

Invoice VC24-06 Vance Consulting Services

May 6, 2024

Attention: Ms. Catherine Donaldson Daniel Ravenel Sotheby's International Realty Bluffton, South Carolina 29910

Baseline IAQ Mold Assessment Report

34 Thomas Heyward Residence Bluffton, SC VC24-06

Field Services	\$150.00
Air Surface Sampling Fee	\$420.00
Reporting Services	\$250.00
TOTAL AMOUNT DUE	\$820 .0 0

Please make payment by **Zelle** Barry J Vance, 843-505-0416

> 8 Buckingham Plantation Drive Bluffton, SC 29910 Office: (843) 505-0416



Vance Consulting, LLC.

8 Buckingham Plantation Drive Bluffton, South Carolina 29910 Mobile: 843-505-0416 Email: bvance.sacs23@gmail.com

May 6, 2024

Attention: Ms. Catherine Donaldson Daniel Ravenel Sotheby's International Realty Bluffton, South Carolina 29910

Subject: Baseline IAQ Mold Assessment Report Residence at 34 Thomas Heyward Bluffton, South Carolina 29910 VC24-06

Vance Consulting Services, LLC is please to present this Baseline IAQ Mold Assessment Report for the above-referenced project.

<u>Purpose</u>

At the request of Ms. Donaldson, we were to document the current conditions and obtain indoor air quality samples from randomly selected interior areas to determine the current airborne fungal spore concentrations. In addition, we were to obtain surface samples from randomly selected areas that contained visible evidence of fungal colonization to determine the absence/presence of fungal growth. Based on our laboratory results, we were to offer our professional opinion whether an "abnormal or impaired" airborne fungal spore and mold condition exists within the indoor environment.

Report Qualifications

This report represents the condition of the property at the time the work was performed and may not represent the condition of the property at a later date. It should be noted that no building envelope evaluation, structural assessments, invasive inspections, or other types of inspections/sampling was performed. Our work was not intended to perform a comprehensive study to locate interior or exterior physical damage or defects. Also, it should be noted that microbial/biological growth, humidity conditions, and moisture will vary within the home due to HVAC cooling or heating operations, building conditions, and changes to the outdoor environmental conditions. **We are not liable** for failure to discover any hidden mold conditions related to this sampling event.

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The following paragraphs summarize our work, findings, results, and recommendations.

Summary of Findings

Mr. Barry J Vance, Certified Indoor Air Quality Professional (CIAQP), License # 595 (expires December 31, 2023) visited the subject property on May 2, 2024 to document the current conditions and perform the require IAQ and mold sampling. At the time of our visit, Ms. Donaldson and the current homeowner granted us access to the home and showed us the interior areas.

<u>Visual Inspection</u>: Our observations of the interior building components (i.e. walls and ceilings) revealed evidence of water damage, water staining and heavy fungal growth throughout the interior. Water damage and fungal growth was most present on the interior ceilings, which would suggest the exterior roof assembly has been severely compromised, see photographs in **Appendix A**.

Occupancy/Building Hazard: Due to the extensive water damage materials and presence of heavy fungal growth, an **unhealthy indoor environment** is present. In our professional opinion, it is possible that allergenic symptoms, inhalation issues, and dermal exposure, could affect or impair the human health of the <u>individuals</u> who occupy the home.

<u>Surface Sampling</u>: From review of our laboratory results, evidence of Chaetomium and Stachybotrys water damage mold spores, growth, and hyphal fragments were detected. In addition, other mold species such as Aspergillus/Penicillium/Cladosporium were also detected. In our professional opinion, the reported fungal growth on interior surfaces is considered an "abnormal condition".

Occupancy/Building Hazard: Due to the extensive water damage materials and presence of heavy fungal growth, an **unhealthy indoor environment** is present. In our professional opinion, it is possible that allergenic symptoms, inhalation issues, and dermal exposure, could affect or impair the human health of the <u>individuals</u> who occupy the home.

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<u>Indoor Air Quality Criteria</u>: In general, there will always be airborne fungal spores present in "normal" indoor environments and currently, there are no state or federal "official" standards for airborne fungal spores, or other microorganisms (bacterialbioaerosols). However, some professional organizations have expressed an opinion that the following concentrations and criteria are **acceptable**;

<u>~Residential Structures</u> should have total indoor volumetric spore concentrations **below** 2,000 spores/m³. In addition, Aspergillus/Penicillium/Cladosporium concentrations should be **below** 700 spores/m³. All other opportunistic spores should be <u>equal to or</u> <u>less than</u> outdoors;

~No evidence of water damaged molds such as Chaetomium, Stachybotrys, Ulocladium, Fusarium, and Memnoniella should be present or detected.

