ALIS
Environmental Inc

Office: 336.368.4500
Mobile: 336.575.2343
jmcmanus@alisenvironmental.com

February 1, 2019

Jay Fuller
Director of Facilities and Maintenance

Alamance-Burlington School System
307 Prison Camp Road
Graham, North Carolina 27253

Subject: Report of Airborne Microbial Sampling
Eastern Alamance High School – Band Room
4040 Mebane-Rogers Road
Mebane, North Carolina 27302
Project No.: 201-1901-01

Dear Mr. Fuller:

ALIS has completed the airborne microbial sampling at Eastern Alamance High School in Mebane, North Carolina. On January 26, 2019, we conducted air sampling for the presence of airborne fungi at the subject property. The purpose of our sampling was to determine the presence and species of airborne fungi and the degree of concentration within the complaint area (band room) and surrounding corridors. Air sampling pumps were calibrated and placed in the band room and surrounding north and east corridors. Two samples were collected from outside the building as a reference for comparison to the inside conditions. Temperature and relative humidity (RH) measurements were collected from the band room, corridor and outside of building. No other areas of the building were included in the scope of work.

Corridor: 54.3° F, 44.3% RH
Band Room: 61.1° F, 29.2% RH
Outside: 40.0° F, 25.7% RH

Results

The laboratory results show significantly higher levels of the Aspergillus/Penicillium species on the indoor samples collected from the band room when compared to levels found on the outside sample. The significantly higher counts suggest there may be active mold growth in this area. Sample results are attached to this report: "Spore Trap Analysis"

Report of Airborne Microbial Sampling
Eastern Alamance High School – Band Room
Mebane, North Carolina
ALIS Project #: 201-1901-01

February 1, 2019

Sampling Methodology

Non-viable samples were collected with a spore trap slide using Allergenco-D Cassettes mounted to a sampling pump. The cassettes contain glass slides that are coated with a sticky substance that captures airborne particulates that impinge on the slides. The air samples were collected at 15 liters per minute for 10 minutes. Calibration of sampling equipment was performed with a precision rotameter (a secondary calibration source). Rotameters are calibrated against a primary standard. Field calibration was performed before and after sampling. The air samples were sealed for transport to Hayes Microbial Consulting in Midlothian, Virginia for analysis. Hayes Microbial is a participant in the American Industrial Hygiene Association, Laboratory Accreditation Program (AIHA-LAP) for Environmental Microbiology.

Background Information on Mold in Buildings

Mold spores exist normally in outdoor and indoor air and can be measured in air and carpets of normal homes, office buildings, hospitals and schools. Naturally occurring sources of mold spores include soil, plants and other sources. The air concentration of these normally occurring mold spores is dependent on the season, environmental conditions and other factors. Elevated levels of mold in building materials may occur if chronic moist conditions from water leaks, floods, chronic high relative humidity, or malfunctioning heating, ventilation or air conditioning systems, allow moisture to remain for prolonged periods on organic matter in the presence of warm ambient temperatures. Under these conditions, low levels of fungal spores in air, plants or other sources, may proliferate on cellulose containing materials such as carpets, wallboard, wood, paper or dusty surfaces (which may serve as a food source), and result in mold contamination. Many fungal spores are allergenic to susceptible persons exposed, though individual susceptibility varies greatly. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.

ALIS appreciates the opportunity to be of service to you on this project. We would welcome the opportunity to discuss at your convenience, any of the results contained in this report. Please contact us if you have any questions or if we may be of further service.

Sincerely,
ALIS ENVIRONMENTAL, INC.

James P. McManus
Vice-President

Attachment: "Spore Trap Analysis"

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Midlothian, VA 23112, USA
804.562.3435 Fax: 804.447.5562

contact@hayesmicrobial.com
http://hayesmicrobial.com/

Analysis Report prepared for

ALIS Environmental Inc.

1027 Koontz Haven Rd
Pinnacle, NC. 27043
Phone: (336) 368-4500

Job Number:	**201-1901-01**
Job Name:	**Eastern Alamance High School**
	4040 Mebane Rogers Road
	Mebane, NC
Date Sampled:	**01-26-2019**
Date Analyzed:	**01-30-2019**
Report Date:	**01-30-2019**

EPA Laboratory ID# VA01419

AIHA EMPAT Lab ID# 188863 | Mold License: LAB1021 | License: #PH-0198

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HMC #19003943

ALIS Environmental Inc.
1027 Koontz Haven Rd
Pinnacle, NC 27043

January 30, 2019

Client Job Number: 201-1901-01
Client Job Name: Eastern Alamance High School
4040 Mebane Rogers Road
Mebane, NC

Dear ALIS Environmental Inc.,

We would like to thank you for trusting Hayes Microbial for your analytical needs. On January 30, 2019 we received 9 samples by FedEx for the job referenced above. 9 samples were received in good condition.

