



July 5, 2019

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

via email: alex.baylor@pgcps.org

**RE: Indoor Air Quality (IAQ) and Mold Assessment Services
Bladensburg Elementary School
4915 Annapolis Road Bladensburg, MD 20710
Tidewater Project No.: 5419-016**

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this Indoor Air Quality (IAQ) and Mold Assessment Report describing the results of the IAQ assessment and mold survey conducted by Tidewater at Bladensburg Elementary School located at 4915 Annapolis Road in Bladensburg, Maryland. The IAQ and Mold survey was conducted on May 30, 2019, by Tidewater's Project Manager and Certified Industrial Hygienist, Mr. Skanda Abeyesekere MS, CIH, CSP, CHMM.

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

- Visual inspections of the following areas of the school: Library, Health Room, Classroom 27, Classroom 22, Classroom 15, Classroom 8, Classroom T4 (Carter Music), Classroom 5, Classroom K6, and Classroom 1 of Bladensburg Elementary School 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.
- Comfort parameter air testing at the above areas utilizing a direct-reading IAQ monitor for temperature (T), relative humidity (RH), carbon monoxide (CO), and carbon dioxide (CO₂.) Measurements were taken for comparison with guidelines established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1–2016, Ventilation for Acceptable Indoor Air Quality, and The United States Environmental Protection Agency (US EPA) National Ambient Air Quality Standards (NAAQS.)
- Measurement of particulate matter less than 10 microns (PM10) concentrations utilizing a direct-reading instrument at the above areas for comparison with guidelines established by the United States Environmental Protection Agency (US EPA.)
- Measurement of Total Volatile Organic Compounds (TVOCs) concentrations utilizing a direct-reading instrument at the above areas for comparison with relevant guidelines.
- Air sampling for total airborne fungal spore concentrations at the above areas using Allergenco-D cassettes affixed to a Buck BioAire™ Model B520 Bioaerosol Sampling Pump.



Visual Observations

Tidewater's assessment included a visual inspection of selected areas of the school including Library, Health Room, Classroom 27, Classroom 22, Classroom 15, Classroom 8, Classroom T4 (Carter Music), Classroom 5, Classroom K6, and Classroom 1 of Bladensburg Elementary School. The results of Tidewater's visual inspection are as follows:

Library

The Library was vacant at the time of the inspection. The wall-mounted air supply grills appeared to have excessive levels of dust deposits. Two (2) wall-mounted fan coil units were in operation at the time of the inspection. The supply air grills of the fan coil units contained excessive levels of dust. No signs of suspect mold growth or water-intrusion problems were observed in the Library. No unusual odors were detected from the Library.

Health Room

The Health Room was vacant at the time of the inspection. The air supply grills located on the ceiling contained excessive levels of dust. No signs of suspect mold growth or water-intrusion problems were observed in the Health Room; however, multiple water-stained ceiling tiles were observed. No unusual odors were detected.

Classroom 27

Classroom 27 was vacant at the time of the inspection. One (1) wall mounted fan coil unit was in operation at the time of the inspection. The supply and return air grills located on the ceiling appeared to be relatively clean. General housekeeping within the classroom appeared to be satisfactory. No signs of suspect mold growth or water-intrusion problems were observed. No unusual odors were detected in the classroom.

Classroom 22

Classroom 22 had over 20 students at the time of the inspection. Two (2) wall-mounted fan coil units were observed in the classroom. One (1) unit was switched off at the time of the inspection. A few boxes were stored on top of the supply air grills of the other fan coil unit hindering air flow into the classroom. The air conditioning unit was not in operation at the time of the inspection and the room was very warm. No signs of suspect mold growth or water intrusion problems were observed within the classroom. However, multiple water-stained ceiling tiles were observed in the classroom. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.

Classroom 15

Classroom 15 was vacant at the time of the inspection. A wall-mounted fan coil unit was observed in the classroom. This unit was switched off at the time of the inspection. The air conditioning unit was not in operation at the time of the inspection and the room was very warm. No signs of suspect mold growth or water intrusion problems were observed within the classroom; however, multiple water-stained ceiling tiles were observed. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.



Classroom 8

Classroom 8 was vacant at the time of the inspection. Two (2) wall-mounted fan coil units were observed in the classroom. Both units were switched off at the time of the inspection. Boxes were stored on top of the supply air grills of both fan coil units hindering air flow into the classroom. The air conditioning unit was not in operation at the time of the inspection and the room was very warm. No signs of suspect mold growth, or ongoing water intrusion problems were observed within the classroom. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.

Classroom T-4 (Carter Music)

Classroom T-4 was vacant at the time of the inspection. The air conditioning unit was in operation at the time of the inspection. Tidewater observed the air supply grills located in the walls to contain excessive dust deposits. Furthermore, the ceiling tiles located directly above air supply grills also contained black dust deposits. General housekeeping within the classroom appeared to be deficient. No signs of suspect mold growth or water-intrusion problems were observed. No unusual odors were detected in the classroom.

Classroom 5

Classroom 1 had around 18 students at the time of the inspection. Two (2) wall-mounted fan coil units were observed in the classroom. One (1) unit was switched off at the time of the inspection. A few boxes were stored on top of the supply air grills of the other fan coil unit hindering air flow into the classroom. No signs of suspect mold growth, or prior or ongoing water intrusion problems were observed within the classroom. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.

