

POST-REMEDATION INDOOR AIR QUALITY AND MOLD ASSESSMENT



FIRST FLIGHT ELEMENTARY & MIDDLE SCHOOLS

107 AND 109 VETERANS DRIVE
KILL DEVIL HILLS, NORTH CAROLINA 27948

ECS PROJECT NO. 49:20986

FOR: DARE COUNTY SCHOOLS

AUGUST 23, 2023





August 23, 2023

Mr. Ian Adams
Dare County Schools
3020 South Wrightsville Avenue
Nags Head, North Carolina 27959
adamsia@daretolearn.org

ECS Project No. 49:20986

Reference: Post-Remediation Indoor Air Quality and Mold Assessment, First Flight Elementary & Middle Schools, 107 and 109 Veterans Drive, Kill Devil Hills, North Carolina

Dear Mr. Adams:

ECS Southeast, LLP (ECS) is pleased to provide Dare County Schools with the results of the above referenced Post-Remediation Indoor Air Quality and Mold Assessment performed at the First Flight Elementary & Middle Schools located at 107 and 109 Veterans Drive in Kill Devil Hills, Dare County, North Carolina. This report summarizes our observations, analytical results, findings, and recommendations related to the work performed. The work described in this report was performed by ECS in general accordance with the Scope of Services described in ECS Proposal Number 49:39208P and the terms and conditions of the agreement authorizing those services.

ECS appreciates this opportunity to provide Dare County Schools with our services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS Southeast, LLP

James McMillan
Senior Environmental Project Manager
jlmcmillan@ecslimited.com
843-534-1725

Lindsey Thompson, REM
Environmental Principal
lthompson@ecslimited.com
864-987-1810

TABLE OF CONTENTS

PAGE

1.0	PROJECT DESCRIPTION	1
2.0	PURPOSE	1
3.0	METHODOLOGY	1
4.0	RESULTS	2
4.1	Mold and Moisture	2
4.1.1	Spore-Trap Air Samples	2
4.1.2	Temperature and Relative Humidity	4
5.0	CONCLUSIONS AND RECOMMENDATIONS	6
6.0	LIMITATIONS	8

TABLE OF APPENDICES

Appendix I: Figures

Appendix II: Laboratory Report(s)

Appendix III: Mold Reference and Guidance Documents

1.0 PROJECT DESCRIPTION

ECS conducted a post-remediation Indoor Air Quality (IAQ) and mold assessment at First Flight Elementary School (FFES) and First Flight Middle School (FFMS) located at 107 and 109 Veterans Drive in Kill Devil Hills, Dare County, North Carolina. Based on the information provided, we understand that the recent downtime between replacement of heating, ventilating, and air conditioning (HVAC) systems and components resulted in increased humidity and decreased ventilation in the facilities, and that suspect visible mold has been observed in limited areas.

In ECS's initial 'baseline' assessment, amplified airborne mold levels were identified in the following areas:

First Flight Middle School

- Media Center
- Room M110

First Flight Elementary School

- Media Center
- Room B102

Following the initial assessment, a contractor reportedly conducted remediation activities in each facility. These activities were reported to include fine cleaning of surfaces, removal and/or of mold-contaminated porous items, and dehumidification. Additionally, it was reported that air filters were replaced and HVAC vents/registers were cleaned in each facility.

2.0 PURPOSE

The purpose of the Post-Remediation Indoor Air Quality and Mold Assessment was to conduct visual observations and sampling for mold and moisture to identify evidence of moisture-affected building materials or selective amplification of mold within tested areas of the subject structures. This secondary assessment was performed to document airborne mold levels in each facility following reported completion of remedial efforts.

3.0 METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practice(s) and methods specified by guidelines and industry standards for the identification of mold and moisture-affected building materials.

Mold and Moisture

The post-remediation assessment was performed on August 21, 2023, by Mr. Braxton Dawson, and included a non-invasive visual and sampling survey for mold and moisture within client-identified areas of concern on the subject property. The assessment focused on the client-selected areas in the buildings indicated by Dare County Schools. The ECS site personnel observed readily accessible areas and selected building materials to evaluate visible suspect fungal



growth and/or moisture-impacted materials. A reasonable effort was made to identify water and mold-impacted areas; however, this does not imply a guarantee that all possible reservoirs of mold were identified because mold or water-impacted building materials may be hidden by walls, flooring, partitions, etc.

Ambient temperature, relative humidity, and carbon dioxide were measured during the surveys using a TSI Q-TRAK Indoor Air Quality Meter. The purpose of these measurements was to identify elevated interior humidity levels, which could potentially support indoor mold growth or indicate ongoing moisture problems.