The results in this analysis pertain only to this job, collected on the stated date and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial Consulting. In no event, shall Hayes Microbial Consulting or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of your use of the test results.

Stephen N. Hayes

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC

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Spore Trap Analysis
SOP #HMC101

HMC #19003943

Job Number:	201-1901-01	Job Name:	Eastern Alamance High School	Date Collected:	01/26/2019
Collected by:	Jim McManus		4040 Mebane Rogers Road	Date Received:	01/30/2019
Email:	jmcmanus@alisenvironmental.com		Mebane, NC	Date Reported:	01/30/2019

HMC ID Number	19003943 - 1	19003943 - 2	19003943 - 3	19003943 - 4
Sample ID#	2760811	2453763	2453761	2760764
Sample Name	Corridor O/S Stage Storage	N Corridor O/S Band Rm	Band Room Rear South	Band Room Front North
Sample Volume	150 liters	150 liters	150 liters	150 liters
Reporting Limit	7 spores/M3	7 spores/M3	7 spores/M3	7 spores/M3
Background	2	2	2	2
Fragments	ND	ND	ND	ND

Organism	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total
Alternaria												
Ascospores	2	13	19.7%	1	7	33.3%	1	7	2.6%	1	7	< 1%
Aspergillus|Penicillium	8	53	80.3%				40	266	97.4%	800	5326	> 99%
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				1	7	33.3%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes				1	7	33.3%						
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Unspecified Spore												
Total	10	66		3	21		41	273		801	5333	

Water Damage Indicator | Common Allergen | Slightly Higher than Outside Air | Significantly Higher than Outside Air | Ratio Abnormality

Signature: P. Ramesh **Date:** 01/30/2019 **Reviewed by:** Stephen N. Hayes **Date:** 01/30/2019

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HMC ID Number	19003943 - 5	19003943 - 6	19003943 - 7	19003943 - 8
Sample ID#	2760767	2760808	2127235	02279988
Sample Name	East Corridor O/S Band Room Entrance	East Corridor O/S Band Rm Entrance At Addit	Outside O/S Female Locker Room	Outside N Side Of V Bldg
Sample Volume	150 liters	150 liters	150 liters	150 liters
Reporting Limit	7 spores/M3	7 spores/M3	7 spores/M3	7 spores/M3
Background	2	2	2	2
Fragments	ND	ND	ND	20/M3

Organism	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total
Alternaria										64	426	14.8%
Ascospores	1	7	25.9%	2	13	65.0%	2	13	16.3%	12	80	2.8%
Aspergillus|Penicillium	2	13	48.1%	1	7	35.0%	7	47	58.8%	3	20	< 1%
Basidiospores	1	7	25.9%							5	33	1.1%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							3	20	25.0%	320	2130	73.9%
Curvularia										1	7	< 1%
Epicoccum										24	160	5.5%
Fusarium												
Memnoniella												
Myxomycetes										4	27	< 1%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Unspecified Spore												
Total	4	27		3	20		12	80		433	2883	

Water Damage Indicator | Common Allergen | Slightly Higher than Outside Air | Significantly Higher than Outside Air | Ratio Abnormality

Signature: P. Ramesh Date: 01/30/2019 Reviewed by: Stephen N. Hayes Date: 01/30/2019

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Email:	jmcmanus@alisenvironmental.com		Mebane, NC	Date Reported:	01/30/2019

HMC ID Number	19003943 - 9
Sample ID#	02280111
Sample Name	Blank
Sample Volume	0 liters
Reporting Limit	0 spores/M3
Background	ND
Fragments	ND

Organism	Raw Count	Count / M3	% of Total
Alternaria			
Ascospores			
Aspergillus|Penicillium			
Basidiospores			
Bipolaris|Drechslera			
Chaetomium			
Cladosporium			
Curvularia			
Epicoccum			
Fusarium			
Memnoniella			
Myxomycetes			
Pithomyces			
Stachybotrys			
Stemphylium			
Torula			
Ulocladium			
Unspecified Spore			
Total	ND	ND	

