

February 10, 2021

Mr. Alex Baylor  
Environmental Specialist  
Environmental Safety Office  
Prince George's County Public Schools  
Division of Supporting Services / Building Services  
13306 Old Marlboro Pike  
Upper Marlboro, MD 20772

via email: [alex.baylor@pgcps.org](mailto:alex.baylor@pgcps.org)

**RE: Indoor Air Quality (IAQ) and Mold Assessment Services  
Prince George's County Public Schools – Perrywood Elementary School  
501 Watkins Park Drive, Largo, Maryland 20774  
Contract No.: IFB 022-19: Indoor Air Quality Services at Various Locations  
Tidewater Project No.: 5419-041**

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this report regarding the results of the preliminary Indoor Air Quality (IAQ) and Mold Assessment Services conducted by Tidewater at Perrywood Elementary School located at 501 Watkins Park Drive in Largo, Maryland. Tidewater's Project Manager and Certified Industrial Hygienist, Mr. Skanda Abeyesekere MS, CIH, CSP, CHMM conducted these services on December 8, 2020.

The scope of work for the IAQ assessment and mold survey included:

- Inspecting, taking direct read measurements and conducting air sampling at the following select areas of the school: Main Office, Science Room 218, Art Room 224, Media Center 164, Multipurpose Room 170, Intermediate Room 164, Intermediate Room 154, Classroom 135 and Classroom 105 (Primary.) These areas were inspected for evidence of potential indoor air quality problems (including suspect microbial growth, water damage, chemical use/ storage, drain traps, sources of allergens/ contaminants, etc.) that may contribute to indoor air quality problems;
- Taking direct read air measurements for comfort parameters including temperature (T), relative humidity (RH), carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO) for comparison with standards established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1–2019, *Ventilation for Acceptable Indoor Air Quality*, and The United States Environmental Protection Agency (US EPA) National Ambient Air Quality Standards (NAAQS);
- Taking direct read measurements for Particulate Matter less than 10 microns (PM<sub>10</sub>) for comparison with standards established by the US EPA NAAQS Final Action (December 7, 2020); and
- Conducting air sampling for microbial spores for total airborne fungal spore analysis.

### **Visual Observation**

The school building was occupied by a limited number of staff and no students were present at the time of the survey because of the on-going COVID-19 pandemic. The majority of the



classrooms and other common areas inspected were vacant. The results of Tidewater's visual inspection are presented below:

**Main Office**

No signs of suspect mold growth were observed in the main office and no notable odors were detected. The ceiling mounted air supply grills were clean. The main office was clean and well maintained and housekeeping appeared to be satisfactory.

**Science Room 218**

Science Room was equipped with ceiling-mounted air supply and return grills. The supply and return air grills were clean and free of dust accumulations. No signs of suspect mold growth were observed in the Science Room and no notable odors were detected. The Science Room was clean and well maintained.

**Art Room 224**

Multiple ceiling tiles with heavy water stains were observed in numerous locations in the Art Room. This room is equipped with ceiling mounted air supply grills, which were clean and free of dust accumulations. No odors were detected. The Art Room was clean and well maintained.

**Media Center**

Signs of ongoing water intrusion problems and heavy water damage were noted. Multiple ceiling tiles with heavy water stains were observed throughout the Media Center. Furthermore, missing/broken ceiling tiles were also observed in several locations. Heavy water damage was observed on the overhead drywall located in the rear end of the library caused by water leaks above the drop ceiling. No odors were detected. Tidewater was informed that there had been ongoing water intrusion problems in the Media Center.

**Multipurpose Room**

The multipurpose room was extremely hot. No visible suspect mold growth or notable odors were detected at the time of the inspection. One (1) water stained ceiling tile was observed. The wall-mounted supply and return air grills had heavy dust accumulations. Housekeeping appeared to be satisfactory.

**Intermediate Room 164**

No visible suspect mold growth or notable odors were detected at the time of the inspection. Ceiling mounted air supply grills were clean. A wall-mounted fan coil unit was observed. This unit was not operating at the time of the inspection. The classroom was clean and well maintained.

**Intermediate Room 154**

No signs of suspect mold growth were observed in Classroom 154 and no notable odors were detected. A wall-mounted fan coil unit was observed. This unit was not operating at the time of the inspection. The classroom was clean and well maintained. Housekeeping was satisfactory.

**Primary Classroom 135**

A ceiling tile with heavy water stains was observed in the classroom. A mild mildew odor was also detected. A wall-mounted fan coil unit was observed. This unit was operating at the time of



the inspection and was emitting warm air. Ceiling mounted air supply grills were clean. The classroom was clean and well maintained. Housekeeping was satisfactory.

### **Primary Classroom 105**

No visible suspect mold growth or notable odors were detected in the classroom at the time of the inspection. An air conditioning unit was operating at the time of the inspection and was emitting cold air. The classroom appeared to be clean and well maintained. Housekeeping was satisfactory.

### **Comfort Parameter Air Testing**

During the IAQ assessment, Tidewater obtained temperature (T), relative humidity (RH), carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO) measurements within select locations using a TSI VelociCalc Indoor Air Quality instrument (Model Number 9565-X, Serial Number 9565X 1945 002, Calibration Date: November 8, 2019.) Measurements were taken after allowing the instrument to become acclimated to the ambient temperature and relative humidity for approximately five (5) minutes. Measurements were taken over a 5-minute time period at each designated location and the average concentration was recorded. Samples were obtained for comparison with standards established by the American Society for Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality*. Tidewater also obtained an “outdoor background” measurement in front of the main entrance of the school building for comparison to the interior readings. The results of the IAQ comfort parameter monitoring are provided in Table 1, in **Attachment A**.

