ati INC
Architecture | Engineering | Construction

9220 Rumsey Road, Suite 100, Columbia, MD 21045
T: 410.992.3424 | F: 410.992.1837

March 2, 2021

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772
Attention: Mr. Alex Baylor

RE: Indoor Air Quality Assessment, Lake Arbor Elementary School
Purchase Order: 734977
ATI Project Number: 21-604

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) assessment at Lake Arbor Elementary School on January 25, 2021 and follow-up assessments on February 22, 2021 and February 27, 2021. The assessments' key findings are enclosed in the Executive Summary on page three, and the official laboratory reports for total fungal spore trap sampling are enclosed in Appendix A.

Thank you for the opportunity to provide Industrial Hygiene services for Prince George's County Public Schools. If you have any questions regarding this report, please contact us at (202) 643-4283.

Sincerely,
ATI, INC.

Reviewed By:

Mikal Frater
Industrial Hygienist

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

Indoor Air Quality Assessment Report

Prince George's County Public Schools
Lake Arbor Elementary School
10205 Lake Arbor Way
Mitchellville, MD 20721

Prepared for:

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772

March 2, 2021

Submitted by:

ATI Job # 21-604

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Abbreviations and Acronyms

AHU	Air-Handling Unit
AIHA	American Industrial Hygiene Association
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EMLAP	Environmental Microbiology Laboratory Accreditation Program
HVAC	Heating, Ventilating, And Air-Conditioning
IAQ	Indoor Air Quality
NIST	National Institute for Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
RH	Relative Humidity
Rev.	Revision

Abbreviations involving scientific volume and measurements involving media or water sampling

Spores/m^3	Mold spores per cubic meter of air
LPM	Liters Per Minute
NTE	Not to exceed
°F	degree Fahrenheit
PPM	Parts Per Million

1 Executive Summary

ATI conducted a proactive Indoor Air Quality (IAQ) assessment on January 25, 2021, at Lake Arbor Elementary School, located at 10205 Lake Arbor Way, in Mitchellville, Maryland, and follow-up assessments on February 22, 2021 and February 27, 2021 in select rooms that had unusual results in the initial assessment and the February 22, 2021 follow-up assessment.

The initial assessment on January 25, 2021 included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the cafeteria/gym, the main office, and randomly selected classrooms, for potential IAQ contributors and pathways. The Main Office, Multipurpose Room and Room 240 had unusual fungal spore concentrations during the initial assessment and were selected for a follow-up assessment after actions were taken to reduce the presence of mold and repair any water issues discovered. On February 22, 2021 these three rooms were reassessed after unusual spore concentrations were present during the first assessment. ATI inspected the Multipurpose Room again on February 27, 2021 after elevated results of *Aspergillus/Penicillium*-like spores were detected during the February 22, 2021 assessment. As part of all assessments, ATI measured common IAQ comfort parameters, including temperature, relative humidity, carbon dioxide, and carbon monoxide. Also, ATI collected total fungal air samples on spore trap cassettes for microbiological analysis.

The following is a summary of the key findings from these assessments:

1. One of the tested spaces on January 25 had a temperature less than the ASHRAE recommended winter range of 68-75°F. Room 240 had a temperature less than the ASHRAE range on February 22, and the Multipurpose Room had a temperature less than the ASHRAE range on February 27. The reassessments occurred during the weekend, likely when a more efficient HVAC mode was operating, however.
2. The relative humidity in all tested spaces on January 25 and February 22 was less than the ASHRAE guidelines of ≤65%, and less than 30%, which can cause occupant discomfort. The Multipurpose Room had a relative humidity less than 65% but greater than 30% on February 27.
3. Carbon dioxide concentrations in all tested spaces were less than the ASHRAE limit for carbon dioxide relative to the outdoor carbon dioxide concentration for the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces.
5. The airborne fungal spore sampling results suggested potential unusual indoor mold amplification in the Main Office, Multipurpose Room and Room 240 on the initial IAQ assessment. The results from the first reassessment suggested the Multipurpose Room still had an unusual mold spore concentration and ATI recommended additional remediation actions. The Multipurpose Room was reassessed for a second time on February 27, and the results supported that a sufficient reduction in airborne mold spores was achieved.

2 Assessment Methods

Mikal Frater, IH of ATI, Inc. conducted the initial visual assessment and air sampling on January 25, 2021, as well as the second follow-up assessment on February 27, 2021, which focused on the Multipurpose Room. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Ms. Frater documented visual observations at the time she collected the air samples. Courtney McCall conducted the first follow-up inspection on February 22, 2021 in the Main Office, Multipurpose Room and Room 240 after the areas were treated for mold presence. ATI references the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) *Standard 62.1 – 2016* and ASHRAE *Standard 55 – 2017* when providing IAQ services to clients. ASHRAE is an industry leader on energy efficiency and indoor air quality.

All measurements and air samples were collected between three-six feet from floor elevation, which represents a typical adult breathing zone, and away from air-supply and return diffusers. Real-time direct readings for temperature, relative humidity, carbon dioxide (CO_2), and carbon monoxide (CO), were measured with a calibrated TSI Q-Trak 7575-X Meter and attached 982 Probe.

Total fungal air samples were collected with a field calibrated Buck BioAire High-Volume Sampling Pump on Zefon Air-O-Cell spore-trap cassettes at a flow rate of 15 liters per minute for five minutes, for a sample volume of 75 liters. AMA Analytical Services, Inc. of Lanham, MD analyzed the samples using direct microscopic examination per ASTM D7391, which spores both viable and non-viable mold spores and particulates, which combined yields total fungal results. AMA participates in the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for general laboratory performance and management, and the American Industrial Hygiene Association (AIHA) for Environmental Microbial Laboratory Accreditation Program (EMLAP). The AMA laboratory reports are included in Appendix A.

3 Visual Observations

Table 1 lists the areas, conditions, observations, and other pertinent details related to the initial and follow-up IAQ assessments. On both dates of sampling, few occupants were present in the school because of the COVID-19 global pandemic.

