4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
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June 7, 2019

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

RE: Indoor Air Quality Screening, Bladensburg High School
IFB: 022-19
ATI Project Number: ATI19-690

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) screening at Bladensburg High School. The IAQ screening was conducted on June 1, 2019. Its key findings are enclosed in the Executive Summary on page three, and the official laboratory report for total fungal spore trap sampling is 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.

Courtney E. McCall
Project Manager

Sarath Seneviratne
CIH, CSP, CHMM

Indoor Air Quality Screening Report

Prince George's County Public Schools
Bladensburg High School
4200 57th Avenue
Bladensburg, Maryland 20710

Prepared for:

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

June 7, 2019

Submitted by:

ATI Job # 19-690

Intentionally Blank

Table of Contents

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

Abbreviations involving scientific volume and measurements involving media or water sampling

Counts/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 and Key Findings

ATI conducted a proactive Indoor Air Quality (IAQ) screening on June 1, 2019, at Bladensburg High School, located at 4200 57th St., Bladensburg, MD 20710.

The screening included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the cafeteria, the main office, and classrooms, for potential IAQ contributors and pathways. As part of the screening, ATI collected direct reading measurements for 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 this screening:

1. Temperature measurements were slightly below and on the lower end of ASHRAE guidelines for summer temperatures, between 73°F and 79°F.
2. Relative humidity measurements were within ASHRAE guidelines, <65%, with the exception of one classroom, which was found to be 67.3% relative humidity on average.
3. All tested spaces were within the recommended ASHRAE limit for carbon dioxide, which was 1,113 parts per million (PPM) for the day of sampling.
4. Carbon monoxide was not detected throughout the tested spaces.
5. Spore trap results were favorable with six indoor locations not detecting any spores and four locations detecting low concentrations of Ascospores or Basidiospores.

2. Assessment Methods

Ms. Courtney McCall of ATI, Inc. conducted a visual assessment and air sampling on June 1, 2019. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Visual observations were made at the time the samples were collected. 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 the 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 obtained with a calibrated TSI Q-Trak 7575-X Meter and attached 982 Probe.

Total fungal air samples were collected with a 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. The samples were analyzed by direct microscopic examination (identifies and counts both viable and non-viable spores, which is then considered "total fungal"), via the American Society for Testing and Materials (ASTM) Standard D7391-09 by EMSL Analytical, Inc., (EMSL) located in Beltsville, MD.

EMSL participates in the National Institute of Standards and Technology's (NIST's) National Voluntary Laboratory Accreditation Program (NVLAP) for general laboratory performance and management and the American Industrial Hygiene Association (AIHA) Environmental Microbial Laboratory Accreditation Program (EMLAP, Certificate Number 102891).

Instrument calibration records are included in Appendix B of this report.

3. Visual Observations

Table 1: Visual Observations and Sampling Locations

Sample Location	Observations
Outside	• Ambient sample collected near the loading dock. • No light wind and no standing water present.
Room C5109 Science Lab	• One person present during testing. • Housekeeping good, no visible dusts or molds. Ceiling tiles are clean. • Approx. 1,500 square feet.
Room C5102	• One person present during testing. • Housekeeping good, no visible dusts or molds. Ceiling tiles are clean. • Approx. 1,500 square feet.
Computer Lab Room C4122	• One person present during testing. • Housekeeping good, no visible dusts or molds. Ceiling tiles are clean. • Approx. 40 computers present on desks with some papers and books nearby. • Approx. 1,000 square feet.
Room C3105	• One person present during testing. • Housekeeping good, no visible dusts or molds. Ceiling tiles are clean. • Approx. 768 square feet.
Room E3101 Art Room	• One person present during testing. • Housekeeping very good, no visible dusts or molds. Metal ceiling with daylighting. • Papers and papier-mache art nearby. • Approx. 1,300 square feet.
C2127 Media Center	• One person present during testing. Samples collected at Circulation Desk. • Housekeeping good, no visible dusts or molds. Ceiling tiles and hard shell ceilings are clean. • Approx. 48 computers present on desks with some papers and books nearby. Bookshelves clean. • Approx. 6,500 square feet.
Room C2100	• One person present during testing. • Housekeeping good, no visible dusts or molds. Approx. 1 square foot of stained ceiling tile present but cannot determine if it is still wet. • Approx. 700 square feet.
Cafeteria	• One person present during testing. • Housekeeping good, no visible dusts.

