January 13, 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 (PGCPS) – Kenmoor Elementary School
3211 82nd Avenue, Landover, Maryland 20785
Contract No.: IFB 022-19: Indoor Air Quality Services at Various Locations
Tidewater Project No.: 5419-031

Dear Mr. Baylor:

Tidewater, Inc. (Tidewater) is pleased to present this report regarding the results of the preliminary Indoor Air Quality (IAQ) and Mold Assessment Services conducted by Tidewater at Kenmoor Elementary School located at 3211 82nd Avenue in Landover, Maryland. These services were conducted on November 30, 2020, 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:

- Inspecting, taking direct read measurements and conducting air sampling at the following select areas of the school: Multipurpose Room, Main Office, Media Center, Classroom 10, Classroom 5, Classroom 2, Classroom 15, Classroom 16, Classroom 17 and Classroom 22. 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

Due to the on-going COVID-19 pandemic, the school building was occupied by a limited number of staff and no students were present at the time of the survey. The majority of the classrooms and other common areas inspected were vacant. The results of Tidewater's visual inspection are presented below.:

Multipurpose Room

Six (6) ceiling-mounted air diffusers were operating and were emitting warm air at the time of the inspection. Furthermore, the multipurpose room was equipped with four (4) window-mounted air conditioning units which were not in operation. No signs of ongoing water-intrusion problems were observed and no notable odors were detected. Boxes and bags of student supplies were stored in the multi-purpose room at various locations.

Main Office

The Main Office appeared to be clean and well maintained. Housekeeping appeared to be satisfactory. No signs of ongoing water-intrusion problems were observed and no odors were detected. Wall-mounted fan coil units were in operation and were emitting warm air at the time of the inspection. Two (2) occupants were present in the main office at the time of the inspection.

Media Center

Two (2) wall-mounted fan coil units and two (2) window-mounted air conditioning units were observed in the Media Center. None of these units were in operation at the time of the inspection. A return air grill and a supply grill were also located on the walls of the media center. The grills appeared clean with no accumulated dust. Furthermore, no mold growth nor notable odors were detected in the Media Center. Housekeeping appeared to be satisfactory.

Classroom 10

No signs of ongoing water-intrusion problems were observed in the classroom and no odors were detected. The return air and supply grills located on the walls of the classroom appeared e clean. The supply grills of the window-mounted air conditioning unit appeared to have dust accumulations. The wall-mounted fan coil unit was not in operation at the time of the inspection.

Classroom 5

No signs of past or ongoing water-intrusion problems were observed in Classroom 5. Furthermore, no mold growth nor notable odors were detected. The wall-mounted fan coil units were operating at the time of the inspection and was emitting warm air. The return air and supply grills located on the walls of the classroom appeared to be clean.

Classroom 2

No signs of ongoing water-intrusion problems were observed in the classroom and no odors were detected. However, a missing ceiling tile and a water-stained ceiling tile were observed in the hallway in front of Classroom 2. One (1) window-mounted air conditioning unit and two (2) wall-mounted fan coil unit were also observed in the classroom. The fan coil units were in operation and were emitting warm air at the time of the inspection. The classroom appeared to be clean and well maintained. Housekeeping appeared to be satisfactory.

Classroom 15

No signs of past or ongoing water-intrusion problems were observed in Classroom 15. Furthermore, no mold growth nor notable odors were detected. Numerous wall-mounted fan coil units and a window mounted air conditioning unit were observed in the classroom. The supply grill located on the walls of the classroom appeared to be clean. The classroom appeared to be clean and well maintained. Housekeeping appeared to be satisfactory.

Computer room 16

No signs of ongoing water-intrusion problems were observed in Classroom 16 and no notable odors were detected. The wall-mounted fan coil units were in operation at the time of the inspection. A window mounted air conditioning unit was also observed in the classroom. The supply grill located on the walls of the classroom appeared to be clean.

Classroom 22

No signs of ongoing water-intrusion problems were observed in the classroom and no notable odors were detected. Numerous wall-mounted fan coil units were in operation and were emitting warm air at the time of the inspection. A window mounted air conditioning unit was observed in the classroom. Two (2) wall-mounted supply and return air grills were also observed on the walls. The perimeter of these supply and return air grills appeared to have dust accumulations.

