March 7, 2021

Mr. Alex Baylor via email: alex.baylor@pgcps.org
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

RE: Indoor Air Quality (IAQ) and Mold Assessment Services
Prince George's County Public Schools – Drew Freeman Middle School
2600 Brooks Drive, Hillcrest Heights, Maryland 20746
Contract No.: IFB 022-19: Indoor Air Quality Services at Various Locations
Tidewater Project No.: 5419-040

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this final report regarding the results of the Indoor Air Quality (IAQ) and Mold Assessment Services conducted by Tidewater at Drew Freeman Middle School located at 2600 Brooks Drive in Hillcrest Heights, Maryland. Tidewater's Project Manager and Certified Industrial Hygienist, Mr. Skanda Abeyesekere MS, CIH, CSP, CHMM conducted these services on December 4, 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, Classroom 104 (Music Room), Cafeteria, Classroom 108 (Health Room), Classroom 122, Classroom 215, Classroom 213, Classroom 207A and Classroom 205A. 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_2), 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 (PM10) 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 ongoing water-intrusion problems were observed in the Main office. However, a missing ceiling tiles was observed indicating signs of past water intrusion problems. Visible suspect surface mold was observed on the overhead pipe insulation located above the drop ceiling. No odors were detected. A wall-mounted fan coil unit was observed in the main office.

Classroom 104 (Music Room)

The Music room was equipped with two wall-mounted fan coil units. The units were operating at the time of the inspection. No signs of suspect mold growth were observed in the Music Room and no notable odors were detected. The Music Room was clean and well maintained.

Cafeteria

The cafeteria was equipped with wall-mounted fan coil units. The units were operating at the time of the inspection and was emitting warm air. No signs of suspect mold growth were observed in the cafeteria and no notable odors were detected. The wall-mounted supply air grills appeared to be clean and free of dust accumulations.

Classroom 108 (Health Room)

Ceiling tiles with heavy water stains were observed in the health room. Furthermore, a missing ceiling tile was observed. The health room was equipped with a wall-mounted fan coil unit. The units was operating at the time of the inspection. The health room was clean and well maintained.

Classroom 122

No signs of suspect mold growth were observed in Classroom 122 and no notable odors were detected. The wall-mounted supply air grills appeared to be clean and free of dust accumulations. The classroom was clean and well maintained and housekeeping appeared to be satisfactory.

Classroom 213

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.

Classroom 215

No signs of suspect mold growth were observed in Classroom 215 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 and housekeeping appeared to be satisfactory.

Classroom 207 A

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

Classroom 205 A

No signs of suspect mold growth were observed in the classroom and no odors were detected. Two wall-mounted fan coil units were operating at the time of the inspection and was emitting hot air. The classroom was extremely hot. A dislodged ceiling tile was observed. The Classroom was well maintained and housekeeping appeared to be satisfactory.

Comfort Parameter Air Testing

During the IAQ assessment, Tidewater obtained temperature (T), relative humidity (RH), carbon dioxide (CO_2), 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 4, 2020 ranged between 62.7°F and 94.8°F. The background temperature outside the building was 59.5°F. The temperature levels recorded within most areas monitored were below the lower temperature standard of 68.0°F recommended by ASHRAE for winter months. The temperature level recorded in Room 205A was significantly above the upper temperature standard of 74.5°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. The temperature levels in the vacant classrooms (apart from Room 205A) are likely to be within ASHRAE standards when the classrooms are re-occupied.

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 4, 2020 ranged between 16.0% and 39.2%. The background relative humidity level outside the building was 38.3%. 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_2 levels not exceed 700 ppm above the outdoor background CO_2 level. The CO_2 levels in the assessed areas on December 4, 2020 ranged between 440 ppm to 490 ppm. The background CO_2 level outside the building was 448 ppm. The CO_2 levels within all interior locations assessed did not exceed 700 ppm above the outdoor background CO_2 level of 448 ppm.

The CO levels in all areas assessed on December 4, 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 (µg/m^3) or 0.150 milligrams per cubic meter of air (mg/m^3.) The results of the PM10 analysis indicate that the average PM10 dust concentrations in all assessed areas ranged between 0.073 mg/m^3 and 0.084 mg/m^3. The average PM10 dust concentration in the background sample obtained in front of the main entrance was 0.072 mg/m^3. The PM10 concentrations in all areas assessed were below the EPA 24-hour primary and secondary NAAQS of 0.150 mg/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 50 spores/m^3 and 1,110 spores/m^3. The total mold spore concentrations in the background sample obtained outdoors was 5,700 spores/m^3. The total mold spore concentrations in all interior samples were significantly below the total mold spore concentration of the background sample (DFMS-BG.)

