COMMITMENT & INTEGRITY
DRIVE RESULTS

40 Shattuck Road | Suite 110
Andover, Massachusetts 01810
www.woodardcurran.com

T 866.702.6371
T 978.557.8150
F 978.557.7948

Via Electronic Mail

November 6, 2018

Thomas Cullen
Director of Operation
Fairfield Public Schools
P.O. Box 320189
501 Kings Highway East, Suite 210
Fairfield, CT 06825

Re: Environmental Assessment, Timothy Dwight Elementary School
1600 Redding Road, Fairfield, Connecticut

Dear Mr. Cullen:

As requested, Woodard & Curran performed an environmental assessment at the Timothy Dwight Elementary School facility located at 1600 Redding Road in Fairfield, Connecticut.

It was reported by Fairfield Public School Operations that humid weather conditions over the summer and early autumn resulted in damp to wet conditions in several classrooms at Dwight Elementary School. In addition, employees who work in classrooms 10, 15 and 17 expressed concerns regarding odors and generally feeling unwell. In response, it was reported that school department personnel performed moisture meter measurements of the wallboard in classroom 10 and reported elevated moisture levels when measured in September. Based on the moisture measurements, dehumidifiers were placed in classrooms 10, 15, and 17 to reduce the humidity. Teachers in these classrooms were instructed to close windows while the dehumidifiers were in use.

The purpose of the environmental assessment was to conduct a follow-up visual survey to determine if there was evidence of fungal growth on building materials in areas identified by School representatives where the above concerns had been raised. This visual survey was conducted on October 4, 2018. Bioaerosol samples for airborne fungal spores were collected at the request of Fairfield Public School Operations on October 25, 2018, as a follow-up to the October 4, 2018 assessment. The follow-up assessment also included a visual inspection and moisture survey in the wall cavities behind white boards, chalkboards and wall panels as applicable in classrooms 8, 10, 15, and 17.

Additionally, between Woodard & Curran's site visits, school staff members discovered an approximate 5 square feet area of suspected fungal growth on painted cement masonry unit (CMU) block wall behind a piece of wood trim board in classroom 17. Woodard and Curran recommended cleaning and disinfecting this area, which was performed by Fairfield Schools facilities personnel, followed by application of a new paint in this area.

BACKGROUND

Fungal growth can occur due to damp conditions within a building and is not always visible. It can be hidden in wall cavities, above ceilings, in structural framing materials, subflooring, insulation and other normally covered building materials.

Fungus thrives in damp organic matter and fungal growth media can vary widely. Examples of media that can support fungal growth include stagnant water, damp wood, backing on carpet and carpet pads, cellulose ceiling tiles, and paper facing on gypsum board. Interior finishes such as vinyl cove base and vinyl wall covering may hold moisture against gypsum board or wood, thus enhancing the conditions for fungal growth.

METHODS

Visual Inspection

Woodard & Curran conducted a visual inspection in the School to determine if obvious sources of suspect fungal growth were present. The roof and areas above the suspended ceiling tiles were also visually inspected. A borescope was used to inspect areas within wall cavities in classrooms 10, 15 and 17.

During the follow-up assessment on October 25, chalk boards and white boards were removed by Fairfield Public School Operations to visually inspect into the wall cavity.

Moisture Survey

The moisture content of building materials was evaluated using a GE Protimeter Surveymaster® digital moisture meter, which has two operating modes: search and measure. In search mode, the instrument uses a non-invasive radio frequency emission technique to locate moisture and can penetrate most wall and floor coverings, including ceramic tiles, to a depth of approximately ¾ inch. It displays a semi-quantitative result on a scale of colored lights. In measure mode, the instrument uses the electrical conductivity of a porous building material to indicate its level of free water. Two electrode pins are inserted into the material and the moisture level is displayed on a digital numeric display in units of wood moisture equivalent (WME). WME is the water content that wood would have if it were in contact with the material being tested for sufficient time to reach moisture equilibrium. It is the ratio of the weight of the water in the wood to the dry weight of the wood, expressed as a percentage. Prior to use, the calibration of the instrument was checked using a Protimeter Check calibration device.