According to the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality*, the temperature range in summer months should be maintained between 73.0°F and 79.0°F for maximum occupant comfort. The ASHRAE standard for temperature for winter months is between 68.0°F and 74.5°F. The indoor temperature levels within the assessed areas on December 8, 2020 ranged between 63.5°F and 85.6°F. The background temperature outside the building was 62.0°F. The temperature levels recorded within most areas monitored were above the upper temperature standard of 74.5°F recommended by ASHRAE for winter months. The temperature level recorded in the Main Office was marginally below the lower temperature standard of 68.0°F recommended by ASHRAE for winter months. Most areas inspected were vacant at the time of the inspection. Indoor temperature levels fluctuate with the number of occupants present within the work area.

Per the same ASHRAE standard, a maximum relative humidity level of 65.0% or below is recommended to reduce the likelihood of condensation on cold surfaces. Relative humidity levels within the assessed areas on December 8, 2020 ranged between 10.3% and 25.7%. The background relative humidity level outside the building was 15.8%. The relative humidity levels in all areas assessed were below the ASHRAE recommended maximum relative humidity standard of 65.0%.

ASHRAE Standard 62.1 – 2019 recommends that indoor CO<sub>2</sub> levels not exceed 700 ppm above the outdoor background CO<sub>2</sub> level. The CO<sub>2</sub> levels in the assessed areas on December 8, 2020 ranged between 438 ppm to 511 ppm. The background CO<sub>2</sub> level outside the building was 420 ppm. The CO<sub>2</sub> levels within all interior locations assessed did not exceed 700 ppm above the outdoor background CO<sub>2</sub> level of 420 ppm.



The CO levels in all areas assessed on December 8, 2020 were below the maximum standard of 9.0 ppm recommended by the Indoor Air Quality Association (IAQA) for CO in occupied indoor environments.

**Particulate Matter Less Than 10 microns (PM10)**

During the assessment, Tidewater obtained particulate matter less than 10 microns (PM10) dust particulate measurements at select locations using a TSI® DUST TRAK II™ Aerosol Monitor (Model 8534, Serial Number 8534170101.) Measurements were taken after allowing the device to become acclimated to the ambient temperature and relative humidity for five (5) minutes. Measurements were taken over a 5-minute time period at each sampling location and the average concentration was recorded for comparison with standards established by the US EPA NAAQS Final Action (December 7, 2020.)

Tidewater also obtained an “outdoor background” sample in front of the main entrance of the school building for comparison to the interior readings.

The results of the particulate matter sampling are provided in Table 2, in **Attachment A**.

Based on the EPA NAAQS for Particulate Matter, Final Action (December 7, 2020), the 24-hour primary and secondary exposure standard for particulate matter less than 10 microns (PM10) is 150.0 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ) or 0.150 milligrams per cubic meter of air ( $\text{mg}/\text{m}^3$ .) The results of the PM10 analysis indicate that the average PM10 dust concentrations in all assessed areas ranged between 0.036  $\text{mg}/\text{m}^3$  and 0.076  $\text{mg}/\text{m}^3$ . The average PM10 dust concentration in the background sample obtained in front of the main entrance was 0.078  $\text{mg}/\text{m}^3$ . The PM10 concentrations in all areas assessed were below the EPA 24-hour primary and secondary NAAQS of 0.150  $\text{mg}/\text{m}^3$ .

**Spore Trap Bioaerosol Sampling**

Tidewater collected spore trap air samples from the same locations where the comfort parameters were recorded. Tidewater obtained the spore trap samples using Allergenco-D cassettes affixed to a Buck BioAire™ Bioaerosol Sampling Pump (Pump Model Number B520 and Serial Number B153043) calibrated to a flow rate of 15.0 Liters per minute. Each sample was run for a period of five (5) minutes to collect a total sample volume of 75.0 liters of air. Tidewater also obtained an “outdoor background” sample in front of the main entrance of the school building for comparison to the interior readings.

Once collected, the samples were transported to EMSL Analytical Laboratory (EMSL) located in Beltsville, Maryland for analysis via a standard turn-around time. The samples were transported following rigorous chain-of-custody guidelines to ensure proper handling and delivery of the samples. EMSL is accredited in the American Industrial Hygiene Association (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP) and is a successful participant in AIHA’s Environmental Microbiology Proficiency Analytical Testing (EMPAT) program (Laboratory Number 102891.) The samples were analyzed via light microscopy at the standardized magnification of 600X. This technique does not allow for the differentiation between *Aspergillus* and *Penicillium* spores because they are morphologically identical. Additionally, the technique does not allow for cultivation, or the identification of spores to the species level, except in a few cases.



There are no universally accepted federal or State of Maryland standards for acceptable airborne concentrations of bioaerosols in an indoor occupational environment. In general, indoor airborne concentrations should be less than that found in the outdoor air, with similar species composition. Indoor spore counts significantly greater than those outdoors, or the presence of large numbers of different types of spores indoors that are not found outdoors, may indicate contamination and potential indoor air quality problems.

The total mold spore counts in all assessed areas of the school ranged between None Detect and 1,150 spores/m<sup>3</sup>. The total mold spore concentration in the background sample obtained outdoors was 960 spores/m<sup>3</sup>. The total mold spore concentrations in all interior samples, except the sample obtained from intermediate room 134 (PHES-8) were significantly below the total mold spore concentration of the background sample (PHES-BG.) The total mold spore concentration in sample PHES-8 was marginally above the background sample concentration.

Additionally, the fungal species observed in the interior samples were consistent with those observed in the background sample, and no significant concentrations of an individual fungal species were identified in the interior samples. These results do not indicate elevated levels of airborne total fungal spores in the interior locations sampled, nor suggest the presence of potential significant sources of indoor fungi in the interior locations sampled.

The summary of the results for the spore trap sampling are provided in Table 3 in **Attachment A**. The laboratory analytical results, including speciation and chain of custody forms for the spore trap samples are included in **Attachment B**.