From review of our indoor air quality results, the current indoor airborne fungal spore concentrations obtained from interior sampled areas are considered **high and acceptable**. The total indoor volumetric spore concentrations were **significantly above** 2,000 spores/m³ and the Aspergillus/Penicillium/Cladosporium fungal spore concentrations were **significantly above** 700 spores/m³. In addition, some other opportunistic spores **higher** inside than those found outdoors.

Occupancy/Building Hazard: Due to the extensive water damage materials, presence of heavy fungal growth, and an "impaired or abnormal" indoor airborne fungal spore concentration does exist within the indoor environment and the current indoor air quality is considered **unhealthy**. In our professional opinion, it is possible that allergenic symptoms, inhalation issues, and dermal exposure, could affect or impair the human health of the <u>individuals</u> who occupy the home.

Sampling Procedures

<u>Surface Sampling:</u> Three (3) surface samples were obtained from interior building components that showed evidence of fungal colonization. The surface samples were obtained by two different surface sampling methods: (1) Sterile Tape Lift Plastic Slide, and (2) A HealthLink two-tip rayon sterile swab.

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The surface samples were placed in the laboratory-prepared plastic containers, chilled, and shipped to Aerobiology Laboratory Associates, Inc. in Smyrna, Georgia. To document the required sample possession, a chain-of-custody record accompanied the samples to the laboratory.

<u>Indoor Air Quality Sampling</u>: The Aero-Spore Trap devise was used to collect the air samples. The Aero-Spore Trap is designed to collect/trap spores onto a grease-coated receiver (slide). The Aero-Spore Trap Device was set at normal breathing levels (approximately 5-6 feet above floor) and we proceeded to obtain **two (2)** indoor air samples from the following areas: **(1)** Living/Dining Room, and **(2)** Hallway between bathroom and back bedroom. In addition, one **(1)** outdoor air sample was collected approximately 75 feet away from the home to serve as a control/background sample.

In accordance with the Indoor Environmental Standard Organization (IESO), we used the recommended sampling time--Active conditions, evidence of fungal growth, dust and debris, sampling time of 5 minutes. Based on these conditions, we pre-calibrated the aero-trap sampler to an air-flow rate of 15 liters/minute and collected over duration of 5 minutes for a total of 75 liters of air. Once the sampling was completed, the air samples were placed in laboratory-prepared plastic containers and shipped to a thirdparty National Voluntary Laboratory Accreditation Program (NVLAP) laboratory (i.e. Aerobiology Laboratories) in Smyrna, Georgia. All fungal structures (including spores and hyphal fragments) are counted and identified.

Results

<u>Surface Sampling:</u> From review of our laboratory results, evidence of Chaetomium and Stachybotrys water damage mold spores, growth, and hyphal fragments were detected. In addition, other mold species such as Aspergillus/Penicillium/Cladosporium were also detected. Results are shown in Appendix B.

<u>Results-Indoor Air Quality:</u> From review of our laboratory results, the total indoor volumetric spore concentrations were **significantly above** 2,000 spores/m³ and the Aspergillus/Penicillium/Cladosporium fungal spore concentrations were **significantly above** 700 spores/m³.

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In addition, some other opportunistic spores **higher** inside than those found outdoors. A summary of the lab results are shown below and the laboratory data is presented in **Appendix A**.

Total Spore Concentrations	Acceptable Levels	Current Levels
	2000 spores/m ³	
Living/Dining Room		6,547 spores/m³
Hallway between bathroom and back be	edroom	36,693 spores/m ³
Average Total Indoor Spores		21,620 spores/m ³
Outside		7,200 spores/m ³
Aspergillus/Penicillium/Cladosporium		Current Levels
Aspergillus/Penicillium/Cladosporium	Acceptable Levels 700 spores/m ³	
	700 spores/m ³	<u>Current Levels</u> 3,000 spores/m ³ 30,613 spores/m ³
Living/Dining Room	700 spores/m ³	3,000 spores/m ³

Occupancy/Building Hazard: As building and indoor quality consultants, we cannot evaluate the individual's health exposures or risks associated with these different microorganisms, exposure, or their concentrations. However, we have listed the following associated mold hazards:

In general, **Chaetomium and Stachybotrys spores/growth** is usually found indoors when a prolonged wet, damp, or major water event has taken place. **Stachybotrys** is usually the cause of the **"Sick Building Syndrome"** and this mold is not known to compete well with other molds. Stachybotrys can become the dominant mold when there is a <u>high level and constant availability of water</u> over an extended period of time. In most cases, Stachybotrys can grow and colonize within 3-6 weeks under the right environment and the availability of a wet surface.