Bioaerosol Sampling for Total Fungal Spores

Bioaerosol samples for total fungal spores were collected using a calibrated Zefon Biopump. Air was drawn through Air-O-Cell cassettes prepared by EMSL Analytical, Inc. at a flow rate of 15 liters per minute. Samples were collected at sixteen indoor locations and three samples were collected outdoors for reference. Each sample was collected for a period of five minutes. Samples along with two field blanks, for quality control purposes, were sent via overnight mail to EMLab P& K in Marlton, New Jersey. Analysis includes identification to genus or group of all fungi present, living, dead, or dormant.

RESULTS

<u>October 4, 2018</u>

Visual Inspection

The following observations were made in classrooms 10, 15 and 17:

- Some of the walls are constructed of CMU block while other walls are constructed of a layered cellulose-based wallboard with textured finish that is painted.
- No visible suspect fungal growth was observed on the CMU walls or cellulose-based wallboard material.

- The layered cellulose-based wallboard material is also used as bulletin boards. No visible suspect fungal growth was observed on or behind the bulletin boards.
- No evidence of active water leaks, water staining, or fungal growth was observed on the acoustical ceiling tiles in classrooms.
- Limited evidence of oxidation was observed on the corrugated metal decking above the acoustical ceiling tiles. This may be related to moisture in the building or storage of building materials during construction.
- A borescope was used to inspect the interior wall cavities of the layered cellulose-based walls. This inspection included two walls in classroom 10, and one wall in classroom 15 and 17. No water damage or suspect fungal growth was observed in the wall cavities inspected with the borescope.

Other observations:

- A solar array is located on the majority of the roof of the school, including above classrooms 10, 15, and 17.
- The roof was reportedly replaced three years ago and appears to be in good condition.
- In classroom 8, a small quantity (less than 1 square feet) of suspect fungal growth was observed on the wallboard near a sink. This area, reportedly, is where students routinely wash and dry their hands and where the trash barrel is stored. Adjacent to this area, clipboards were hung/stored on the wall. There was some light particulate debris behind these clip boards.

<u>October 25, 2018</u>

- A second visual inspection was conducted in classrooms 8, 10, 15 and 17 on October 25, 2018. Results of the visual inspection indicate that no suspect fungal growth was observed in the interior of the wall cavities that were inspected.
- The areas previously mentioned in classroom 8 and classroom 17 appeared to be cleaned and disinfected appropriately.
- In classrooms 20, 1, 2, 6, 5, 19, 7, men's room, women's room, boy's room, girl's room, and library media center a cursory visual inspection was performed. There were no obvious signs of visual suspect fungal growth on readily available surfaces. There was no water staining on walls or ceiling tiles. Also, no water was observed on the floor.

A photo log is included as Attachment A which depicts the conditions noted above and a floor plan depicting assessed locations is included as Attachment B.

Moisture Survey

Woodard & Curran conducted a moisture survey in areas noted above on October 4, 2018. The moisture survey included those rooms specified above including ceiling and wallboard materials. The moisture survey indicated that the moisture content was less than 15%, indicating dry conditions, in classrooms 10, 15, and 17 as well as the area of suspect fungal growth in classroom 8.

Similarly, the results of the moisture survey conducted on October 25, 2018 indicated that no elevated moisture was identified in the surveyed building materials in Rooms 8, 10, 15, and 17. The materials surveyed included wallboard, wood support bracings, and whiteboards in the wall cavity behind the whiteboards and chalkboards in Rooms 8, 10, 15, and 17.

Bioaerosol Samples for Total Fungal Spores

There are no published or regulatory standards to compare bioaerosol samples in order to assess potential health risks. As such, a reference or background level, typically outdoor ambient air, is used to compare the results. For example, are the interior sample results of similar species and concentration to that outdoors; if differences are observed can they be attributable to a spore amplication due to an interior source, such as excessive moisture, or water leak, etc.