Table 1: Visual Observations and Sampling Locations

Sample Location	January 25, 2021 Observations
Outdoors – Parking Lot	• Cloudy skies, winds 5mph E • Light vehicle traffic
Main Office	• Two occupants at time of assessment • Doors to corridor closed at time of assessment, doors to adjoining offices open • No odor or visible growth observed • One air return, four air supplies with trace dust accumulation • Space is approximately 396 ft.^{2}
Cafeteria/Multipurpose	• Outdoor access via emergency exit • Doubles as auditorium/gym • Two occupants at time of assessment and door to corridor/kitchen was open • No signs of major water intrusion • Outdoor access via emergency exit • No stained ceiling tiles, observed odor or visible growth • Four air supplies, four returns
Media Center "Library"	• Two occupants at time of assessment • Outdoor access via emergency exit • Same stained ceiling tile noted in previous IAQ; potential fungal growth observed – dark black in color • Six air returns, eight air supplies • Faux plants on shelves with light dust accumulation
Room 203	• Two occupants at time of assessment • No stained ceiling tiles, observed odor or visible growth • Two air supplies, one in the form of a wall unit – on during assessment • One air return with trace dust accumulation • Space is approximately 912 ft.^{2}
Room 305	• Two air supplies, one in the form of a wall unit – on during assessment • One air return with trace dust accumulation • No stained ceiling tiles, observed odor or visible growth • Two occupants at time of assessment

Sample Location	January 25, 2021 Observations
	• Space is approximately 960 ft.^{2}
Room 334	• Two occupants at time of assessment • Door to corridor closed at time of assessment • No stained ceiling tiles, observed odor or visible growth • One wall unit on at time of assessment • Space is approximately 875 ft.^{2}
Room 240	• One occupant at time of assessment • One air supply in the form of a wall unit – on during assessment • Emergency exit outside access • No stained ceiling tiles, observed odor or visible growth • Space is approximately 1,008 ft.^{2}

Sample Location	February 22, 2021 Reassessment Observations
Main Office	• Two ceiling tiles had minor water staining – near the front desk/entrance walkway and one near the wall mirror • Housekeeping in office was good – desk were tidy, appeared to be well dusted and floors were clean • Room 109, an adjacent room in the attached hallway, had a sign on the door indicating that a leak inside "was getting worse." Staff unlocked the door for ATI and no active leak was observed. Ceiling tiles were removed from that room.
Room 240	• Emergency exit door to the outside was present. No observed leaves or debris blown inside • A sink in the room was dripping. In adjoining bathroom wall was patched presumably from a previous leak. • Student books and materials were stored around the room's perimeter.
Multipurpose Room	• Two emergency exit doors were present and some debris (leaves) had blown inside. • Dining tables were pushed to the room's perimeter. • Dust was not present on the tables but could be observed high, near the 25 ft ceiling near air supplies. • Adjoining kitchen doors were closed at time of sampling.
Sample Location	**February 27, 2021 Reassessment Observations**
Outdoors	• Light rain, cloudy skies • Parking lot was mostly empty with little to no foot traffic
Cafeteria/Multipurpose	• Two occupants at time of assessment • Doors to corridor open • Microtrap on and leading into corridor • Doors to kitchen/outdoors closed at time of assessment

4 Thermal Environmental Conditions for Human Occupancy

ASHRAE *Standard 55-2017, Thermal Environmental Conditions for Human Occupancy*, addresses thermal comfort in an office environment, which means that an employee wearing a normal amount of clothing feels neither too cold nor too warm. This standard discusses thermal comfort within the context of air temperature, humidity, and air movement and provides recommended ranges for temperature and humidity that are intended to satisfy 80% of occupants. The recommended ASHRAE ranges are referenced below by each comfort parameter.

4.1 Temperature

The ASHRAE standard establishes a winter comfort range of between 68°F and 75°F and a summer range of between 73°F and 79°F. The temperatures measured during the three assessments are summarized in Table 2. As indicated by the data in the table, temperatures in the school on January 25 averaged between 67°F and 72°F, with all but one of the tested locations being within the ASHRAE recommended winter range.

ATI also reassessed the temperature in the Cafeteria/Multipurpose Room, Main Office and Room 240 on February 27, 2021. All rooms were within recommended ranges, except Room 240, which was less than the ASHRAE range. This assessment occurred on the weekend, however, when a more efficient HVAC mode was likely operating and keeping temperatures cooler.

ATI also reassessed the temperature in the Cafeteria/Multipurpose room on February 27, 2021. The average temperature in the Cafeteria/Multipurpose room was 65°F, which is less than the ASHRAE recommended winter range. This assessment occurred on the weekend, however, when a more efficient HVAC mode was likely operating and keeping temperatures cooler.

Table 2: Temperature

Sample Location	1/25/2021 Initial Assessment °F			ASHRAE Standard °F
	Min	Max	Average	
Outdoors	39	40	40	N/A
Indoors				
Main Office	66	68	67	68°F - 75°F
Cafeteria	72	72	72	68°F - 75°F
Media Center "Library"	70	70	70	68°F - 75°F
Room 203	69	70	70	68°F - 75°F
Room 305	72	72	72	68°F - 75°F
Room 334	71	71	71	68°F - 75°F
Room 240	70	71	71	68°F - 75°F
February 22, 2021 Reassessment Temperature in °F				
Outdoors	34	37	36	N/A
Indoors				
Main Office	68	71	70	68°F - 75°F
Cafeteria/Multipurpose	69	72	71	68°F - 75°F
Room 240	63	63	63	68°F - 75°F

Sample Location	1/25/2021 Initial Assessment °F			ASHRAE Standard °F
	Min	Max	Average	
February 27, 2021 Reassessment Temperature in °F				
Outdoors	44	46	45	N/A
Indoors				
Cafeteria/Multipurpose	64	66	65	68°F - 75°F

4.2 Relative Humidity

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 65%. ASHRAE *Standard 62.1-2016*, *Ventilation for Acceptable Indoor Air Quality,* recommends a maximum indoor relative humidity of 65% to prevent condensation of moisture on surfaces. Relative humidity less than 30% may result in drying of occupants' mucous membranes and skin. Relative humidity measurements for January 25, 2021, February 22, 2021 and February 27, 2021 are summarized in Table 3. As indicated by the data in the table, the average relative humidity ranged between 12% and 23% with all tested locations measuring less than the ASHRAE maximum recommendation of 65% relative humidity, as well as less than 30% relative humidity.

During the February 22, 2021 reassessment, the Multipurpose Room, Main Office and Room 240 all had less than the ASHRAE maximum recommendation of 65% relative humidity, as well as less than 30% relative humidity.

ATI also reassessed the relative humidity in the Cafeteria/Multipurpose room on February 27, 2021, and the average relative humidity was 39%, less than the ASHRAE maximum recommendation of 65% relative humidity.

Table 3: Relative Humidity

Sample Location	1/27/2021 (% RH)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outdoors	36	37	37	N/A
Indoors				
Main Office	22	24	23	≤ 65
Cafeteria/Multipurpose	12	12	12	≤ 65
Media Center "Library"	14	14	14	≤ 65
Room 203	14	14	14	≤ 65
Room 305	12	13	13	≤ 65
Room 334	12	12	12	≤ 65
Room 240	13	13	13	≤ 65
February 22, 2021 Reassessment Relative Humidity (%RH)				
Outdoors	26	27	27	N/A
Indoors				
Main Office	19	22	21	≤ 65
Cafeteria/Multipurpose	11	12	12	≤ 65
Room 240	18	19	19	≤ 65

February 27, 2021 Reassessment Relative Humidity (%RH)				
Outdoors	55	60	58	N/A
Indoors				
Cafeteria/Multipurpose	37	40	39	≤ 65

4.3 Carbon Dioxide

Carbon dioxide concentrations within an occupied building are a standard method used to gauge the efficiency of ventilation systems. Carbon dioxide is a by-product of human respiration and does not pose an acute health hazard alone. Elevated concentrations may suggest that insufficient fresh air is being supplied to an occupied space and/or that the ventilation system does not provide a sufficient rate of air exchange.