Fungal spore air samples were collected by means of a high volume pump and Air-O-Cell® cassettes. Samples were transported to Scientific Analytical Institute, Inc. (SAI) located in Greensboro, North Carolina for analysis. SAI is accredited by the Environmental Microbiology Laboratory Accreditation Program, administered by the American Industrial Hygiene Association. Air samples were reported to the genus or group level according to the laboratory standard quantification procedures.

It is important to note that fungal spore samples represent a snapshot in time of a constantly changing microbiome. Environmental conditions such as temperature and humidity may influence sample results. The goal of the sampling performed was not to establish precise numerical concentrations over time, but rather to generally identify the dominant fungi in the sampled locations and the general significance of their relative concentrations as compared to outdoor concentrations or unaffected locations.

4.0 RESULTS

The following is a summary of laboratory results, measurements, findings and observations.

4.1 Mold and Moisture

The following visual observations were made during ECS' IAQ assessment on August 21, 2023:

- Evidence of suspect visible mold growth was not observed in the facilities.
- Commercial dehumidifiers and air scrubbers were in operation throughout each school at the time of assessment.
- Musty odors were not noted; and,
- The HVAC system was observed to be operating at the time of the assessment, but it was reported that facility-integrated dehumidifiers were not running.

Below is a summary of the sampling data collected as part of this evaluation.

4.1.1 Spore-Trap Air Samples

Fungal spore-trap air samples were collected from the surveyed areas of each school facility. Representative exterior samples were collected for comparison. The following table summarizes the results of sample analysis reported in spore counts per cubic meter of air.

Spore-Trap Sample Results

Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter) / Predominant Genus Identified
First Flight Middle School		
A1	First Flight MS - Exterior	<i>Alternaria</i> - 353 <i>Ascospores</i> - 1250 <i>Aspergillus/Penicillium-like</i> - 0 <i>Basidiospores</i> - 1180 <i>Cladosporium</i> - 1800 <i>Curvularia</i> - 744 <i>Epicoccum</i> - 157
A2	First Flight MS - A104	<i>Basidiospores</i> - 39.2
A3	First Flight MS - Media Center	<i>Aspergillus/Penicillium-like</i> - 1450 <i>Cladosporium</i> - 509
A4	First Flight MS - K127	No Spores Detected
A5	First Flight MS - M110	No Spores Detected
A6	First Flight MS - Art Room	No Spores Detected
A7	First Flight MS - J124 Hallway	No Spores Detected
A8	First Flight MS - Cafeteria	<i>Aspergillus/Penicillium-like</i> - 196 <i>Curvularia</i> - 39.2
A9	First Flight MS - M118	No Spores Detected
First Flight Elementary School		
A11	First Flight ES - Exterior	<i>Alternaria</i> - 509 <i>Ascospores</i> - 1610 <i>Aspergillus/Penicillium-like</i> - 0 <i>Basidiospores</i> - 1100 <i>Cladosporium</i> - 2160 <i>Curvularia</i> - 823 <i>Myxomycete/Rust</i> - 313
A12	First Flight ES - D117	No Spores Detected
A13	First Flight ES - A121	No Spores Detected
A14	First Flight ES - B148	<i>Ascospores</i> - 39.2



Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter) / Predominant Genus Identified
A15	First Flight ES - Media Center	<i>Aspergillus/Penicillium-like</i> - 196
A16	First Flight ES - B102	No Spores Detected
A17	First Flight ES - Hallway C, Near C114	No Spores Detected
A18	First Flight ES - D125	Ascospores - 39.8

Based on the August 21, 2023 post-remediation assessment and the laboratory results, the following area is considered to contain amplified levels of indoor *Aspergillus/Penicillium-like* mold:

First Flight Middle School

- Media Center

Although spores or *Aspergillus/Penicillium* type mold were also detected in the Middle School Cafeteria and Elementary School Gymnasium, overall spore counts were considered elevated outside and spores counts of *Aspergillus/Penicillium* were lower overall when compared to the initial, pre-remediation assessment.

The above table does not represent all detected spore types in the samples analyzed. The detailed laboratory report is provided in the appendices.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. It is important to note however that spore trap measurements can fluctuate rapidly, and the readings reported should not be used as a definitive indication that mold and or health hazards related to mold are present or absent.