In addition, Aspergillus/Penicillium spores/growth were found inside the home at high concentrations. Chaetomium, Stachybotrys and some Aspergillus/Penicillium species can produce toxins called "mycotoxins".

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These mycotoxins are produced in the spores, hyphal fragments, and the main fruiting bodies and these spores can contaminate the interior air space through physical disturbance. In addition, "mycotoxins" can cause individuals to suffer general allergy related symptoms, as well as, cause prolong health related problems. Some health related symptoms are listed below:

- Respiratory problems, eye irritation, and throat irritations;
- Skin inflammation;
- Nausea & Headaches;
- > Cold or flu type symptoms or recurring colds;
- ➢ Fever and Vomiting.

Conclusions

In our professional opinion, we would <u>not advise individuals</u> to occupy or enter the home located at 34 Thomas Heyward as these current mold conditions and their concentrations are **unhealthy**. Any individual that occupy or enters the home are likely to be exposed to elevated fungal spores or other possible microorganisms that could impair human health or affect sensitive individuals. However, whether or not allergenic symptoms develop in individuals is dependent upon the nature of the fungus, the amount of exposure (i.e. inhalation, physically contacted (dermal exposure) or ingested), and the susceptibility of the exposed person. As indoor air quality consultants, we cannot evaluate the individual's health exposures or risks associated with these different microorganisms, exposure, or their concentrations.

Assessment Limitations and Closure

Vance Consulting Services, LLC has analyzed and evaluated the information collected during this sampling event using what we believe to be sound industrial hygiene sampling procedures and applicable knowledge of basic building science. Vance Consulting Services, LLC assumes no liability from other parties involved in losses sustained as a result of decisions made based on interpretations of this report. Reliance on this report is governed by our client (Ms. Donaldson) for whom our services were performed.

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If any information in this report is found to be incorrect or if new information or differing conditions are found in the future, we should be contacted so that we can assess the potential impact of that information. There are no warranties, or representations, either expressed or implied, regarding the comments made in this report.

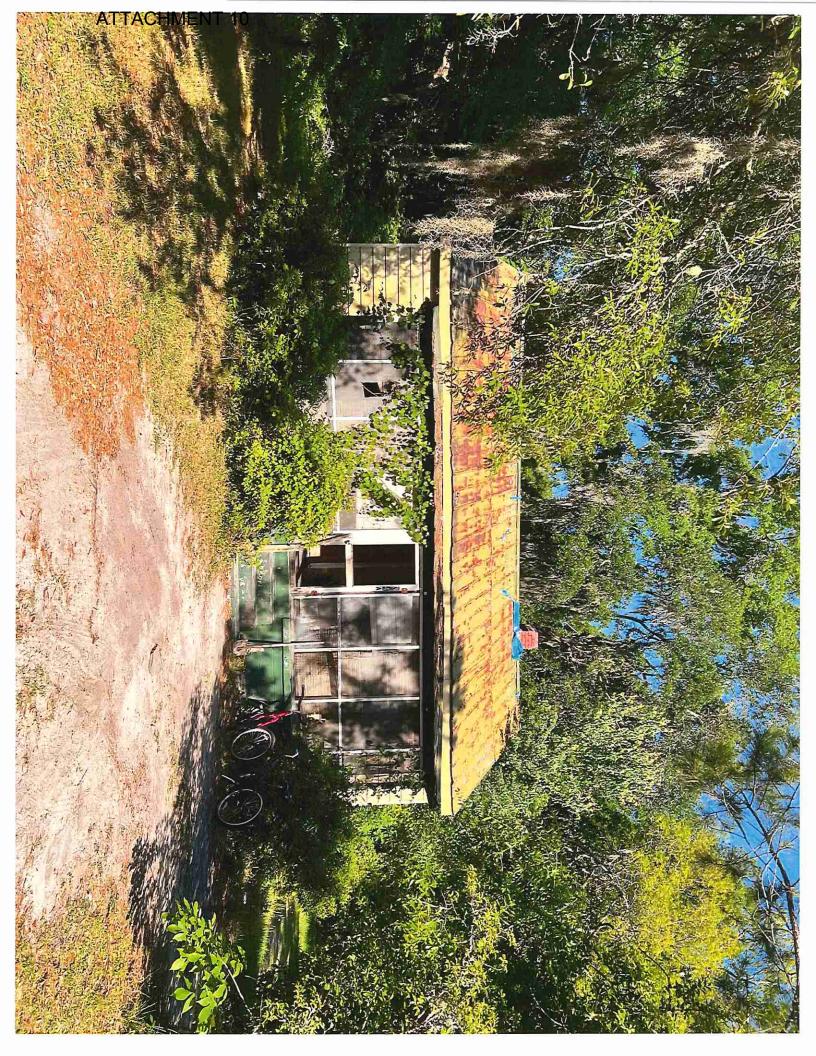
If you have any questions or comments concerning this report, please do not hesitate to contact Mr. Barry J Vance at 843-505-0416.