Research has indicated that buildings with adequately operating ventilation systems are able to remove odors generated by activities in an indoor office environment efficiently. ASHRAE *Standard 62.1-2016* states that comfort (odor) criteria with respect to human bioeffluents are likely to be satisfied if the ventilation can maintain indoor carbon dioxide concentrations less than 700 parts per million (ppm) greater than the outdoor air concentration. Typically, outdoor carbon dioxide concentrations range from 300 ppm to 450 ppm, with the higher range typically found in urban areas during peak rush hour.

Carbon dioxide concentrations for January 25, 2021 are summarized in Table 4. On the day of the assessment, the average outdoor carbon dioxide concentration was 387 ppm, which calculates to a maximum indoor concentration of 1,087 ppm (700 + 387). All tested locations indoors were less than the recommended maximum for the day of the assessment.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 22, 2021 after remediation actions were completed. The carbon dioxide concentrations measured during the reassessment are included in Table 4. The average outdoor carbon dioxide concentration on February 22, 2021 was 338 ppm, which calculates to a maximum indoor concentration of 1,038 ppm (700 + 338). All tested locations indoors were less than the recommended maximum for the day of the reassessment.

ATI reassessed the Cafeteria/Multipurpose room on February 27, 2021, after remediation actions were completed. The carbon dioxide concentrations measured during the reassessment are included in Table 4. The average outdoor carbon dioxide concentration on February 27, 2021 was 340 ppm, which calculates to a maximum indoor concentration of 1,040 ppm (700 + 340). The Cafeteria/Multipurpose room measured less than the recommended maximum for the day of the reassessment.

Table 4: Carbon Dioxide

Sample Location	1/25/2021 Concentration (parts per million)			ASHRAE Standard (ppm) NTE
	Min	Max	Average	
Outdoors	336	438	387	N/A
Indoors				
Main Office	462	466	464	< 1,087
Cafeteria/Multipurpose	374	388	381	< 1,087
Media Center "Library"	385	385	385	< 1,087
Room 203	378	381	380	< 1,087
Room 305	394	407	401	< 1,087
Room 334	388	391	390	< 1,087
Room 240	383	385	384	< 1,087
February 22, 2021 Reassessment Concentration (parts per million)				

Outdoors	317	358	338	N/A
Indoors				
Main Office	408	421	415	< 1,038
Cafeteria/Multipurpose	412	423	418	< 1,038
Room 240	388	395	392	< 1,038
February 27, 2021 Reassessment Concentration (parts per million)				
Outdoors	333	347	340	N/A
Indoors				
Cafeteria/Multipurpose	398	410	404	< 1,040

4.4 Carbon Monoxide

Carbon monoxide is a colorless and odorless gas produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are the major sources of carbon monoxide. ASHRAE recommends that carbon monoxide not exceed nine ppm indoors over an eight-hour time-weighted average. ATI measured carbon monoxide concentrations using a TSI Q-Trak model number 7575-X with an attached IAQ probe (model number 982). The instrument's carbon monoxide sensor has an error range of ± 3% of the reading or three (3) ppm, whichever is greater. As indicated by the data in Table 5, carbon monoxide concentrations for January 25, 2021 were less than the Q-Trak's detection limit throughout the school.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 22, 2021 and February 27, 2021, after remediation actions were completed. The carbon monoxide concentrations measured during the reassessment are included in Table 5. The carbon monoxide concentrations from the reassessments were also less than the Q-Trak's limit of detection and less than the EPA/ASHRAE recommended maximum of 9 ppm.

Table 5: Carbon Monoxide

Sample Location	1/27/2021 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outdoors	< 3	< 3	< 3	N/A
Indoors				
Main Office	< 3	< 3	< 3	< 9
Cafeteria	< 3	< 3	< 3	< 9
Media Center "Library"	< 3	< 3	< 3	< 9
Room 203	< 3	< 3	< 3	< 9
Room 305	< 3	< 3	< 3	< 9
Room 334	< 3	< 3	< 3	< 9
Room 240	< 3	< 3	< 3	< 9
February 22, 2021 Reassessment Concentration (parts per million)				
Outdoors	< 3	< 3	< 3	N/A
Indoors				
Main Office	< 3	< 3	< 3	< 9
Cafeteria/Multipurpose	< 3	< 3	< 3	< 9
Room 240	< 3	< 3	< 3	< 9
February 27, 2021 Reassessment				

Concentration (parts per million)				
Outdoors	< 3	< 3	< 3	N/A
Indoors				
Cafeteria/Multipurpose	< 3	< 3	< 3	< 9

5 Total Fungal Air Sampling Results

Mold is carried indoors through building entrances, open windows, loading docks, foot traffic into buildings, and the HVAC system. To thrive indoors, mold requires a food source, proper temperature and humidity to foster its growth.

The January 25, 2021, February 22, 2021 and February 27, 2021 mold assessments sampled air using spore trap cassettes in randomly selected classrooms and other areas throughout the facility. These cassettes collect both viable spores, those capable of producing more fungal colonies, and non-viable spores, which cannot reproduce. Based upon recognized industry practices, indoor mold concentrations are compared with those detected outdoors, which are also known as ambient or baseline samples.

In normal circumstances, the diversity of spores identified indoors and outdoors should be similar with some exceptions. The high concentration of one or two species of fungal spores identified indoors and the absence of the same species outdoors can indicate a moisture problem with the potential to degrade the air quality. Fungi species present indoors are typically found at levels ranging from approximately 10-50% of their levels in the outdoor air, reflecting the filtering by the building's HVAC system.

The results from January 25, 2021 suggested unusual mold spore concentrations in three locations: The Main Office, Cafeteria, and Room 240. The total ambient, outdoor spore concentration was 530 spores/m^3. The Cafeteria had the greatest total spore concentration of 2,756 spores/m^3, with *Aspergillus/Penicillium*-like spores being the predominant spore types present at 2,438 spores/m^3. The Main Office and Room 240 had total spore concentrations of 1,378 spores/m^3, and 1,325 spores/m^3, respectively, with *Aspergillus/Penicillium*-like spores being the predominant spore types in each room.

The total fungal spore concentrations on January 25, 2021 in the Cafeteria, Main Office, and Room 240 were just slightly greater than what ATI considers typical indoor mold concentrations of around 1,000 spores/m^3 or less, however the concentrations measured in those rooms do not suggest significant mold growth and could be residual spores from prior growth, or possibly trivial to mild amounts of mold growth normal in occupied spaces. ATI recommended evaluating these tested spaces and the surrounding areas to try and identify water sources, abate any mold issues and clean the area before retesting the space.