Classroom 17

The classroom appeared to be clean and well maintained. No signs of ongoing water-intrusion problems were observed in the classroom and no notable odors were detected. Multiple wall-mounted fan coil units were in operation and were emitting warm air at the time of the inspection. The supply grills of the window-mounted air conditioning unit and the perimeter of the wall-mounted supply grills appeared to have dust accumulations.

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. The results were compared to the standards established by the American Society for Heating Refrigeration and Air Conditioning (ASHRAE) Standard 62.1 – 2019, *Ventilation for Acceptable Indoor Air Quality*. Tidewater also obtained "outdoor background" measurement at the 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 November 30, 2020 ranged between 71.7°F and 75.0°F. The background temperature outside the building was

69.0°F. The temperature levels recorded within most areas monitored were within the temperature levels typically observed during the fall-winter transitional period. The temperature levels in the main office was marginally above the upper temperature levels of 74.5°F recommended by ASHRAE for winter months. The main office had 2 occupants present at the time of the inspection. Most areas inspected were vacant at the time of the inspection. Indoor temperature levels fluctuate with the number of occupants present within the work area.

Per the same ASHRAE standard, a maximum relative humidity level of 65.0% or below is recommended to reduce the likelihood of condensation on cold surfaces. Relative humidity levels within the assessed areas on November 30, 2020 ranged between 43.7% and 60.3%. The background relative humidity level outside the building was 70.4%. 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 November 30, 2020 ranged between 438 ppm to 618 ppm. The background CO_2 level outside the building was 416 ppm. The CO_2 levels within all interior locations assessed did not exceed 700 ppm above the outdoor background CO_2 level of 416 ppm.

The CO levels in all areas assessed on November 30, 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 outdoors 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 0.069 mg/m^3 and 0.082 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 1,350 spores/m^3 and 31,400 spores/m^3. The total mold spore concentrations in the background sample obtained outdoors was 47,410 spores/m^3. The total mold spore concentrations in all indoor samples were below the background sample concentration of 47,410 spores/m^3 (sample # KES-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

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 follow issues were identified during the visual inspections:
  - Classroom 10 and Classroom 17: The supply grills of the window-mounted air conditioning units appeared to have dust accumulations.
  - Classroom 2: A missing ceiling tile and a water-stained ceiling tile were observed in the hallway in front of Classroom.
  - Classroom 22 and Classroom 17: The perimeter of the supply and return air grills located on the walls of these classrooms appeared to have dust accumulations.
- Temperature levels recorded within majority of the interior locations assessed, were within ASHRAE Standard 62.1 – 2019 of 68.0°F and 74.5°F recommended for winter months. The temperature levels in the main office marginally exceeded the upper temperature levels 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:

- Clean the supply grills of the window-mounted air conditioning units in Classroom 10 and Classroom 17 with a commercially available (EPA approved) disinfectant on a routine basis to remove dust deposits.
- Investigate the drop ceiling above the water-stained ceiling tile in the hallway outside Classroom 2 for any ongoing water leaks. If any ongoing water leaks are detected, take immediate action to repair them. Remove the water-stained ceiling tile and replace with new ceiling tile. Also replace all other missing ceiling tiles in this area.
- 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 conducted an air quality and mold assessment of Kenmoor Elementary School located at 3211 82nd Avenue in Landover Maryland. 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, CES, CEI
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 Kenmoor Elementary School				
Location	**Temperature (°F)**	**Carbon Dioxide (ppm)**	**Relative Humidity (%)**	**Carbon Monoxide (ppm)**
November 30, 2020				
Multi-purpose Room	71.8	60.3	438	0.0
Main Office	**75.0**	55.3	618	0.1
Media Center	73.6	54.2	449	0.0
Classroom 10	74.5	53.6	447	0.0
Classroom 5	73.7	55.2	452	0.0
Classroom 2	73.6	56.2	446	0.0
Classroom 15	71.7	59.5	466	0.0
Classroom 16	73.7	55.1	444	0.0
Classroom 22	72.8	43.9	447	0.0
Classroom 17	73.7	43.7	447	0.0
Background (Outdoors)	69.0	70.4	416	0.0

*Highlighted Areas indicate locations in which temperature levels were above 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) Kenmoor Elementary School	
Location	**Particulate Matter (PM10)** **Concentration (mg/m^3)**
November 30, 2020	
Multi-purpose Room	0.069
Main Office	0.072
Media Center	0.071
Classroom 10	0.076
Classroom 5	0.074
Classroom 2	0.077
Classroom 15	0.082
Classroom 16	0.077
Classroom 22	0.074
Classroom 17	0.070
Background (Outdoors)	0.072