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.

It should be noted however, that visible suspect mold growth was observed on the overhead pipe insulation located in the ceiling plenum above the main office.

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:
  - Main Office: Visible suspect surface mold was observed on the pipe insulation located in the drop ceiling.
  - Classroom 108 (Health Room): Ceiling tiles with heavy water stains was observed in the classroom. Furthermore, a missing ceiling tile was also observed.
  - Classroom 205: A loose dislodged ceiling tile was observed.
- The temperature levels in most areas assessed were below the lower temperature standard of 68.0°F recommended by ASHRAE for winter months. The temperature level in Room 205A was significantly above the upper temperature standard of 74.5°F recommended by ASHRAE for winter months.
- The Relative humidity, CO_2, 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 were below the background sample concentration and were also consistent with those observed in the background sample. 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 area around the pipe insulation with visible surface mold located above the drop ceiling of the main office for any ongoing water leaks or condensation problems. If any ongoing problems are detected, take immediate action to repair them.
- Appropriate steps should be taken to remediate the apparent mold-impacted pipe insulation located above the drop ceiling of the main office 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.
- Investigate the areas above the suspended ceiling tiles with heavy water stains in Classroom 108 (Health Room) for any ongoing water leaks. If any ongoing water leaks are detected, take immediate action to repair them. Remove all water-stained ceiling tiles and replace them with new ceiling tiles.
- Adjust the dislodged ceiling tile in Classroom 205 and ensure that it is fitted snugly into the ceiling grid.
- 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 Drew Freeman Middle School located at 2600 Brooks Drive in Hillcrest Heights, 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

APPENDIX A

COMFORT PARAMETERS, PM10 PARTICULATE DUST, AND MICROBIAL RESULTS

Table 1: Indoor Air Quality Comfort Parameters Drew Freeman Middle School				
Location	**Temperature (°F)**	**Carbon Dioxide (ppm)**	**Relative Humidity (%)**	**Carbon Monoxide (ppm)**
December 4, 2020				
Main Office	**67.2**	39.2	460	0.0
Room 104 (Music Room)	**62.7**	35.2	446	0.0
Cafeteria	73.1	33.4	490	0.0
Room 108 (Health Room)	**67.9**	29.3	460	0.0
Room 122	**63.7**	33.7	454	0.0
Room 215	**65.1**	32.3	460	0.0
Room 213	**65.3**	33.0	440	0.0
Room 207A	71.0	33.5	459	0.0
Room 205A	**94.8**	16.0	450	0.0
Background (Outdoors)	59.5	38.3	448	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.

Table 2: Particulate Matter Less than 10 Microns (PM10) Drew Freeman Middle School	
Location	**Particulate Matter (PM10)** **Concentration (mg/m^3)**
December 4, 2020	
Main Office	0.077
Room 104 (Music Room)	0.080
Cafeteria	0.076
Room 108 (Health Room)	0.084
Room 122	0.073
Room 215	0.075
Room 213	0.073
Room 207A	0.073
Room 205A	0.074
Background (Outdoors)	0.072

Table 3: Spore Trap Sampling Results Drew Freeman Middle School				
December 4, 2020				
Sample Number	**Sample Location**	**Sample Volume (L)**	***Aspergillus Penicillium* Concentration (Counts/m^3)**	**Total Fungi Concentration (Counts/m^3)**
DFMS - 1	Main Office	75.0	40	750
DFMS - 2	Room 104 (Music Room)	75.0	100	420
DFMS - 3	Cafeteria	75.0	300	490
DFMS - 4	Room 107 (Waiting Room)	75.0	80	730
DFMS - 5	Room 122	75.0	-	140
DFMS - 6	Room 215	75.0	100	1,110
DFMS - 7	Room 213	75.0	-	50
DFMS - 8	Room 207A	75.0	420	790
DFMS - 9	Room 205A	75.0	40	380
DFMS -BG	Background	75.0	200	5,700

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

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

EMSL Order: 182004029
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Drew Freeman MS