The Main Office, Multipurpose Room and Room 240 were reassessed on February 22, 2021 after the initial assessment indicated the unusual presence of airborne mold spores. The sampling results from Room 240 and the Main Office suggested the actions taken to reduce mold spore concentrations were successful; however, the *Aspergillus/Penicillium*-like mold spore concentration in the Multipurpose Room increased to 8,000 spores/m^3 on February 22. Thus, the Cafeteria/Multipurpose Room was reassessed on February 27, 2021, after the first follow-up assessment indicated the unusual presence of airborne mold spores. The *Aspergillus/Penicillium-like* spore concentration measured in the Multipurpose Room on February 27 was 424 spores/m^3, which suggested that the actions taken to reduce mold spore concentrations in the space were successful. Differences in concentrations between all assessment dates of assessment are summarized in Table 6.

Table 6: *Aspergillus/Penicillium* Concentration Comparison

Sample Location	January 25, 2021 Concentrations	February 22, 2021 Concentrations	February 27, 2021 Concentrations	% Change
Main Office	954	53	*N/A*	-94%

Cafeteria/Multipurpose	2,438	8,000	424	-83%*
Room 240	1,325	106	*N/A*	-92%

*Percent change from initial sampling round to February 27th sampling round

The official laboratory reports with spore trap samples collected on January 25, 2021, February 22, 2021, and February 27, 2021 are presented in Appendix A.

6 Summary of Findings

1. One of the tested spaces on January 25 had a temperature less than the ASHRAE recommended winter range of 68-75°F. Room 240 had a temperature less than the ASHRAE range on February 22, and the Multipurpose Room had a temperature less than the ASHRAE range on February 27.
2. The relative humidity in all tested spaces on January 25 and February 22 was less than the ASHRAE guidelines of ≤65%, and less than 30%, which can cause occupant discomfort. The Multipurpose Room had a relative humidity less than 65% but greater than 30% on February 27.
3. Carbon dioxide concentrations in all tested spaces were less than the ASHRAE limit for carbon dioxide relative to the outdoor carbon dioxide concentration for the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces.
5. The airborne fungal spore sampling results suggested potential unusual indoor mold amplification in the Main Office, Multipurpose Room and Room 240 on the initial IAQ assessment. The results from the first reassessment suggested the Multipurpose Room still had an unusual mold spore concentration and ATI recommended additional remediation actions. The Multipurpose Room was reassessed for a second time on February 27, and the results supported that a sufficient reduction in airborne mold spores was achieved.

We appreciate the opportunity to provide these IAQ testing services for you. If you have any questions, please contact us at (202) 643-4283.

Best,
ATI, INC.

Mikal Frater
Industrial Hygienist

Appendix A: Laboratory Report and Chain of Custody

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285326	**Job Name:**	Lake Arbor Elementary School IAQ	**Date Submitted:**	01/26/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchelville, MD 20721	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	02/02/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Mikal Frater				

AMA Sample #	285326-1	**AMA Sample #**	285326-2	**AMA Sample #**	285326-3
Client ID	21-604-1	**Client ID**	21-604-2	**Client ID**	21-604-3
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	0	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	1	**Debris Loading**	2
Location	Parking Lot	**Location**	Field Blank	**Location**	Main Office

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores	1	15	53	53	10%
Basidiospores	2	15	53	106	20%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	6	15	53	318	60%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	10%
Hyphal Fragments*	2	15	53	106	20%
Total Raw Ct:	10		**Total sp/m³:**		530

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	0		**Total sp/m³:**		0

Comments

No mold spores observed.

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores	1	15	53	53	3.8%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	Present	15	53	<53	
Curvularia					
Penicillium / Aspergillus	18	15	53	954	69.2%
Smuts/Periconia/Myxomycetes	5	15	53	265	19.2%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	2	15	53	106	7.7%
Other Colorless					
Hyphal Fragments*	2	15	53	106	7.7%
Total Raw Ct:	26		**Total sp/m³:**		1378

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285326	**Job Name:**	Lake Arbor Elementary School IAQ	**Date Submitted:**	01/26/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchelville, MD 20721	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	02/02/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Mikal Frater				

AMA Sample #	285326-4	**AMA Sample #**	285326-5	**AMA Sample #**	285326-6
Client ID	21-604-9	**Client ID**	21-604-4	**Client ID**	21-604-5
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	75	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	2	**Debris Loading**	1
Location	Cafeteria	**Location**	Media Center	**Location**	RM 203

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria	1	15	53	53	1.9%
Ascospores					
Basidiospores	1	15	53	53	1.9%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	3	15	53	159	5.8%
Curvularia					
Penicillium / Aspergillus	46	15	53	2438	88.5%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	53	53	1.9%
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	52	**Total sp/m^3:**	2756		
Comments					

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	1	15	53	53	9.1%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	2	15	53	106	18.2%
Curvularia					
Penicillium / Aspergillus	6	15	53	318	54.5%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	2	15	53	106	18.2%
Hyphal Fragments*					
Total Raw Ct:	11	**Total sp/m^3:**	583		
Comments					

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	1	15	53	53	50%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	50%
Hyphal Fragments*					
Total Raw Ct:	2	**Total sp/m^3:**	106		
Comments					

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285326	**Job Name:**	Lake Arbor Elementary School IAQ	**Date Submitted:**	01/26/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchelville, MD 20721	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	02/02/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Mikal Frater				

AMA Sample #	285326-7	**AMA Sample #**	285326-8	**AMA Sample #**	285326-9
Client ID	21-604-6	**Client ID**	21-604-7	**Client ID**	21-604-8
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	75	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	1	**Debris Loading**	1
Location	RM 305	**Location**	RM 334	**Location**	RM 240

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	1	15	53	53	16.7%
Basidiospores	1	15	53	53	16.7%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	16.7%
Curvularia					
Penicillium / Aspergillus	2	15	53	106	33.3%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	16.7%
Hyphal Fragments*					
Total Raw Ct:	6	**Total sp/m^3:**	318		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	1	15	53	53	20%
Basidiospores	1	15	53	53	20%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	20%
Curvularia					
Penicillium / Aspergillus	1	15	53	53	20%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	20%
Hyphal Fragments*					
Total Raw Ct:	5	**Total sp/m^3:**	265		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	25	15	53	1325	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	25	**Total sp/m^3:**	1325		

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285326	**Job Name:**	Lake Arbor Elementary School IAQ	**Date Submitted:**	01/26/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchelville, MD 20721	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	02/02/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Mikal Frater				

Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

Normal ecology	Slightly above normal ecology	Moderately above normal ecology	Substantially above normal ecology

Stachybotrys / Memnoniella, and Chaetomium	**Other Spores* (Control Present)**	**Other Spores* (No Control)**
1-4 Spores: Yellow 5-9 Spores: Orange 10+ Spores: Red	< 10 Spores: Insignificant (no color) <= Control's spore count: Green Between Control and 2x Control: Yellow Between 2x Control and 3x Control: Orange 3x+ Control: Red	< 10 Spores: Insignificant (no color) 10-20 Spores: Yellow 20-50 Spores: Orange 50+ Spores: Red