4.1.2 Temperature and Relative Humidity

As cited by NIOSH, the ANSI/ASHRAE Standard 55-2020: Thermal Environmental Conditions for Human Occupancy specifies the combinations of indoor environmental and personal factors that produce acceptable thermal conditions to a majority of occupants within a space [ANSI/ASHRAE 2013b]. ASHRAE recommends that indoor relative humidity be maintained at or below 50% [ANSI/ASHRAE 2013b]. The USEPA recommends maintaining indoor relative humidity between 30% and 60% to reduce mold growth [EPA 2012]. Assuming slow air movement (less than 40 feet per minute) and 50% indoor relative humidity, the operative temperatures recommended by ASHRAE range from 68.5°F to 75°F in the winter, and from 75°F to 80.5°F in the summer. The difference in temperature ranges between the seasons is largely due to clothing selection. ANSI/ASHRAE 62 also recommends that indoor carbon dioxide (CO₂) levels be no higher than 700 parts per million (ppm) above the outdoor concentrations.



The indoor comfort parameters measured were generally acceptable, with exception to relative humidity in some areas. Elevated humidity levels may contribute to indoor mold growth.

The following table summarizes the indoor air temperature and relative humidity readings collected by ECS from various locations.

Temperature, Relative Humidity, and Carbon Dioxide

Sample Number	Location	Temperature (Fahrenheit)	Relative Humidity (%)	Carbon Dioxide (ppm)
First Flight Middle School				
A1	First Flight MS - Exterior	93.1	51.4	387
A2	First Flight MS - A104	74.6	69.1	373
A3	First Flight MS - Media Center	77.0	61.0	582
A4	First Flight MS - K127	76.3	67.4	490
A5	First Flight MS - M110	77.7	77.2	494
A6	First Flight MS - Art Room	76.9	76.9	389
A7	First Flight MS - J124 Hallway	77.8	66.7	377
A8	First Flight MS - Cafeteria	77.6	63.0	449
A9	First Flight MS - M118	73.1	71.3	391
First Flight Elementary School				
A11	First Flight ES - Exterior	88.4	51.2	383
A12	First Flight ES - D117	76.1	53.4	508
A13	First Flight ES - A121	72.9	64.0	448
A14	First Flight ES - B148	75.3	59.9	445



Sample Number	Location	Temperature (Fahrenheit)	Relative Humidity (%)	Carbon Dioxide (ppm)
A15	First Flight ES - Media Center	73.1	61.8	412
A16	First Flight ES - B102	70.9	66.7	409
A17	First Flight ES - Hallway C, Near C114	73.4	59.7	41
A18	First Flight ES - D125	72.8	61.2	429

Items in **BOLD** are considered elevated

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our understanding of the purpose of the Post-Remediation Indoor Air Quality and Mold Assessment, the results of laboratory analysis, and our findings and observations, ECS presents the following recommendations.

Mold and Moisture

ECS recommends remediation be performed for water and mold impacted materials within the surveyed areas as soon as reasonably possible. This includes all materials that have visible suspected mold and/or have been subjected to elevated moisture conditions for greater than 48 hours without proper drying efforts. Particular emphasis should be placed on the following areas, where airborne mold levels were considered amplified at the time of assessment.

First Flight Middle School

- Media Center

Discussion: Overall, airborne mold levels and indoor comfort parameters were measured at more favorable levels than during the initial, pre-remediation assessment. An additional cleaning of the First Flight Middle School Media Center should be conducted, particularly in difficult to access areas. Observations above ceiling systems should be conducted, if possible, to determine if suspect visible mold is present.

Once the facilities' integrated dehumidification systems are in operation, their effectiveness should be properly evaluated to ensure proper function. Continued elevation of relative humidity in the schools may contribute to mold growth.

General



Remediation activities should be performed in general accordance with the guidelines described in EPA's March 2001 document "Mold Remediation in Schools and Commercial Buildings" and under the OSHA 2010 Guidelines for mold removal. Additional remedial guidance documents are also referenced in Section at the end of this report. Workers performing this work should wear proper personal protective equipment (PPE) including HEPA filtered respirators and disposable clothing (per OSHA standards for PPE).

ECS was not requested to assess the potential presence of hazardous materials, and ECS assumes no responsibility for actions taken to address mold or moisture that inadvertently disturb hazardous materials. ECS is unaware of the presence of possible asbestos containing materials or lead based paint (LBP). Prior to remediation work, if not performed already, an asbestos/LBP survey is recommended for the building. Pending the results of this survey, disclosures and/or abatement should be made with regards to hazardous containing materials prior to mold/water damage material removal efforts.

ECS recommends that the identified areas undergo a thorough cleaning following guidelines described in EPA's March 2001 document "Mold Remediation in Schools and Commercial Buildings." Surface remediation should include HEPA vacuuming of vertical and horizontal surfaces and a clean-wipe with a mild detergent. The surfaces should not be saturated and discard cleaning cloths. All areas (affected and unaffected) should be left dry, visibly free from contamination and debris prior to build back activities.

Follow-up

A post-remediation survey and sampling should be performed to assess the remediation efforts. At this time, ECS recommends an additional post-remediation site visit and air sampling in the Middle School Media Center, along with the collection of relative humidity readings.