A table summarizing the results is included as Attachment C and the analytical laboratory report is included as Attachment D. As indicated on this table, the total spores detected indoors were less than concurrent outdoor samples. The average of the outdoor sample results (average of all detected concentrations) was 1,109 spores/m^3, whereas the average of the detected indoor sample results was 497 spores/m^3. The range of detected concentrations in the outdoor samples was 27 to 6,000 spores/m^3, whereas the range of detected concentrations in the indoor samples was 13 to 4,200 spores/m^3.

In addition, the individual spore types were similar between the indoor and outdoor samples. Certain individual spore types were detected in certain classrooms at greater concentrations indoors than outdoors and primarily include Cladosporium and Penicillium/Aspergillus. However, this variation is expected in indoor air quality sampling since both Cladosporium and Penicillium/Aspergillus are common spore types and were also detected outdoors.

The detected concentrations of airborne fungal spores would not be expected to cause a health issue in healthy individuals. No common species indicative of a chronic moisture issue, i.e., Chaetomium or Stachybotrys were detected on any sample. These species commonly grow on indoor building materials that have been subjected to long periods of excess moisture. These results are not indicative of an ongoing indoor source of fungal growth and wouldn't be expected to negatively affect the indoor environment.

RECOMMENDATIONS

Based on industry guidelines, the following best management practices should be considered:

- Continue dehumidifying the classrooms to control humidity and keep building materials dry.
- Open windows as needed to provide fresh air into the building.
- Check exhaust fans to ensure that they are operating properly.
- Review cleaning procedures and frequency of routine housekeeping activities in the building and update as necessary including more routine removal of food items, trash and recyclables from the building.
- Floors should be cleaned regularly. While cleaning, caution should be taken to not over saturate the floor, which could lead to water damage on adjacent wall materials. It should be ensured that the floor is dry following cleaning.
- Excess water should be mopped up and cleaned especially around sinks and staff should be vigilant that water is not left to accumulate and stand near water sources.

In addition to these recommendations, the specific activities are recommended:

- Consider removing the paneling/fibrous board in the classrooms, starting in Classroom 10 and in areas beneath the air conditioning units, and wipe the CMU walls and discard the panels. A full asbestos inspection should be completed for materials that will be impacted. If less than 10 square

feet of suspect fungal growth is present on painted CMU walls, beneath this board/trim, disinfect the area, wipe clean and paint over the area once dry. This should be performed at a time when school is not in session.

- Continue to monitor school areas for water damage and excess moisture in building materials. The monitoring frequency should be increased as necessary. Continue maintenance program of replacing ceiling tiles if any water damage is observed and performing disinfection of small areas of suspected microbial growth. Note that the School's Asbestos Hazard Emergency Response Act (AHERA) records should be reviewed prior to disturbing any building materials as some ceiling tiles in the school were noted to contain asbestos.
- Monitor the operation of the air conditioning units, this includes monitoring for any water leaks and excess condensation on surfaces in the classrooms. Also, operate and maintain the air conditioning units in accordance with the manufacture's recommendations.
- Consider installing other/supporting ventilation methods to better control humidity during episodes of elevated humidity. If mechanical ventilation is not feasible, operate dehumidifiers during humid periods with plumbed drainage to a sink or other plumbing fixture.
- Clean classroom exhaust ventilation grills to remove particulate that has accumulated on the grills.
- It is our understanding that follow-up smoke tests and other work to further understand and correct the odor issue has been ongoing. This effort should continue to identify and correct the odor issue.

Limitations

The services performed by Woodard & Curran were conducted in a manner consistent with standard industry practices for indoor air quality screening assessments and Woodard & Curran's on October 4 and 25, 2018.