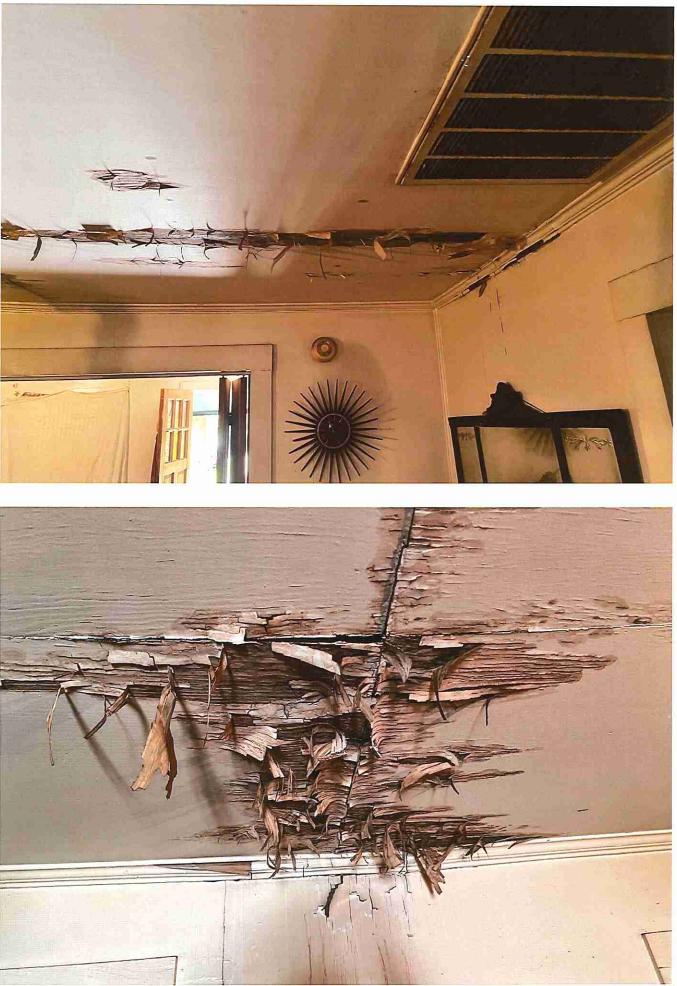
Sincerely,

Barry J. Vance

Barry J. Vance, IH Certified Indoor Air Quality Professional, CIAQP #595 **Vance Consulting Services, LLC** Managing Principal