Water Damage Indicator | Common Allergen | Slightly Higher than Outside Air | Significantly Higher than Outside Air | Ratio Abnormality

Signature: P. Ramesh **Date:** 01/30/2019 **Reviewed by:** Stephen N. Hayes **Date:** 01/30/2019

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Spore Trap Information

HMC #19003943

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.
Blanks	Results have not been corrected for field or laboratory blanks.
Background	The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 4 and each level is determined as follows: **ND** : No background detected. (Pump or cassette malfunction.) Recollect sample. **1** : <5% of field occluded. No spores will be uncountable. **2** : 5-25% of field occluded. **3** : 25-75% of field occluded. **4** : 75-90% of field occluded. **5** : >90% of field occluded. Suggest recollection of sample.
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.
Indoor/Outdoor Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.
Water Damage Indicators	These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.
Common Allergens	Although all molds are potential allergens, these are the most common allergens that may be found indoors.
Slightly Higher than Outside Air	The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.
Significantly Higher than Outside Air	The spore count is significantly higher than the outdoor count and probably indicates a source of contamination.
Ratio Abnormality	The types of spores found indoors should be similar to the ones that were identified in the outdoor sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.
Color Note	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.

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Organism Descriptions

HMC #19003943

Alternaria

Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.

Health Effects: A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.

Ascospores

Habitat: A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.

Health Effects: Health affects are poorly studied, but many are likely to be allergenic.

Aspergillus|Penicillium

Habitat: The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.

Health Effects: This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.

Basidiospores

Habitat: A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.

Health Effects: Common allergens and are also associated with hypersensitivity pneumonitis.

Cladosporium

Habitat: One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.

Health Effects: A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

Curvularia

Habitat: They exist in soil and plant debris, and are plant pathogens.

Health Effects: They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and desseminated infection, primarily in the immunocompromised.

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Epicoccum

Habitat: It is found in soil and plant litter and is a plant pathogen. It can grow indoors on a variety of substrates, including paper and textiles and is commonly found on wet drywall.

Health Effects: It is a common allergen. No cases of infection have been reported in humans.

Myxomycetes

Habitat: Found on decaying plant material and as a plant pathogen.

Health Effects: Some allergenic properties reported, but generally pose no health concerns to humans.

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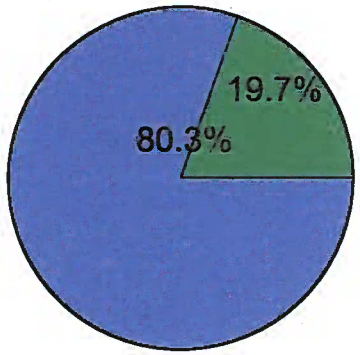
Graph Addendum

HMC #19003943

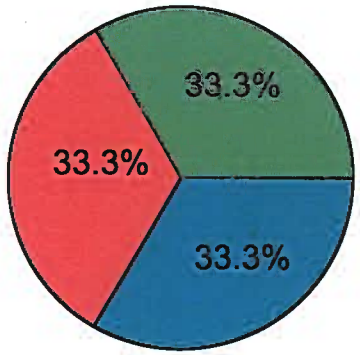
Job Number:	201-1901-01	Job Name:	Eastern Alamance High School	Date Collected:	01/26/2019
Collected by:	Jim McManus		4040 Mebane Rogers Road	Date Received:	01/30/2019
Email:	jmcmanus@alisenvironmental.com		Mebane, NC	Date Reported:	01/30/2019