Classroom K6

Classroom K6 was vacant at the time of the inspection. One (1) wall-mounted fan coil unit was observed in the classroom. This unit was operating at the time of the inspection. The air supply grills located on the ceiling appeared to be clean. No signs of suspect mold growth, or prior or ongoing water intrusion problems were observed within the classroom. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.

Classroom 1

Classroom 1 was vacant at the time of the inspection. Two (2) wall-mounted fan coil unit were observed in the classroom. These units were not operating at the time of the inspection. The air supply grills located on the ceiling appeared to be clean. No signs of suspect mold growth, or prior or ongoing water intrusion problems were observed within the classroom. Tidewater did not detect any unusual odors in the classroom at the time of the inspection.

Comfort Parameter Air Testing

During the assessment, Tidewater recorded temperature, relative humidity, carbon dioxide (CO₂), and carbon monoxide (CO) measurements in the above-mentioned locations of Bladensburg Elementary School using a TSI Q-Track Air Quality Meter (Model Number TSI Q-Track 7565, Serial Number 7565x0931002, Calibration Date: April 18, 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 guidelines established by the American Society for Heating



Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2016, Ventilation for Acceptable Indoor Air Quality. A background sample was obtained in front of the main entrance to 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 – 2016, the temperature range in summer months should be maintained between 73.0°F and 79.0°F for maximum occupant comfort. The ASHRAE guideline for temperature for winter months is between 68.0°F and 74.5°F. The indoor temperature levels recorded in the assessed areas ranged between 74.8°F and 79.8°F. The background temperature outside the building was 81.9°F. The temperature levels recorded in Classroom 5 marginally exceeded the upper temperature range 79.0°F recommended in ASHRAE Standard 62.1 – 2016 for summer months.

Per the same guideline, a maximum relative humidity level of 65.0% is recommended to reduce the likelihood of condensation on cold surfaces. Relative humidity levels recorded in the assessed areas ranged between 37.0% and 65.9%. The background relative humidity level outside the building was 52.3%. The relative humidity level in Classroom 22 marginally exceeded the ASHRAE recommended maximum relative humidity guideline of 65.0%.

ASHRAE Standard 62.1 – 2016 recommends that indoor CO₂ concentrations not exceed 700 ppm above the outdoor background CO₂ level. The CO₂ levels recorded in the assessed areas ranged between 653 ppm to 3,451 ppm. The background CO₂ level outside the building was 510 ppm. The CO₂ levels in Classrooms 27, 22, 15, 8, 5, K-6 and 1 exceeded 700 ppm above the outdoor background CO₂ level of 510 ppm and indicates inadequate air flow into these office areas. These areas are highlighted in Table 1, in **Attachment A**.

The CO concentrations recorded in all of the assessed areas were below the maximum guideline of 9 ppm recommended by the Indoor Air Quality Association (IAQA) for CO in occupied indoor environments.

Particulate Matter Less than 10 Microns (PM 10)

Tidewater conducted air sampling for respirable dust particulates using a TSI® DUST TRAK DRX™ Aerosol Monitor (Serial Number 8534170101, Calibrated Date: March 1, 2019.) The TSI® DUST TRAK DRX™ Aerosol Monitor was equipped with a PM10 (10 µm) respirable impactor. 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 designated location and the average concentration was recorded. Samples were taken for comparison with guidelines established by the EPA NAAQS. Tidewater also obtained a background sample from outside 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 National Ambient Air Quality Standard (NAAQS) for Particulate Matter, Final Rule (January 15, 2013), 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 (µg/m³) or 0.150 milligrams per cubic meter of air (mg/m³.) The results of the PM10 analysis indicate that the average PM10 dust concentration recorded in all of the assessed areas ranged between 0.015 mg/m³ and 0.054 mg/m³. The average PM10 dust concentration in the background sample obtained in front of the main entrance was 0.025 mg/m³.



The results of the PM10 monitoring indicate that the PM10 dust concentration in all areas assessed were below the EPA 24-hour primary and secondary NAAQS of 0.150 mg/m³.

Total Volatile Organic Compound (TVOC) Air Testing

Tidewater obtained direct read measurements for Total Volatile Organic Compounds (TVOCs) using a Mini-RAE 2000 Hand Held VOC meter (Model Number MINIRAE 2000, Serial Number 110-010833, Calibration Date April 9, 2019.) 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 threshold limits recommended for typical indoor occupied environments.

A background sample was also obtained outdoors in front of the main entrance of the school building for comparison to the indoor readings. The results of the particulate matter sampling are provided in Table 3, in **Attachment A**.

There are no OSHA published guidelines for TVOCs. However, in general, the indoor air quality TVOC threshold for typical indoor occupied environments should not exceed 1,000 ppb (1.0 ppm) isobutylene units. The TVOC concentrations recorded in all of the assessed areas were below the recommended threshold level of 1.0 ppm.

Spore Trap Bioaerosol Sampling

On May 30, 2019, Tidewater collected a total of 10 spore trap air samples using Allergenco-D cassettes to characterize potential airborne fungal spores within select areas of Bladensburg Elementary School. A background sample was also collected outside the main entrance to the school building for comparison purposes.

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, Calibration Date: February 6, 2019) calibrated to a flow rate of 15.0 Liters per minute. Each sample was run for a period of five (5) minutes at each sample location to collect a total sample volume of 75.0 liters of air.