Phone: (443) 983-0362
Fax: (410) 997-8713
Collected Date:
Received Date: 12/09/2020 02:18 PM
Analyzed Date: 12/15/2020 - 02/03/2021

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

Lab Sample Number:	182004029-0001			182004029-0002			182004029-0003		
Client Sample ID:	DFMS-1			DFMS-2			DFMS-3		
Volume (L):	75			75			75		
Sample Location:	Main Office			Music Room			Cafeteria		
Spore Types	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	1*	10*	2
Aspergillus/Penicillium	1	40	5.3	3	100	23.8	8	300	61.2
Basidiospores	10	420	56	5	200	47.6	2	80	16.3
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	4	200	26.7	1	40	9.5	3	100	20.4
Curvularia	1*	10*	1.3	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	5.3	-	-	-	-	-	-
Pithomyces++	1	40	5.3	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	2	80	19	-	-	-
Total Fungi	**18**	**750**	**100**	**11**	**420**	**100**	**14**	**490**	**100**
Hyphal Fragment	6*	80*	-	-	-	-	1	40	-
Insect Fragment	-	-	-	1	40	-	-	-	-
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.

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

Kevin Ream, Laboratory Manager
or other Approved Signatory

Report Amended: 02/03/2021 02:32 PM Replaces initial report from: 12/16/2020 09:54 AM Reason Code Client-Additional Analysis

For information on the fungi listed in this report, please visit the Resources section at 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

EMSL Order: 182004029
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Drew Freeman MS

Phone: (443) 983-0362
Fax: (410) 997-8713
Collected Date:
Received Date: 12/09/2020 02:18 PM
Analyzed Date: 12/15/2020 - 02/03/2021

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

Lab Sample Number:	182004029-0004			182004029-0005			182004029-0006		
Client Sample ID:	DFMS-4			DFMS-5			DFMS-6		
Volume (L):	75			75			75		
Sample Location:	Room 107 (Waiting)			Room 122			Room 215		
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	11	-	-	-	2	80	7.2
Aspergillus/Penicillium	2	80	11	-	-	-	3	100	9
Basidiospores	11	460	63	1	40	28.6	21	890	80.2
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	13.7	3	100	71.4	1	40	3.6
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	1*	10*	1.4	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	**19**	**730**	**100**	**4**	**140**	**100**	**27**	**1110**	**100**
Hyphal Fragment	1	40	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	1*	10*	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	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.

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

Kevin Ream, Laboratory Manager
or other Approved Signatory

Report Amended: 02/03/2021 02:32 PM Replaces initial report from: 12/16/2020 09:54 AM Reason Code Client-Additional Analysis

For information on the fungi listed in this report, please visit the Resources section at 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

EMSL Order: 182004029
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Drew Freeman MS

Phone: (443) 983-0362
Fax: (410) 997-8713
Collected Date:
Received Date: 12/09/2020 02:18 PM
Analyzed Date: 12/15/2020 - 02/03/2021

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

Lab Sample Number:	182004029-0007			182004029-0008			182004029-0009		
Client Sample ID:	DFMS-7			DFMS-8			DFMS-BG		
Volume (L):	75			75			75		
Sample Location:	Room 213			Room 207A			Background		
Spore Types	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	1	40	0.7
Ascospores	-	-	-	1	40	5.1	3	100	1.8
Aspergillus/Penicillium	-	-	-	10	420	53.2	4	200	3.5
Basidiospores	1	40	80	6	300	38	112	4730	83
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	1*	10*	1.3	4	200	3.5
Curvularia	-	-	-	-	-	-	1*	10*	0.2
Epicoccum	1*	10*	20	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	10	420	7.4
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	1*	10*	1.3	-	-	-
Polythrincium	-	-	-	1*	10*	1.3	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	**2**	**50**	**100**	**20**	**790**	**100**	**135**	**5700**	**100**
Hyphal Fragment	-	-	-	2	80	-	2	80	-
Insect Fragment	-	-	-	-	-	-	1	40	-
Pollen	-	-	-	1*	10*	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	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.