Table 3: Spore Trap Sampling Results Kenmoor Elementary School				
November 30, 2020				
Sample Number	**Sample Location**	**Sample Volume (L)**	***Aspergillus Penicillium* Concentration (Counts/m^3)**	**Total Fungi Concentration (Counts/m^3)**
KES-1	Multi-purpose Room	75.0	200	31,400
KES-2	Main Office	75.0	300	28,340
KES-3	Media Center	75.0	ND	19,120
KES-4	Classroom 10	75.0	200	30,260
KES-5	Classroom 5	75.0	100	30,180
KES-6	Classroom 2	75.0	NA*	NA*
KES-7	Classroom 15	75.0	550	28,940
KES-8	Classroom 16	75.0	80	14,020
KES-9	Classroom 22	75.0	ND	1,350
KES-10	Classroom 17	75.0	200	8,220
KES-BG	Background	75.0	200	47,410

NA* - Slide for Cassette KES-6 was missing due to manufacturing error.

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705
Tel/Fax: (301) 937-5700 / (301) 937-5701
http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 192011891
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Kenmoor ES

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected Date: 11/30/2020
Received Date: 12/02/2020
Analyzed Date: 12/14/2020

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

Lab Sample Number:	192011891-0001			192011891-0002			192011891-0003		
Client Sample ID:	KES-1			KES-2			KES-3		
Volume (L):	75			75			75		
Sample Location:	Multipurpose room			Main office			Media center		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	1*	10*	0	3	100	0.5
Ascospores	9	400	1.3	4	200	0.7	4	200	1
Aspergillus/Penicillium	5	200	0.6	6	300	1.1	-	-	-
Basidiospores	722	30500	97.1	650	27400	96.7	433	18300	95.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	6	300	1	10	420	1.5	7	300	1.6
Curvularia	-	-	-	-	-	-	3	100	0.5
Epicoccum	-	-	-	-	-	-	1	40	0.2
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	10*	0	2	80	0.4
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**742**	**31400**	**100**	**672**	**28340**	**100**	**453**	**19120**	**100**
Hyphal Fragment	-	-	-	2	80	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
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	-

Report Comment: Slide for KES-6 cassette missing due to manufacturing error

++ 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.

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

Initial report from: 12/15/2020 10:53 AM

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

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Project: Kenmoor ES

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected Date: 11/30/2020
Received Date: 12/02/2020
Analyzed Date: 12/14/2020

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

Lab Sample Number:	192011891-0004			192011891-0005			192011891-0007		
Client Sample ID:	KES-4			KES-5			KES-7		
Volume (L):	75			75			75		
Sample Location:	Classroom 10			Classroom 5			Classroom 15		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	1	40	0.1	-	-	-
Ascospores	11	460	1.5	13	550	1.8	9	400	1.4
Aspergillus/Penicillium	5	200	0.7	3	100	0.3	13	550	1.9
Basidiospores	696	29400	97.2	650	27400	90.8	650	27400	94.7
Bipolaris++	-	-	-	1	40	0.1	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	5	200	0.7	39	1600	5.3	13	550	1.9
Curvularia	-	-	-	1	40	0.1	-	-	-
Epicoccum	-	-	-	4*	50*	0.2	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	40	0.1	-	-	-
Myxomycetes++	-	-	-	4	200	0.7	3*	40*	0.1
Pithomyces++	-	-	-	1	40	0.1	-	-	-
Rust	-	-	-	2	80	0.3	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**717**	**30260**	**100**	**720**	**30180**	**100**	**688**	**28940**	**100**
Hyphal Fragment	1	40	-	10	420	-	-	-	-
Insect Fragment	1	40	-	-	-	-	-	-	-
Pollen	-	-	-	3*	40*	-	2*	30*	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

Report Comment: Slide for KES-6 cassette missing due to manufacturing error

++ 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.