Once collected, the samples were transported to EMSL Analytical Laboratory (EMSL) located in Beltsville, Maryland for analysis. 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, airborne concentrations indoors should be less than that found in the outdoor air, with similar species composition. Indoor spore counts significantly greater than those detected 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 for the interior samples ranged between 940 and 7,730 spores per cubic meter (spores/m³.) The total mold spore concentration in the outdoors (background) sample was 19,330 spores/m³. The total mold spore concentrations in all interior locations sampled were significantly below the outdoors (background) total mold spore concentration.

The concentration of species of the genus *Aspergillus/ Penicillium* detected in Pre K-6 room (1,600 spores/m³) and Classroom 1 (2,800 spores /m³) was approximately 4-7X that of the *Aspergillus/ Penicillium* concentration detected in the background sample (400 spores /m³.)

Aspergillus/ Penicillium are the most common mold species that are detected in indoor air samples. Most of the hundreds of sub-species are allergenic with only a few that are toxic. This group of species will grow with only the humidity in the air as its water source. Certain species of *Penicillium* are associated with certain illnesses or allergic reactions, while others are not.

As with *Penicillium*, the genus *Aspergillus* contains some species that are known to cause illness, while others do not. *Aspergillus fumigatus* causes lung infections in people with weakened immune systems, while healthy individuals are not affected. However, high levels of the genus *Aspergillus* do not necessarily indicate an exposure risk.

Although, visible surface mold formations were not observed in the Classroom1 and Classroom Pre K-6 during the visual inspection, it is possible that surface mold could be present above the drop ceiling or in the duct system of Classroom 1 and Classroom Pre K-6; therefore, further investigation is warranted.

The summary of the results for the spore trap sampling are provided in Table 4 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

Based on this IAQ and mold assessment survey, Tidewater offers the following conclusions:

- Tidewater's visual inspection did not reveal any evidence of standing water, active water intrusion or suspect mold growth on accessible walls, floors and ceilings in the assessed areas; however, multiple water-stained ceiling tiles were observed in the Health Room, Classroom 22 and Classroom 15.
- The supply air grills of the air conditioning units in the Library, Health Room, and Classroom T-4 (Carter Music) contained excessive levels of dust.
- There were boxes stored on top of the air supply grills of the fan coil units in Classroom 22, 8, and 5 hindering the air flow to the classrooms.
- General housekeeping in all areas assessed appeared to be good apart from Classroom T-4 (Carter Music).
- The CO, PM10, and TVOC readings recorded within the assessed areas were all within industry standards and guidelines.
- The temperature levels in Classroom 5 marginally exceeded the upper temperature range 79.0°F recommended in ASHRAE Standard 62.1 – 2016 for summer months.
- The relative humidity level in Classroom 22 marginally exceeded the ASHRAE recommended maximum relative humidity guideline of 65.0%.



- The CO₂ levels in Classrooms 27, 22, 15, 8, 5, K-6 and 1 exceeded 700 ppm above the outdoor background CO₂ level of 510 ppm and indicates insufficient air exchanges in these areas.
- The total mold spore concentrations in all interior locations sampled were significantly below the outdoors (background) total mold spore concentration.
- The concentration of species of the genus *Aspergillus/ Penicillium* detected in Pre K-6 room (1,600 spores/m³) and Classroom 1 (2,800 spores /m³) was approximately 4-7X that of the *Aspergillus/ Penicillium* concentration detected in the background sample (400 spores /m³) and may be an indicator of potential fungal contamination and water damage above the drop ceiling or in the duct system of Classroom 1 and Classroom Pre K-6.

Recommendations

Based on the results of the assessment, Tidewater offers the following recommendations:

- Abate the water-stained ceiling tiles in the Health Room, Classroom 22 and Classroom 15. Ensure that the perimeters of the ceiling grids are cleaned with a 10% bleach solution to eliminate existing fungal spores prior to installing new ceiling tiles.
- Clean all supply air grills of the air conditioning unit in the Library, Health Room and Classroom T-4 (Carter Music) with a 10% bleach solution to eliminate observed dirt/dust.
- Ensure that all cleaning activities are conducted after hours when the classrooms are vacant to minimize exposure to occupants.
- Maintain good housekeeping practices in all common areas and classrooms. All common area and classroom floors should be broom cleaned at the end of each day. Furthermore, all horizontal surfaces including desktops, furniture, window sills and suspended light fixtures should be cleaned on a routine basis to prevent the accumulations of dust.
- Ensure HVAC System supplying is properly balanced per design requirements and current use/occupancy in order to ensure adequate ventilation throughout the classrooms.
- Ensure the ventilation systems are turned on in all classrooms and are operating at all times when the classrooms are occupied to provide sufficient air flow and ventilation to the classrooms.
- Adjust the HVAC system serving Classroom 5 in order to lower the temperature and achieve a temperature level between 73.0°F and 79.0°F recommended by ASHRAE Standard 62.1-2016 for summer months.
- Install a de-humidifier or adjust the thermostat in the HVAC system in Classroom 22 in order to maintain a relative humidity level below 65.0% per ASHRAE recommendations to minimize the potential for mold formations.
- Increase the air exchange rates to Classrooms 27, 22, 15, 8, 5, K-6 and 1 in order improve the air circulation within the classrooms.
- Ensure the air supply vents of the fan coil units in Classrooms 22, 8, and 5 are left unobstructed to ensure adequate air supply into the classroom.