## **CONCLUSIONS**

- The following issues were identified during the visual inspections:
  - Art Room: Ceiling tiles with heavy water stains were observed in numerous locations.
  - Media Center: Multiple ceiling tiles with heavy water stains were observed throughout. Missing/ broken ceiling tiles were also observed in numerous locations. Heavy water damage was observed on the overhead drywall located in the rear end of the library.
  - Multipurpose Room: A water-stained ceiling tile was observed. The wall-mounted supply and return air grills had heavy dust accumulations.
  - Primary Classroom 135: A ceiling tile with heavy water stains was observed in the classroom. A mild mildew odor was also detected.
- The temperature levels recorded within most areas monitored were above the upper temperature standard of 74.5°F recommended by ASHRAE for winter months. The temperature level recorded in the Main Office was marginally below the lower temperature standard of 68.0°F recommended by ASHRAE for winter months.
- The Relative humidity, CO<sub>2</sub>, CO readings and particulate matter less than 10 microns (PM10) recorded within the assessed areas were within industry standards and guidelines.
- The total mold spore concentrations in all interior locations sampled, except sample PHES-8, were below the background sample concentration. The total mold spore concentration in sample PHES-8 was marginally above the background sample concentration. However, the fungal species observed in all interior samples were



consistent with those observed in the background sample. No significant concentrations of an individual fungal species were identified in the interior samples. The results do not indicate elevated levels of airborne total fungal spores in the interior locations sampled.

## **RECOMMENDATIONS**

Based on the results of our visual inspection, Tidewater proposes the following:

- Investigate the areas above the suspended ceiling tiles with heavy water stains in the Art Room 224, Media Center, Multipurpose Room and Primary Classroom 135 for any ongoing water leaks or condensation problems. If any ongoing water leaks or condensation problems are detected, take immediate action to repair them. Remove all water-stained /broken ceiling tiles in these areas and replace them with new ceiling tiles.
- Appropriate steps should be taken to remediate the water-impacted ceiling tiles, drywall and pipe insulation located above the drop ceiling of the Media Center and sanitize the surrounding areas. The surrounding areas including the ceiling grids should be cleaned with a commercially available (EPA approved) fungicide to mitigate existing fungal spores.
- The wall-mounted supply air and return air grills in the multipurpose room should be cleaned with a commercially available (EPA approved) disinfectant on a routine basis to remove dust buildup.
- Adjust thermostat of the Heating Ventilation and Air Conditioning (HVAC) System supplying air to all classrooms and common areas to achieve a temperature level between 68.0°F and 74.5°F recommended for winter months per ASHRAE Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality*.
- Ensure the Heating Ventilation and Air Conditioning (HVAC) System supplying air to all common areas and classrooms is properly balanced per design requirements and are turned on and are operating at all times to ensure adequate ventilation throughout the classrooms and common areas before the school re-opens.
- Maintain good housekeeping practices in all common areas and classrooms. All common area and classrooms floors should be broom cleaned at the end of each day once the school re-opens for students. Furthermore, all horizontal surfaces including desktops, furniture, window sills, and light fixtures should be cleaned on a routine basis to prevent the accumulation of dust.

## **Qualifications**

Tidewater endeavored to investigate existing conditions in select areas of Perrywood Elementary School located at 501 Watkins Park Drive in Largo, Maryland as they pertain to indoor air quality and mold contamination. Our conclusions and recommendations are based on observations made on the day of our assessment, laboratory data from the time of the assessment, and information provided by both our Client and the area occupants. Actual conditions vary from day to day throughout the year.



Tidewater appreciates the opportunity to provide Industrial Hygiene consulting services for Prince Georges County Public Schools. Please contact us should any questions arise concerning this report or if we may be of further assistance.

Sincerely,  
*Tidewater, Inc.*

Skanda Abeyesekere, MS, CIH, CSP, CHMM  
Project Manager

Jonathan N. Schatz, MS  
Manager, IH Services

SA/JNS

- Attachments: **Attachment A – Summary of Comfort Parameters, PM10 Particulate Dust, and Microbial Results**  
**Attachment B – Laboratory Reports and Chain of Custody Forms**  
**Attachment C – Instrument Calibration Certificates**  
**Attachment D – Relevant Certifications**  
**Attachment E – Floor Plan with Sampling Locations**



**TIDEWATER INC**

**ENGINEERS / SCIENTISTS / PROGRAM MANAGERS**

**APPENDIX A**

**COMFORT PARAMETERS, PM10 PARTICULATE DUST, AND  
MICROBIAL RESULTS**





<b>Table 1: Indoor Air Quality Comfort Parameters Perrywood Elementary School</b>				
<b>Location</b>	<b>Temperature (°F)</b>	<b>Carbon Dioxide (ppm)</b>	<b>Relative Humidity (%)</b>	<b>Carbon Monoxide (ppm)</b>
<b>December 8, 2020</b>				
Main Office – Rm 200	<b>63.5</b>	496	25.7	0.0
Science Room – Rm 218	70.9	456	19.3	0.0
Art Room – Rm 224	72.6	456	16.9	0.0
Media Center	<b>75.3</b>	462	17.4	0.0
Multipurpose Room	<b>81.3</b>	485	14.0	0.0
Intermediate Room 164	<b>84.6</b>	512	11.2	0.0
Intermediate Room 154	<b>85.6</b>	438	10.3	0.0
Classroom 135	<b>84.1</b>	476	12.0	0.0
Classroom 105	<b>77.3</b>	438	14.8	0.0
Background (Outdoors)	62.0	420	15.7	0.0

\*Highlighted Areas indicate locations in which temperature levels were above or below the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2019 recommended standards for winter months.