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

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Collected Date: 11/30/2020
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Analyzed Date: 12/14/2020

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

Lab Sample Number:	192011891-0008			192011891-0009			192011891-0010		
Client Sample ID:	KES-8			KES-9			KES-10		
Volume (L):	75			75			75		
Sample Location:	Classroom 16			Classroom 22			Classroom 17		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	3	100	0.7	3	100	7.4	26	1100	13.4
Aspergillus/Penicillium	2	80	0.6	-	-	-	5	200	2.4
Basidiospores	325	13700	97.7	28	1200	88.9	163	6880	83.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	0.7	-	-	-	1	40	0.5
Curvularia	-	-	-	1*	10*	0.7	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	0.3	1	40	3	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**334**	**14020**	**100**	**33**	**1350**	**100**	**195**	**8220**	**100**
Hyphal Fragment	2	80	-	1*	10*	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	2*	30*	-	1	40	-	1	40	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

Report Comment: Slide for KES-6 cassette missing due to manufacturing error

++ 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.

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

Initial report from: 12/15/2020 10:53 AM

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

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705
Tel/Fax: (301) 937-5700 / (301) 937-5701
http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 192011891
Customer ID: TIDE50
Customer PO:
Project ID:

Attention: Skanda Abeyeskere
Tidewater, Inc.
6625 Selnick Drive
Suite A
Elkridge, MD 21075
Project: Kenmoor ES

Phone: (410) 540-8700
Fax: (410) 997-8713
Collected Date: 11/30/2020
Received Date: 12/02/2020
Analyzed Date: 12/14/2020

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

Lab Sample Number:	**192011891-0011**		
Client Sample ID:	**KES-BG**		
Volume (L):	**75**		
Sample Location:	**Background**		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	4	200	0.4
Ascospores	283	11900	25.1
Aspergillus/Penicillium	4	200	0.4
Basidiospores	826	34900	73.6
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	4	200	0.4
Curvularia	-	-	-
Epicoccum	-	-	-
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	1*	10*	0
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Total Fungi	**1122**	**47410**	**100**
Hyphal Fragment	-	-	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	42	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	1	-

Report Comment: Slide for KES-6 cassette missing due to manufacturing error

++ 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.

Abubakar Barry, Microbiology Lab Manager
or other Approved Signatory

Initial report from: 12/15/2020 10:53 AM

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

OrderID: 192011891

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

192011891

PHONE:
FAX:

Company: Tidewater Inc	**EMSL-Bill to:** ☐ Different ☐ Same If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 6625 Selnick Drive, Suite A	
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: Kenmoor ES!	**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:** Skanda Abeyesekere

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
Example: A1	Kitchen	Air	M001	75L	1/1/12 4:00 PM
KES-1	Multipurpose room	AIR	M032	75	11/30/2020
KES-2	Main office				
KES-3	Media Center				
KES-4	classroom 10				
KES-5	classroom 5				
KES-6	classroom 6				
KES-7	classroom 15				
KES-8	classroom 16				
KES-9	~~cl~~ classroom 22				

Client Sample # (s): 11 **Total # of Samples:** 11

Relinquished (Client): Skanda Abeyesekere **Date:** 11/30 **Time:** 12:00 6:00pm

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

Comments:

RECEIVED
EMSL ANALYTICAL, INC.
BELTSVILLE, MD
2020 DEC -2 A 9:15

OrderID: 192011891

Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

192011891

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
KES-10	Classroom 17	Air	M032	75.0	11/30/2020
~~KES~~		"	"	"	"
KES-BG	Background	"	"	"	"

****Comments/Special Instructions:**

Page 2 of 2 pages

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

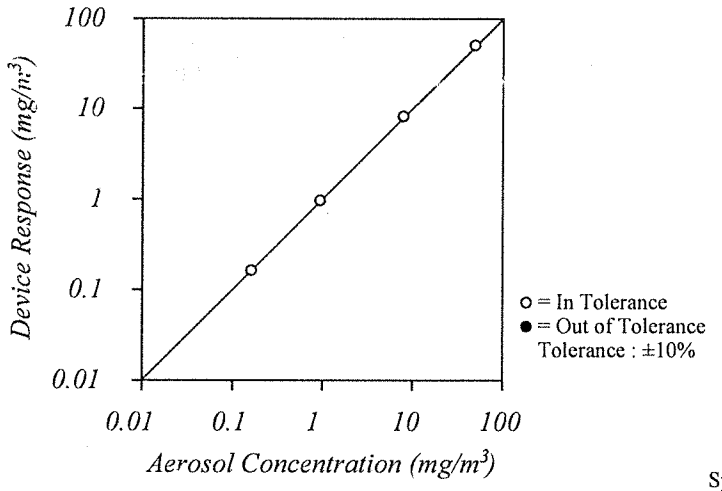
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