Air sampling will be performed by fungal spore trap method to document mold levels following remediation efforts. The results of air sampling should find air samples in and adjacent to the work area to be less than concurrent outdoor samples, and the indoor samples will not find a prevalence of certain fungi considered likely indoor contaminants as determined by rank-order analysis.

Because of the nature of the environment, complete elimination of all microbial organisms within a building cannot be expected and is not the goal of remediation. The goal of remediation is to restore the affected materials to at least the condition of unaffected materials. It is important to note that the reported mold levels are only reflective of conditions at the time of this test and that mold populations can vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). If significant mold growth reappears, or if the occupants experience prolonged allergic-type health complaints, they should seek further investigation of the problem.

Note: The purpose of this survey was to evaluate areas where moisture intrusion or suspected visible mold growth has occurred and provide findings and recommendations for remedial work efforts. Identification and recommendations for correction of sources of moisture should be performed by a qualified engineer.

6.0 LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

This survey is not intended to represent an exhaustive research of every potential hazard or condition that may exist, nor does it claim to represent indoor conditions or events that arise after the survey. This report has been prepared in accordance with generally accepted environmental practices. Our conclusions and findings are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others. The scope of services performed was limited to those requested by the Client and does not constitute a full microbial assessment of the site or a comprehensive moisture survey of the site. The data provided in this study is only indicative of conditions sampled at the immediate time of the study.

This report does not warrant against future operations or conditions, nor does it warrant against extant, or future, conditions of a type or at a location not investigated. Because of the nature of this type of work and the difficulties involved in conducting remediation work, ECS cannot guarantee that the methods or recommendations described in this report will eliminate all potential indoor air quality issues. Since performance of the remediation work is also beyond ECS scope of services, ECS also cannot be held responsible for the execution of the remediation work. The reported microbial levels are only reflective of conditions at the time of this test and that microbial populations can vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). The work performed in conjunction with this assessment and the data developed is intended as a description of available information at the dates and locations given.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