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285326	**Job Name:**	Lake Arbor Elementary School IAQ	**Date Submitted:**	01/26/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchelville, MD 20721	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	02/02/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Mikal Frater				

General Comments, Disclaimers, and Footnotes

Analytical Method: Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

Sample Condition: Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

Spore Notes: Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

Quantification: Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
Analyst(s): Tristan Ward

Technical Director Tristan Ward

MOLD SPORE DESCRIPTIONS

Alternaria

Alternaria is ubiquitous in the environment and are normal agents of decay and decomposition. The spores are airborne and common outdoors than indoors isolated from plants, soil, and food. Indoors, the spores are found in house dust, carpets, textiles, wallboard and window frames. The production of melanin-like pigment is one of its major identifying characteristics. The club-shaped spores (conidia) are single or in long chains. They can grow thick colonies with grayish-white surfaces at the beginning which later darken to greenish black or olive brown colors. Health Effects: Allergies are common, but serious infections are rare, except in people with compromised immune systems. Certain species of this genus are often prolific producers of a variety of toxic compounds whose effects on human health are not well known.

Ascospores

Ascospores are spores formed inside an ascus (asci-plural) or sac-like cell which is contained inside a fruiting body called an ascocarp or an ascoma (ascomata-plural). An ascus typically contains a definite nuimber of ascospores, usually eight. Ascospores are unique in shape, size, and color as to the Genus/species they represent. These spores are specific to fungi classified as Ascomycetes. They are ubiquitous in nature. Many decay organic matter, others are plant or animal pathogens. They can grow indoors on damp materials. Release of ascospores are released by forcible ejection and dispersed by wind, water, animals and other agents. Health Effects: Depending on the Genera, Ascospores may be allergenic.

Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

Other Colorless

- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

Smuts/Periconia/Myxomycetes

Smuts, Periconia, and Myxomycetes spores are grouped together due to their similar round, brown morphology. Smuts are outdoor parasitic plant pathogens. They rarely grow indoors but may grow on host plants if appropriate conditions are present. They are parasitic plant pathogens. They can be found on cereal crops, grasses, flowing plants, weed, and other fungi. They can cause allergies. Periconia are found in soils, dead herbaceous stems and leaf spots, and grasses. They have wind dispersed dry spores. Their spores are abundant in the air but it is not known if they are allergenic. Myxomycetes are found on decaying logs, stumps and dead leaves. They have wind-dispersed dry spores and wet motile (amoebic phase) spores. During favorable conditions they move about like amoebae. They form dry airborne spores when conditions are unfavorable. They are rarely found indoors. Health Effects: They may cause Type 1 allergies (hay fever, asthma). No human infections have been reported.

Unknown Fungi

“Unknown Fungi” are spores that cannot be identified under direct microscopic analysis. This includes partial spores. This category also includes spores that are hidden or hard to see during microscopic examination due to heavy presence of particulate.

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 285326

Mailing/Billing Information:

1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd
3. Address 2: Suite 250
4. Address 3: Lanham, MD 20706
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: Lake Arbor ES IAQ
2. Job Location: 10205 Lake Arbor Way Mitchelville, MD 20721
3. Job #: 21-604 P.O. #: _____
4. Contact Person: Mikal Frater Cell: (818) 702-8621
5. Collected by: " Cell: "

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)
☐ 4 Hours
☐ Immediate Date Due: _____
☐ 24 Hours Time Due: _____
Comments: _____

NORMAL BUSINESS HOURS
☐ 4 Hours ☐ 3 Day
☐ Same Day ■ 5 Day + Date Due: 2/3/21
☐ Next Day ☒ Results Required By Noon
☐ 2 Day

REPORT TO:
■ Email: mikal@atiinc.com
☐ Email 2: _____
☐ Verbals: _____

Asbestos Analysis
*PCM Air – Please Indicate Filter Type: _____
☐ NIOSH 7400 _____ (QTY)
☐ Fiberglass _____ (QTY)
TEM Air* – Please Indicate Filter Type: _____
☐ AHERA _____ (QTY)
☐ NIOSH 7402 _____ (QTY)
☐ Other (specify _____) _____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate _____ (QTY) ☐ Pos Stop
☐ EPA Point Count _____ (QTY)
☐ NY State Friable 198.1 _____ (QTY)
☐ Grav. Reduction ELAP 198.6 _____ (QTY)
☐ Other (specify _____) _____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield _____ (QTY)
☐ NY State PLM/TEM _____ (QTY)
☐ Residual Ash _____ (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
☐ Quan. (s/area)Dust D6480-99 _____ (QTY)
TEM Water
☐ Qual. (pres/abs) _____ (QTY)
☐ ELAP 198.2/EPA 100.2 _____ (QTY)
☐ EPA 100.1 _____ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☐ Pb Paint Chip _____ (QTY)
☐ *Pb Dust Wipe (wipe type _____) _____ (QTY)
☐ *Pb Air _____ (QTY)
☐ Pb Soil/Solid _____ (QTY)
☐ Pb TCLP _____ (QTY)
☐ Drinking Water ☐ Pb____(QTY) ☐ Cu____(QTY) ☐ As____(QTY)
☐ Waste Water ☐ Pb____(QTY) ☐ Cu____(QTY) ☐ As____(QTY)
☐ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
■ *Spore-Trap 9 (QTY) ☐ Surface Vacuum Dust____ (QTY)
☐ *Surface Swab____(QTY) ☐ Culturable ID Genus (Media____)____(QTY)
☐ *Surface Tape____ (QTY) ☐ Culturable ID Species (Media____)____(QTY)
☐ Other (Specify____)____ (QTY

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
21-604 1	Parking Lot	1:31	75L										✓			Date/Time: Contact:By:
21-604 2	FIELD BLANK	— N/A —											✓			
21-604 3	Main Office	1:40	75L										✓			
21-604 9	Cafeteria	1:48	75L										✓			
21-604 4	Media Center	1:55	75L										✓			Date/Time: Contact:By:
21-604 5	Room 203	2:03	75L										✓			
21-604 6	Room 305	2:11	75L										✓			
21-604 7	Room 334	2:19	75L										✓			
21-604 8	Room 240	2:40	75L										✓			Date/Time: Contact:By:

1/25/21

	Print Name	Signature	Date	Time
Relinquished by:	Mikal Frater	Mikal Frater	1/26/21	1:30 PM
Received by:				
Relinquished by:				
Received for Lab by:			1/26/21	1580

Shipping Information
☐ UPS ☒ In-Person ☐ Other
☐ FedEx ☐ Drop Box
☐ USPS ☐ Courrier
Airbill/Tracking No: _____