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

Kevin Ream, Laboratory Manager
or other Approved Signatory

Report Amended: 02/03/2021 02:32 PM Replaces initial report from: 12/16/2020 09:54 AM Reason Code Client-Additional Analysis

For information on the fungi listed in this report, please visit the Resources section at 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

EMSL Order: 182004029
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Drew Freeman MS

Phone: (443) 983-0362
Fax: (410) 997-8713
Collected Date:
Received Date: 12/09/2020 02:18 PM
Analyzed Date: 12/15/2020 - 02/03/2021

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

Lab Sample Number:	**182004029-0010**		
Client Sample ID:	**DFMS-9**		
Volume (L):	**75**		
Sample Location:	**Room 205A**		
Spore Types	**Raw Count**	**Count/M³**	**% of Total**
Alternaria (Ulocladium)	-	-	-
Ascospores	-	-	-
Aspergillus/Penicillium	1	40	10.5
Basidiospores	7	300	78.9
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	3*	40*	10.5
Curvularia	-	-	-
Epicoccum	-	-	-
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	-	-	-
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Cercospora++	-	-	-
Polythrincium	-	-	-
Torula-like	-	-	-
Total Fungi	**11**	**380**	**100**
Hyphal Fragment	-	-	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	42	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	2	-
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.

Report Amended: 02/03/2021 02:32 PM Replaces initial report from: 12/16/2020 09:54 AM Reason Code Client-Additional Analysis

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

OrderID: 182004029

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

182004029

PHONE:
FAX:

Company: Tidewater Inc	**EMSL-Bill to:** ☐ Different ☐ Same If Bill to is Different note instructions in Comments**
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: Drew Freeman MS	**Please Provide Results:** ☐ FAX ☒ E-mail ☐ Mail
U.S. State Samples Taken: Maryland	**Connecticut Samples:** ☐ Commercial ☐ 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
- **M049** BioSIS
- **M030** Micro 5
- **M173** Allegro M2
- **M003** Burkard
- **M174** MoldSnap
- **M004** Allergenco
- **M043** Cyclex
- **M176** Relle Smart
- **M032** Allergenco-D
- **M002** Cyclex-d
- **M130** Via-Cell
- **M172** Versa Trap

Other Microbiology Test Codes

- **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
- **M014** Endotoxin Analysis
- **M015** Heterotrophic Plate Count
- **M180** Real Time Q-PCR-ERMI 36 Panel
- **M018** Total Coliform (Membrane Filtration)
- **M020** Fecal *Streptococcus* (Membrane Filtration)
- **M210-215** *Legionella* Detection
- **M026** Recreational Water Screen
- **M027** Mycotoxin Analysis
- **M029** *Enterococci*
- **M019** Fecal Coliform
- **M133** MRSA Analysis
- **M028** *Cryptococcus neoformans* Detection
- **M120** *Histoplasma capsulatum* Detection
- **M033-39** Allergen Testing
- **M044** Group Allergen (Cat, Dog, Cockroach, Dustmites)
- **Other** See Analytical Price Guide

Preservation Method (Water):

Name of Sampler: Skanda Abeyesekere **Signature of Sampler:** [signature]

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
DF-MS-1	Main office	Air	M001	75.0	12/4/2020
-2	Music Room	↓	↓	↓	↓
3	Cafeteria				
4	Room 108 (health)				
5	Room 122				
6	Room 215				
7	Room 213				
8	Room 207A				
BG	Background	↓	↓	↓	↓

Client Sample # (s): 16 **Total # of Samples:** 10

Relinquished (Client): [signature] **Date:** 12/4/2020 **Time:** 4:30 pm

Received (Client): [signature] Drop Box **Date:** **Time:**

Comments:

RECEIVED
EMSL ANALYTICAL, INC.
BELTSVILLE, MD
2020 DEC -9 P 2:18

OrderID: 182004029

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

182004029

PHONE:
FAX:

Company: Tidewater Inc	**EMSL-Bill to:** ☐ Different ☐ Same If Bill to is Different note instructions in Comments**
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: Drea Freeman	**Please Provide Results:** ☐ FAX ☐ E-mail ☐ Mail
U.S. State Samples Taken: Maryland	**Connecticut Samples:** ☐ Commercial ☐ 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

• **M041** Fungal Direct Examination	• **M014** Endotoxin Analysis	• **M029** *Enterococci*
• **M005** Viable Fungi ID and Count	• **M015** Heterotrophic Plate Count	• **M019** Fecal Coliform
• **M006** Viable Fungi ID and Count (Speciation)	• **M180** Real Time Q-PCR-ERMI 36	• **M133** MRSA Analysis
• **M007** Culturable Fungi	• Panel	• **M028** *Cryptococcus neoformans*
• **M008** Culturable Fungi (Speciation)	• **M018** Total Coliform	Detection
• **M009** Gram Stain Culturable Bacteria	(Membrane Filtration)	• **M120** *Histoplasma capsulatum*
• **M010** Bacterial Count and ID – 3 Most	• **M020** Fecal *Streptococcus*	Detection
Prominent	(Membrane Filtration)	• **M033-39** Allergen Testing
• **M011** Bacterial Count and ID – 5 Most	• **M210-215** *Legionella* Detection	• **M044** Group Allergen
Prominent	• **M026** Recreational Water Screen	(Cat, Dog, Cockroach, Dustmites)
• **M013** Sewage Contamination in Buildings	• **M027** Mycotoxin Analysis	• **Other** See Analytical Price Guide

Preservation Method (Water):

Name of Sampler: Skanda Abeyesekere **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
DFNS-9	Room 205A	AIR	M001	75	12/04/28

Client Sample # (s): - **Total # of Samples:**

Relinquished (Client): **Date:** **Time:**

Received (Client): **Date:** **Time:**

Comments:

APPENDIX C

INSTRUMENT CALIBRATION CERTIFICATES

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

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

ENVIRONMENT CONDITIONS		
TEMPERATURE	74.1 (23.4)	°F (°C)
RELATIVE HUMIDITY	26	%RH
BAROMETRIC PRESSURE	29.26 (990.9)	inHg (hPa)

MODEL	9565-X
SERIAL NUMBER	9565X1945002

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

-- CALIBRATION VERIFICATION RESULTS --

THERMO COUPLE^ — **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)				

^ *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

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003299	06-06-19	12-31-20	DC Voltage	E003300	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

Doc. ID CERT_GEN_WCC_TM

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

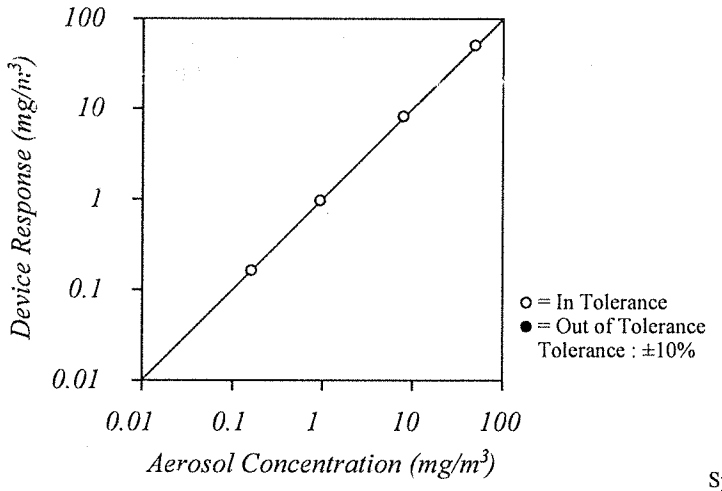
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.83 (24.4)	°F (°C)
Relative Humidity	43.6	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	**8534**
Serial Number	**8534170101**

☒ As Left ☒ In Tolerance
☐ As Found ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

FLOW AND PRESSURE VERIFICATION — SYSTEM DTII01-01

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

Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-15-20	01-31-21
Microbalance	M001324	10-03-18	10-31-20
3 um PSL	221853	n/a	n/a
Pressure	E003511	10-04-19	10-31-20
DC Voltage	E003315	01-15-20	01-31-21
Flowmeter	E005922	06-29-20	06-30-21
Microbalance	M001324	10-03-18	10-31-20
1 um PSL	698880	n/a	n/a
10 um PSL	212455	n/a	n/a

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

David Farrell

Calibrated

September 24, 2020

Date

Certificate of Conformance

(X) 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. Cravener

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.

APPENDIX D

RELEVANT CERTIFICATIONS

ABIH®

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

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

Paul S Adams — President

Linda Tapp — Secretary

20110 — CSP No.

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

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

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT IHMM CORPORATE SEAL 1984 DISTRICT OF COLUMBIA

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.