Appendix I: Figures

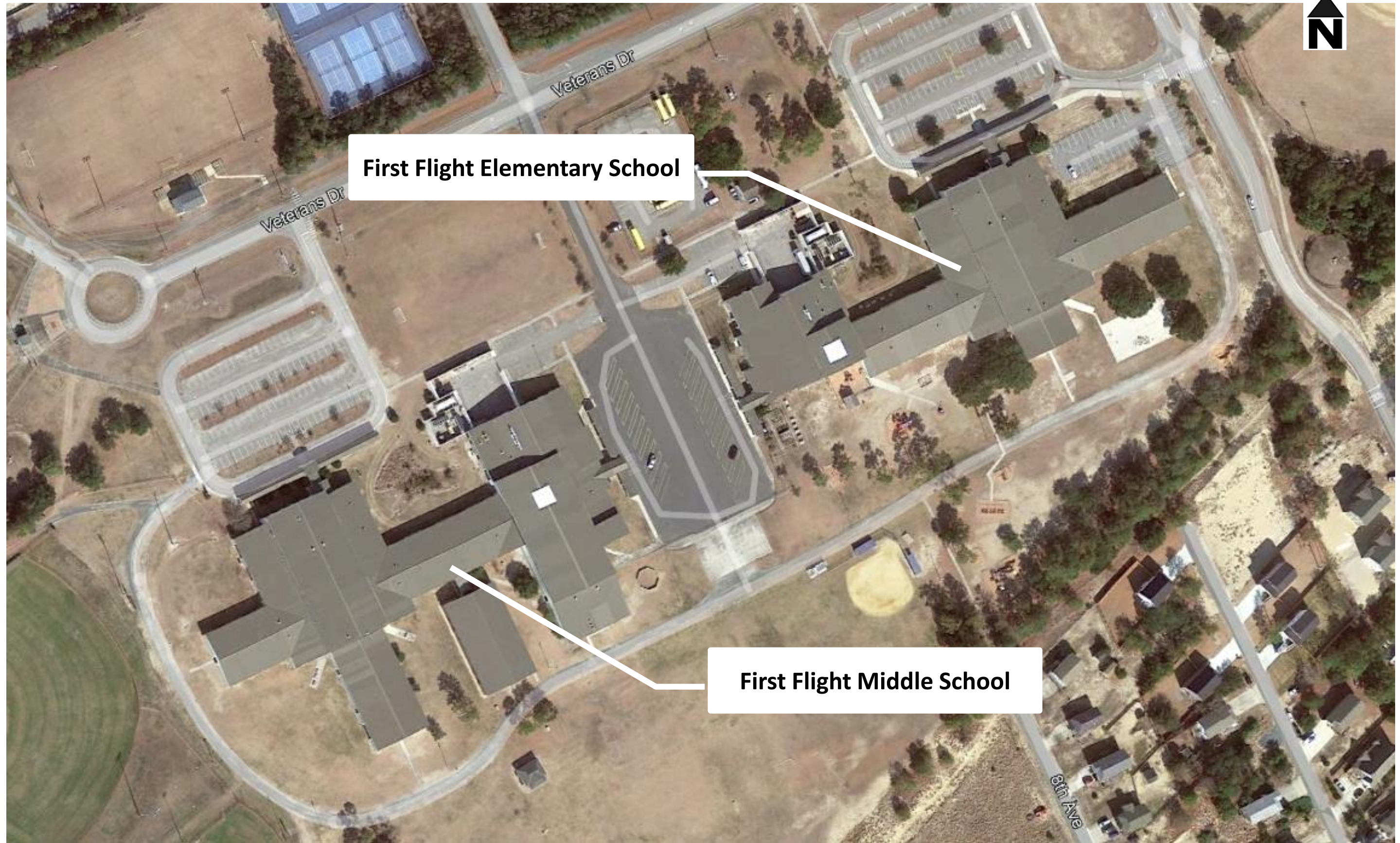


**IAQ and Mold Assessment
Post-Remediation**

Figure 1

Site Overview

First Flight Middle / Elementary Schools
109 and 109 Veterans Drive
Kill Devil Hills, NC 27948
ECS Project No. 49-20986-A







IAQ and Mold Assessment Post-Remediation

Figure 2

Sample Locations, FFMS

First Flight Middle
Kill Devil Hills, NC 27948
ECS Project No. 49-20986-A

LEGEND

-  Sample Location
-  Amplified Mold







IAQ and Mold Assessment Post-Remediation

Figure 3

Sample Locations, FFES

First Flight Elementary
Kill Devil Hills, NC 27948
ECS Project No. 49-20986-A

LEGEND

-  Sample Location
-  Amplified Mold



Appendix II: Laboratory Report(s)



Direct Exam: Spore Trap Analysis

SAI Method B-SOP-003



Customer: ECS Southeast, LLP
6714 Netherlands Dr
Wilmington, NC 28405

Attn: Braxton Dawson

Lab Order ID: 10030728

Analysis: STA

Date Received: 08/22/2023

Date Reported: 08/22/2023

Project: First Flight - Post-Remediation

Sample ID	A1			A2			A3			EXTERIOR		
Lab Sample ID	10030728_0001			10030728_0002			10030728_0003			AVERAGE		
Description	Outside			A104			Media center			N/A		
Lab Notes										N/A		
Volume (L)	150			150			150			N/A		
Analytical Sensitivity (counts/m ³)	39			39			39			N/A		
IDENTIFICATION	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total
<i>Alternaria</i>	9	353	5.81%							11	431	6.51%
Ascospores	32	1250	20.6%							37	1430	21.9%
<i>Aspergillus/Penicillium-like</i>							37	1450	74.0%			
Basidiospores	30	1180	19.4%	1	39.2	100.0%				29	1140	17.2%
<i>Cercospora-like</i>	4	157	2.58%							5	177	2.96%
<i>Cladosporium</i>	46	1800	29.7%				13	509	26.0%	51	1980	30.2%
<i>Curvularia</i>	19	744	12.3%							20	784	11.8%
<i>Epicoccum</i>	4	157	2.58%							3	118	1.78%
Myxomycete/Rust/Smut-like	6	235	3.87%							7	274	4.14%
<i>Nigrospora</i>	2	78.4	1.29%							1	39.2	0.592%
<i>Pithomyces</i>										1	39.2	0.592%
<i>Polythrincium</i>										1	39.2	0.592%
<i>Torula</i>	2	78.4	1.29%							1	39.2	0.592%
Unknown/Other	1	39.2	0.645%							2	58.8	1.18%
TOTAL	155	6070	100.0%	1	39.2	100.0%	50	1960	100.0%	169	6550	100.0%
Non-Cellulosic Fibers	-	-	-	-	-	-	-	-	-	-	-	-
Hyphal Fragments	7	274	-	-	-	-	1	39.2	-	5	196	-
Insect Parts	-	-	-	-	-	-	-	-	-	-	-	-
Pollen	1	39.2	-	-	-	-	1	39.2	-	2	58.8	-
Skin Cell % of Total Debris		0-20%			40-60%			40-60%			N/A	
Total Debris in Background		60-80%			0-20%			20-40%			N/A	

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA EMPAT program for fungi. EMPAT Laboratory ID: 173190. Reporting Limit equals Analytical Sensitivity. Unless indicated, areas and volumes were provided by the customer.