Woodard & Curran appreciates the opportunity to assist you on this project. If you have any questions or require further information, please feel free to email me at whenderson@woodardcurran.com or call me at (781) 251-0489.

Sincerely,

WOODARD & CURRAN INC.

William Henderson, CIH
Project Scientist

Raymond Cowan, CIH
Project Manager

Attachment A: Photo Log
Attachment B: Floor Plan of Assessed Areas
Attachment C: Table of Bioaerosol Sampling Results
Attachment D: EMLab P&K Analytical Laboratory Results

ATTACHMENT A: PHOTO LOG

ATTACHMENT A – PHOTOGRAPHS

Photo Number: 1	Date: 10/04/2018
Description: Wallboard material in Classroom 10, prior to borescope inspection	

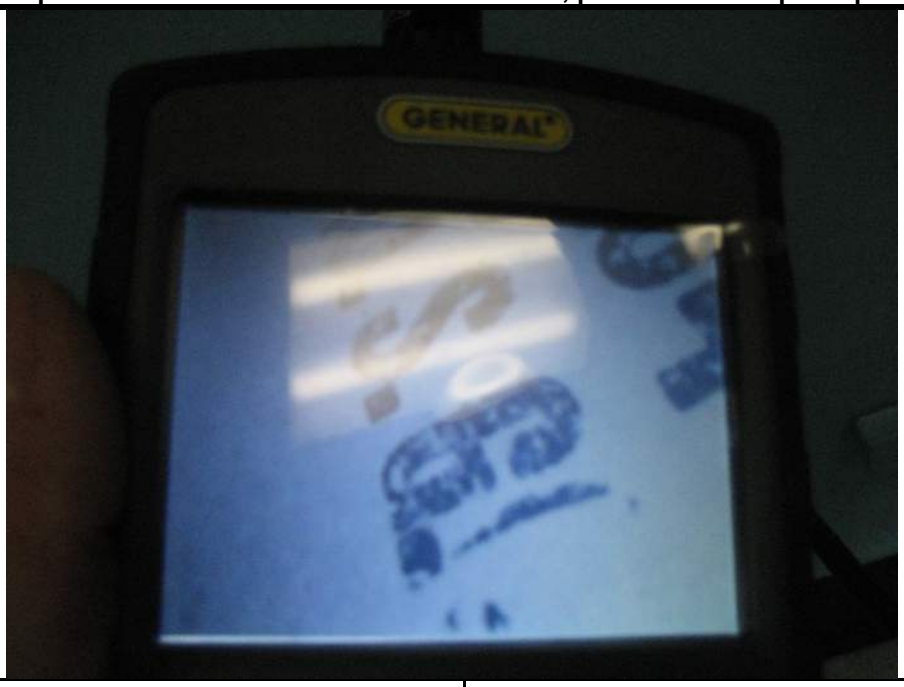


Photo Number: 2	Date: 10/04/2016
Description: Wall cavity in Classroom 10	

Photo Number: 3	Date: 10/04/2018
Description: Interior and surface of bulletin board in Classroom 10	

Photo Number: 4	Date: 10/04/2018
Description: Above suspended ceiling in Classroom 10	

Photo Number: 5	Date: 10/04/2016
Description: Wallboard material in Classroom 15, prior to borescope inspection	