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CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	625298	**Job Name:**	Lake Arbor Elementary School	**Date Submitted:**	02/22/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchellville, MD 20721	**Person Submitting:**	Courtney McCall
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	02/22/2021
		P.O. Number:	Not Provided	**Report Date:**	02/22/2021
Attention:	Courtney McCall				

AMA Sample #	625298-1	**AMA Sample #**	625298-2	**AMA Sample #**	625298-3
Client ID	31569965	**Client ID**	31570021	**Client ID**	31569957
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	75	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	1	**Debris Loading**	1	**Debris Loading**	1
Location	Main Office	**Location**	Multi-purpose/ Cafeteria	**Location**	RM 240

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	Present	15	53	<53	
Curvularia					
Penicillium / Aspergillus	1	15	53	53	50%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	50%
Hyphal Fragments*					
Total Raw Ct:	2		**Total sp/m^3:**	106	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	Present	15	53	<53	
Basidiospores	Present	15	53	<53	
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	100	10	80	8000	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	100		**Total sp/m^3:**	8000	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	2	15	53	106	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*	1	15	53	53	50%
Total Raw Ct:	2		**Total sp/m^3:**	106	

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	625298	**Job Name:**	Lake Arbor Elementary School	**Date Submitted:**	02/22/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchellville, MD 20721	**Person Submitting:**	Courtney McCall
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	02/22/2021
		P.O. Number:	Not Provided	**Report Date:**	02/22/2021
Attention:	Courtney McCall				

AMA Sample #	625298-4	**AMA Sample #**	625298-5
Client ID	31569967	**Client ID**	31569952
Analyst ID	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	0
Sample Condition	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	1
Location	Ambient	**Location**	Field Blank

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	7	15	53	371	43.8%
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	7	15	53	371	43.8%
Smuts/Periconia/Myxomycetes	1	15	53	53	6.3%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	53	53	6.3%
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 16 **Total sp/m^3:** 848

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 0 **Total sp/m^3:** 0

Comments

No mold spores observed.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	625298	**Job Name:**	Lake Arbor Elementary School	**Date Submitted:**	02/22/2021
Client:	ATI, Inc.	**Job Location:**	10205 Lake Arbor Way, Mitchellville, MD 20721	**Person Submitting:**	Courtney McCall
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	02/22/2021
		P.O. Number:	Not Provided	**Report Date:**	02/22/2021
Attention:	Courtney McCall				

Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

Normal ecology	Slightly above normal ecology	Moderately above normal ecology	Substantially above normal ecology

Stachybotrys / Memnoniella, and Chaetomium	**Other Spores* (Control Present)**	**Other Spores* (No Control)**
1-4 Spores: Yellow 5-9 Spores: Orange 10+ Spores: Red	< 10 Spores: Insignificant (no color) <= Control's spore count: Green Between Control and 2x Control: Yellow Between 2x Control and 3x Control: Orange 3x+ Control: Red	< 10 Spores: Insignificant (no color) 10-20 Spores: Yellow 20-50 Spores: Orange 50+ Spores: Red

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

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This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

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General Comments, Disclaimers, and Footnotes

Analytical Method: Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

Sample Condition: Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

Spore Notes: Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

Quantification: Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
Analyst(s): Tristan Ward

Technical Director Tristan Ward

MOLD SPORE DESCRIPTIONS

Ascospores

Ascospores are spores formed inside an ascus (asci-plural) or sac-like cell which is contained inside a fruiting body called an ascocarp or an ascoma (ascomata-plural). An ascus typically contains a definite nuimber of ascospores, usually eight. Ascospores are unique in shape, size, and color as to the Genus/species they represent. These spores are specific to fungi classified as Ascomycetes. They are ubiquitous in nature. Many decay organic matter, others are plant or animal pathogens. They can grow indoors on damp materials. Release of ascospores are released by forcible ejection and dispersed by wind, water, animals and other agents. Health Effects: Depending on the Genera, Ascospores may be allergenic.

Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

Other Colorless

- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

Smuts/Periconia/Myxomycetes

Smuts, Periconia, and Myxomycetes spores are grouped together due to their similar round, brown morphology. Smuts are outdoor parasitic plant pathogens. They rarely grow indoors but may grow on host plants if appropriate conditions are present. They are parasitic plant pathogens. They can be found on cereal crops, grasses, flowing plants, weed, and other fungi. They can cause allergies. Periconia are found in soils, dead herbaceous stems and leaf spots, and grasses. They have wind dispersed dry spores. Their spores are abundant in the air but it is not known if they are allergenic. Myxomycetes are found on decaying logs, stumps and dead leaves. They have wind-dispersed dry spores and wet motile (amoebic phase) spores. During favorable conditions they move about like amoebae. They form dry airborne spores when conditions are unfavorable. They are rarely found indoors. Health Effects: They may cause Type 1 allergies (hay fever, asthma). No human infections have been reported.

Unknown Fungi

“Unknown Fungi” are spores that cannot be identified under direct microscopic analysis. This includes partial spores. This category also includes spores that are hidden or hard to see during microscopic examination due to heavy presence of particulate.

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 625298

Mailing/Billing Information:

1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd.
3. Address 2: Suite 250
4. Address 3: Lanham, MD 20706
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: Lake Arbor E.S.
2. Job Location: 10205 Lake Arbor Way Mitchellville, MD 20721
3. Job #: _____ P.O. #: _____
4. Contact Person: Courtney McCall @ phone # 703 399 5423
5. Submitted by: ~~Andrew Woerner~~ C. McCall Signature: Courtney McCall

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due: _____
❑ 24 Hours Time Due: _____
Comments: _____

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
☒ Next Day ❑ 5 Day
❑ 2 Day Date Due: 2/23/21
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: courtney @ atiinc.com
❑ Fax: _____
❑ Verbals: _____

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 _____(QTY)
❑ Fiberglass _____(QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA _____(QTY)
❑ NIOSH 7402 _____(QTY)
❑ Other (specify_____) _____(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate _____(QTY)
❑ EPA Point Count _____(QTY)
❑ NY State Friable 198.1 _____(QTY)
❑ Grav. Reduction ELAP 198.6 _____(QTY)
❑ Other (specify_____) _____(QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield _____(QTY)
❑ NY State PLM/TEM _____(QTY)
❑ Residual Ash _____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust _____(QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____(QTY)
❑ Quan. (s/area)Dust D6480-99 _____(QTY)
TEM Water
❑ Qual. (pres/abs) _____(QTY)
❑ ELAP 198.2/EPA 100.2 _____(QTY)
❑ EPA 100.1 _____(QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