Sample Location	Observations
	• Approx. three ceiling tiles removed to capture leaks and 10 ceiling tiles have water stains. Nine buckets are scattered to collect dripping water. Two buckets have one inch of water present. A small puddle is on the ground about 25 feet from sampling. • Approx. 8,800 square feet.
Room MD802 ROTC	• Room divided into three partitions separated by removable walls. • Trophies and uniforms present. • Housekeeping is good with no visible dust. • Ceiling tiles look new and have no stains. • Approx. 2500 square feet.
Room C1199	• One ceiling tile removed and about a 12 inch water stain on another ceiling tile. • Two penetrations in the concrete wall (rear of room) have capped pipes present. Small openings into wall cavity are present. • Housekeeping is good with no visible dust. • Approx. 820 square feet.

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 most building 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 temperature measurements obtained during the June 1, 2019, screening is summarized in Table 2. As indicated by the data in the table, temperatures in the school averaged between 67.5 – 76.3°F, with some rooms testing below and some within the ASHRAE summer comfort range.

Table 2: Temperature Measurements

Sample Location	June 1, 2019 °F			ASHRAE Standard °F
	Min	Max	Average	
Outside	74.3	75.2	74.8	N/A
Indoors				
Room C5109 Science Lab	76	76.5	76.3	73 – 79
Room C5102	75.1	75.8	75.5	73 – 79
Computer Lab Room C4122	69.9	70.9	70.4	73 – 79

Sample Location	June 1, 2019 °F			ASHRAE Standard °F
	Min	Max	Average	
Room C3105	71	72	71.5	73 – 79
Room E3101 Art Room	68	70.6	69.3	73 – 79
C2127 Media Center	70	70.4	70.2	73 – 79
Room C2100	70.8	70.9	70.9	73 – 79
Cafeteria	66.4	69.2	67.8	73 – 79
Room MD802 ROTC	67	67.9	67.5	73 – 79
Room C1199	69.8	70.3	70.1	73 – 79

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 below 30% may result in drying of the mucous membranes and skin. Relative humidity measurements are summarized in Table 3. As indicated by the data in the table, relative humidity measurements averaged between 45.1% and 67.3%. One tested location, Room C2100, exceeded the ASHRAE maximum recommendation of 65% relative humidity.

Table 3: Relative Humidity Measurements

Sample Location	June 1, 2019 (%)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outside	63.3	64	63.7	N/A
Inside				
Room C5109 Science Lab	55.7	57.1	56.4	< 65
Room C5102	56	56	56	< 65
Computer Lab Room C4122	64.2	65.6	64.9	< 65
Room C3105	60.3	62.7	61.5	< 65
Room E3101 Art Room	43.7	46.5	45.1	< 65
C2127 Media Center	51.4	52.6	52	< 65
Room C2100	63.8	70.8	67.3	< 65
Cafeteria	53	56.5	54.8	< 65
Room MD802 ROTC	55.5	57	56.3	< 65
Room C1199	53.8	55.4	54.6	< 65

4.3 Carbon Dioxide

Carbon dioxide measurements 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 results indoor carbon dioxide concentrations are less than 700 parts per million (ppm) above the outdoor air concentration.

Carbon dioxide measurements are summarized in Table 4. On the day of the screening, the average outdoor carbon dioxide concentration obtained was 413 ppm, which calculates to a maximum indoor concentration of 1,113 ppm (700 + 413). The carbon dioxide levels inside the school ranged from the minimum detected, 372 ppm to 981 ppm, the maximum detected. All tested locations were within the ASHRAE recommended standard, <1,113 ppm.

Table 4: Carbon Dioxide Measurements

Sample Location	June 1, 2019 Concentration (parts per million)			ASHRAE Standard (ppm) NTE
	Min	Max	Average	
Outside	398	427	413	N/A
Inside				
Room C5109 Science Lab	414	981	697.5	1,113
Room C5102	433	545	489	1,113
Computer Lab Room C4122	415	449	432	1,113
Room C3105	425	627	526	1,113
Room E3101 Art Room	387	410	398.5	1,113
C2127 Media Center	398	415	406.5	1,113
Room C2100	437	485	461	1,113
Cafeteria	372	640	506	1,113
Room MD802 ROTC	399	458	428.5	1,113
Room C1199	399	410	404.5	1,113

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. As indicated by the data in Table 5, carbon monoxide was not detected throughout the suite.