APPENDIX A

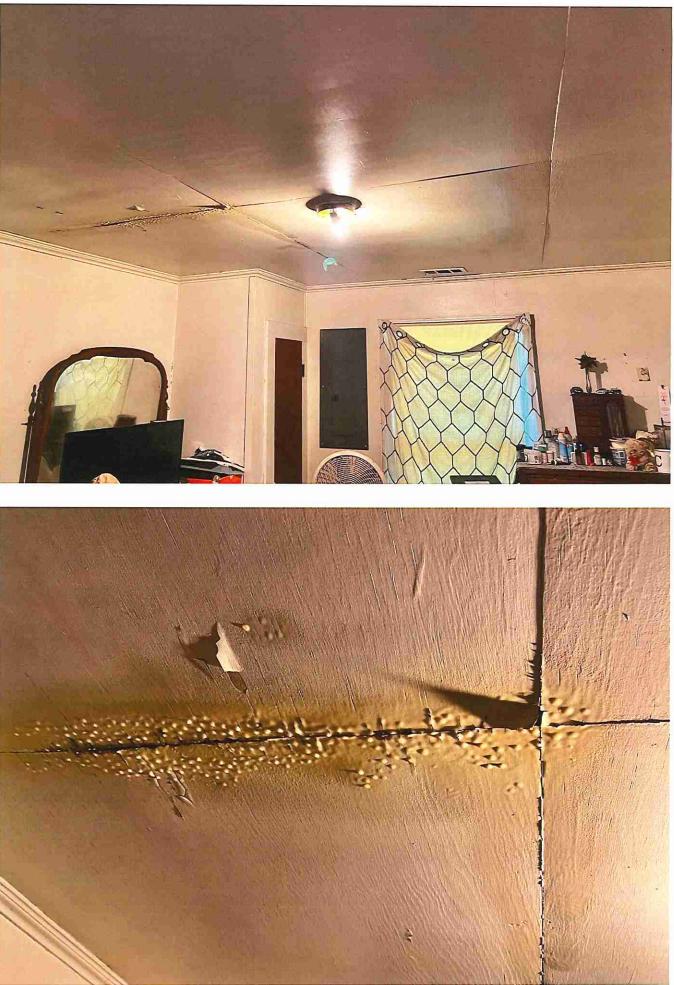


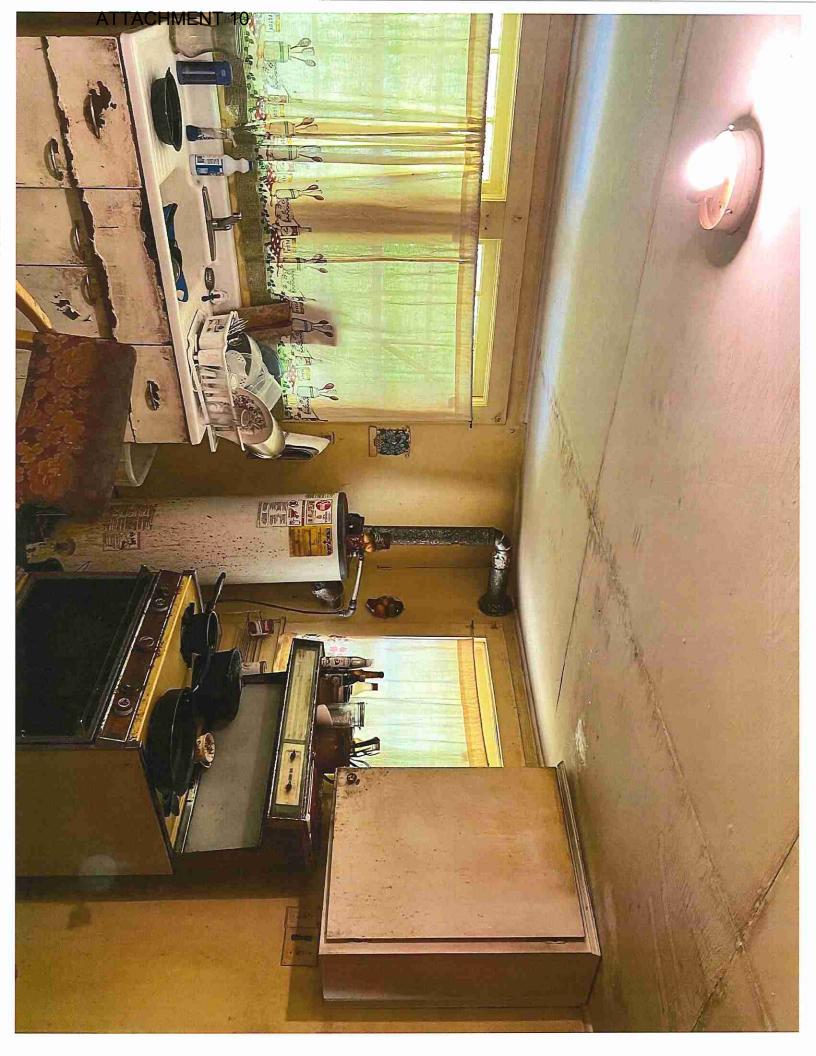


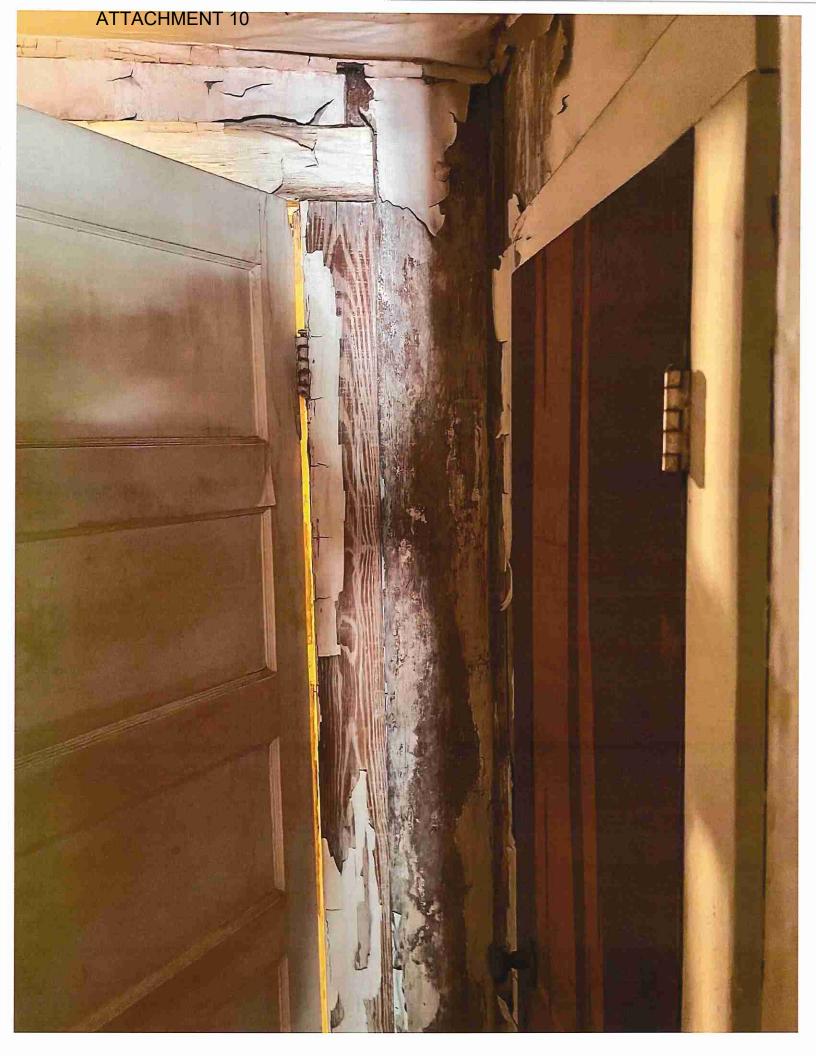


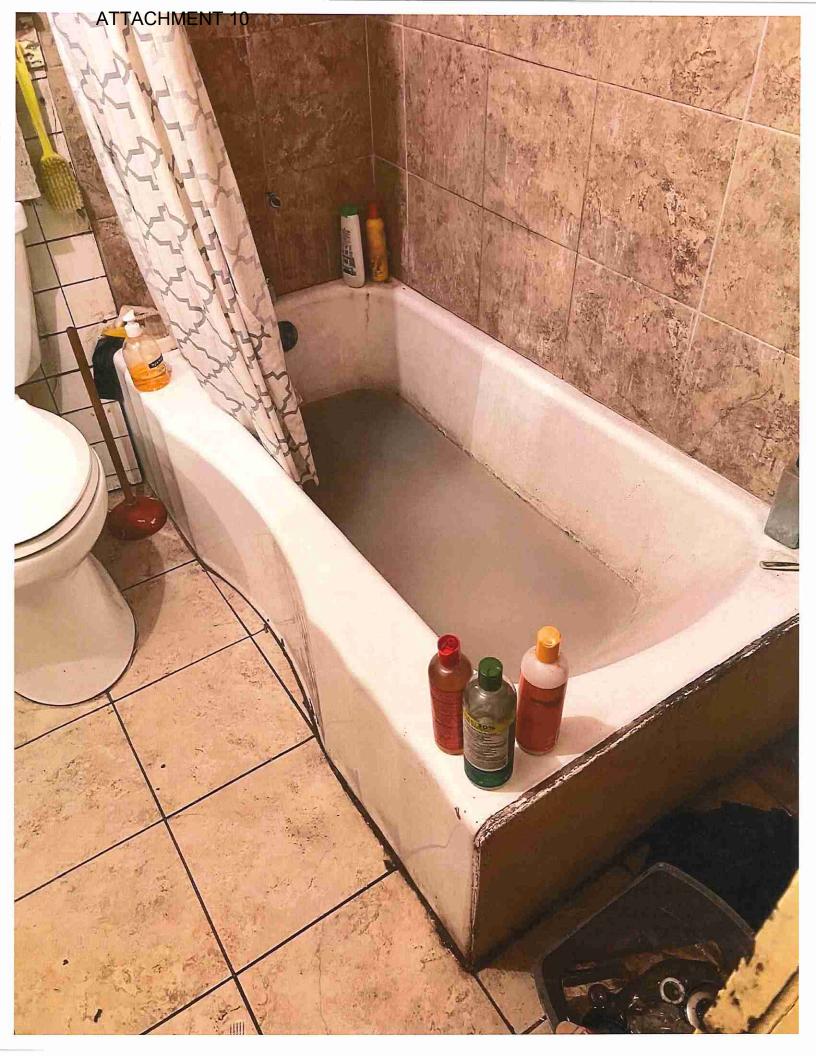












APPENDIX B



Certificate of Analysis AIHA LAP EMLAP# 163063

SACS, Inc. 8 Buckingham Plantation Drive Bluffton SC, 29910 Attn: Barry Vance Project: **34 Thomas Heyward** Condition of Sample(s) Upon Receipt: Acceptable