- It is recommended that Classrooms 1 and Pre K-6 are re-tested for total mold spores after all cleaning activities are complete.

Qualifications

Tidewater has endeavored to investigate existing conditions in representative areas of Bladensburg Elementary School located at 4915 Annapolis Road in Bladensburg, Maryland as they pertain to indoor air quality. Our conclusions and recommendations are based on the 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 Abeysekere, MS, CIH, CSP, CHMM
Project Manager

Jonathan N. Schatz, MS
Manager, IH Services

SA/JNS

- Attachments: **Attachment A – Summary of Comfort Parameters, Total (Nuisance) Dust, TVOC and Non-Viable Spore Trap Sampling**
Attachment B – Laboratory Reports for Non-Viable Spore Trap Sampling
Attachment C – Calibration Certificates
Attachment D – Qualifications
Attachment E – Floor Plan with Sampling Locations



Attachment A

Summary of Comfort Parameters, Total (Nuisance) Dust, TVOC and Non-Viable Spore Trap Sampling



Table 1: Indoor Air Quality Comfort Parameters Bladensburg Elementary School				
Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
May 30, 2019				
Library	77.7	43.7	653	0.0
Health Room	76.8	46.3	940	0.0
Classroom 27	75.6	57.9	1,353	0.0
Classroom 22	75.6	65.9	3,451	0.0
Classroom 15	76.5	51.2	1,256	0.0
Classroom 8	74.8	44.7	1,440	0.0
Room T4 (Music Room)	77.0	37.0	720	0.0
Classroom 5	79.8	46.2	2,045	0.0
Classroom K6	78.5	50.2	1,260	0.0
Classroom 1	77.8	46.0	1,958	0.0
Background	81.9	52.3	510	0.0

- Numbers highlighted in red indicates locations in which temperature, carbon dioxide or relative humidity levels were either above or below the guidelines recommended by the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2016.



Table 2: Particulate Matter Less than 10 Microns (PM10) Bladensburg Elementary School	
Location	Particulate Matter (PM10)
	Concentration (mg/m³)
May 30, 2019	
Library	0.022
Health Room	0.022
Classroom 27	0.020
Classroom 22	0.054
Classroom 15	0.019
Classroom 8	0.015
Room T4 (Music Room)	0.016
Classroom 5	0.038
Classroom K6	0.053
Classroom 1	0.031
Background (Outdoors)	0.025

- Highlighted areas indicates locations where the PM10 particulate concentration exceeded the EPA 24-hour primary and secondary NAAQS of 0.150 mg/m³.



Table 3: Total Volatile Organic Compounds (TVOCs) Bladensburg Elementary School	
Location	Concentration (ppm)
May 30, 2019	
Library	0.0
Health Room	0.0
Classroom 27	0.0
Classroom 22	0.2
Classroom 15	0.0
Classroom 8	0.0
Room T4 (Music Room)	0.0
Classroom 5	0.0
Classroom K6	0.0
Classroom 1	0.0
Background (Outdoors)	0.0



Table 4: Spore Trap Sampling Results Bladensburg Elementary School			
May 30, 2019			
Sample Number	Sample Location	Sample Volume (L)	Total Fungi Concentration (Counts/m³)
BES-1	Library	75.0	2,590
BES-2	Health Room	75.0	2,780
BES-3	Classroom 27	75.0	2,590
BES-4	Classroom 22	75.0	2,210
BES-5	Classroom 15	75.0	2,740
BES-6	Classroom 8	75.0	1,140
BES-7	Room T4 (Music Room)	75.0	940
BES-8	Classroom 5	75.0	3,880
BES-9	Classroom K6	75.0	5,170
BES-10	Classroom 1	75.0	7,730
BG-1	Background (Outdoors)	75.0	19,330

- Highlighted Area indicates location where the concentrations of the indoor sample exceeded the level detected in the background sample.



TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment B

Laboratory Reports for Non-Viable Spore Trap Mold Sampling



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910765
Customer ID: TIDE50
Customer PO:
Project ID:

Attn: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Proj: PGPCS Bladenburg ES 5419-016

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

Lab Sample Number:	061910765-0001			061910765-0002			061910765-0003		
Client Sample ID:	BES-1			BES-2			BES-3		
Volume (L):	75			75			75		
Sample Location:	Library			Health Room			Classroom 27		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	1*	10*	0.4	-	-	-
Ascospores	7	300	11.6	10	440	15.8	11	480	18.5
Aspergillus/Penicillium	-	-	-	2	90	3.2	16	700	27
Basidiospores	50	2200	84.9	50	2200	79.1	29	1300	50.2
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	1.5	1	40	1.4	3	100	3.9
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	1*	10*	0.4
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	1.5	-	-	-	-	-	-
Pithomyces++	1*	10*	0.4	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Paecilomyces-like	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Triadelphia	-	-	-	-	-	-	-	-	-
Total Fungi	60	2590	100	64	2780	100	60	2590	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	2	-	-	2	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

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

Jeffrey Lau, Microbiology Laboratory Manager
or Other Approved Signatory

Samples received in good condition 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. 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. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.
Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:29:35

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



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910765
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Attn: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Proj: PGCPs Bladenburg ES 5419-016

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

Lab Sample Number:	061910765-0004			061910765-0005			061910765-0006		
Client Sample ID:	BES-4			BES-5			BES-6		
Volume (L):	75			75			75		
Sample Location:	Classroom 22			Classroom 15			Class Room 8		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	4	200	9	3	100	3.6	3	100	8.8
Aspergillus/Penicillium	12	520	23.5	17	740	27	-	-	-
Basidiospores	27	1200	54.3	36	1600	58.4	23	1000	87.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	5	200	9	7	300	10.9	1	40	3.5
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	2	90	4.1	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Paecilomyces-like	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Triadelphia	-	-	-	-	-	-	-	-	-
Total Fungi	50	2210	100	63	2740	100	27	1140	100
Hyphal Fragment	4	200	-	-	-	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	2	-	-	2	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

Jeffrey Lau, Microbiology Laboratory Manager
or Other Approved Signatory

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

Samples received in good condition 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. 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. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.
Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:29:35

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



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
 Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910765
 Customer ID: TIDE50
 Customer PO:
 Project ID:

Attn: Skanda Abeyeskere
 Tidewater, Inc.
 6625 Selnick Drive
 Suite A
 Elkridge, MD 21075

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Proj: PGPCS Bladenburg ES 5419-016

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	061910765-0007 BES-7 75 Music Room			061910765-0008 BES-8 75 Classroom 5			061910765-0009 BES-9 75 Pre K 6		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	4	200	21.3	14	610	15.7	7	300	5.8
Aspergillus/Penicillium	1	40	4.3	12	520	13.4	37	1600	30.9
Basidiospores	13	570	60.6	58	2500	64.4	62	2700	52.2
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	2	90	9.6	4	200	5.2	9	400	7.7
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1	40	1	3	100	1.9
Pithomyces++	-	-	-	-	-	-	1	40	0.8
Rust	-	-	-	1*	10*	0.3	2*	30*	0.6
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Paecilomyces-like	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Triadelphia	1	40	4.3	-	-	-	-	-	-
Total Fungi	21	940	100	90	3880	100	121	5170	100
Hyphal Fragment	1	40	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	2	90	-	-	-	-	1	40	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	3	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	2	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	3	-

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

Jeffrey Lau, Microbiology Laboratory Manager
 or Other Approved Signatory

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

Samples received in good condition 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. 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. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.
 Samples analyzed by EMSL Analytical, Inc. Carle Place, NY

Initial report from: 06/06/2019 08:29:35

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



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
 Phone/Fax: (516) 997-7251 / (516) 997-7528
<http://www.EMSL.com> / carleplacelab@emsl.com

Order ID: 061910765
 Customer ID: TIDE50
 Customer PO:
 Project ID:

Attn: Skanda Abeyeskere
 Tidewater, Inc.
 6625 Selnick Drive
 Suite A
 Elkridge, MD 21075

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected: 05/30/2019
Received: 06/03/2019
Analyzed: 06/05/2019

Proj: PGPCS Bladenburg ES 5419-016

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	061910765-0010 BES-10 75 Classroom 1			061910765-0011 BG-1 75 Background		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria (Ulocladium)	1*	10*	0.1	1	40	0.2
Ascospores	7	300	3.9	81	3500	18.1
Aspergillus/Penicillium	64	2800	36.2	9	400	2.1
Basidiospores	79	3400	44	300	13100	67.8
Bipolaris++	-	-	-	-	-	-
Chaetomium	1*	10*	0.1	-	-	-
Cladosporium	28	1200	15.5	43	1900	9.8
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	2*	30*	0.2
Fusarium	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Myxomycetes++	1*	10*	0.1	2*	30*	0.2
Pithomyces++	-	-	-	-	-	-
Rust	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-
Paecilomyces-like	-	-	-	6	300	1.6
Torula-like	-	-	-	2*	30*	0.2
Triadelphia	-	-	-	-	-	-
Total Fungi	181	7730	100	446	19330	100
Hyphal Fragment	1	40	-	-	-	-
Insect Fragment	-	-	-	-	-	-
Pollen	-	-	-	1	40	-
Analyt. Sensitivity 600x	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	1	-
Fibrous Particulate (1-4)	-	2	-	-	1	-
Background (1-5)	-	2	-	-	2	-

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

Jeffrey Lau, Microbiology 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. Carle Place, NY

Initial report from: 06/06/2019 08:29:35

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

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

061910765

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 Slenick Drive, Suite A		<i>Third Party Billing requires written authorization from third party</i>	
City: Elkridge	State/Province: Maryland	Zip/Postal Code:	Country:
Report To (Name): Skanda Abeysekere		Telephone #:	
Email Address: skanda@tideh2o.net		Fax #:	Purchase Order:
Project Name/Number: PGCPs <i>Bladensburg ES</i>		Please Provide Results: <input type="checkbox"/> FAX <input type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: MD <i>5419-016</i>		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 Cyclcx	• M002 Cyclcx-d	
• M030 Micro 5	• M174 MoldSnap	• M176 Relle Smart	• M130 Via-Cell	

Other Microbiology Test Codes

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

Preservation Method (Water):

Name of Sampler: <i>SKANDA ABEYSEKERE</i>	Signature of Sampler:
---	-----------------------