Metals Analysis
❑ Pb Paint Chip _____(QTY)
❑ Pb Dust Wipe (wipe type _____) _____(QTY)
❑ Pb Air _____(QTY)
❑ Pb Soil/Solid _____(QTY)
❑ Pb TCLP _____(QTY)
❑ Drinking Water ❑ Pb_____(QTY) ❑ Cu_____(QTY) ❑ As_____(QTY)
❑ Waste Water ❑ Pb_____(QTY) ❑ Cu_____(QTY) ❑ As_____(QTY)
❑ Pb Furnace (Media _____) _____(QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media: _____
☒ Spore-Trap 5 (QTY) ❑ Surface Vacuum Dust _____(QTY)
❑ Surface Swab _____(QTY) ❑ Culturable ID Genus (Media_____) _____(QTY)
❑ Surface Tape _____(QTY) ❑ Culturable ID Species (Media_____) _____(QTY)
❑ Other (Specify_____) _____(QTY)

SAMPLE INFORMATION: CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MATRIX: MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
3156 9965	Main Office	2/20/21	75L	—					X	X				X			Date/Time: Contact: By:
3157 0021	Multipurpose/																
	Cafeteria	2/20/21	75L	—					X	X				X			
3156 9957	Rm 240	2/20/21	75L	—					X	X				X			
3156 9967	Ambient	2/20/21	75L	—					X	X				X			Date/Time: Contact: By:
3156 9952	Field Blank	2/20/21	75L	—					X	X				X			
																	Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 2 / 22 / 21 @ 0800 Via: DHL By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____ / ____ / ____ Time: _____ Initials: _____
4. Comments: _____

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CERTIFICATE OF ANALYSIS

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Chain of Custody:	285347	**Job Name:**	IAQ - PGCPS	**Date Submitted:**	03/01/2021
Client:	ATI, Inc.	**Job Location:**	Lake Arbor Elementary	**Person Submitting:**	Mikal Frater
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-604	**Date Analyzed:**	03/01/2021
		P.O. Number:	Not Provided	**Report Date:**	03/01/2021
Attention:	Mikal Frater				

AMA Sample #	285347-1	**AMA Sample #**	285347-2	**AMA Sample #**	285347-3
Client ID	21-604-1	**Client ID**	21-604-2	**Client ID**	21-604-3
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	0	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	1	**Debris Loading**	1
Location	Parking Lot	**Location**	Field Blank	**Location**	Multi-purpose/ Cafe

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	51	15	53	2703	77.3%
Basidiospores	14	15	53	742	21.2%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes	1	15	53	53	1.5%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	66	**Total sp/m^3:**	3498		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	0	**Total sp/m^3:**	0		

Comments

No mold spores observed.

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	2	15	53	106	11.8%
Basidiospores	1	15	53	53	5.9%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	2	15	53	106	11.8%
Curvularia					
Penicillium / Aspergillus	8	15	53	424	47.1%
Smuts/Periconia/Myxomycetes	Present	15	53	<53	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	53	53	5.9%
Other Colorless	3	15	53	159	17.6%
Hyphal Fragments*					
Total Raw Ct:	17	**Total sp/m^3:**	901		

Comments

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Technical Director Tristan Ward

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- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

Smuts/Periconia/Myxomycetes

Smuts, Periconia, and Myxomycetes spores are grouped together due to their similar round, brown morphology. Smuts are outdoor parasitic plant pathogens. They rarely grow indoors but may grow on host plants if appropriate conditions are present. They are parasitic plant pathogens. They can be found on cereal crops, grasses, flowing plants, weed, and other fungi. They can cause allergies. Periconia are found in soils, dead herbaceous stems and leaf spots, and grasses. They have wind dispersed dry spores. Their spores are abundant in the air but it is not known if they are allergenic. Myxomycetes are found on decaying logs, stumps and dead leaves. They have wind-dispersed dry spores and wet motile (amoebic phase) spores. During favorable conditions they move about like amoebae. They form dry airborne spores when conditions are unfavorable. They are rarely found indoors. Health Effects: They may cause Type 1 allergies (hay fever, asthma). No human infections have been reported.

Unknown Fungi

“Unknown Fungi” are spores that cannot be identified under direct microscopic analysis. This includes partial spores. This category also includes spores that are hidden or hard to see during microscopic examination due to heavy presence of particulate.

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 285347

Mailing/Billing Information:

1. Client Name: ATI, Inc
2. Address 1: 4221 Forbes Blvd Suite 250
3. Address 2: Lanham, MD 20706
4. Address 3:
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: IAQ - PGCPS
2. Job Location: Lake Arbor Elementary
3. Job #: 21-604 P.O. #: _____
4. Contact Person: Mikal Frater Cell: (818) 702-8621
5. Collected by: " Cell: "

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ 4 Hours ☐ Immediate Date Due: _____ ☐ 24 Hours Time Due: _____ Comments: _____	☐ 4 Hours ☐ 3 Day ☐ Same Day ☐ 5 Day + ● Next Day Date Due: _____ ☐ 2 Day ☐ Results Required By Noon	● Email: mikal@atiinc.com ☐ Email 2: _____ ☐ Verbals: _____

Asbestos Analysis

*PCM Air – Please Indicate Filter Type: _____
- ☐ NIOSH 7400 _____ (QTY)
- ☐ Fiberglass _____ (QTY)

TEM Air* – Please Indicate Filter Type: _____
- ☐ AHERA _____ (QTY)
- ☐ NIOSH 7402 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate _____ (QTY) ☐ Pos Stop
- ☐ EPA Point Count _____ (QTY)
- ☐ NY State Friable 198.1 _____ (QTY)
- ☐ Grav. Reduction ELAP 198.6 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield _____ (QTY)
- ☐ NY State PLM/TEM _____ (QTY)
- ☐ Residual Ash _____ (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
- ☐ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
- ☐ Qual. (pres/abs) _____ (QTY)
- ☐ ELAP 198.2/EPA 100.2 _____ (QTY)
- ☐ EPA 100.1 _____ (QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples _____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
- ☐ Pb Paint Chip _____ (QTY)
- ☐ *Pb Dust Wipe (wipe type _____) _____ (QTY)
- ☐ *Pb Air _____ (QTY)
- ☐ Pb Soil/Solid _____ (QTY)
- ☐ Pb TCLP _____ (QTY)
- ☐ Drinking Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
- ☐ Waste Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
- ☐ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
- ● *Spore-Trap 3 (QTY)
- ☐ *Surface Swab _____ (QTY)
- ☐ *Surface Tape _____ (QTY)
- ☐ Other (Specify _____) _____ (QTY
- ☐ Surface Vacuum Dust _____ (QTY)
- ☐ Culturable ID Genus (Media _____) _____ (QTY)
- ☐ Culturable ID Species (Media _____) _____ (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MATRIX: MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
21-604 1	Parking Lot	2/27/21						✓	✓							Date/Time: Contact:By:
21-604 2	Blank	2/27/21						✓	✓							
21-604 3	Multipurpose Cafe	2/27/21						✓	✓							
																Date/Time: Contact:By:
																Date/Time: Contact:By:

	Print Name	Signature	Date	Time	Shipping Information
Relinquished by:	Mikal Frater	Mikal Frater	3/1/21	11:40 AM	☐ UPS ☐ In-Person ☐ Other
Received by:					☐ FedEx ☐ Drop Box
Relinquished by:					☐ USPS ☐ Courrier
Received for Lab by:					Airbill/Tracking No: _____

Appendix B: Instrument Calibration Records

Certificate of Calibration

(✓) Buck™ BioAire Pump Calibration Rotameter

( ) Buck™ BioSlide Pump Calibration Rotameter

Serial number: R15046
Date Calibrated: 11/12/2020 **Calibration Due Date:** 11/12/2021

Flow Calibration

This is to certify that the rotameter listed above has been calibrated using a Buck Primary calibrator listed below which is calibrated according to A.P. Buck, Inc. calibration procedure APB-1, Ver. 6.2 and is traceable to the National Institute of Standards & Technology (N.I.S.T). A.P. Buck guarantees the accuracy of the rotameter to be within ± 5% of the actual flow rate.