Palmer Hines (17)

Analyst

Approved Signatory



Direct Exam: Spore Trap Analysis

SAI Method B-SOP-003



Customer: ECS Southeast, LLP
6714 Netherlands Dr
Wilmington, NC 28405

Attn: Braxton Dawson

Lab Order ID: 10030728

Analysis: STA

Date Received: 08/22/2023

Date Reported: 08/22/2023

Project: First Flight - Post-Remediation

Sample ID	A4			A5			A6			EXTERIOR		
Lab Sample ID	10030728_0004			10030728_0005			10030728_0006			AVERAGE		
Description	K127			M110			Art room			N/A		
Lab Notes										N/A		
Volume (L)	150			150			150			N/A		
Analytical Sensitivity (counts/m³)	39			39			39			N/A		
IDENTIFICATION	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total
<i>Alternaria</i>	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	No Spores Detected	11	431	6.51%
Ascospores										37	1430	21.9%
<i>Aspergillus/Penicillium-like</i>												
Basidiospores										29	1140	17.2%
<i>Cercospora-like</i>										5	177	2.96%
<i>Cladosporium</i>										51	1980	30.2%
<i>Curvularia</i>										20	784	11.8%
<i>Epicoccum</i>										3	118	1.78%
Myxomycete/Rust/Smut-like										7	274	4.14%
<i>Nigrospora</i>										1	39.2	0.592%
<i>Pithomyces</i>										1	39.2	0.592%
<i>Polythrincium</i>										1	39.2	0.592%
<i>Torula</i>										1	39.2	0.592%
Unknown/Other										2	58.8	1.18%
TOTAL										<1	<39.2	100.0%
Non-Cellulosic Fibers	-	-	-	-	-	-	-	-	-	-	-	-
Hyphal Fragments	-	-	-	-	-	-	-	-	-	5	196	-
Insect Parts	-	-	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	2	58.8	-
Skin Cell % of Total Debris		60-80%			40-60%			40-60%				N/A
Total Debris in Background		0-20%			0-20%			0-20%				N/A

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA EMPAT program for fungi. EMPAT Laboratory ID: 173190. Reporting Limit equals Analytical Sensitivity. Unless indicated, areas and volumes were provided by the customer.

Palmer Hines (17)

Analyst

Approved Signatory



Direct Exam: Spore Trap Analysis

SAI Method B-SOP-003



Customer: ECS Southeast, LLP
6714 Netherlands Dr
Wilmington, NC 28405

Attn: Braxton Dawson

Lab Order ID: 10030728

Analysis: STA

Date Received: 08/22/2023

Date Reported: 08/22/2023

Project: First Flight - Post-Remediation

Sample ID	A7	A8	A9	EXTERIOR								
Lab Sample ID	10030728_0007	10030728_0008	10030728_0009	AVERAGE								
Description	J134 - hallway	Cafeteria	M118	N/A								
Lab Notes				N/A								
Volume (L)	150	150	150	N/A								
Analytical Sensitivity (counts/m ³)	39	39	39	N/A								
IDENTIFICATION	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total
<i>Alternaria</i>	No Spores Detected	No Spores Detected	No Spores Detected				11	431	6.51%			
Ascospores							37	1430	21.9%			
<i>Aspergillus/Penicillium-like</i>				5	196	83.3%						
Basidiospores							29	1140	17.2%			
<i>Cercospora-like</i>							5	177	2.96%			
<i>Cladosporium</i>							51	1980	30.2%			
<i>Curvularia</i>				1	39.2	16.7%	20	784	11.8%			
<i>Epicoccum</i>							3	118	1.78%			
Myxomycete/Rust/Smut-like							7	274	4.14%			
<i>Nigrospora</i>							1	39.2	0.592%			
<i>Pithomyces</i>							1	39.2	0.592%			
<i>Polythrincium</i>							1	39.2	0.592%			
<i>Torula</i>							1	39.2	0.592%			
Unknown/Other							2	58.8	1.18%			
TOTAL	<1	<39.2	100.0%	6	235	100.0%	<1	<39.2	100.0%	169	6550	100.0%
Non-Cellulosic Fibers	-	-	-	-	-	-	1	39.2	-	-	-	-
Hyphal Fragments	-	-	-	-	-	-	-	-	-	5	196	-
Insect Parts	-	-	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	2	58.8	-
Skin Cell % of Total Debris		40-60%			60-80%			40-60%			N/A	
Total Debris in Background		0-20%			0-20%			0-20%			N/A	

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA EMPAT program for fungi. EMPAT Laboratory ID: 173190. Reporting Limit equals Analytical Sensitivity. Unless indicated, areas and volumes were provided by the customer.