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
<i>BES-1</i>	<i>Library</i>	<i>Air</i>	<i>M032</i>	<i>75.0</i>	<i>05/30/19</i>
<i>-2</i>	<i>Health Room</i>				
<i>-3</i>	<i>classroom 27</i>				
<i>-4</i>	<i>classroom 22</i>				
<i>-5</i>	<i>classroom 15</i>				
<i>6</i>	<i>classroom 14</i>				
<i>7</i>	<i>classroom 5</i>				
<i>8</i>	<i>classroom 5</i>				
<i>9</i>	<i>Pre K 6</i>				

Client Sample # (s): <i>11</i>	Total # of Samples: <i>11</i>
Relinquished (Client): <i>Jack</i>	Date: <i>05/30/19</i> Time: <i>1:50 pm</i>
Received (Client): <i>J. Powell</i>	Date: <i>6/3/19</i> Time: <i>1:45 pm</i>
Comments:	

6/5/19

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

061910765

PHONE:

FAX:

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
BES-10	classroom 1	AM	M032	75.0	05/30/2019
			(D)		
BG-1	Background	AM	M032	75.0	05/30/19

**Comments/Special Instructions:

6/5/19



TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment C
Calibration Certificates



IAQ Meter Calibration Certificate

Cal Standard	Lot #	Expiration
	18-6508	4/18/2020

Carbon Monoxide Gas	Reading ppm	Acceptable Range
35 ppm ▼	35.0	(32 - 38) ▼

Carbon Dioxide Gas	Reading ppm	Acceptable Range
1000 ppm ▼	1008.0	(950 - 1050) ▼

Model	TSI Q-Trak 7565 ▼
S/N	7565x0931002
Barcode	u59038x
Order #	398188

Calibrated By

Date of Calibration

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.

All calibration gas used is traceable to NIST. Additional documentation is available upon request.

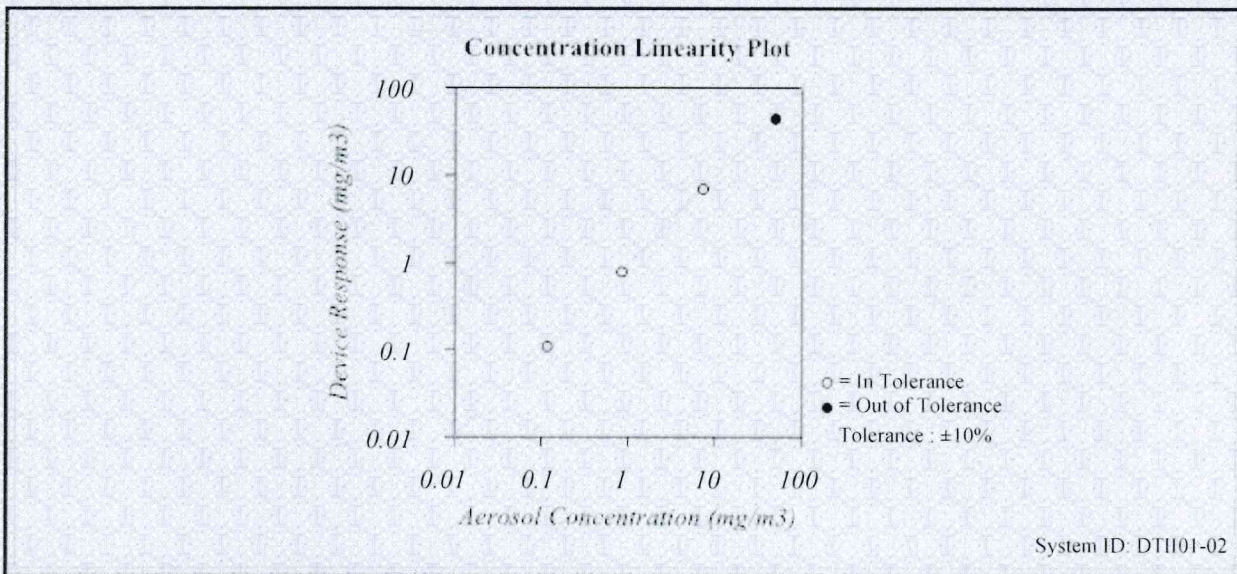


CERTIFICATE OF CALIBRATION AND TESTING

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	8534
Temperature	76.6 (24.8)	°F (°C)	Serial Number	8534170101
Relative Humidity	24	%RH		
Barometric Pressure	29.14 (986.8)	inHg (hPa)		

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



FLOW AND PRESSURE VERIFICATION				SYSTEM DTII01-02			
Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.0	3.0	2.85 ~ 3.15	Pressure kPa	98.6	98.6	93.71 ~ 103.57