<b>Table 2: Particulate Matter Less than 10 Microns (PM10) Perrywood Elementary School</b>	
<b>Location</b>	<b>Particulate Matter (PM10)</b>
	<b>Concentration (mg/m<sup>3</sup>)</b>
<b>December 8, 2020</b>	
Main Office – Rm 200	0.070
Science Room – Rm 218	0.036
Art Room – Rm 224	0.071
Media Center	0.070
Multipurpose Room	0.074
Intermediate Room 164	0.072
Intermediate Room 154	0.073
Classroom 135	0.074
Classroom 105	0.076
Background (Outdoors)	0.078

**Table 3: Spore Trap Sampling Results  
Perrywood Elementary School****December 8, 2020**

<b>Sample Number</b>	<b>Sample Location</b>	<b>Sample Volume (L)</b>	<b><i>Aspergillus Penicillium</i> Concentration (Counts/m<sup>3</sup>)</b>	<b>Total Fungi Concentration (Counts/m<sup>3</sup>)</b>
PHES - 1	Main Office – Rm 200	75.0	-	100
PHES - 2	Science Room – Rm 218	75.0	-	None Detect
PHES - 3	Art Room – Rm 224	75.0	-	80
PHES - 4	Media Center	75.0	-	80
PHES - 5	Multipurpose Room	75.0	300	860
PHES - 6	Intermediate Room 164	75.0	40	660
PHES - 7	Intermediate Room 154	75.0	40	1,150
PHES - 8	Classroom 134	75.0	-	240
PHES - 9	Classroom 105	75.0	40	240
PHES -BG	Background	75.0	-	960



**APPENDIX B**

**LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS**



# EMSL Analytical, Inc.

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**EMSL Order:** 182004028  
**Customer ID:** TIDE50  
**Customer PO:**  
**Project ID:**

**Attention:** Skanda Abeyeskere  
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6625 Selnick Drive  
Suite A  
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**Project:** Perry Hill Elementary School

**Phone:** (443) 983-0362  
**Fax:** (410) 997-8713  
**Collected Date:** 12/09/2020  
**Received Date:** 12/09/2020 02:17 PM  
**Analyzed Date:** 12/15/2020

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	182004028-0001 PHES-1 75 Main Office 200			182004028-0002 PHES-2 75 Science Rm 218			182004028-0003 PHES-3 75 Art Rm			
	Spore Types	Raw Count	Count/M <sup>3</sup>	% of Total	Raw Count	Count/M <sup>3</sup>	% of Total	Raw Count	Count/M <sup>3</sup>	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-	-
Basidiospores	3	100	100	-	-	-	1	40	50	-
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	1	40	50	-
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>3</b>	<b>100</b>	<b>100</b>	-	<b>None Detect</b>	-	<b>2</b>	<b>80</b>	<b>100</b>	-
Hyphal Fragment	-	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-	-
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.

Kevin Ream, Laboratory Manager  
or other Approved Signatory

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

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.  
Samples analyzed by EMSL Analytical, Inc. Plymouth Meeting, PA AIHA-LAP, LLC-EMLAP Accredited #178659

Initial report from: 12/16/2020 08:22 AM

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



# EMSL Analytical, Inc.

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**Attention:** Skanda Abeyeskere  
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**Project:** Perry Hill Elementary School

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	182004028-0004 PHES-4 75 Media Center Rt			182004028-0005 PHES-5 75 Multipurpose Room			182004028-0006 PHES-6 75 162 - Intermediate Room			
	Spore Types	Raw Count	Count/M <sup>3</sup>	% of Total	Raw Count	Count/M <sup>3</sup>	% of Total	Raw Count	Count/M <sup>3</sup>	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	1*	10*	1.5
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	6	300	34.9	1	40	6.1	
Basidiospores	2	80	100	7	300	34.9	12	510	77.3	
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	1*	10*	1.2	-	-	-	-
Cladosporium	-	-	-	4	200	23.3	3	100	15.2	
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	10*	1.2	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	1	40	4.7	-	-	-	-
<b>Total Fungi</b>	<b>2</b>	<b>80</b>	<b>100</b>	<b>20</b>	<b>860</b>	<b>100</b>	<b>17</b>	<b>660</b>	<b>100</b>	
Hyphal Fragment	-	-	-	4	200	-	-	-	-	-
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.

Kevin Ream, Laboratory Manager  
or other Approved Signatory

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

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Samples analyzed by EMSL Analytical, Inc. Plymouth Meeting, PA AIHA-LAP, LLC-EMLAP Accredited #178659

Initial report from: 12/16/2020 08:22 AM

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



# EMSL Analytical, Inc.

5221 Militia Hill Road Plymouth Meeting, PA 19462  
Tel/Fax: (610) 828-3102 / (610) 828-3122  
<http://www.EMSL.com> / [plymouthmeetinglab@emsl.com](mailto:plymouthmeetinglab@emsl.com)

**EMSL Order:** 182004028  
**Customer ID:** TIDE50  
**Customer PO:**  
**Project ID:**

**Attention:** Skanda Abeyeskere  
Tidewater, Inc.  
6625 Selnick Drive  
Suite A  
Elkridge, MD 21075  
**Project:** Perry Hill Elementary School

**Phone:** (443) 983-0362  
**Fax:** (410) 997-8713  
**Collected Date:** 12/09/2020  
**Received Date:** 12/09/2020 02:17 PM  
**Analyzed Date:** 12/15/2020

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	182004028-0007 PHES-7 75 1CT - Intermediate Room			182004028-0008 PHES-8 75 134 - Classroom			182004028-0009 PHES-9 75 105 - Classroom			
	Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	2	80	7	-	-	-	-	-	-	-
Aspergillus/Penicillium	1	40	3.5	-	-	-	1	40	16.7	
Basidiospores	15	630	54.8	3	100	41.7	5	200	83.3	
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	9	400	34.8	3	100	41.7	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	1*	10*	4.2	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	2*	30*	12.5	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>27</b>	<b>1150</b>	<b>100</b>	<b>9</b>	<b>240</b>	<b>100</b>	<b>6</b>	<b>240</b>	<b>100</b>	
Hyphal Fragment	2*	30*	-	-	-	-	-	-	-	-
Insect Fragment	1*	10*	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	1	40	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	2	-	-
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.