Palmer Hines (17)

Analyst

Approved Signatory



Direct Exam: Spore Trap Analysis

SAI Method B-SOP-003



Customer: ECS Southeast, LLP
6714 Netherlands Dr
Wilmington, NC 28405

Attn: Braxton Dawson

Lab Order ID: 10030728

Analysis: STA

Date Received: 08/22/2023

Date Reported: 08/22/2023

Project: First Flight - Post-Remediation

Sample ID	A11			A12			A13			EXTERIOR		
Lab Sample ID	10030728_0010			10030728_0011			10030728_0012			AVERAGE		
Description	Outside			Hallway D - D117			A121			N/A		
Lab Notes										N/A		
Volume (L)	150			150			150			N/A		
Analytical Sensitivity (counts/m ³)	39			39			39			N/A		
IDENTIFICATION	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total	Raw Count	Concentration (counts/m ³)	% Of Total
<i>Alternaria</i>	13	509	7.26%	No Spores Detected	No Spores Detected		11	431	6.51%			
Ascospores	41	1610	22.9%			37	1430	21.9%				
<i>Aspergillus/Penicillium-like</i>												
Basidiospores	28	1100	15.6%			29	1140	17.2%				
<i>Cercospora-like</i>	5	196	2.79%			5	177	2.96%				
<i>Cladosporium</i>	55	2160	30.7%			51	1980	30.2%				
<i>Curvularia</i>	21	823	11.7%			20	784	11.8%				
<i>Epicoccum</i>	2	78.4	1.12%			3	118	1.78%				
Myxomycete/Rust/Smut-like	8	313	4.47%			7	274	4.14%				
<i>Nigrospora</i>						1	39.2	0.592%				
<i>Pithomyces</i>	2	78.4	1.12%			1	39.2	0.592%				
<i>Polythrincium</i>	2	78.4	1.12%			1	39.2	0.592%				
<i>Torula</i>						1	39.2	0.592%				
Unknown/Other	2	78.4	1.12%			2	58.8	1.18%				
TOTAL	179	7010	100.0%			<1	<39.2	100.0%	169	6550	100.0%	
Non-Cellulosic Fibers	-	-	-	-	-	-	-	-	-			
Hyphal Fragments	3	118	-	-	-	-	5	196	-			
Insect Parts	-	-	-	-	-	-	-	-	-			
Pollen	2	78.4	-	-	-	-	2	58.8	-			
Skin Cell % of Total Debris		0-20%			60-80%			60-80%				
Total Debris in Background		40-60%			0-20%			0-20%				

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA EMPAT program for fungi. EMPAT Laboratory ID: 173190. Reporting Limit equals Analytical Sensitivity. Unless indicated, areas and volumes were provided by the customer.

Palmer Hines (17)

Analyst

Approved Signatory



Direct Exam: Spore Trap Analysis

SAI Method B-SOP-003



Customer: ECS Southeast, LLP
6714 Netherlands Dr
Wilmington, NC 28405

Attn: Braxton Dawson

Lab Order ID: 10030728

Analysis: STA

Date Received: 08/22/2023

Date Reported: 08/22/2023

Project: First Flight - Post-Remediation

Sample ID	A17	A18	EXTERIOR									
Lab Sample ID	10030728_0016	10030728_0017	AVERAGE									
Description	Hallway C - C114	D123	N/A									
Lab Notes			N/A									
Volume (L)	150	150	N/A									
Analytical Sensitivity (counts/m³)	39	39	N/A									
IDENTIFICATION	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total	Raw Count	Concentration (counts/m³)	% Of Total
<i>Alternaria</i>	No Spores Detected						11	431	6.51%			
Ascospores		1	39.2	100.0%			37	1430	21.9%			
<i>Aspergillus/Penicillium-like</i>												
Basidiospores							29	1140	17.2%			
<i>Cercospora-like</i>							5	177	2.96%			
<i>Cladosporium</i>							51	1980	30.2%			
<i>Curvularia</i>							20	784	11.8%			
<i>Epicoccum</i>							3	118	1.78%			
Myxomycete/Rust/Smut-like							7	274	4.14%			
<i>Nigrospora</i>							1	39.2	0.592%			
<i>Pithomyces</i>							1	39.2	0.592%			
<i>Polythrincium</i>							1	39.2	0.592%			
<i>Torula</i>							1	39.2	0.592%			
Unknown/Other							2	58.8	1.18%			
TOTAL		<1	<39.2	100.0%	1	39.2	100.0%	-	-	-	169	6550
Non-Cellulosic Fibers	-	-	-	-	-	-	-	-	-	-	-	-
Hyphal Fragments	-	-	-	-	-	-	-	-	-	5	196	-
Insect Parts	-	-	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	2	58.8	-
Skin Cell % of Total Debris		60-80%			80-100%			N/A			N/A	
Total Debris in Background		0-20%			0-20%			N/A			N/A	

Disclaimer: This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA EMPAT program for fungi. EMPAT Laboratory ID: 173190. Reporting Limit equals Analytical Sensitivity. Unless indicated, areas and volumes were provided by the customer.