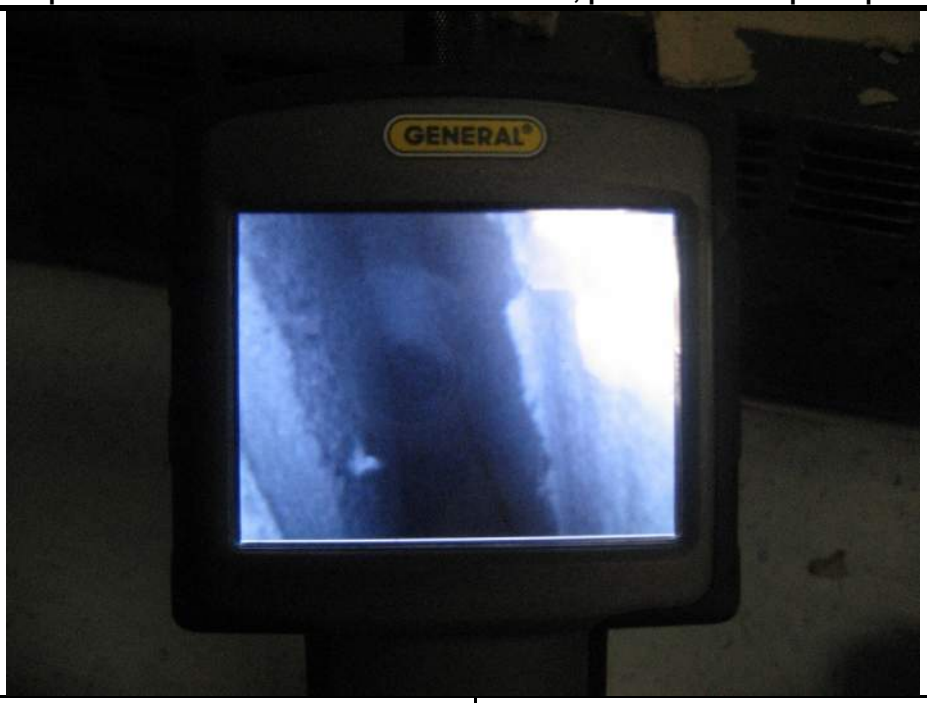


Photo Number: 6	Date: 10/04/2018
Description: Wall cavity in Classroom 15	

Photo Number: 7	Date: 10/04/2018
Description: Interior and surface of bulletin board in Classroom 15	

Photo Number: 8	Date: 10/04/2018
Description: Above suspended ceiling in Classroom 15	

Photo Number: 9	Date: 10/04/2016
Description: Wallboard material in Classroom 17, prior to borescope inspection	

Photo Number: 10	Date: 10/04/2018
Description: Wall cavity in Classroom 17	

Photo Number: 11	Date: 10/04/2018
Description: Interior and surface of bulletin board in Classroom 15	

Photo Number: 12	Date: 10/04/2018
Description: Above suspended ceiling, Classroom 17	

Photo Number: 13	Date: 10/04/2018
Description: School rooftop	

Photo Number: 14	Date: 10/04/2018
Description: Classroom 8, Wall with suspect microbial growth on surface	

Photo Number: 15	Date: 10/25/2018
Description: Classroom 17, disinfected area below air conditioner	

Photo Number: 16	Date: 10/25/2018
Description: Classroom 8, wall behind white board and chalk board	

Photo Number: 17	Date: 10/25/2018
Description: Classroom 15, wall behind white board and chalk board	

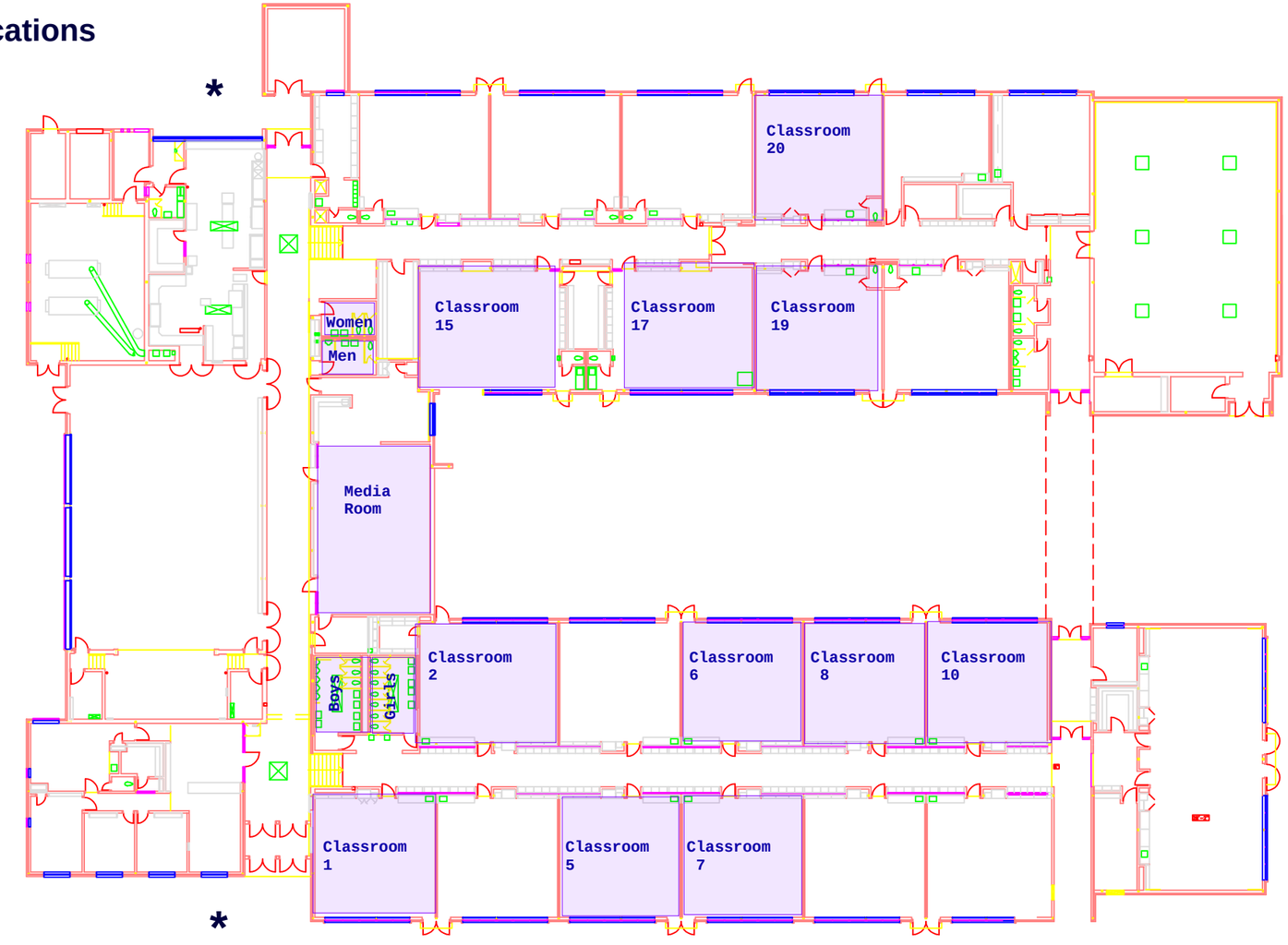
Photo Number: 18	Date: 10/25/2018
Description: Classroom 10, wall behind white board and chalk board	

ATTACHMENT B: FLOOR PLAN OF ASSESSED AREAS

KEY

Assessed Areas (roof not shown on drawing)

* Outdoor sample locations



WOODARD &CURRAN
COMMITMENT & INTEGRITY DRIVE RESULTS

REVISED:

SCALE: 1/32" = 1'-0"

DRAWN:

Timothy Dwight Elementary School
0232017.00

Existing Floor Plan

ATTACHMENT C: TABLE OF BIOAEROSOL SAMPLING RESULTS

Summary of Bioaerosol Sampling Results for Total Fungal Spores[1]

Timothy Dwight Elementary School
1600 Redding Road, Fairfield, Connecticut
October 25, 2018