Kevin Ream, Laboratory Manager  
or other Approved Signatory

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

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Samples analyzed by EMSL Analytical, Inc. Plymouth Meeting, PA AIHA-LAP, LLC-EMLAP Accredited #178659

Initial report from: 12/16/2020 08:22 AM

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



# EMSL Analytical, Inc.

5221 Militia Hill Road Plymouth Meeting, PA 19462  
Tel/Fax: (610) 828-3102 / (610) 828-3122  
<http://www.EMSL.com> / [plymouthmeetinglab@emsl.com](mailto:plymouthmeetinglab@emsl.com)

**EMSL Order:** 182004028  
**Customer ID:** TIDE50  
**Customer PO:**  
**Project ID:**

**Attention:** Skanda Abeyeskere  
Tidewater, Inc.  
6625 Selnick Drive  
Suite A  
Elkridge, MD 21075  
**Project:** Perry Hill Elementary School

**Phone:** (443) 983-0362  
**Fax:** (410) 997-8713  
**Collected Date:** 12/09/2020  
**Received Date:** 12/09/2020 02:17 PM  
**Analyzed Date:** 12/15/2020

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

Lab Sample Number:	182004028-0010		
Client Sample ID:	PHES-10		
Volume (L):	75		
Sample Location:	Background		
Spore Types	Raw Count	Count/M <sup>3</sup>	% of Total
Alternaria (Ulocladium)	-	-	-
Ascospores	1	40	4.2
Aspergillus/Penicillium	-	-	-
Basidiospores	16	680	70.8
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Curvularia	-	-	-
Epicoccum	1	40	4.2
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	3	100	10.4
Pithomyces++	1*	10*	1
Rust	1*	10*	1
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Torula-like	2	80	8.3
<b>Total Fungi</b>	<b>25</b>	<b>960</b>	<b>100</b>
Hyphal Fragment	3	100	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	42	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	1	-

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

Kevin Ream, Laboratory Manager  
or other Approved Signatory

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

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Samples analyzed by EMSL Analytical, Inc. Plymouth Meeting, PA AIHA-LAP, LLC-EMLAP Accredited #178659

Initial report from: 12/16/2020 08:22 AM

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



# Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

182004028

PHONE:  
FAX:

Company: Tidewater Inc		EMSL-Bill to: <input type="checkbox"/> Different <input type="checkbox"/> Same <small>If Bill to is Different note instructions in Comments**</small>	
Street: 6625 Selnick Drive, Suite A		Third Party Billing requires written authorization from third party	
City: Elkridge	State/Province: MD	Zip/Postal Code:	Country:
Report To (Name): Skanda Abeyesekere		Telephone #:	
Email Address: skanda@tideh2o.net		Fax #:	Purchase Order:
Project Name/Number: Perry Hill Elementary School		Please Provide Results: <input type="checkbox"/> FAX <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: Maryland		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> Residential	

**Turnaround Time (TAT) Options\* - Please Check**

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

\*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

**Non Culturable Air Samples (Spore Traps) - Test Codes**

• M001 Air-O-Cell	• M173 Allegro M2	• M004 Allergenco	• M032 Allergenco-D	• M172 Versa Trap
• M049 BioSIS	• M003 Burkard	• M043 Cyclex	• M002 Cyclex-d	
• M030 Micro 5	• M174 MoldSnap	• M176 Relle Smart	• M130 Via-Cell	

**Other Microbiology Test Codes**

<ul style="list-style-type: none"> <li>• M041 Fungal Direct Examination</li> <li>• M005 Viable Fungi ID and Count</li> <li>• M006 Viable Fungi ID and Count (Speciation)</li> <li>• M007 Culturable Fungi</li> <li>• M008 Culturable Fungi (Speciation)</li> <li>• M009 Gram Stain Culturable Bacteria</li> <li>• M010 Bacterial Count and ID - 3 Most Prominent</li> <li>• M011 Bacterial Count and ID - 5 Most Prominent</li> <li>• M013 Sewage Contamination in Buildings</li> </ul>	<ul style="list-style-type: none"> <li>• M014 Endotoxin Analysis</li> <li>• M015 Heterotrophic Plate Count</li> <li>• M180 Real Time Q-PCR-ERMI 36 Panel</li> <li>• M018 Total Coliform (Membrane Filtration)</li> <li>• M020 Fecal Streptococcus (Membrane Filtration)</li> <li>• M210-215 Legionella Detection</li> <li>• M026 Recreational Water Screen</li> <li>• M027 Mycotoxin Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• M029 Enterococci</li> <li>• M019 Fecal Coliform</li> <li>• M133 MRSA Analysis</li> <li>• M028 Cryptococcus neoformans Detection</li> <li>• M120 Histoplasma capsulatum Detection</li> <li>• M033-39 Allergen Testing</li> <li>• M044 Group Allergen (Cat, Dog, Cockroach, Dustmites)</li> <li>• Other See Analytical Price Guide</li> </ul>
---	--	--

**Preservation Method (Water):**

Name of Sampler: Skanda Abeyesekere

Signature of Sampler:

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
PHES-1	Main office 200	Air	M001	75L	11/12/2020
-2	Screen on 218				
-3	Computer room ARTRM				
-4	Media center				
-5	Multi purpose room				
-6	162 - Intermediate room				
-7	164 - Toilets				
-8	135 - Classroom				
-9	135 - classroom				

Client Sample # (s): 10 Background Total # of Samples: 10

Relinquished (Client): Date: 12/09/2020 Time: 2:00pm

Received (Client): Drop Box Date: Time:

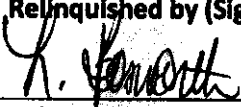
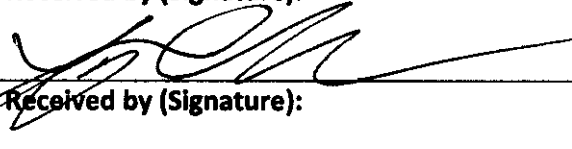
Comments:

RECEIVED  
 EMSL ANALYTICAL, INC.  
 BELTSVILLE, MD  
 2020 DEC -9 P 2:17

EMSL

## EMSL Analytical, Inc.

### Sample Transfer Form

<b>Receiving Lab:</b>	EMSL- BELTSVILLE	<b>Phone Number:</b>	3019375700	
		<b>Fax Number:</b>	3019375701	
<b>Relinquished to:</b>	EMSL- PLYMOUTH MEETING	<b>Phone Number:</b>	8002203675	
		<b>Fax Number:</b>	8567860262	
<b>Does new lab hold equivalent or additional accreditation? *</b>			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>EMSL Customer ID # (if known):</b>	TIDE50			
<b>Client Name:</b>	TIDEWATER			
<b>Client Project:</b>	PERRY HILL ELEMENTARY SCHOOL			
<b>Tests to be Performed:</b>	M001			
<b>Date Received:</b>	12/10/20			
<b>Date Relinquished:</b>	12/10/20			
<b>Date Due:</b>	1 WEEK - 12/16/20			
<b>Special Instructions:</b> (e.g. Work Order # , required qualifications, project specific procedures/modifications)				
<b>Relinquished by (Signature):</b> 	<b>Date:</b> 12/10/20	<b>Received by (Signature):</b> 	<b>Date:</b> 12-11-20	
<b>Relinquished by (Signature):</b>	<b>Date:</b>	<b>Received by (Signature):</b>	<b>Date:</b>	
<b>Customer Agreement-</b> Please sign form and send to the receiving laboratory. By signing below, you agree to permit the above named receiving lab to transfer samples to a separate EMSL lab with equivalent qualifications* for analysis. The final report will be issued from the analyzing laboratory. Ensure any requirements are listed in special instructions.				
<b>Name (please print):</b>	<b>Signature:</b>	<b>Agent of:</b>	<b>Date:</b>	
<i>If this is a recurring project or sample type that may require samples to be relinquished on a regular basis, a Standing Agreement form must be completed.</i>				

\* Receiving and analyzing labs shall be aware of required qualifications of project prior to transfer of samples.

Note: If customer has been notified and approved this transfer verbally or by e-mail, the receiving lab must sign for the customer above. EMSL employee filling out form on behalf of customer shall print name of person to whom they spoke, date agreement was received, and then sign under Signature.



**APPENDIX C**  
**INSTRUMENT CALIBRATION CERTIFICATES**



# 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			<b>MODEL</b>	<b>9565-X</b>
TEMPERATURE	74.1 (23.4)	°F (°C)		
RELATIVE HUMIDITY	26	%RH		
BAROMETRIC PRESSURE	29.26 (990.9)	inHg (hPa)		
			<b>SERIAL NUMBER</b>	<b>9565X1945002</b>

<input checked="" type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input type="checkbox"/> AS FOUND	<input type="checkbox"/> OUT OF TOLERANCE

-- CALIBRATION VERIFICATION RESULTS --

THERMO COUPLE <sup>^</sup>				SYSTEM PRESSURE01-01				Unit: °F (°C)
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	71.6 (22.0)	71.6 (22.0)	69.6~73.6 (20.9~23.1)					

BAROMETRIC PRESSURE				SYSTEM PRESSURE01-01				Unit: inHg (hPa)
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	29.26 (990.9)	29.26 (990.9)	28.67~29.85 (970.9~1010.8)					

<sup>^</sup> Circuit portion of temperature measurement only, not including probe.

*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*

<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>
DC Voltage	E003299	06-06-19	12-31-20	DC Voltage	E003500	06-06-19	12-31-20
Temperature	E004626	01-09-19	01-31-20	Pressure	E003302	08-07-19	02-29-20
Pressure	E003303	08-26-19	02-29-20				

Rose Germain

---

CALIBRATED

November 8, 2019

---

DATE

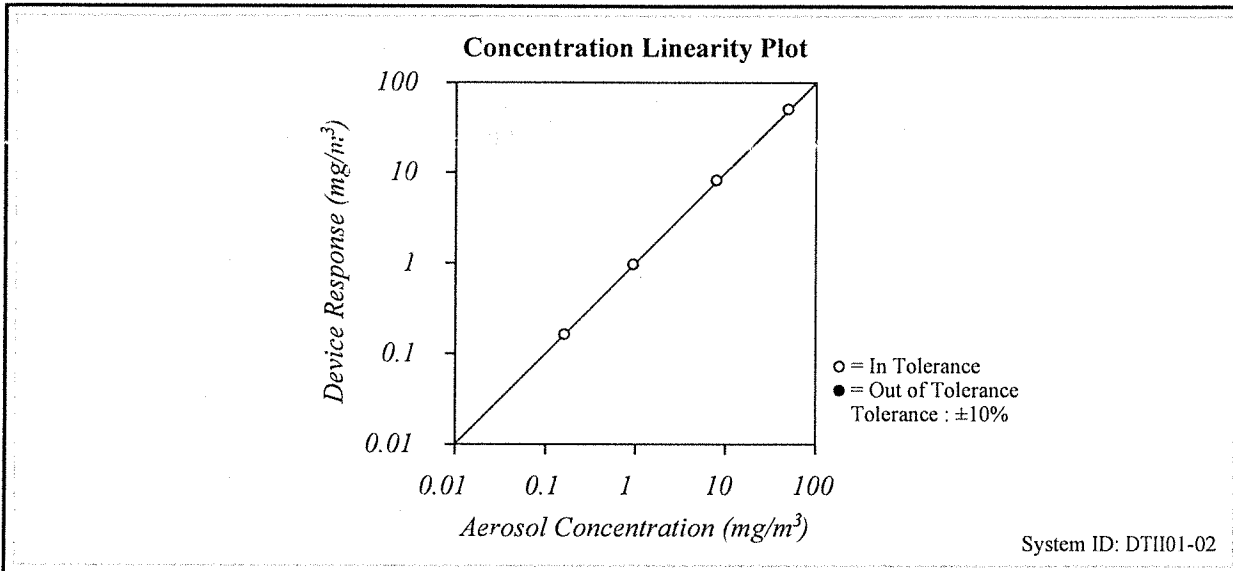


# CERTIFICATE OF CALIBRATION AND TESTING

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			Model	<b>8534</b>
Temperature	75.83 (24.4)	°F (°C)	Serial Number	<b>8534170101</b>
Relative Humidity	43.6	%RH		
Barometric Pressure	28.93 (979.7)	inHg (hPa)		

