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AIRMD®
ENVIRONMENTAL CONSULTANTS

Indoor Microbial Assessment

Project Location:
Alorica
2703 North US Highway 75,
Sherman, TX 75090

Prepared For:
Macon Building Inc
662 Highland Drive,
Altamonte Springs, FL 32701

Date: 8/18/21

Simon Hahessy
Texas ID # MAC 1645
Exp Date: 9/25/2021

Table of Contents

MAC Initials: SH

1.0 Executive Summary

AirMD is providing assessment results to the client for the above referenced project. AirMD's objective was to conduct an indoor fungal assessment of the property. The project was requested as a result of a reported leak from the sprinkler system following a fire within the building. A site assessment was completed on August 13, 2021. The site visit assessed the visible accessible areas of the property that was agreed with the client and collected samples and measurements. The information provided in this report is based upon the agreed scope relative to the reported issue(s)/claim and include the IT and training area.

At the time of AirMD's assessment, signs favorable for mold growth were not identified in the assessed areas. Additionally, signs of water intrusion were not identified and elevated moisture was not detected in any of the building materials. Temperature and humidity profiles were within industry standards. Bio aerosol sampling conducted inside the assessed areas identified normal fungal ecology.

2.0 Introduction

The subject property is a commercial property of concrete construction with a flat roof system. In the areas assessed, split system air conditioner(s) serve the structure and the interior walls are gypsum board while the ceilings are acoustic ceiling tiles. AirMD was retained to conduct an assessment of the property based on a reported leak from the sprinkler system following a fire within the building. The agreed scope of work includes a non-invasive assessment of the IT and training area relative to the reported issue(s)/claim. Upon arrival to the project site, removal/restoration efforts appear to have commenced prior to the site visit.

Note, the site assessment did not include invasive testing and was specific to the scope of work described previously. Hidden areas of mold growth and other environmental issues may exist, and areas of damage not related to the reported issue(s)/claim may also exist and are not covered under this scope of work.

The purpose of the report is to detail the observations and findings and to present corrective measures if required based on the findings. It is very important that the necessary time be taken to read the report in its entirety.

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3.0 Methodology

Project planning, development and execution was conducted in general accordance and consistent with the Texas Mold Assessment and Remediation Rules (TMARR), ASTM D7338-10 Standard Guide for Assessment of Fungal Growth in Buildings, guidelines published by the American Industrial Hygiene Association (AIHA) in Recognition, Evaluation, and Control of Indoor Mold and guidelines published by the American Conference of Governmental Industrial Hygienists (ACGIH) in Bioaerosols Assessment and Control. A full list of reference materials is listed in the Appendix section of this report. The project approach included the following:

- Conduct a visual assessment of the property for the presence of water damage, water stains, moisture intrusion sources and fungal (mold) growth.
- Conduct moisture mapping of accessible building materials to identify whether the moisture equivalent values of the materials tested would be deemed elevated, suggesting exposure to moisture.
- Conduct temperature and relative humidity measurements to determine whether the ambient conditions are within accepted industry recommended ranges.
- Collect air sample(s) to assess fungal (mold) presence in the ambient air.

4.0 Findings

The observations and findings documented below identify the issues present in each location. They are followed by recommendations for corrective measures that should be implemented.

Observations and Findings:

The visual assessment conducted includes observations of the visible portions of the property consistent with the scope of work. The visual assessment was completed to identify and document visible evidence of mold growth, water damage and/or water intrusion. The visual assessment also allows documentation of the extent of any issues so remedial actions can occur.

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Training and IT Area:

- At the time of AirMD's assessment, signs favorable for mold growth were not identified in the assessed areas. Additionally, signs of water intrusion were not identified and elevated moisture was not detected in any of the building materials. Temperature and humidity profiles were within industry standards. Bio aerosol sampling conducted inside the assessed areas identified normal fungal ecology.

5.0 Sampling and Measurements

Water/Moisture Intrusion

Controlling moisture is extremely important in the function of any building. Moisture control is important to protect the building components and to protect occupants from adverse health effects from negative conditions because of moisture intrusion.