Organism Percentages For Each Sample

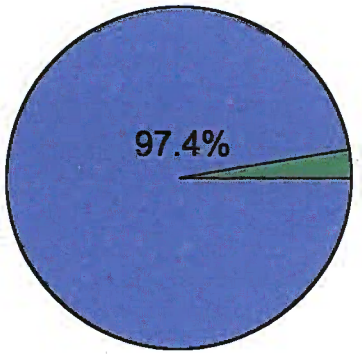
Corridor O/S Stage Storage



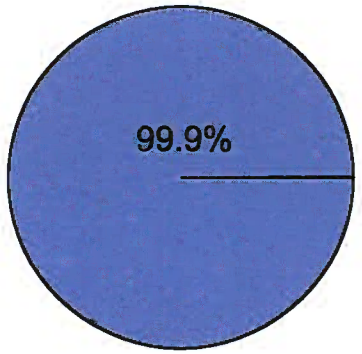
N Corridor O/S Band Rm



Band Room Rear South



Band Room Front North



Ascospores
Aspergillus|Penicillium
Cladosporium
Myxomycetes

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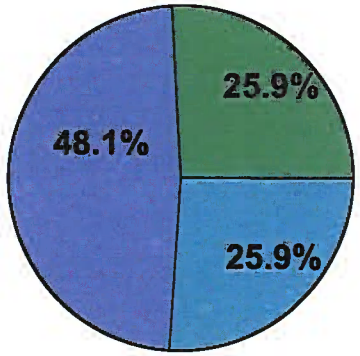
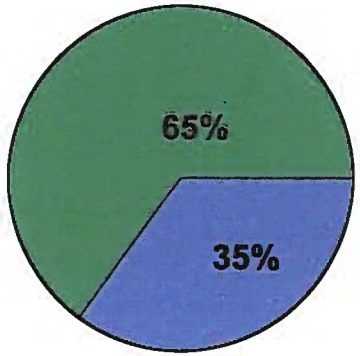
Organism Percentages For Each Sample

East Corridor O/S Band Room Entrance

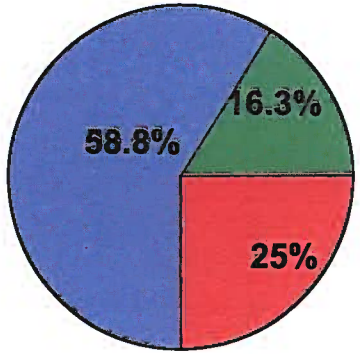


East Corridor O/S Band Rm Entrance At Addit

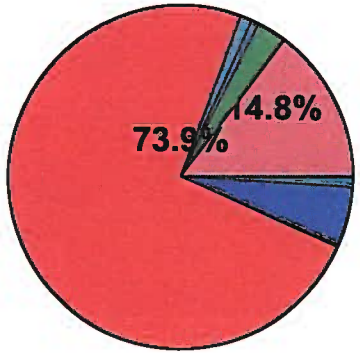


Alternaria
Ascospores
Aspergillus|Penicillium
Basidiospores
Cladosporium
Curvularia
Epicoccum
Myxomycetes

Outside O/S Female Locker Room



Outside N Side Of V Bldg



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Organism Percentages For Each Sample

Blank

Alternaria
Ascospores
Aspergillus|Penicillium
Basidiospores
Cladosporium
Curvularia
Epicoccum
Myxomycetes

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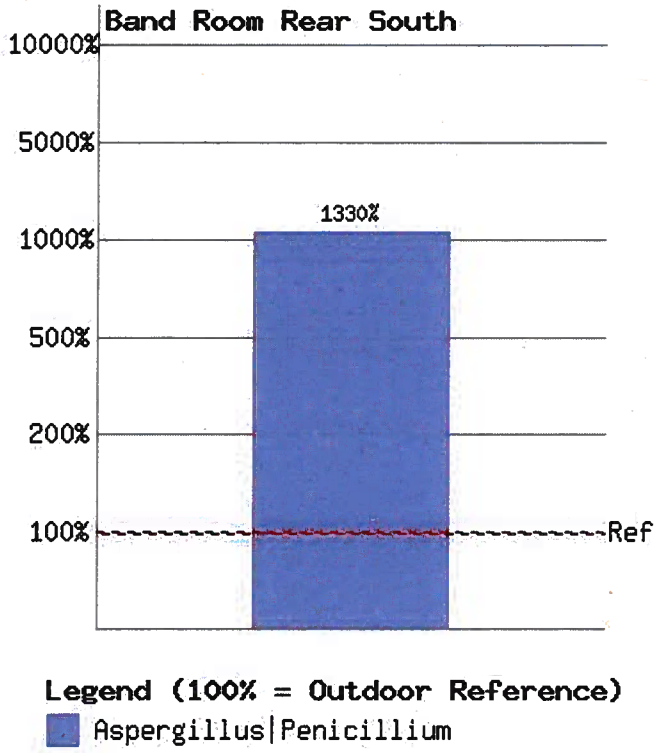
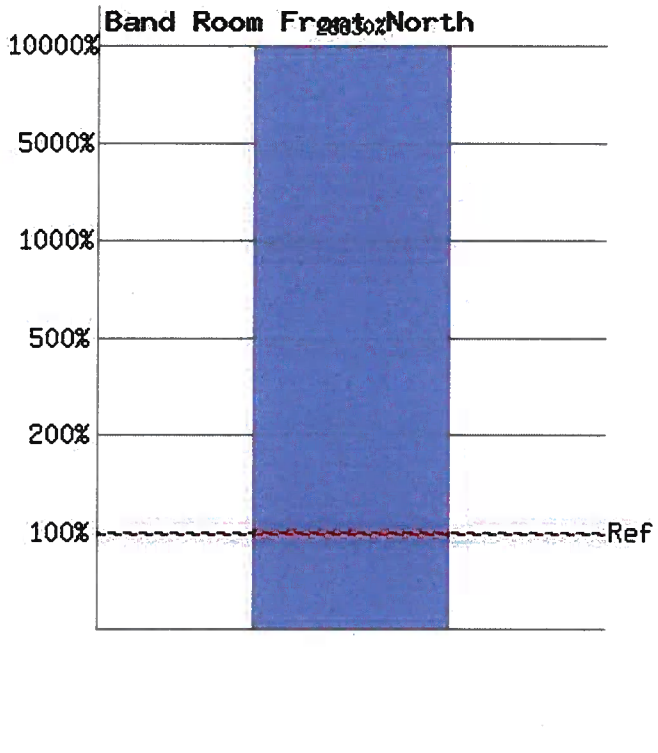
Indoor Samples Compared to Outdoor Reference