<input checked="" type="checkbox"/> As Left	<input checked="" type="checkbox"/> In Tolerance	
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance	



FLOW AND PRESSURE VERIFICATION				SYSTEM DTH101-01			
Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.00	3.03	2.88 ~ 3.12	Pressure kPa	97.8	97.8	92.95 ~ 102.73
Full Flow lpm	N/A	4.54	>3.80				

*TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, Ai test dust (Arizona dust). Our calibration ratio is greater than 1.2:1*

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-15-20	01-31-21	Photometer	E005612	08-19-20	02-28-21
Microbalance	M001324	10-03-18	10-31-20	1 um PSL	698880	n/a	n/a
3 um PSL	221853	n/a	n/a	10 um PSL	212455	n/a	n/a
Pressure	E003511	10-04-19	10-31-20	Flowmeter	E005140	01-09-20	01-31-21
DC Voltage	E003315	01-15-20	01-31-21	Photometer	E003433	09-15-20	03-31-21
Flowmeter	E005922	06-29-20	06-30-21	DC Voltage(Keithley)	E002859	06-15-20	06-30-21
Microbalance	M001324	10-03-18	10-31-20	Pressure	E005651	07-06-20	07-31-21
1 um PSL	698880	n/a	n/a	3 um PSL	206030	n/a	n/a
10 um PSL	212455	n/a	n/a				

David Farrell

September 24, 2020

Calibrated

Date

# Certificate of Conformance

Buck BioAire™

Buck BioSlide™

Serial number: B153043 Date Issued: 3-18-20

## Flow Calibration

The instrument listed above is in conformance with factory specifications and the flow is set to nominal using a BUCK Calibrator which is N.I.S.T. traceable to A. P. Buck, Inc. Calibration Procedure APB-1, Ver. 6.2.

**QA APPROVAL BY:** Thomas J. Coomaver

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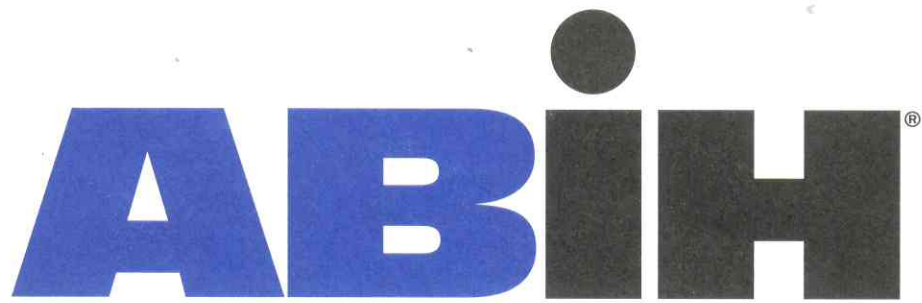
A.P. BUCK, INC.  
7101 Presidents Drive, Suite 110  
Orlando, FL 32809  
Phone: 407-851-8602 • Fax: 407-851-8910

**BUCK**  
A.P. BUCK, INC.

COCR-004 REV-01 3/3/2006



**APPENDIX D**  
**RELEVANT CERTIFICATIONS**



**american board of industrial hygiene®**

organized to improve the practice of industrial hygiene  
proclaims that

*Skandakumar Harshanath Abeyesekere*

having met all requirements of  
education, experience and examination, and  
ongoing maintenance,  
is hereby certified in the

**COMPREHENSIVE PRACTICE  
of  
INDUSTRIAL HYGIENE**

and has the right to use the designations

**CERTIFIED INDUSTRIAL HYGIENIST**

**CIH**

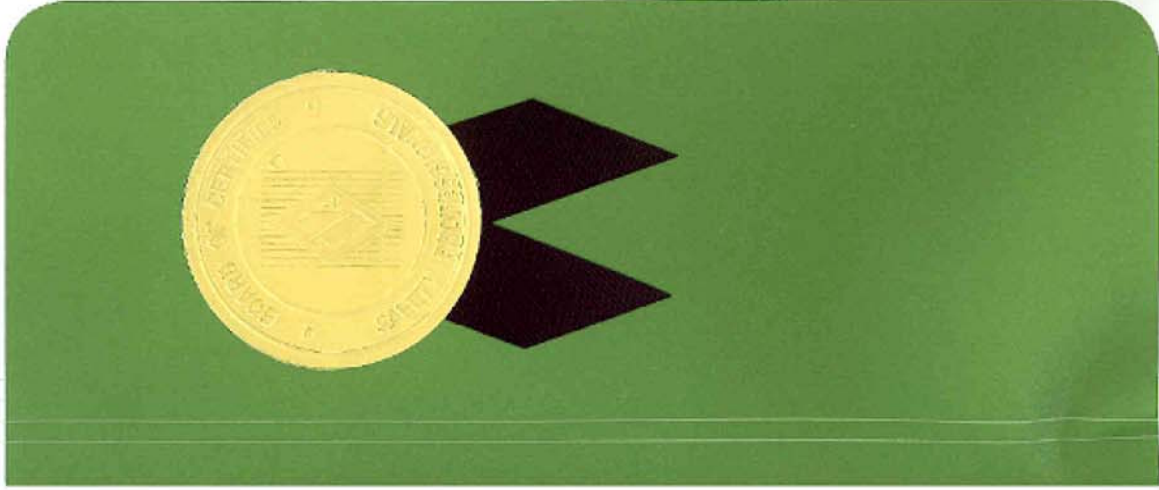
Certificate Number	9928 CP
Awarded:	May 11, 2011
Expiration Date:	December 1, 2021