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

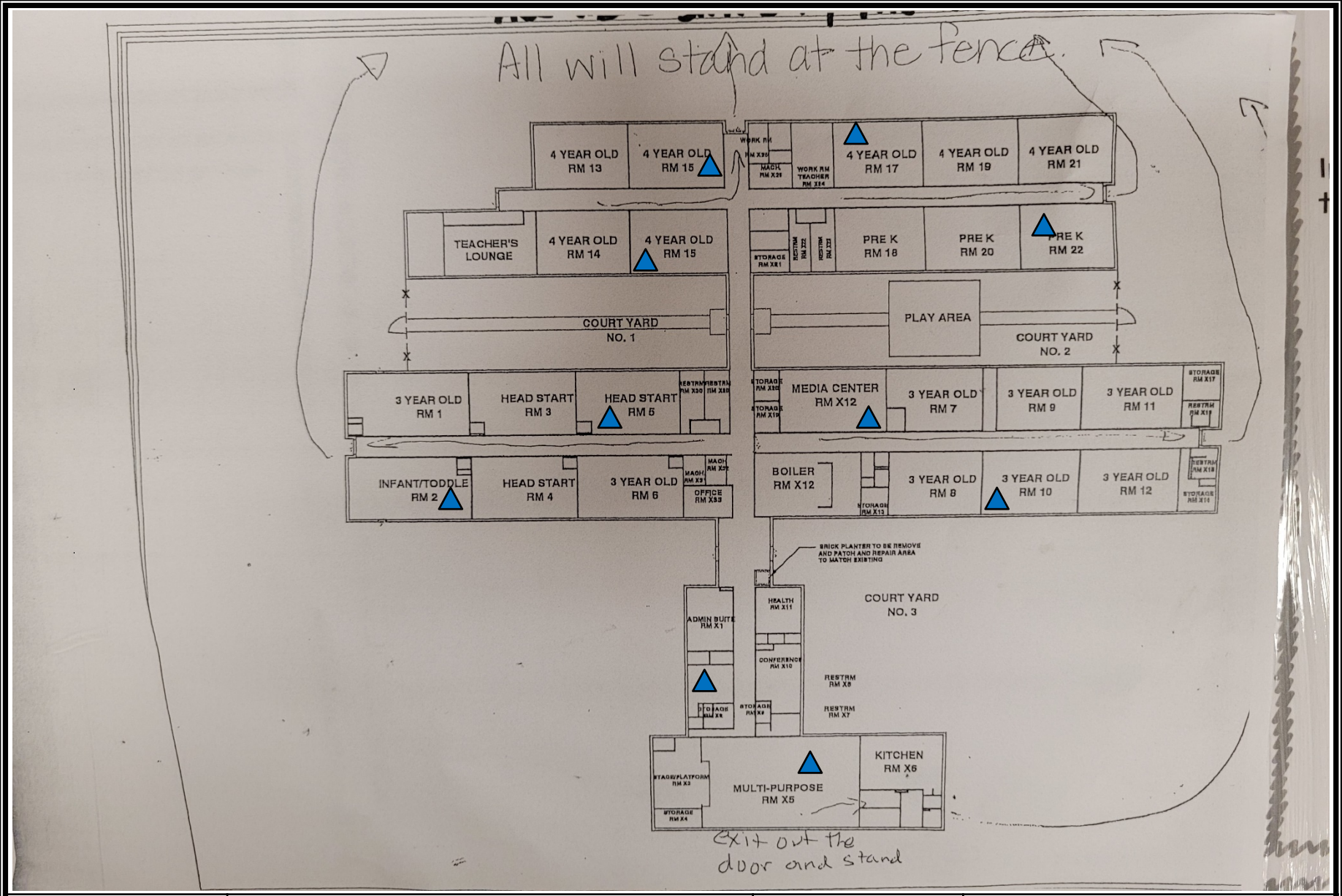
VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.

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



TIDEWATER INC	**Attachment C** **Kenmoor Elementary School** **Floor Plan with Sampling Locations**	Scale: N/A Project #: 5419-031 Date: November 30, 2020	**General Notes** ▲ = Sample Location