Pump run time: 25 Hours, Pump voltage: 433 Bits

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, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Measurement Variable</th> <th>System ID</th> <th>Last Cal.</th> <th>Cal. Due</th> </tr> </thead> <tbody> <tr> <td>Temp/Humidity</td> <td>E005409</td> <td>10-19-17</td> <td>10-31-18</td> </tr> <tr> <td>DC Voltage</td> <td>E003314</td> <td>05-03-17</td> <td>05-31-18</td> </tr> <tr> <td>Photometer</td> <td>E003319</td> <td>01-09-18</td> <td>07-31-18</td> </tr> <tr> <td>1 um PSL</td> <td>679755</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>10 um PSL</td> <td>167947</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Flowmeter</td> <td>E002471</td> <td>04-20-17</td> <td>04-30-18</td> </tr> </tbody> </table>	Measurement Variable	System ID	Last Cal.	Cal. Due	Temp/Humidity	E005409	10-19-17	10-31-18	DC Voltage	E003314	05-03-17	05-31-18	Photometer	E003319	01-09-18	07-31-18	1 um PSL	679755	n/a	n/a	10 um PSL	167947	n/a	n/a	Flowmeter	E002471	04-20-17	04-30-18	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Measurement Variable</th> <th>System ID</th> <th>Last Cal.</th> <th>Cal. Due</th> </tr> </thead> <tbody> <tr> <td>Temp/Humidity</td> <td>E005410</td> <td>10-19-17</td> <td>10-31-18</td> </tr> <tr> <td>DC Voltage</td> <td>E003315</td> <td>05-03-17</td> <td>05-31-18</td> </tr> <tr> <td>Microbalance</td> <td>M001324</td> <td>11-02-16</td> <td>11-30-18</td> </tr> <tr> <td>3 um PSL</td> <td>180387</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Pressure</td> <td>E003511</td> <td>10-02-17</td> <td>10-31-18</td> </tr> </tbody> </table>	Measurement Variable	System ID	Last Cal.	Cal. Due	Temp/Humidity	E005410	10-19-17	10-31-18	DC Voltage	E003315	05-03-17	05-31-18	Microbalance	M001324	11-02-16	11-30-18	3 um PSL	180387	n/a	n/a	Pressure	E003511	10-02-17	10-31-18
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Pressure	E003511	10-02-17	10-31-18																																																		

 Verified

March 1, 2018

 Date



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

Tidewater MD

Instrument ID 110-010833
Description MINIRAE 2000
Calibrated 4/9/2019

Manufacturer Rae Systems
Model Number MINIRAE 2000
Serial Number 110-010833
Location Maryland
Department CATHY MOORE

Frequency 6 Months
Status Pass
Temp 24
Humidity 39

Calibration Specifications

Group # 1
Group Name ISOBUTYLENE
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

<u>Nom In Val / In Val</u>	<u>In Type</u>	<u>Out Val</u>	<u>Out Type</u>	<u>Fnd As</u>	<u>Lft As</u>	<u>Dev%</u>	<u>Pass/Fail</u>
100.00 / 100.00	ppm	100.00	ppm	92.80	101.00	1.00%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

<u>Test Instrument ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Last Cal Date</u>	<u>Next Cal Date / Expiration Date</u>
MD ISO 100PPM FBI-248-100-12	MD ISO 100PPM	Pine Environmental Services, Inc.	FBI-248-100-12	34LS-248-100	5/23/2022	
MD ZERO AIR FBI-1-25	ZERO AIR Oxygen 20.9%VOL, Nitrogen Balance	Pine Environmental Services, Inc.	31844	FBI-1-25		

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Ryan Armstrong

Pine Environmental Services, LLC. hereby certifies that this instrument is calibrated and functions to meet the manufacturer's specifications using NIST traceable standards, or is derived from accepted values of physical constants.

Certificate of Conformance

Buck BioAire™

Buck BioSlide™

Serial number: B153043 Date Issued: 2-6-19

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. Gorenover

Information contained in this document should not be reproduced in any form without the written consent of A.P. Buck Inc. It is for reference only and cannot be used as a form of endorsement by any private or governmental regulatory body.