AMBIENT CONDITIONS: Temperature 74±3° F Relative Humidity 50±10%

Description	MFR.	Model	Serial #
Primary Calibrator	A.P. Buck Inc.	M30B	☐ A40020 ☑ A40021

QA Approval By: Moran Menk

A.P. BUCK, INC.
7101 Presidents Drive, Suite 110
Orlando, FL 32809
Phone: 407-851-8602
Fax: 407-851-8910

BUCK

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.72 (21.5)	°F (°C)
RELATIVE HUMIDITY	39.0	%RH
BAROMETRIC PRESSURE	29.15 (987.1)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

☒ AS LEFT ☒ IN TOLERANCE
☐ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

THERMO COUPLE — **SYSTEM PRESSURE01-02** — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	70.9 (21.6)	70.8 (21.6)	68.9~72.9 (20.5~22.7)				

BAROMETRIC PRESSURE — **SYSTEM PRESSURE01-02** — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	29.22 (989.5)	29.23 (989.8)	28.64~29.80 (969.9~1009.1)				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E004626	02-14-20	02-28-21	Pressure	E005254	10-10-19	10-31-20
Pressure	E003982	01-24-20	07-31-20	DC Voltage	E003493	08-14-19	08-31-20

ChaoVang
CALIBRATED

June 15, 2020
DATE

DOC ID: CERT_GEN_V02

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.68 (21.5)	°F (°C)
RELATIVE HUMIDITY	38.0	%RH
BAROMETRIC PRESSURE	29.16 (987.5)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

☐ AS LEFT ☒ IN TOLERANCE
☒ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

THERMO COUPLE — SYSTEM PRESSURE01-02 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	70.8 (21.6)	71.1 (21.7)	68.8~72.8 (20.4~22.7)				

BAROMETRIC PRESSURE — SYSTEM PRESSURE01-02 — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	29.22 (989.5)	29.17 (987.8)	28.64~29.80 (969.9~1009.1)				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E004626	02-14-20	02-28-21	Pressure	E005254	10-10-19	10-31-20
Pressure	E003982	01-24-20	07-31-20	DC Voltage	E003493	08-14-19	08-31-20

ChaoVang
VERIFIED

June 15, 2020
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	74.0 (23.3)	°F (°C)
RELATIVE HUMIDITY	34	%RH
BAROMETRIC PRESSURE	29.20 (988.8)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

☐ AS LEFT ☒ AS FOUND

☐ IN TOLERANCE ☒ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

GAS CO_2 AS FOUND — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3015.3	* 2902.7	2924.9~3105.8
2	499	458	449~549	5	5056	* 4859.6	4904.3~5207.7
3	1002	963	952~1052				

GAS CO AS FOUND — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35.1	* 29.5	32.1~38.1	2	100.5	* 84.8	97.5~103.5

TEMPERATURE AS FOUND — SYSTEM T-101 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.1 (0.0)	32.8 (0.4)	31.1~33.1 (−0.5~0.6)	2	140.02 (60.01)	* 141.31 (60.73)	139.02~141.02 (59.45~60.57)

HUMIDITY AS FOUND — SYSTEM H-102 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	10.4	7.0~13.0	4	70.0	67.1	67.0~73.0
2	30.0	29.3	27.0~33.0	5	90.01	* 85.88	87.01~93.01
3	50.0	48.5	47.0~53.0				

**Indicates Out-of-Tolerance Condition*

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due
5000 CO_2	14A044095	04-06-20	04-06-25
N2	T-0608	05-19-20	05-19-28
Flow	E003341	09-03-19	09-30-20
Flow	E003525	01-06-20	01-31-21
2000 C4H8	EB0054467	08-13-19	08-12-22
Temperature	E010657	02-14-20	02-28-21
Temperture	E010655	01-21-20	01-31-21

Measurement Variable	System ID	Last Cal.	Cal. Due
200 CO	149886	04-30-20	03-24-28
Air	T17939	04-09-20	04-09-28
Flow	E003980	04-22-20	04-30-21
Flow	E003342	09-03-19	09-30-20
100 C4H8	CC507339	03-24-20	03-24-28
Temperature	E010658	02-14-20	02-28-21
Humidity	E003539	02-26-20	08-31-20

Chimouva Vue
VERIFIED

June 15, 2020
DATE

Doc. ID: CERT_GEN_WCC

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.41 (21.3)	°F (°C)
RELATIVE HUMIDITY	50.3	%RH
BAROMETRIC PRESSURE	29.15 (987.1)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

☒ AS LEFT ☐ AS FOUND

☒ IN TOLERANCE ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

TEMPERATURE VERIFICATION — SYSTEM T-101 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.1 (0.0)	31.9 (-0.1)	31.1~33.1 (-0.5~0.6)	2	140.0 (60.0)	140.3 (60.3)	139.0~141.0 (59.5~60.6)

HUMIDITY VERIFICATION — SYSTEM H-102 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	9.0	7.8~12.2	4	70.0	69.5	67.8~72.2
2	30.0	29.1	27.8~32.2	5	90.0	88.7	87.8~92.2
3	50.0	49.6	47.8~52.2				

CO2 GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3016	3012	2926~3107
2	502	502	452~552	5	5056	5032	4904~5208
3	1005	1019	955~1055				

CO GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35	36	32~38	2	101	100	98~104

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E010657	02-14-20	02-28-21
Temperture	E010655	01-21-20	01-31-21
5000 CO2	14A044095	04-06-20	04-06-25
N2	T-0608	05-19-20	05-19-28
Flow	E003341	09-03-19	09-30-20
Flow	E003525	01-06-20	01-31-21
2000 C4H8	EB0054467	08-13-19	08-12-22

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E010658	02-14-20	02-28-21
Humidity	E003539	02-26-20	08-31-20
200 CO	149886	04-30-20	03-24-28
Air	T17939	04-09-20	04-09-28
Flow	E003980	04-22-20	04-30-21
Flow	E003342	09-03-19	09-30-20
100 C4H8	CC507339	03-24-20	03-24-28

Chao Vang
CALIBRATED

June 16, 2020
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157