Table 5: Carbon Monoxide Measurements

Sample Location	June 1, 2019 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outside	0	0	0	N/A
Inside				
Room C5109 Science Lab	0	0	0	< 9
Room C5102	0	0	0	< 9
Computer Lab Room C4122	0	0	0	< 9
Room C3105	0	0	0	< 9
Room E3101 Art Room	0	0	0	< 9
C2127 Media Center	0	0	0	< 9
Room C2100	0	0	0	< 9
Cafeteria	0	0	0	< 9
Room MD802 ROTC	0	0	0	< 9
Room C1199	0	0	0	< 9

5. Total Fungal Air Sampling Results

Mold needs a food source, moisture, proper temperature and humidity, and at times, a source of light, to grow in an environment. Air infiltration through building entrances and exits, open windows and loading docks, and foot traffic into buildings, including the HVAC system all serve as primary pathways that can carry fungi indoors. Water leaks and humid conditions inside of buildings provide the moisture that fosters mold growth.

The June 1, 2019, mold screening 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 official laboratory report with spore trap samples collected on June 1, 2019, is presented in Appendix A. The findings indicated that the indoor concentrations were favorable compared to the outdoor concentrations, and indoor amplification was not present.

The outdoor sample detected 16,870 total counts/^{m3} of mold spores. Six classrooms did not detect any mold spores. Four classrooms detected under 100 counts/^{m3} of Ascospores or Basidiospores, spore types that are commonly found indoors.

6. Summary of Findings

Temperature measurements were slightly below ASHRAE guidelines for summer temperatures, between 73°F and 79°F. Relative humidity measurements were within ASHRAE guidelines, <65%, with the exception of one classroom. All tested spaces were within the recommended ASHRAE limit for carbon dioxide, which was 1,113 parts per million (PPM) for the day of sampling. Carbon monoxide was not detected throughout the tested spaces.

Laboratory results were very favorable and indicated that six locations indoors did not detect any mold spores. Four other locations detected very low quantities of Ascospores or Basidiospores.

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

Sincerely,
ATI, INC.

Courtney E. McCall
Project Manager

Sarath Seneviratne
CIH, CSP, CHMM

Appendix A:
Laboratory Report and Chain of Custody

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705

Tel/Fax: (301) 937-5700 / (301) 937-5701

http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 191906227
Customer ID: ATII25A
Customer PO:
Project ID:

Attn: Courtney McCall
ATI
4221 Forbes Blvd
Suite 250
Lanham, MD 20706
Project: 19-690-Bladensburg High School

Phone: (202) 832-1433
Fax:
Collected: 06/01/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	191906227-0001			191906227-0002			191906227-0003		
Client Sample ID:	2839 9889			2840 0110			2839 9890		
Volume (L):	75			75			75		
Sample Location	ambient			room c5109			room c5102		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	2	80	0.5	-	-	-	-	-	-
Ascospores	26	1100	6.5	1	40	100	-	-	-
Aspergillus/Penicillium	1	40	0.2	-	-	-	-	-	-
Basidiospores	358	15100	89.5	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	13	550	3.3	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**400**	**16870**	**100**	**1**	**40**	**100**	**-**	**None Detect**	**-**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	2	-	-	2	-

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

Stefanie Schneider

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD AIHA-LAP, LLC --EMLAP Accredted #102891

Report amended: 06/05/2019 17:10:42 Replaces initial report from: 06/05/2019 16:44:49 Reason Code: Client-Change to Location

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

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Fax:
Collected: 06/01/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	191906227-0004			191906227-0005			191906227-0006		
Client Sample ID:	2840 0093			2840 0077			2840 0081		
Volume (L):	75			75			75		
Sample Location	room c4122			room c3105			art room, e3103		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	1	40	100	1	40	100	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**1**	**40**	**100**	**1**	**40**	**100**	**-**	**None Detect**	**-**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	2	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

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

Stefanie Schneider

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Analyzed: 06/05/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	191906227-0007			191906227-0008			191906227-0009		
Client Sample ID:	2840 0104			2840 0097			2840 0275		
Volume (L):	75			75			75		
Sample Location	media room c2127			room c2100			cafeteria		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**-**	**None Detect**	**-**	**-**	**None Detect**	**-**	**-**	**None Detect**	**-**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

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

Stefanie Schneider

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD AIHA-LAP, LLC --EMLAP Accredted #102891

Report amended: 06/05/2019 17:10:42 Replaces initial report from: 06/05/2019 16:44:49 Reason Code: Client-Change to Location

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705

Tel/Fax: (301) 937-5700 / (301) 937-5701

http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 191906227
Customer ID: ATII25A
Customer PO:
Project ID:

Attn: Courtney McCall
ATI
4221 Forbes Blvd
Suite 250
Lanham, MD 20706
Project: 19-690-Bladensburg High School

Phone: (202) 832-1433
Fax:
Collected: 06/01/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	191906227-0010			191906227-0011			191906227-0012		
Client Sample ID:	2840 0100			2840 0270			2840 9888		
Volume (L):	75			75					
Sample Location	rotc rm md802			room c119			field blank		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	2	80	100	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**2**	**80**	**100**	**-**	**None Detect**	**-**	**-**	**No Trace**	**-**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	0	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	0*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	-	-
Background (1-5)	-	1	-	-	1	-	-	-	-

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

Stefanie Schneider

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

Report amended: 06/05/2019 17:10:42 Replaces initial report from: 06/05/2019 16:44:49 Reason Code: Client-Change to Location

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

OrderID: 191906227

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*: 191906227

EMSL ANALYTICAL, INC.
LABORATORY-PRODUCTS-TRAINING

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX:(856) 786-0262

Company Name: ATI, Inc.	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments
Street: 4221 Forbes Blvd Suite 250	*Third Party Billing requires written authorization from third party.*
City: Lanham **State/Province:** MD	**Zip/Postal Code:** 20706 **Country:**
Report To (Name): Courtney McCall	**Telephone #:** 703 399 5423
Email Address: courtney@atiinc.com	**Fax #:** **Purchase Order:**
Project Name/Number: 19-690	**Please Provide Results:** ☐ Fax ☑ Email
U.S. State Samples Taken: MD **Project Zip Code:** 20710	**Connecticut Samples:** ☐ Commercial ☐ Residential
Sterile, Sodium Thiosulfate Preserved Bottle Used: ☐ **Biocide Used in Source (specify):** ☐	
Public Water Supply Samples: ☐ **Note: All results may automatically be reported to DOH if required by state.**	

Turnaround Time (TAT) Options - Please Check

☐ 3 Hour	☐ 6 Hour	☐ 24 Hour	☐ 48 Hour	☐ 72 Hour	☐ 96 Hour	☑ 1 Week	☐ 2 Week

Microbiology Test Codes

M001 Air-O-Cell
M174 MoldSnap
M030 Micro 5
M032 Allergenco-D
M041 Fungal Direct Examination
M169 *Pollen ID & Enumeration*
M280 Dust Characterization Level-1
M281 Dust Characterization Level-2
M005 Viable Fungi- Air Samples (Genus ID & Count)
M006 Viable Fungi- Air Samples (Includes *Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M007 Culturable fungi - Surface Samples (Genus ID & Count)
M008 *Culturable fungi - Surface Samples (Includes Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M009 Bacteria Culture Gram Stain & Count
M010 Bacteria Count & ID - 3 Most Prominent
M011 Bacteria Count & ID - 5 Most Prominent

M012 *Pseudomonas aeruginosa* (P/A***)
M024 *Pseudomonas aeruginosa* (MFT*)
M015 Heterotrophic Plate Count
M017 Total Coliform & *E. coli* (Colilert P/A***)
M018 Total Coliform & *E. coli* (MFT*)
M114 Total Coliform & *E. coli* Enumeration (Colilert MPN**)
M019 Fecal Coliform (MFT*)
M020 Fecal *Streptococcus* (MFT*)
M029 *Enterococci* (MFT*)
M129 *Enterococci* (Enterolert P/A***)
M180 Real Time qPCR-ERMI 36 Panel
M025 Sewage Screen –Water (MFT*)

M115 Sewage Screen - Water (P/A***)
M116 Sewage Screen - Water (MPN**)
M117 Sewage Screen - Swab (P/A***)
M013 Sewage Screen - Swab (MFT*)
M133 *Methicillin-resistant Staph. aureus* (MRSA)
M031 Rapid-growing non-TB *Mycobacteria* Detection & Enumeration
M014 Endotoxin Analysis
M044 Group Allergen (Cat, Dog, Cockroach, Dust Mite)
Other See Analytical Price Guide
***Legionella* Analysis** Please use EMSL *Legionella* COC

*MFT= Membrane Filtration Technique
**MPN= Most Probable Number
***P/A= Presence/Absence

Name of Sampler: Courtney E McCall **Signature of Sampler:** Courtney E McCall

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (Only for Waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
Example A1	Kitchen Sink/Tap	Water	☒ P ☐ NP	M017	100 mL	9/1/13 4:00 PM	
2839 9889	Ambient	Air	☐ P ☐ NP	M001	75l	6/1/19 753 am	
2840 0110	Room C5109	Air	☐ P ☐ NP	M001	75l	6/1/19 828 am	
2839 9890	Room C5102	Air	☐ P ☐ NP	M001	75l	6/1/19 835 am	
2840 0093	Room C4122	Air	☐ P ☐ NP	M001	75l	6/1/19 845 am	
2840 0077	Room C3105	Air	☐ P ☐ NP	M001	75l	6/1/19 900 am	