*Susan Ripple*  
Chair, ABIH

*William K. Oliver*  
Chief Executive Officer, ABIH





# BOARD OF CERTIFIED SAFETY PROFESSIONALS

affirms that

**Skandakumar Abeyesekere**

Has applied for, met qualifications, and passed required examination(s) and is hereby authorized to use the designation

**Certified Safety Professional<sup>®</sup>**  
in Comprehensive Practice

So long as this certificate is not suspended or revoked and the certificant renews this authorization annually and meets Continuance of Certification requirements.

Board of Examiners in witness whereof we have here unto set our hands and affixed the Seal of the Board this 7th Day of April, 2008



*Paul S Adams* President  
*Linda Japp* Secretary  
20110 CSF No.



THIS CERTIFIES THAT

*Skandakumar Abeyeskere*

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

**CERTIFIED HAZARDOUS MATERIALS MANAGER  
CHMM**



May 13, 2016

DATE OF CERTIFICATION

19053

CREDENTIAL NUMBER

May 31, 2021

CERTIFICATION EXPIRES

*M. Patricia Buley*  
ACTING EXECUTIVE DIRECTOR

VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.



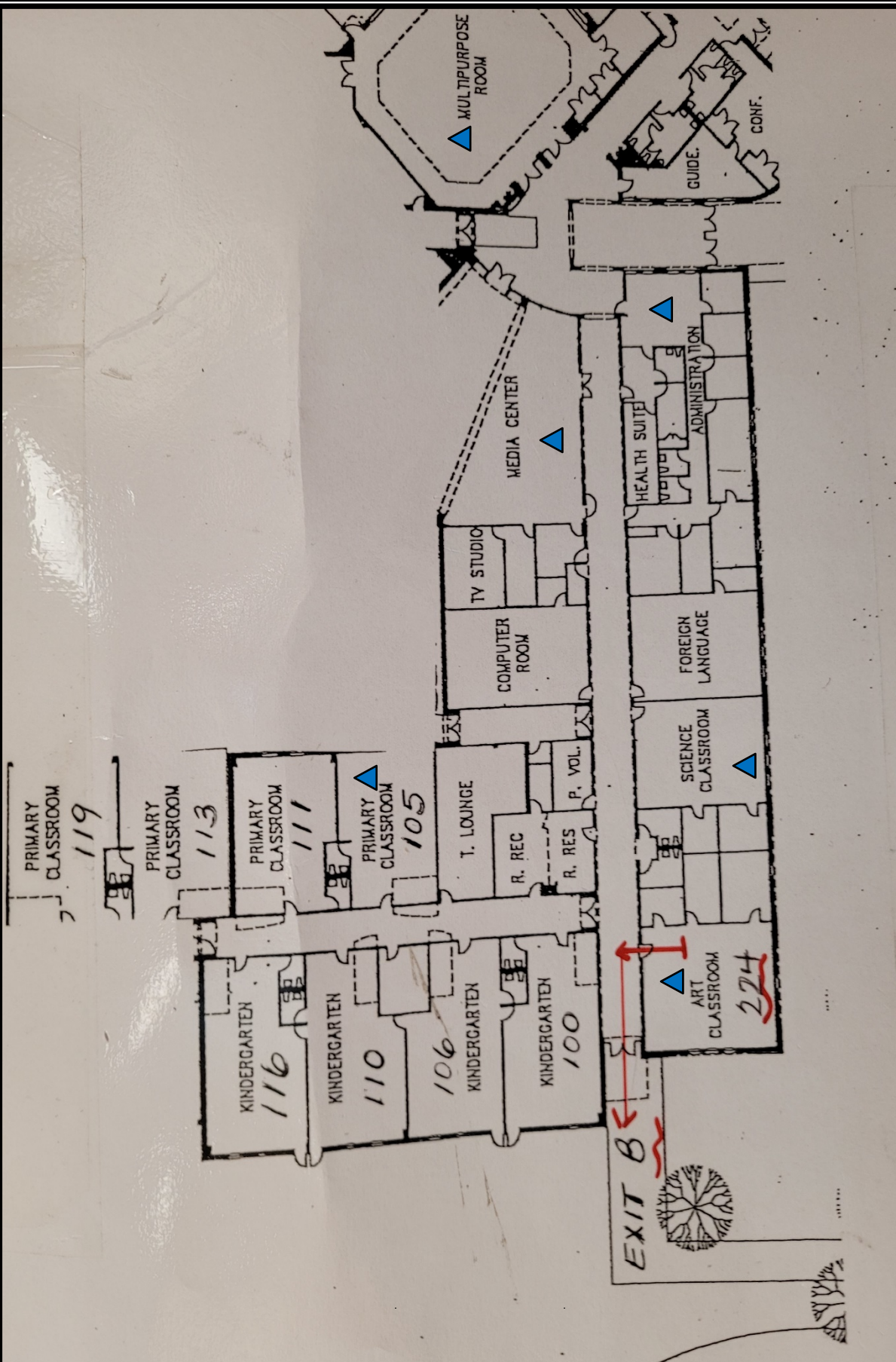
Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards





**APPENDIX E**

**FLOOR PLAN WITH SAMPLING LOCATIONS**



General Notes

Scale: N/A

Project #: 5419 - 041  
Date: December 8, 2020

▲ Sample Location

**Attachment C**  
**Perrywood Elementary School**  
**Floor Plan with Sampling Locations**