Spores/m³																	
Spore Type	**Outdoor Range**	**Room 8**	**Room 10**	**Room 15**	**Room 17**	**Room 20**	**Room 1**	**Room 2**	**Room 6**	**Room 5**	**Library Media Center**	**Men's Room**	**Women's Room**	**Boy's Room**	**Girls Room**	**Room 19**	**Room 7**
Alternaria	< 13	< 13	< 13	< 13	< 13	13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13
Ascospores	< 13 to 320	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	320	< 13	< 13	< 13	< 13	< 13	< 13	< 13
Basiospores	2,100 to 6,000	590	320	1,000	800	370	270	110	320	1,300	210	53	1,100	270	480	430	800
Cladosporium	< 13 to 320	< 13	< 13	< 13	53	640	2,300	1,500	4,200	< 13	53	53	< 13	110	< 13	160	110
Curvularia	<13 to 27	13	< 13	< 13	< 13	< 13	13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13
Penicilium/Aspergillus	<13 to 370	800	< 13	160	53	480	< 13	< 13	1,800	< 13	< 13	1,500	1,400	< 13	110	320	370
Pithomyces	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13	27	< 13	< 13	< 13	< 13	< 13	< 13	< 13	< 13
Smuts, Periconia, Myxomycetes	<13 to 130	40	< 13	27	13	< 13	13	< 13	27	27	< 13	80	510	< 13	110	13	27
Background Debris	1+ to 2+	3 +	1 +	2 +	2 +	2+	2+	2+	3+	2+	2+	2+	3+	2+	2+	2+	2+
Total Spores/m³	2,800 to 6,600	1,400	320	1,200	920	1,500	2,600	1,600	6,300	1,600	270	1,700	3,000	370	690	920	1,300

[1] Air-O-Cell Spore Trap Method was performed during Air Sampling

Spores/m³ = Spore Count/ Cubic meter of air

ATTACHMENT D: EMLAB P&K ANALYTICAL LABORATORY RESULTS

Report for:

Will Henderson, Laura Stockfisch
Woodard & Curran
980 Washington Street
Suite 325
Dedham, MA 02026

Regarding: Project: Dwight Elementary School; Bioaerosol Sampling
EML ID: 2031531

Approved by:

Technical Manager
Ariunaa Jalsrai

Dates of Analysis:
Spore trap analysis: 10-29-2018

Service SOPs: Spore trap analysis (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #103005

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182515: Outdoors Front			182516: Room 8		
Comments (see below)	None			None		
Lab ID-Version‡:	9587271-1			9587272-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores	3	25	160			
Basidiospores	47	25	2,500	11	25	590
Chaetomium						
Cladosporium						
Curvularia	2	100	27	1	100	13
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†				15	25	800
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	10	100	130	3	100	40
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	1+			3+		
Hyphal fragments/m3	< 13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	1+			3+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			2,800			1,400

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182517: Room 10			182518: Room 15		
Comments (see below)	None			None		
Lab ID-Version‡:	9587273-1			9587274-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	6	25	320	19	25	1,000
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†				3	25	160
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes				2	100	27
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	1+			2+		
Hyphal fragments/m3	< 13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	1+			1+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			320			1,200

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182519: Room 17			182520: Room 20		
Comments (see below)	None			None		
Lab ID-Version‡:	9587275-1			9587276-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria				1	100	13
Ascospores						
Basidiospores	15	25	800	7	25	370
Chaetomium						
Cladosporium	1	25	53	12	25	640
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†	1	25	53	9	25	480
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	1	100	13			
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			2+		
Hyphal fragments/m3	13			13		
Pollen/m3	< 13			13		
Skin cells (1-4+)	1+			2+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			920			1,500

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182521: Room 1			182522: Room 2		
Comments (see below)	None			None		
Lab ID-Version‡:	9587277-1			9587278-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	5	25	270	2	25	110
Chaetomium						
Cladosporium	44	25	2,300	28	25	1,500
Curvularia	1	100	13			
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†						
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	1	100	13			
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			2+		
Hyphal fragments/m3	< 13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	2+			2+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			2,600			1,600