Client Sample # (s): -
Total # of Samples: 12
Samples Received Chilled? Yes / No (Lab Use Only)

Relinquished (Client): Courtney E McCall **Date:** 6/2/2019 **Time:** 10:17 AM
Received (Lab): AB Walk-In **Date:** 6/3/19 **Time:** 8:30 am
AB 6/3/19

Comments/Special Instructions:

Controlled Document – COC-34 Micro R8 11/14/2017

OrderID: 191906227

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX:(856) 786-0262

Additional pages of the chain of custody are only necessary if needed for additional sample information.

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (Only for Waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
2840 0081	Art Room, E3103	Air	☐ P ☐NP	M001	75l	6/1/19 915 am	
2840 0104	Media Center, C2127	Air	☐ P ☐NP	M001	75l	6/1/19 930 am	
2840 0097	Room C2100	Air	☐ P ☐NP	M001	75l	6/1/19 940 am	
2840 0275	Cafeteria	Air	☐ P ☐NP	M001	75l	6/1/19 955 am	
2840 0100	ROTC Rm MD802	Air	☐ P ☐NP	M001	75l	6/1/19 1005 am	
2840 0270	Room C1199	Air	☐ P ☐NP	M001	75l	6/1/19 1015 am	
2839 9888	FIELD BLANK	Air	☐ P ☐NP	M001	NA		
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				
			☐ P ☐NP				

Comments/Special Instructions:

Controlled Document – COC-34 Micro R8 11/14/2017

Appendix B:
Instrument Calibration Records

Certificate of Calibration

(✓) ~~Buck™~~ BioAire Pump Calibration Rotameter

( ) Buck™ BioSlide Pump Calibration Rotameter

Serial number: R14057

Date Calibrated: 1/22/19 **Calibration Due Date:** 1/22/20

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:

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

BUCK
A.P. BUCK, INC.

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	75.9 (24.4)	°F (°C)
RELATIVE HUMIDITY	34	%RH
BAROMETRIC PRESSURE	29.08 (984.8)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

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

– CALIBRATION VERIFICATION RESULTS –

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.0 (0.0)	31.6 (−0.2)	31.0~33.0 (−0.6~0.6)	2	140.0 (60.0)	140.4 (60.2)	139.0~141.0 (59.4~60.6)

HUMIDITY VERIFICATION — SYSTEM H-120 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	9.8	7.8~12.2	4	70.0	70.0	67.8~72.2
2	30.0	30.6	27.8~32.2	5	90.0	89.6	87.8~92.2
3	50.0	50.4	47.8~52.2				

CO_2 GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3000	3005	2910~3090
2	500	487	450~550	5	5042	5034	4891~5193
3	1000	1000	950~1050				

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35	35	32~38	2	100	99	97~103

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	E003986	02-12-19	08-31-19
Humidity	E002008	01-25-19	07-31-19
200 CO	CC15018	04-15-19	04-12-22
Air	GT-0540	01-19-19	01-18-22
Flow	E003978	02-26-19	02-29-20
Flow	E003501	09-04-18	09-30-19
100 C4H8	EB0100212	09-29-17	09-29-21

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E003987	02-12-19	08-31-19
5000 CO_2	3341007	12-14-18	12-11-21
N2	UT-102	04-30-19	04-30-24
Flow	E003341	09-14-18	09-30-19
Flow	E003502	02-26-19	02-29-20
2000 C4H8	EB0081455	06-27-18	06-26-21

CALIBRATED

May 23, 2019
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	75.5 (24.2)	°F (°C)
RELATIVE HUMIDITY	38	%RH
BAROMETRIC PRESSURE	28.66 (970.5)	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	73.5 (23.1)	73.1 (22.8)	71.5~75.5 (21.9~24.2)				

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	28.67 (970.9)	28.65 (970.2)	28.10~29.24 (951.6~990.2)				

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	E003170	02-21-19	02-29-20	Pressure	E005254	10-29-18	10-31-19
Pressure	E003982	02-07-19	08-31-19	DC Voltage	E003493	08-23-18	08-31-19

Sharol M^cElmury
VERIFIED

May 22, 2019
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157