Date Collected:	5/2/2024
Date Received:	5/3/2024
Date Analyzed:	5/3/2024
Date Reported:	5/6/2024
Project ID:	24015472
	Page 1 of 3

1054 Spore Trap Analysis SOP 3.8: 24hr TA	٩T
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	1054 Sp							
Client Sample #	1	#	1			#	3	
Sample Location	Livir	g/Dining Room	n (middle of in	terior)		Outo	door	
Sample Volume (L)		7			75			
Lab Sample #		240154	72-001			240154	72-003	
Spore Identification	RawCt	spr/m ³	%Ttl	I/O	RawCt	spr/m ³	%Ttl	I/O
Alternaria	1	13	<1	1/2	2	27	<1	:=:
ascospores	5	67	1	1/5	25	333	5	-
basidiospores	86	1,147	18	1/2	49	2,613	36	-
Cercospora	1	13	<1	1/1	1	13	<1	-
Chaetomium	-	-	-	10 A	23	307	4	-
Cladosporium	124	1,653	25	1/2	229	3,053	42	-
Curvularia	8	107	2	8/1	1	13	<1	~
Drechslera/Bipolaris group	2	27	<1	2/1	1	13	<1	140
Epicoccum	-	-	-	-	2	27	<1	-
Gliomastix	1	13	<1	-			-	-
hyphal elements	157	2,093	32	8/1	19	253	4	-
Penicillium/Aspergillus group	101	1,347	21	3/1	32	427	6	-
Pithomyces	20	-	2		1	13	<1	-
Smuts, Periconia, Myxomycetes	3	40	<1	1/3	8	107	1	-
Torula	2	27	<1	-	-		-	-
		Debris F	Rating 4			Debris F	Rating 3	
Analytical Sensitivity	A	analytical Sensit		n ³	A	nalytical Sensit		1 ³
Comments		nt may be unde A single Penic						
Total *See Footnotes	491	6,547	~100%	1/1	393	7,200	~100%	-
Client Sample #		#2	-0.1			#.	3	
Sample Location	Hallway	between bathro	oom and back	bedroom		Outo		_
Sample Volume (L)		7:	=21			7.	~~~	
Lab Sample #		240154				240154	72-003	
Spore Identification	RawCt	spr/m ³	0/704				COLLECT OF ANDERS	
A 1/	Rawet	Spiriti	%Ttl	I/O	RawCt	spr/m ³	%Ttl	I/O
Alternaria	-	-	-	-	2	27	%Ttl <1	I/O -
ascospores			1 Martin N	illighter a	1 BORDA	200 CONCIDENT /	%Ttl	Ver/Belot
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ascospores basidiospores Cercospora Chaetomium Cladosporium Curvularia Drechslera/Bipolaris group Epicoccum hyphal elements Penicillium/Aspergillus group Pestalotiopsis Pithomyces	- 8 57 - 53 76 11 1 - 152 249 1 -	- 107 3,040 - 707 4,053 147 13 - 2,027 26,560 13 -	- <1 8 - 2 11 <1 - 6 72 <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - <1 - - <1 - - - <1 - - - - - - - - - - - - -	- 1/3 1/1 - 2/1 1/1 1/1 1/1 1/1 - 8/1 62/1 - -	2 25 49 1 23 229 1 1 1 2 19 32 - 1	27 333 2,613 13 307 3,053 13 13 13 27 253 427 - 13	%TU <1	
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ATTACHMENT 10 AERObiology Laboratory ASSOCIATES, Laboratory APace*Laboratory

Certificate of Analysis AIHA LAP EMLAP# 163063 2400 Herodian Way Suite 190 Smyrna , GA 30080 7709472828

SACS, Inc.	Date Collected:	5/2/2024
8 Buckingham Plantation Drive	Date Received:	5/3/2024
Bluffton SC, 29910	Date Analyzed:	5/3/2024
Attn: Barry Vance	Date Reported:	5/6/2024
Project: 34 Thomas Heyward	Project ID:	24015472
Condition of Sample(s) Upon Receipt: Acceptable		Page 2 of 3