Legend (100% = Outdoor Reference)
Aspergillus|Penicillium

OUTSIDE 40.4° CORRIDOR 54.5° BAND 61.1°
OUTSIDE 25.7 % CORRIDOR 44.3% BAND 29.2 %

HAYES MICROBIAL CONSULTING

Chain of Custody

3005 East Boundary Terrace / Suite F
Midlothian, VA 23112
Ph. 804.562.3435 Fax. 804-447-5562

HMC Report # 103943

ALIS Environmental, Inc. 1027 Koontz Haven Rd Pinnacle, NC 27043	Job Number: 201-1901-01 Job Name: Eastern Alamance High School 4040 Mebane Rogers Road Mebane, NC	Date Collected: 1/26/2019 Collected by: J.McManus / D. McManus Email: jmcmanus@alisenvironmental.com
Ph.: 336.575.2343 Fax:		

AD

Sample #	Sample Name	Analysis Type	Volume	Turn Around Time	Start / Stop Time
2760811	N CORRIDOR % STAGE STORAGE	S	150.2 LTRS	4 HRS	10:14 / 10:24
2453763	N CORRIDOR % BAND RM	S	150.2		10:14 / 10:24
2453761	Band room rear - South	S	150.2		10:23 / 10:33
2760764	Band room front - North	S	150.2		10:23 / 10:33
2760767	EAST CORRIDOR % BAND ROOM ENTRANCE	S	150.2		10:34 / 10:44
2760808	EAST CORRIDOR % BAND ROOM ENTRANCE & ADDITION	S	150.2		10:34 / 10:44
2127235	OUTSIDE % FEMALE LOCKER ROOM	S	150.2		10:40 / 10:50
[illegible]	OUTSIDE N. Side of V bldg	S	150.2		10:56 / 11:06
0778011	BLANK				

Analysis Type		Description	Turn Around Time	Acceptable Samples Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 hours	Spore Trap cassettes, Impact slides
	S+	I & E of Fungal Spores + total dander, fiber and pollen count	24 hours	Spore Trap cassettes, Impact slides
Direct ID	D	ID and Semi-quantitative enumeration of spores and mycelium	24 hours	Tape, Bio-tape, swab, bulk, agar plate for ID only
	D+	ID and Enumeration with spore count	24 hours	Tape, Bio-tape, swab, bulk, agar plate for ID only
Culture	C1	Identification & Enumeration of Mold only	7 days	Anderson Air Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 days	Anderson Air Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 days	Anderson Air Plate, Swab, Bulk
Dust Mite	A1	Semi-quantitive analysis of dust mite allergen	24 hours	Bulk Dust

Notes:

Relinquished By: J.P McManus Date: 1-26-19 Rcvd. By: AN Date: 1/30/19 Time: