tennessee, Indoor Air Quality Association

26. NIOSH Alert (Publication No. 2013–102) Preventing Occupational Respiratory Disease from Exposures Caused by Dampness in Office Buildings, Schools, and Other Nonindustrial Buildings, November 2012

Appendix A
Laboratory Analysis Results

Aerobiology Laboratory Associates, Incorporated
A Pace® Laboratory

Certificate of Analysis
AIHA LAP EMLAP# 102977

43760 Trade Center Place
Suite 100
Sterling, VA 20166
8776489150

Air Source Technology, Inc.
131 Prosperous Place Suite 17
Lexington KY, 40509
Attn: Michael McGonigle
Project: **PO#110592 ASTI Project PC542**
LFUCG Police HQ 4th IAQ
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected:	9/11/2023
Date Received:	9/12/2023
Date Analyzed:	9/12/2023
Date Reported:	9/12/2023
Project ID:	23037956

1054 Spore Trap Analysis SOP 3.8: Same Day TAT

Client Sample #	3427				3429			
Sample Location	Room 403				Outdoors (9:52am)			
Sample Volume (L)	75				75			
Lab Sample #	23037956-002				23037956-001			
Spore Identification	RawCt	spr/m^3	%Ttl	I/O	RawCt	spr/m^3	%Ttl	I/O
Alternaria	1	13	4	1/4	4	53	<1	-
ascospores	1	13	4	1/69	69	920	6	-
basidiospores	5	67	22	1/130	81	8,640	61	-
Cercospora	-	-	-	-	5	67	<1	-
Cladosporium	6	80	26	1/52	157	4,187	30	-
Curvularia	-	-	-	-	1	13	<1	-
hyphal elements	3	40	13	1/2	6	80	<1	-
Penicillium/Aspergillus group	3	40	13	1/3	10	133	<1	-
Pithomyces	1	13	4	1/4	4	53	<1	-
Smuts,Periconia,Myxomycetes	1	13	4	1/1	1	13	<1	-
Unknown	2	27	9	-	-	-	-	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **13** spr/m^3				Analytical Sensitivity: **13** spr/m^3			
Comments	Large amount of particulate and fibers seen.							
Total *See Footnotes	23	307	~100%	1/46	338	14,160	~100%	-

Client Sample #	3453				3429			
Sample Location	Reception				Outdoors (9:52am)			
Sample Volume (L)	75				75			
Lab Sample #	23037956-003				23037956-001			
Spore Identification	RawCt	spr/m^3	%Ttl	I/O	RawCt	spr/m^3	%Ttl	I/O
Alternaria	-	-	-	-	4	53	<1	-
ascospores	-	-	-	-	69	920	6	-
basidiospores	5	67	23	1/130	81	8,640	61	-
Cercospora	-	-	-	-	5	67	<1	-
Cladosporium	1	13	5	1/314	157	4,187	30	-
Curvularia	-	-	-	-	1	13	<1	-
Epicoccum	1	13	5	-	-	-	-	-
hyphal elements	-	-	-	-	6	80	<1	-
Penicillium/Aspergillus group	13	173	59	1/1	10	133	<1	-
Pithomyces	1	13	5	1/4	4	53	<1	-
Smuts,Periconia,Myxomycetes	1	13	5	1/1	1	13	<1	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **13** spr/m^3				Analytical Sensitivity: **13** spr/m^3			
Comments								
Total *See Footnotes	22	293	~100%	1/48	338	14,160	~100%	-

Aerobiology Laboratory Associates, Incorporated
A Pace Laboratory

Certificate of Analysis
AIHA LAP EMLAP# 102977

43760 Trade Center Place
Suite 100
Sterling, VA 20166
8776489150

Air Source Technology, Inc.
131 Prosperous Place Suite 17
Lexington KY, 40509
Attn: Michael McGonigle
Project: **PO#110592 ASTI Project PC542**
LFUCG Police HQ 4th IAQ
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 9/11/2023
Date Received: 9/12/2023
Date Analyzed: 9/12/2023
Date Reported: 9/12/2023
Project ID: 23037956