Moisture problems in residential and commercial properties are commonplace. Many common moisture problems in these properties can be traced to poor decisions in design, construction, and/or maintenance. Elevated moisture in building materials in a property can indicate for example, that plumbing leaks and/or water intrusion from outside sources is occurring. Elevated moisture in building materials can cause property damage and provide favorable conditions for fungal (mold) growth. Moisture mapping the property can identify problem areas.

Moisture mapping was conducted in limited areas throughout the property using a GE Protimeter Surveymaster moisture meter. The meter has two modes, a search mode and a measure mode. In search mode, the moisture meter acts as a moisture detector providing readings in relative terms regarding the moisture condition beneath the surface. It is a useful method to indicate moisture in a substrate.

In measure mode, the moisture meter uses electrical conductance to measure the moisture level of the material between two electrodes. The moisture measurements should not be interpreted as exact moisture content measurements of a material but should be interpreted as the Moisture Equivalent of the material at the time of measurement. Where elevated moisture is detected, it indicates a measurement of 20-99.9% while 17-19.9% is considered borderline. Elevated moisture was not detected in the materials.

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Moisture Measurement %				
Location	**North**	**South**	**East**	**West**
IT Area	9.1	10.4	9.6	9.6
Training Area	13.4	9.6	9.1	10.4

Prior to moisture mapping, a field calibration check is completed on the moisture meters using the internal moisture meter field check as well as an independent calibration check device. Additionally, a third-party manufacturer's calibration check is completed annually.

Temperature/Relative Humidity Measurements

Indoor temperatures in a property can play a role in thermal comfort, occupant satisfaction with the space, and influence indoor air quality. Relative humidity in general terms is how moist the air is. It is defined as the ratio of the water vapor density (mass per unit volume) to the saturation water vapor density, usually expressed in percent. Elevated humidity indoors can provide favorable conditions for fungal (mold) growth.

Temperature and relative humidity measurements were recorded using a hygrothermometer and the measurements were compared to ASHRAE (American Society for Heating, refrigerating, Air Conditioning Engineers) standards. The instrument uses a precision capacitance sensor for measurement. A third-party manufacturer's calibration check is completed annually for the hygrothermometers used.

The temperature measurements recorded in the property at the time of our visit were in all areas within the typical range suggested by the ANSI/ASHRAE Standard 55-2013: Thermal Environmental Conditions for Human Occupancy which specifies the combinations of indoor environmental and personal factors that produce acceptable thermal conditions to a majority of occupants within a space. Assuming slow air movement (less than 40 feet per minute) and 50% indoor relative humidity, the operative temperatures recommended by ASHRAE range from 68.5°F to 75°F in the winter, and from 75°F to 80.5°F in the summer.

The relative humidity measurements recorded in the property at the time of our visit were in all areas below 60%. Indoor relative humidity in the 30 to 60 percent range is the most acceptable for comfort. It is recommended by the U.S Environmental Protection Agency (E.P.A) and the American Conference of Governmental Industrial Hygienists (ACGIH) to keep humidity below 60% as a mold preventative measure.

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Bio-aerosol Sampling

The purpose of bio-aerosol sampling is to collect ambient air samples to identify whether fungal (mold) structures (spores and hyphal fragments) are present and to determine whether the amounts detected suggest that unusual conditions exist. It must be noted that this must be completed alongside a visual assessment as the data alone cannot be relied upon solely. According to the United States Environmental Protection Agency (USEPA), when comparing indoor conditions to outdoors for the presence of fungi (mold), air samples should be compared by fungal type and quantity of fungal spore's present. A typical indoor environment without a mold problem contains similar types with similar or lower quantities of fungal spores compared to outdoors levels. Fungal spore quantities higher than outdoors suggests a fungal reservoir(s) exists and is contributing mold spores to the indoor ambient air.

Currently there are no accepted standards or regulatory requirements issued from OSHA, EPA or other state and federal agencies that establish unacceptable levels for fungi (mold) in indoor environments. As a result, utilizing comparison outdoor samples or statistically derived outdoor data is a practical approach to assess conditions in a property. Variability with outdoor samples over short time spans and changing weather conditions can occur, which result in a lack of confidence in the data when comparing outdoor to indoor samples. When necessary, AirMD utilizes a national accredited laboratory database of typical outdoor fungal concentrations (see table below), to compare indoor to outdoor samples as an aid in interpreting conditions along with the other important aspects of an assessment (including but not limited to visual observations, moisture mapping). The table for typical outdoor spore levels contains a list of fungal genera with associated spores/m^3 count values. The spore count values are listed under low, medium and high headers. The low and high values represent the 5% and 97.5% percentile values while the medium value is the 50% percentile value (median) of the spore count. To assist with the data interpretation, the medium (median) value was used. Due to the limitations of the sampling and analytical procedures involved with fungal (mold) air samples, the data obtained cannot be used to establish a health-based risk assessment.

Bio-aerosol samples were collected from the training area and IT area using a sampling pump calibrated to fifteen liters and slit impactor cassettes containing a sticky acrylic matrix to trap particulate matter from the ambient air. The samples once collected were sent to an independent accredited laboratory under chain of custody. All samples were analyzed using brightfield microscopy. In relation to the comparison outdoor air data, elevated fungal spores were not detected in any of the ambient air samples collected.

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Typical Texas Outdoor Fungal Comparisons (spores/m3)			
Fungal Type	**Low**	**Medium**	**High**
Alternaria sp.	7	53	489
Basidiospores	27	707	14819
Bipolaris/Dreschlera group	7	27	307
Botrytis sp.	7	27	58
Chaetomium sp.	7	13	153
Cladosporium sp.	53	1307	21210
Curvularia sp.	7	40	1127
Epicoccum sp.	7	20	287
Nigrospora sp.	7	33	496
Penicillium/Aspergillus types	27	373	4800
Rusts	7	13	93
Smuts	13	107	1171
Stachybotrys sp.	7	13	1158
Torula sp.	7	13	133

Limitations: AirMD's evaluation and test results do not guarantee that the indoor environment is free from contaminates, gases, organisms or analytes sampled for. The customer understands that the there are limitations associated with the instrumentation used associated with accuracy, precision, and uncertainty. Additionally, further limitations are present because of sampling and measurement methods/procedures utilized in testing and measuring as well as any or all other factors such as environmental and climatic conditions. The customer is aware that destructive testing was not performed and that the evaluation can only assess for conditions that are visible at the time of the evaluation. AirMD retains the right to supplement this report should additional information become available and/or further issues are discovered. AirMD reserves the right to assess the potential impact of the new information on the findings and to revise the report, if necessary, as warranted by the information or discovery.

AirMD's opinions as noted in the report are based on the findings and upon our professional experience with no warranty or guarantee implied. AirMD accepts no responsibility for interpretations or actions based on this report by others. The findings, results and conclusions as part of our assessment are only representative of conditions at the time of the AirMD visit and do not represent conditions at other times. This report is intended for your use and your assigned representatives. Its data and content shall not be used or relied upon by other parties without prior written authorization of AirMD.

Sincerely,

Simon Hahessy
Texas ID # MAC 1645
Exp Date: 9/25/2021

Reviewed By:

Rachael Rupp
Senior Consultant

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Appendix A

Floor Plans

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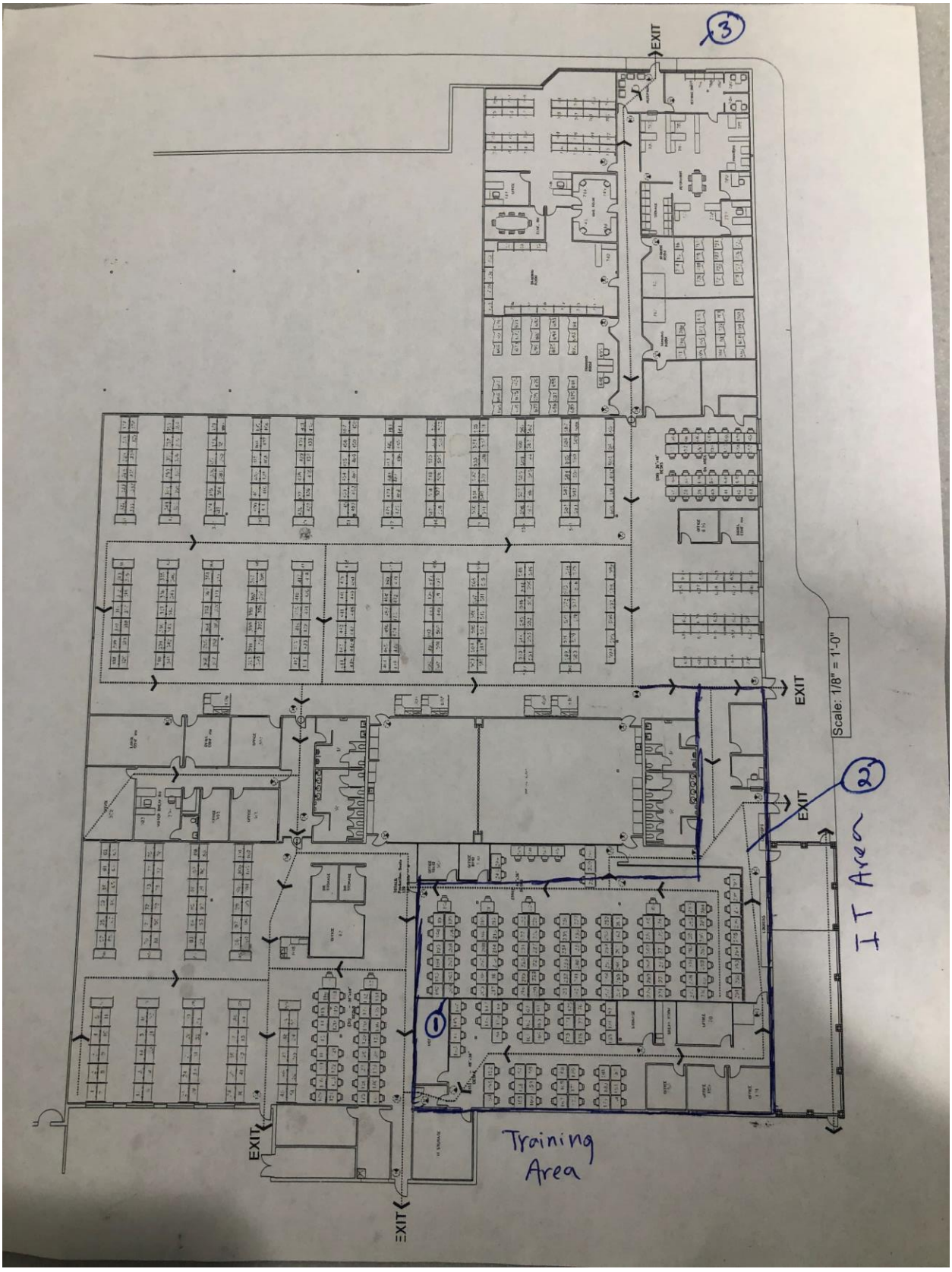

Appendix B

Photographic Documentation

(Selection of relevant photos supplied, entire photo file for the project is available upon request)

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Appendix C

Laboratory Results

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Project: 21-02686-AF1 Alorica 2703 N US Highway 75 Sherman TX

Batch: 334113

Sampled: 8/13/2021
Received: 8/16/2021
Analysis Date: 8/16/2021
Report Date: 8/16/2021

AEML Test: A001 Spore Trap Analysis

Sample ID:	334113-01	334113-02	334113-03
Client Sample ID:	Training Area	IT Area	Outside
Volume Sampled (L):	150	150	150
Media:	Air-O-Cell	Air-O-Cell	Air-O-Cell
Percent of Trace Analyzed:	100% at 600X Magnification	100% at 600X Magnification	100% at 600X Magnification

Spore Types	Raw Count	Count/m³	%	Raw Count	Count/m³	%	Raw Count	Count/m³	%
Alternaria	—	—	—	—	—	—	—	—	—
Arthrinium	—	—	—	—	—	—	—	—	—
Ascospores	1	7	10	—	—	—	7	47	19
Aspergillus/Penicillium-Like	6	40	60	—	—	—	6	40	17
Basidiospores	1	7	10	—	—	—	9	60	25
Bipolaris/Dreschlera	—	—	—	—	—	—	—	—	—
Botrytis	—	—	—	—	—	—	—	—	—
Chaetomium	—	—	—	—	—	—	—	—	—
Cladosporium	2	13	20	—	—	—	7	47	19
Curvularia	—	—	—	2	13	100	3	20	8
Epicoccum	—	—	—	—	—	—	—	—	—
Fusarium	—	—	—	—	—	—	—	—	—
Ganoderma	—	—	—	—	—	—	3	20	8
Memnoniella	—	—	—	—	—	—	—	—	—
Nigrospora	—	—	—	—	—	—	1	7	3
Oidium/Peronospora	—	—	—	—	—	—	—	—	—
Pithomyces	—	—	—	—	—	—	—	—	—
Rust	—	—	—	—	—	—	—	—	—
Smut/Myxomyces/Periconia	—	—	—	—	—	—	—	—	—
Stachybotrys	—	—	—	—	—	—	—	—	—
Torula	—	—	—	—	—	—	—	—	—
Ulocladium	—	—	—	—	—	—	—	—	—
Unidentified Spores	—	—	—	—	—	—	—	—	—
Total Spores	**10**	**67**		**2**	**13**		**36**	**240**	
Hyphal Fragments	—	—		—	—		—	—	
Pollen	—	—		—	—		—	—	
Debris Rating	3			3			4		
Detection Limit	7			7			7		

Joshua Krinsky
Technical Director

Appendix D

Standards and Reference Materials Utilized

MAC Initials: SH

Texas Mold Assessment and Remediation Rules, TMARR

Macher, J., Ed. (1999). Bioaerosols Assessment and Control. Cincinnati, Ohio, American Conference of Governmental Industrial Hygienists.

USEPA March 2001, Mold Remediation in Schools and Commercial Buildings. E. P. Agency. Washington, D.C., United States Environmental Protection Agency.

New York City Department of Health Guidelines on *Assessment and Remediation of Fungi in Indoor Environments,* New York City Department of Health and Mental Hygiene, November 2008.

IICRC S500, 2006 Standard and Reference Guide for Professional Water Damage Restoration. Vancouver, Washington, Institute of Inspection, Cleaning and Restoration Certification.

IICRC S520, 2008, Standard and Reference Guide for Professional Mold Remediation. Vancouver, Washington, Institute of Inspection, Cleaning and Restoration Certification.

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ANSI/ASHRAE Standard 55, 2013 Thermal Environmental Conditions for Human Occupancy. Atlanta, Georgia.

Bailey, H. S., 2005, Fungal Contamination: A Manual for Investigation, Remediation and Control. Jupiter, Florida, BECi.

ASTM D7338-10, January 2011, Standard Guide for Assessment of Fungal Growth in Buildings.

Kendrick, B, 2001, The Fifth Kingdom. Newburyport, Massachusetts, Focus Publishing.

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Deacon, J. (2006). Fungal Biology. Oxford, UK, Blackwell Publishing.

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C Health Canada. "Fungal Contamination in Public Buildings: A Guide to Recognition and Management." Ontario: Health Canada, Federal-Provincial Committee on Environmental and Occupational Health. 1995.

D Robertson, L.D. "Monitoring Viable Fungal and Bacterial Bioaerosol Concentrations to Identify Acceptable Levels for Common Indoor Environments." Indoor Built Environments. 6(1997):295-300

E Godish, T. Indoor Environmental Quality. Boca Raton: CRC Press LLC, 2001.

F Clark, G. "Assessment and Sampling Approaches for Indoor Microbiological Assessments." American Industrial Hygiene Association (IAHA): The Synergist. Nov. 2001

Bradley, P., Weekes, J., and Miller, D. "Recognition, Evaluation and Control of Indoor Mold." American Industrial Hygiene Association (IAHA): 2008

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