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

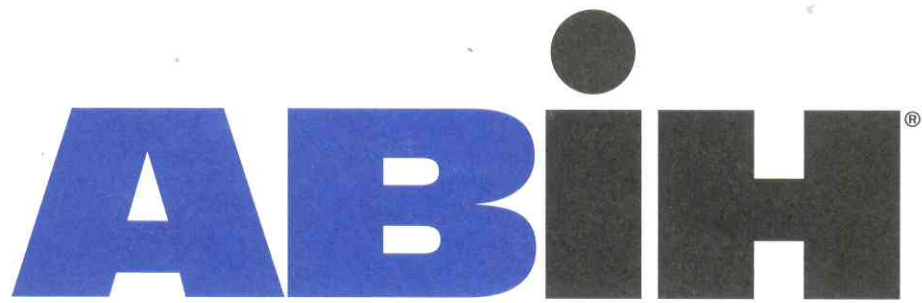


TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment D

Qualifications



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

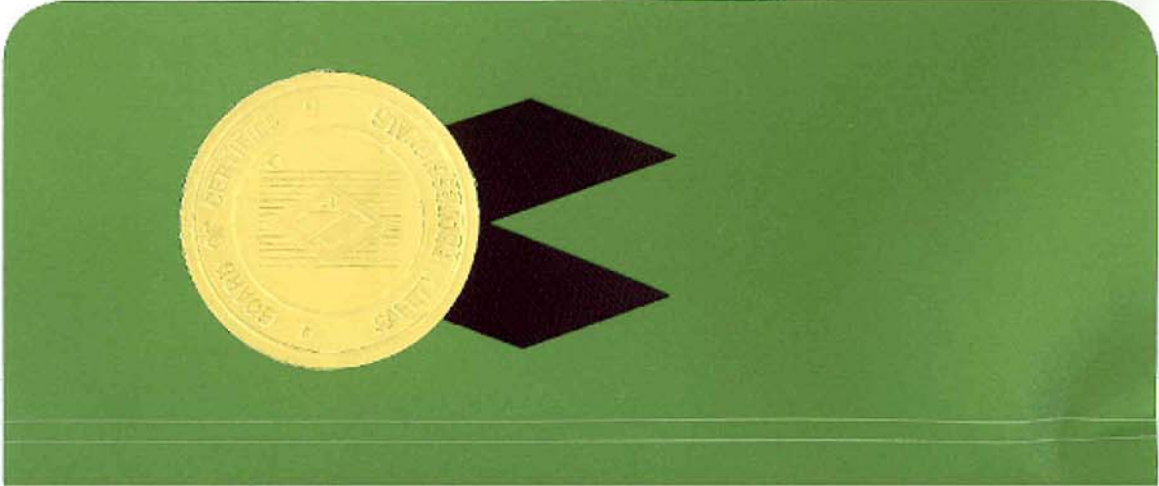
CIH

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® 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



<i>Paul S Adams</i>	President
<i>Linda Japp</i>	Secretary
20110	CSP 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



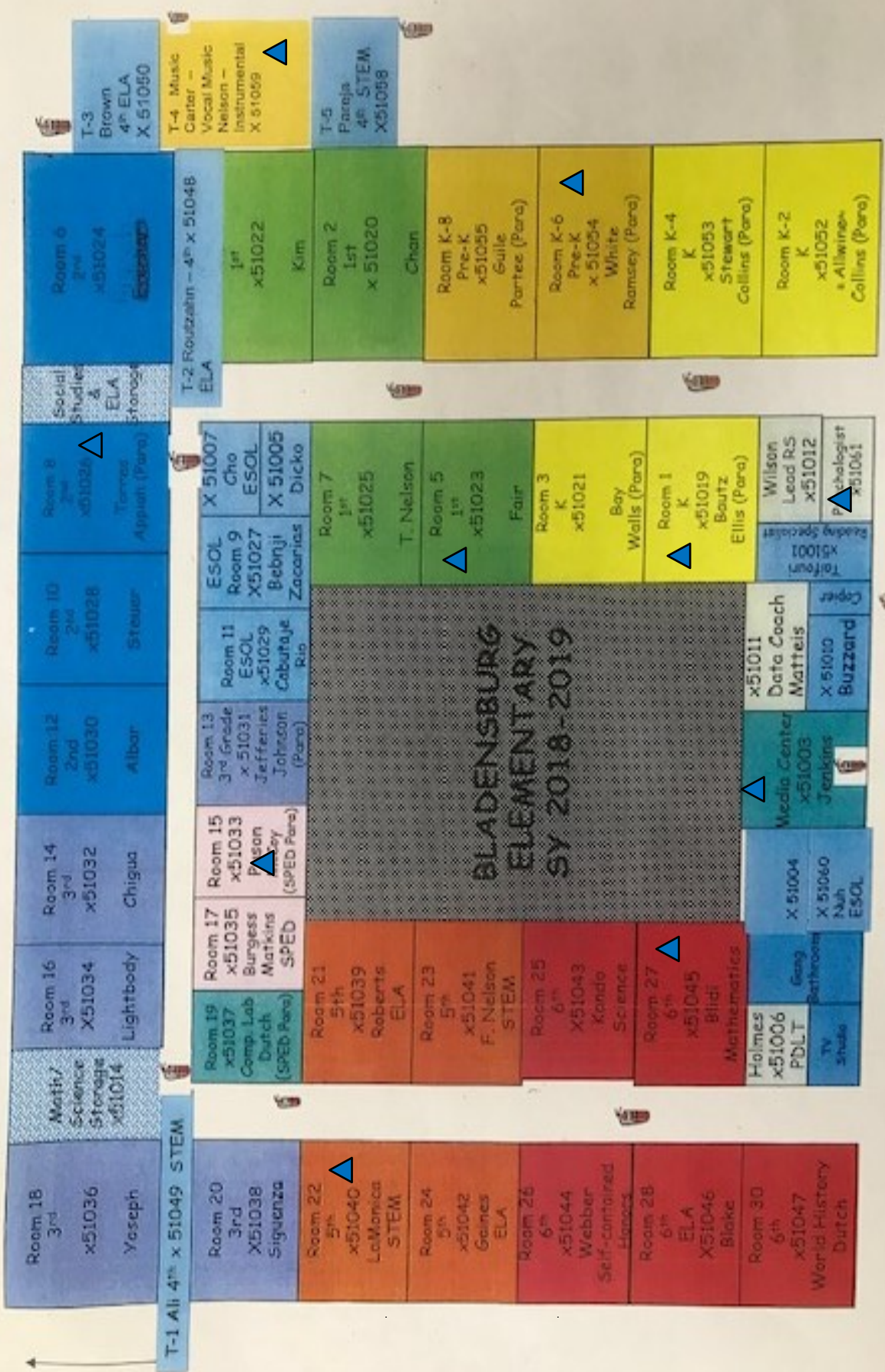


TIDEWATER INC

ENGINEERS / SCIENTISTS / PROGRAM MANAGERS

Attachment E

Floor Plan with Sampling Locations



Updated 08/06/2018

General Notes

Scale: N/A

Attachment C
Bladensburg Elementary School
Floor Plan with Sampling Locations