Client Sample #: #1 Tape Sample Location: Bathroom Ceiling	Lab Sample #: 24015472-004
Test: 1051-24H Surface, Tape - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT	
Results:	Observation
Numerous Chaetomium spores seen	3-4 per field (minimum)
Numerous Chaetomium hyphae seen	3-4 per field (minimum)
Numerous Chaetomium perithecia seen	3-4 per field (minimum)
Numerous Cladosporium spores seen	3-4 per field (minimum)
Moderate Cladosporium hyphae seen	1 per 5 fields
Occasional Cladosporium conidiophores seen	1-5 per cover slip
Numerous Penicillium/Aspergillus group spores seen	3-4 per field (minimum)
Moderate Penicillium/Aspergillus group hyphae seen	1 per 5 fields
Debris Rating: 1	
Client Sample #: #2 SS	Lab Sample #: 24015472-005
Sample Location: Living Room above interior ceiling	
Test: 1051-24H Surface, Swab - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT	
Results:	Observation
Occasional Alternaria spores seen	1-5 per cover slip
Moderate Cladosporium spores seen	1 per 5 fields
Occasional Curvularia spores seen	1-5 per cover slip
Occasional Drechslera/Bipolaris group spores seen	1-5 per cover slip
Occasional Penicillium conidiophores seen	
	1-5 per cover slip
Numerous Penicillium/Aspergillus group spores seen	1-5 per cover slip 3-4 per field (minimum)
Numerous Penicillium/Aspergillus group spores seen Numerous Penicillium/Aspergillus group hyphae seen Occasional Stachybotrys spores seen	1-5 per cover slip

Debris Rating: 4

Client Sample #: #3 SS Sample Location: Back bedroom ceiling	Lab Sample #: 24015472-006
Test: 1051-24H Surface, Swab - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT	
Results:	Observation
Moderate Chaetomium spores seen	1 per 5 fields
Moderate Chaetomium hyphae seen	1 per 5 fields
Few Cladosporium spores seen	5 per cover slip
Few Penicillium/Aspergillus group spores seen	5 per cover slip

Debris Rating: 4



Certificate of Analysis AIHA LAP EMLAP# 163063

SACS, Inc.	Date Collected:	5/2/2024
8 Buckingham Plantation Drive	Date Received:	5/3/2024
Bluffton SC, 29910	Date Analyzed:	5/3/2024
Attn: Barry Vance	Date Reported:	5/6/2024
Project: 34 Thomas Heyward	Project ID:	24015472
Condition of Sample(s) Upon Receipt: Acceptable		Page 3 of 3

Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
1	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

Aerobiology Laboratory Associates, Inc. shall be responsible for all the information provided in the report, except when information is provided by the customer. Data provided by a customer can affect the validity of results and shall be clearly identified. Results apply to the samples as received. Aerobiology Laboratory Associates, Inc. is not responsible for the sampling activity, such as air and water volume, area, and mass unit. The report shall not be reproduced except in full without the approval of the laboratory to ensure that parts of a report are not taken out of context. Data interpretation of this report will be the client responsibility based on their sampling.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

5. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

6. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

*7. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

8. Due to rounding totals may not equal 100%.

9. Analytical Sensitivity for each spores is different for Non-viable sample when the spores are read at different percentage. Analytical Sensitivity is calculated as spr/m³ divided by raw count. spr/m³ = raw counts x (100/ % read) x (1000/Sample volume). If Analytical Sensitivity is 13 spr/m³ at 100% read, Analytical Sensitivity at 50% read would be 27 spr/m³, which is 2 times higher. Analytical Sensitivity provided on the report is based on an assumed 100% of the trace being analyzed.

*10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

*11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. The results in this report are related to this project and these samples only as received.

13. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should considered (3) three. For example, a sample with a result of 55,443 spr/m³ from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,000 spr/m ³.

14. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

*: Applicable to the reported data for culture testing

Syrace 5. Bluing

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1006		ure - Bacterial C			2056	Heterotrophic I	Plate Count	
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1008		ire - Bacterial Co			3002	ASBESTOS - I		
1033 BULK Culture - Fungal Count v						n		



The Association of Energy Engineers certifies that

Barry J. Vance

has completed the prescribed standards for certification, has demonstrated a high level of competence and ethical fitness, and is hereby granted the title of

Certified Indoor Air Quality Professional



Valid: January 1, 2024 - December 31, 2026 | Certification ID: 595

William Kent

Francine Sestin

Certification Director

Executive Director