Client Sample #	3459				3429			
Sample Location	Center Of Cubicle Work Area				Outdoors (9:52am)			
Sample Volume (L)	75				75			
Lab Sample #	23037956-004				23037956-001			
Spore Identification	RawCt	spr/m^3	%Ttl	I/O	RawCt	spr/m^3	%Ttl	I/O
Alternaria	-	-	-	-	4	53	<1	-
ascospores	1	13	3	1/69	69	920	6	-
basidiospores	15	200	38	1/43	81	8,640	61	-
Cercospora	-	-	-	-	5	67	<1	-
Cladosporium	2	27	5	1/157	157	4,187	30	-
Curvularia	-	-	-	-	1	13	<1	-
hyphal elements	-	-	-	-	6	80	<1	-
Penicillium/Aspergillus group	18	240	46	2/1	10	133	<1	-
Pithomyces	1	13	3	1/4	4	53	<1	-
Rusts	2	27	5	-	-	-	-	-
Smuts,Periconia,Myxomycetes	-	-	-	-	1	13	<1	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **13** spr/m^3				Analytical Sensitivity: **13** spr/m^3			
Comments								
Total *See Footnotes	39	520	~100%	1/27	338	14,160	~100%	-

Client Sample #	3458				3429			
Sample Location	Left Hallway Cubicle Work Area				Outdoors (9:52am)			
Sample Volume (L)	75				75			
Lab Sample #	23037956-005				23037956-001			
Spore Identification	RawCt	spr/m^3	%Ttl	I/O	RawCt	spr/m^3	%Ttl	I/O
Alternaria	-	-	-	-	4	53	<1	-
ascospores	-	-	-	-	69	920	6	-
basidiospores	11	147	58	1/59	81	8,640	61	-
Cercospora	-	-	-	-	5	67	<1	-
Cladosporium	3	40	16	1/105	157	4,187	30	-
Curvularia	-	-	-	-	1	13	<1	-
hyphal elements	-	-	-	-	6	80	<1	-
Penicillium/Aspergillus group	5	67	26	1/2	10	133	<1	-
Pithomyces	-	-	-	-	4	53	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	1	13	<1	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **13** spr/m^3				Analytical Sensitivity: **13** spr/m^3			
Comments								
Total *See Footnotes	19	253	~100%	1/56	338	14,160	~100%	-

Aerobiology Laboratory Associates, Incorporated
A Pace Laboratory

Certificate of Analysis
AIHA LAP EMLAP# 102977

43760 Trade Center Place
Suite 100
Sterling, VA 20166
8776489150

Air Source Technology, Inc.
131 Prosperous Place Suite 17
Lexington KY, 40509
Attn: Michael McGonigle
Project: **PO#110592 ASTI Project PC542**
LFUCG Police HQ 4th IAQ
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 9/11/2023
Date Received: 9/12/2023
Date Analyzed: 9/12/2023
Date Reported: 9/12/2023
Project ID: 23037956

Client Sample #	3423				3429			
Sample Location	Outdoors (2:00pm)				Outdoors (9:52am)			
Sample Volume (L)	75				75			
Lab Sample #	23037956-006				23037956-001			
Spore Identification	RawCt	spr/m^3	%Ttl	I/O	RawCt	spr/m^3	%Ttl	I/O
Alternaria	3	40	<1	1/1	4	53	<1	-
ascospores	55	733	6	1/1	69	920	6	-
basidiospores	60	6,400	51	1/1	81	8,640	61	-
Cercospora	1	13	<1	1/5	5	67	<1	-
Cladosporium	92	4,907	39	1/1	157	4,187	30	-
Curvularia	2	27	<1	2/1	1	13	<1	-
Drechslera/Bipolaris group	1	13	<1	-	-	-	-	-
Epicoccum	1	13	<1	-	-	-	-	-
hyphal elements	4	53	<1	1/2	6	80	<1	-
Penicillium/Aspergillus group	11	147	1	1/1	10	133	<1	-
Pithomyces	3	40	<1	1/1	4	53	<1	-
Smuts,Periconia,Myxomycetes	6	80	<1	6/1	1	13	<1	-
Unknown	1	13	<1	-	-	-	-	-
	Debris Rating **3**				Debris Rating **2**			
Analytical Sensitivity	Analytical Sensitivity: **13** spr/m^3				Analytical Sensitivity: **13** spr/m^3			
Comments								
Total *See Footnotes	240	12,480	~100%	1/1	338	14,160	~100%	-

Aerobiology Laboratory Associates, Incorporated
A Pace' Laboratory

Certificate of Analysis
AIHA LAP EMLAP# 102977

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131 Prosperous Place Suite 17
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Condition of Sample(s) Upon Receipt: Acceptable

Date Collected:	9/11/2023
Date Received:	9/12/2023
Date Analyzed:	9/12/2023
Date Reported:	9/12/2023
Project ID:	23037956

Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

5. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

6. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

*7. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

8. Due to rounding totals may not equal 100%.

9. Analytical Sensitivity for each spores is different for Non-viable sample when the spores are read at different percentage. Analytical Sensitivity is calculated as spr/m ^{3} divided by raw count. spr/m ^{3} = raw counts x (100/ % read) x (1000/Sample volume). If Analytical Sensitivity is 13 spr/m ^{3} at 100% read, Analytical Sensitivity at 50% read would be 27 spr/m ^{3}, which is 2 times higher. Analytical Sensitivity provided on the report is based on an assumed 100% of the trace being analyzed.

*10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

*11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. The results in this report are related to this project and these samples only as received.

13. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should considered (3) three. For example, a sample with a result of 55,443 spr/m^3 from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m ^{3}.

14. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

***: Applicable to the reported data for culture testing**

Suzanne S. Blevins

Suzanne Blevins
Laboratory Director

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 23-09-01285

Client: Air Source Technology Inc.
131 Prosperous Pl. Unit 17
Lexington, KY 40509

Received Date: 09/12/2023
Analyzed Date: 09/12/2023
Reported Date: 09/12/2023

Project/Test Address: PC542; LFUCG Police HQ 4th Flr; Lexington, KY

Client Number: 18-4340

Fax Number: 859-299-0494

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
23-09-01285-001	A-1		Brown Fibrous; Tan Chalky; Inhomogeneous	NAD	7% Cellulose 3% Fibrous Glass 90% Non-Fibrous
23-09-01285-002	A-2		Brown Fibrous; Tan Chalky; Inhomogeneous	NAD	7% Cellulose 3% Fibrous Glass 90% Non-Fibrous
23-09-01285-003	A-3		Tan Powdery; Homogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
23-09-01285-004	A-4			Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 18-4340 Report Number: 23-09-01285

Project/Test Address: PC542; LFUCG Police HQ 4th Flr; Lexington, KY

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 55-M12019-2

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Meredith Outlaw

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714 NVLAP #101882-0 VELAP 460172. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection.

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

* All California samples analyzed by Polarized Light Microscopy, EPA Method 600/M4-82-020, Dec. 1982.

LEGEND: NAD = no asbestos detected

EHS Laboratories
Environmental Hazards Services, LLC

Asbestos Chain-of-Custody Form

SHIP TO: 7469 Whitepine Rd. Richmond, VA 23237
Phone: (800) 347-4010 FAX: (804) 275-4907
ONLINE CLIENT PORTAL AVAILABLE FOR ANALYSIS RESULTS AT:
www.leadlab.com

23-09-01285

Due Date:
09/12/2023
(Tuesday)
AE

MO 4PM

Company Name: AirSource Technology, Inc. Account Number: 18-4340

Address: 131 Prosperous Place, Unit 17 City/State/Zip: Lexington, KY 40509

Phone #: 859-299-0046 Email: support@airsourcetechnology.com Fax: 859-299-0494

Project Name / Testing Address: PC542 LFUCG Police HQ 4th Flr City/State (Required): Lexington, KY

Collected by: Michael McGonigle P.O. # 110593

TURN AROUND TIMES: IF NO TAT IS SPECIFIED, SAMPLE(S) WILL BE PROCESSED AND CHARGED AS 3 - DAY TAT.

1 Day	2 Day	3 Day	X	* Same Day – Must Call Ahead	* Weekend – Must Call Ahead

No.	Client Sample ID	HA Area #	Collection Date & Time	PLM	Positive Stop	Point Count 400	TEM - Bulk	Location/Description	Comments
1	A-1	1	9/11/23	X	X			Sheetrock	
2	A-2	1	↓	↓	↓			"	
3	A-3	2	↓	↓	↓			Drywall Compound	
4	A-4	2	↓	↓	↓			"	
5									
6									
7									
8									
9									
10									

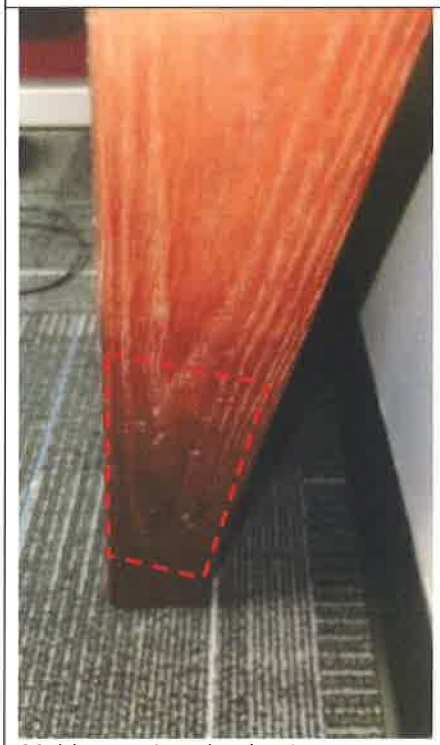
Released by: Michael B. McGonigle Signature: Michael B. McGonigle Date/Time: 9/11/23 4pm
Received by: Signature: Date/Time: 9/12/23 10:10 AM

Appendix B
Photographs

Outside air sample location

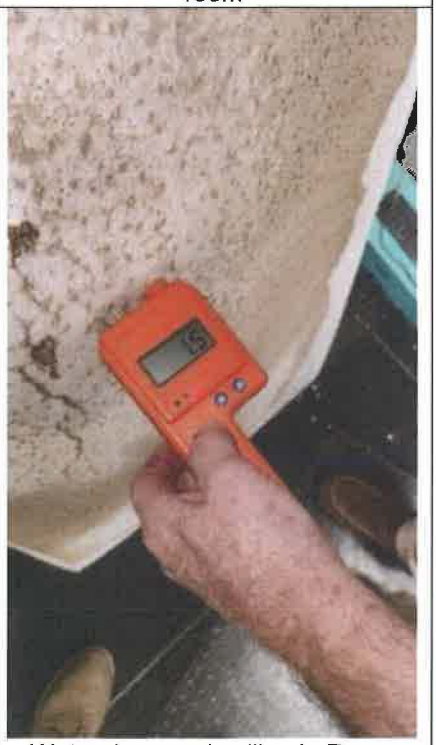
Moldy leather carrier in storage room

Moldy equipment case in storage room



Moldy wood casing in storage room

Moldy door in storage room



Water damaged ceiling in Room 403 was wet

Water damage noted to drywall ceiling in multiple locations

Water damage was noted to drop ceiling tile in multiple locations

Sample location for asbestos drywall compound (A-3 & 4)

Dirty HVAC supply diffuser in Room 403

Water damage noted to drywall ceiling in Room 418

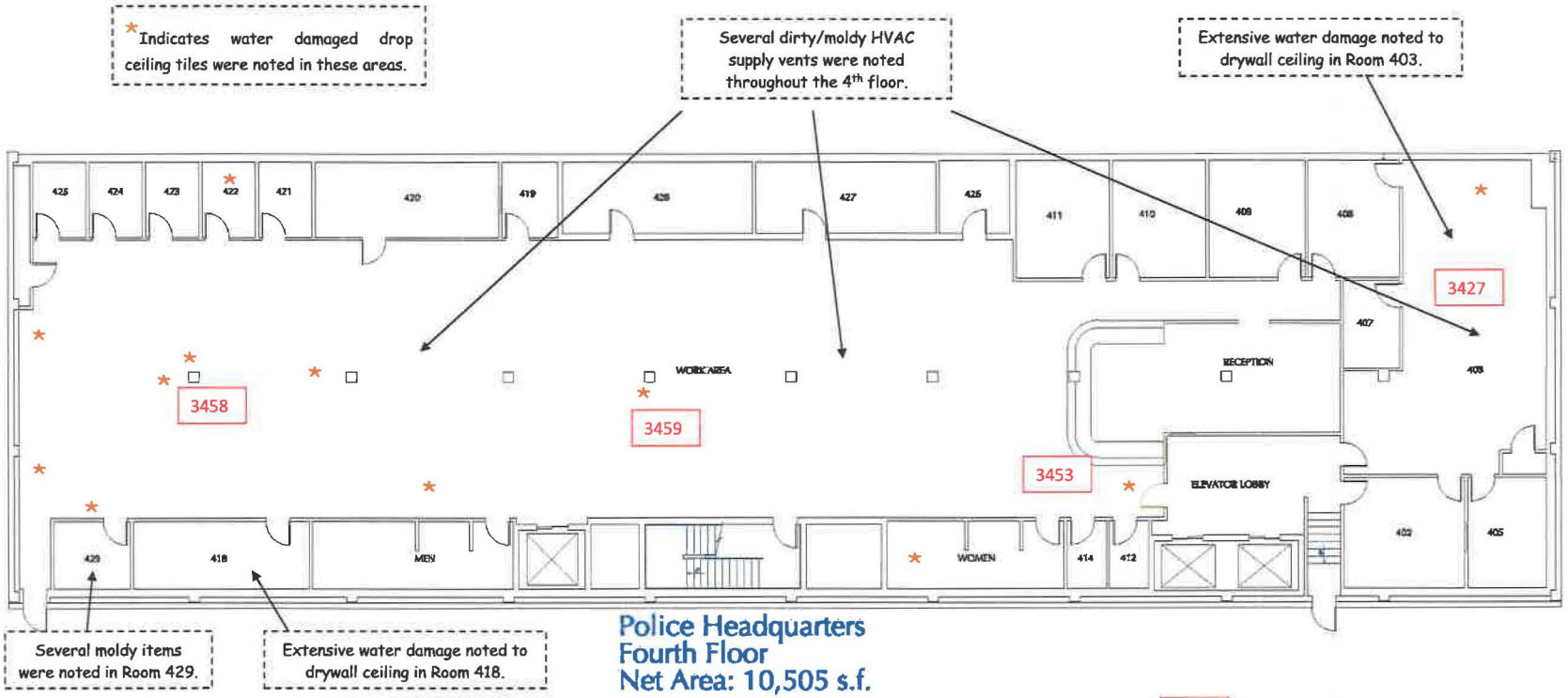
Water damage was noted to drop ceiling tile in multiple locations

Air sample location in left cubicle hallway

Air sample location in center cubicle hallway

Appendix C
Location Sketches

Sample Locations and Notes



4th Floor