Palmer Hines (17)

Analyst

Approved Signatory



Scientific Analytical Institute
 4604 Dundas Dr. Greensboro, NC 27407
 Phone: 336.292.3888 Fax: 336.292.3313
 www.sailab.com lab@sailab.com

Lab Use Only 10030728
 Lab Order ID: _____
 Client Code: _____

Company Contact Information	
Company: ECS Southeast, LLC	Contact: Braxton Dawson
Address: 6714 Netherlands Dr	Phone <input checked="" type="checkbox"/> : 910-899-1289
Wilmington, NC 28405	Fax <input type="checkbox"/> :
	Email <input checked="" type="checkbox"/> : bdawson@ecslimited.com

Microbiology Test Types	
Spore Trap - Slit Impact, ie. AOC/Allergenco (STA)	<input checked="" type="checkbox"/>
Spore Trap Other, ie. Micro-5 (STO)	<input type="checkbox"/>
Direct Exam Tape (DET)	<input type="checkbox"/>
Direct Exam Swab (DES)	<input type="checkbox"/>
Direct Exam Bulk (DEB)	<input type="checkbox"/>
Fungal Culture Air (FCA)	<input type="checkbox"/>
Fungal Culture Swab (FCS)	<input type="checkbox"/>
Fungal Culture Bulk (FCB)	<input type="checkbox"/>
Bacteria Culture Air (BCA)	<input type="checkbox"/>
Bacteria Culture Bulk (BCB)	<input type="checkbox"/>
Bacteria Culture Swab (BCS)	<input type="checkbox"/>
Biolog (BLG)	<input type="checkbox"/>
Drinking Water (BCC) (Coliform/E.coli)	<input type="checkbox"/>
Other:	<input type="checkbox"/>

Billing/Invoice Information	Turn Around Times	
Company: same	90 Min. <input type="checkbox"/>	48 Hours <input type="checkbox"/>
Contact:	3 Hours <input type="checkbox"/>	72 Hours <input type="checkbox"/>
Address:	6 Hours <input type="checkbox"/>	96 Hours <input type="checkbox"/>
	12 Hours <input checked="" type="checkbox"/>	120 Hours <input type="checkbox"/>
	24 Hours <input type="checkbox"/>	144+ Hours <input type="checkbox"/>

PO Number: 49-20986
 Project Name/Number: First Flight - Post-Remediation

Sample ID #	Description/Location	Volume/Area	Comments
A1	outside	150L	Middle School
A2	A104		↓ Elementary School
A3	Media Center		
A4	K127		
A5	M110		
A6	Art Room		
A7	J124 - Hallway		
A8	Cafeteria		
A9	M118		
A11	outside		
A12	Hallway D - D117		
A13	A121		
A14	B148	Accepted <input checked="" type="checkbox"/>	
A15	Media Center		
A16	B102	Rejected <input type="checkbox"/>	
A17	Hallway C - C114		

Relinquished by	Date/Time	Received by	Date/Time
[Signature]	8/2/23 3:00pm	[Signature]	8/22 10:30

Appendix III: Mold Reference and Guidance Documents

REFERENCE AND GUIDANCE DOCUMENTS

A Brief Guide to Mold in the Workplace, Occupational Safety Health Administration (OSHA), SHIB 03-10-10, updated 11-08-13

ANSI/IICRC S520 Standard and Reference Guide for Professional Mold Remediation, Institute of Inspection, Cleaning, and Restoration Certification, 2015.

ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration, Institute of Inspection, Cleaning, and Restoration Certification, 2015.

Bioaerosols: Assessment and Controls, American Conference of Governmental Industrial Hygienists, 1999.

Building Air Quality: A Guide for Building Owners and Facility Managers, EPA, EPA 402-F-91-102, December 1991

Centers for Disease Control and Prevention (CDC), <https://www.cdc.gov/mold/faqs.htm>

Department of Energy and the Environment (DOEE), Mold Assessment and Remediation Licensure Regulations.

EPA – Mold Resources, <https://www.epa.gov/mold>

Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

Mold Moisture and Your Home, EPA, EPA-402-K-02-003, September 2012

Mold Remediation in Schools and Commercial Buildings, EPA, EPA 402-K-01-001, September 2008