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182523: Room 6			182524: Room 5		
Comments (see below)	None			None		
Lab ID-Version‡:	9587279-1			9587280-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores				6	25	320
Basidiospores	6	25	320	24	25	1,300
Chaetomium						
Cladosporium	78	25	4,200			
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†	34	25	1,800			
Pithomyces	2	100	27			
Rusts						
Smuts, Periconia, Myxomycetes	2	100	27	2	100	27
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	3+			2+		
Hyphal fragments/m3	< 13			13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	1+			1+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			6,300			1,600

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182525: Outdoors Rear			182526: Library Media Center		
Comments (see below)	None			None		
Lab ID-Version‡:	9587281-1			9587282-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	39	25	2,100	4	25	210
Chaetomium						
Cladosporium	6	25	320	1	25	53
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†	7	25	370			
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			2+		
Hyphal fragments/m3	27			13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	1+			1+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			2,800			270

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182527: Mens Room			182528: Womens Room		
Comments (see below)	None			None		
Lab ID-Version‡:	9587283-1			9587284-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	1	25	53	21	25	1,100
Chaetomium						
Cladosporium	1	25	53			
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†	29	25	1,500	26	25	1,400
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	6	100	80	38	100	510
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			3+		
Hyphal fragments/m3	13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	2+			3+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			1,700			3,000

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182529: Boys Room			182530: Girls Room		
Comments (see below)	None			None		
Lab ID-Version‡:	9587285-1			9587286-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	5	25	270	9	25	480
Chaetomium						
Cladosporium	2	25	110			
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†				2	25	110
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes				8	100	110
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			2+		
Hyphal fragments/m3	< 13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	1+			2+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			370			690

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182531: Room 19			182532: Room 7		
Comments (see below)	None			None		
Lab ID-Version‡:	9587287-1			9587288-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores						
Basidiospores	8	25	430	15	25	800
Chaetomium						
Cladosporium	3	25	160	2	25	110
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†	6	25	320	7	25	370
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	1	100	13	2	100	27
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	2+			2+		
Hyphal fragments/m3	< 13			< 13		
Pollen/m3	< 13			< 13		
Skin cells (1-4+)	2+			2+		
Sample volume (liters)	75			75		
§ TOTAL SPORES/m3			920			1,300

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182533: Outdoors			182534: Blank 1		
Comments (see below)	None			None		
Lab ID-Version‡:	9587289-1			9587290-1		
Analysis Date:	10/29/2018			10/29/2018		
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Alternaria						
Ascospores	6	25	320			
Basidiospores	113	25	6,000			
Chaetomium						
Cladosporium	4	25	210			
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†						
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	5	100	67			
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	1+			None		
Hyphal fragments/m3	< 13			N/A		
Pollen/m3	< 13			N/A		
Skin cells (1-4+)	< 1+			None		
Sample volume (liters)	75			0		
§ TOTAL SPORES/m3			6,600			N/A

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Woodard & Curran
C/O: Will Henderson, Laura Stockfisch
Re: Dwight Elementary School; Bioaerosol Sampling

Date of Sampling: 10-25-2018
Date of Receipt: 10-29-2018
Date of Report: 10-29-2018

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	182535: Blank 2		
Comments (see below)	None		
Lab ID-Version‡:	9587291-1		
Analysis Date:	10/29/2018		
	raw ct.	% read	spores/m3
Alternaria			
Ascospores			
Basidiospores			
Chaetomium			
Cladosporium			
Curvularia			
Epicoccum			
Fusarium			
Myrothecium			
Nigrospora			
Other colorless			
Penicillium/Aspergillus types†			
Pithomyces			
Rusts			
Smuts, Periconia, Myxomycetes			
Stachybotrys			
Stemphylium			
Torula			
Ulocladium			
Zygomycetes			
Background debris (1-4+)††	None		
Hyphal fragments/m3	N/A		
Pollen/m3	N/A		
Skin cells (1-4+)	None		
Sample volume (liters)	0		
§ TOTAL SPORES/m3			N/A

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.