ANSI Accredited Program PERSONNEL CERTIFICATION

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

APPENDIX E

FLOOR PLAN WITH SAMPLING LOCATIONS

Attachment C
Drew Freeman Middle School
First Floor Plan with Sampling Locations

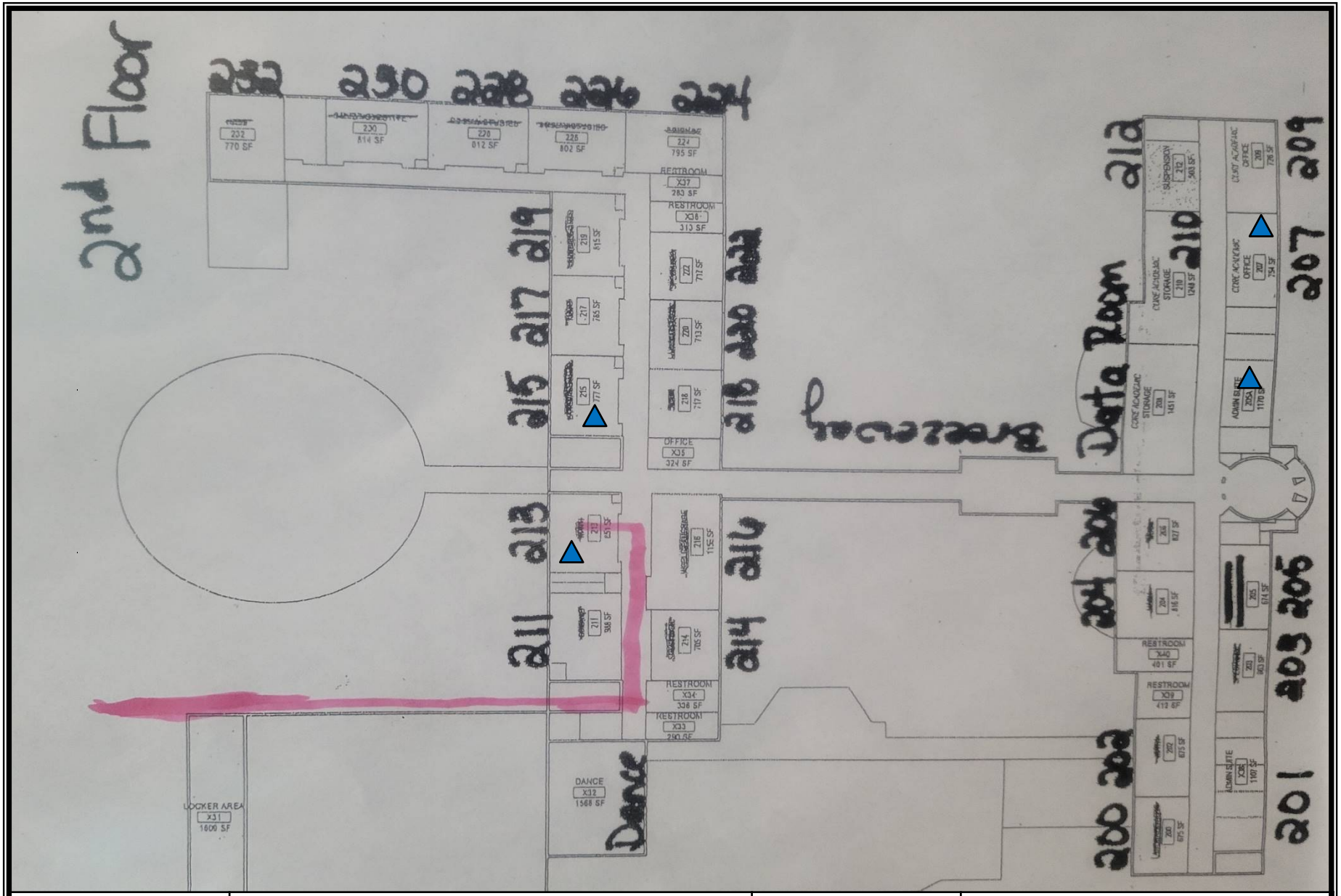
TIDEWATER INC

Scale: N/A

Project #: 5419-040
Date: December 4, 2020

General Notes

▲ = Sample Location



TIDEWATER INC	**Attachment C** **Drew Freeman Middle School** **Second Floor Plan with Sampling Locations**	Scale: N/A Project #: 5419-040 Date: December 4, 2020	**General Notes** ▲ = Sample Location