

DATE: February 19, 2019

TO: Tim Greenwell, Principal

SUBJECT: Liberty ES - IAQ - Initial Contact - Room 421

This morning, I inspected Room 421. Room smelled OK, but I found 6 Stained ceiling tiles.

I have requested the West Zone Facility Services to change the stained ceiling tiles. I have submitted a P.O. request to have Room 421 Air Tested. This will be when the Temp is above 60 degrees and it is not raining.

If I can be of any other assistance, please let me know.

Thanks, Paul

Paul Siddall
Maintenance Energy Auditor (IAQ)
Facility Services
Lewisville ISD
601 E. Purnell Street
Lewisville, TX 75057

Cell: 469-446-8882



DATE: March 22, 2019

TO: Tim Greenwell, Principal

SUBJECT:

On Tuesday 3/19, Ensolum LLC Air tested Room 421. It is typically assumed that indoor spore levels in an area with filtered or air-conditioned air, and activity levels associated with schools average below the outdoor levels. Data from the airborne fungi sampling indicated that the total indoor concentration of mold/fungi in Room 421, was **14.0%** of the outdoor levels. Utilizing this theory, the indoor concentrations are well within the acceptable guidelines for areas with filtered air or air conditioning. If you have any questions, please call me.

Thanks, Paul

Paul Siddall
Maintenance Energy Auditor (IAQ)
Facility Services
Lewisville ISD
340 Lake Haven Rd
Lewisville, TX 75057



March 27, 2019

Lewisville Independent School District 340 Lake Haven Lewisville, Texas 75057 Attn: Mr. Paul Siddall

Re:

Limited Mold Assessment Liberty Elementary School – Room 421 4600 Quail Run Flower Mound, Texas Ensolum Project No. 01A.1288.014

Ensolum, LLC (Ensolum) was retained to perform limited mold assessment services within Room 421 of Liberty Elementary School located at 4600 Quail Run in Flower mound, Texas. Enclosed is the report, including analytical data.

Ensolum appreciates this opportunity to be of service and looks forward to our continued work together. Please contact the undersigned with any questions or concerns you may have.

Sincerely,

Tod L. McLellan, MAC

Mold Assessment License: MAC1361

Exp. Date: 03/08/2020

Darren G. Bowden

Principal

MAC0321 EXP: 2/15/2020

1. A Forde

1.0 INTRODUCTION

Ensolum was retained by Mr. Paul Siddall, LISD, to complete a Limited Mold Assessment of Room 421 within Liberty Elementary School addressed at 4600 Quail Run, Flower Mound, Texas. The purpose of this investigation was to determine if elevated concentrations of airborne fungal spores and structures were present within the above-referenced office.

Mr. Tod McLellan completed the on-site investigation on March 19, 2019. The Limited Mold Assessment was performed in response to a complaint of possible indoor air quality issues within the classroom.

2.0 PROCEDURE

Ensolum visually inspected accessible areas of the office. No visible water damage or odors were observed in the following locations:

VISIBLE WATER DAMAGE									
LOCATION	DATE	EXPLAINATION							
Room 421	3-19-2019	N/A							

It is possible that water-damaged building materials are present within the adjacent areas but were not reasonably accessible due to access limitations.

Following the inspection of potential water-damaged building materials, Ensolum conducted a moisture investigation in the identified areas to determine if nonvisible water-damaged materials and other building materials within the investigation area were present. The moisture investigation was completed with a GE Protimeter BLD5364 moisture meter on accessible porous and semi-porous building materials in each area of concern. At the time of investigation, monitored building materials did not exhibit elevated moisture concentrations in comparison with similar and non-affected building materials in the structure and standard scientific guidelines.

Representative Relative Humidity readings were collected and recorded using a Vaisala HM40 Humidity and Temperature Meter. Measurements recorded during the investigation are listed in the chart below:

TEMPERATURE, RELATIVE HUMIDITY & SPECIFIC HUMIDITY									
LOCATION	DATE	Temperature: F	Relative Humidity	Specific Humidity					
Room 421	3-19-2019	64.9°	45.5%	41.60					
Outdoor	3-19-2019	69.2°	29.2%	30.96					

Area air samples were collected with Allergenco-D spore trap cassettes and analyzed for airborne fungal spores and structures. Samples were collected at a rate of 15 liters per minute. Indoor air sample(s) were collected for a ten (10) minute period of time (150 liters) at a height of approximately five (5) feet above finished floor (AFF). Outdoor air samples were collected for a ten (10) minutes period of time (150 liters) at a height of approximately five (5) feet above level ground. American Conference of Governmental Industrial Hygienists (ACGIH) guidelines were followed for the sample collection. Fungal air samples were collected in the following areas:

SPORE TRAP LOCATIONS								
SAMPLE NUMBER	LOCATION							
245230	Room 421							
245225	Outdoor							
245223	Outdoor							

3.0 RESULTS

Currently, there are no regulatory standards for airborne fungal contamination. Therefore, results of the fungal analysis are compared against scientific guidelines. Bioaerosol samples are evaluated by comparing the indoor samples against the outdoor sample. The same types of fungi should be found in both the indoor and outdoor samples. Should higher fungal concentrations occur in the indoor sample(s) or complaint areas, this generally indicates there is a source of fungal growth in the area. The types of fungi are also evaluated-the same types/genus of fungi should be present in both the indoor/complaint and outdoor/non-complaint samples.

The results of the fungal air samples collected were evaluated. Air testing performed using spore traps found that airborne mold spores in the room were considerably lower and were qualitatively similar to those measured outside of the building at the time the sampling was performed.

4.0 CONCLUSIONS

Based on ENSOLUM's limited assessment and the analytical results, it appears that the indoor air quality, as it relates to airborne fungi, was within recommended guidelines on this day.

APPENDIX A ANALYTICAL DATA



Summary TDLR License No.: LAB0117
AIHA EMPAT ID: 102577

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Ensolum, LLC Lab Job No.: 19F-03072

Project: Lewisville ISD, Liberty Elementary School Report Date: 03/20/2019 12:23 PM

Project #: 01A1288014 **Sample Date:** 03/19/2019

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Allergenco D

Test Method: Mold: ASTM D7391-17e1 - Standard Profile Page 1 of 2

On 3/19/2019, three (3) samples were submitted by Tod McLellan of Ensolum, LLC (located at 2351 W. Northwest Hwy Suite #1203, Dallas, TX 75220) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

Sample Number	Volume (liters)	Sample Description	Identification		ntration
245230	150	Room 421 * See Analytical Notes report for	Hyphal / Spore Fragments - Dematiaceous	43	21%
		further details	Cladosporium	43	21%
			Aspergillus / Penicillium	43	21%
			Myxomycete / Rust / Smut	21	10%
			Basidiospores	21	10%
			Ascospores	21	10%
			Hyphal / Spore Fragments - Hyaline	7	3%
			Pithomyces	7	3%
			Total:	206	100%
245225	150	Outdoor (South)	Basidiospores	441	30%
		* See Analytical Notes report for	Cladosporium	348	24%
		further details	Ascospores	263	18%
			Aspergillus / Penicillium	192	13%
			Hyphal / Spore Fragments - Dematiaceous	64	4%
			Torula	28	2%
			Myxomycete / Rust / Smut	28	2%
			Hyphal / Spore Fragments - Hyaline	21	1%
			Epicoccum	21	1%
			Alternaria	21	1%
			Coprinus group	14	<1%
			Agaricales group	7	<1%
			Peronospora	7	<1%
			Pithomyces	7	<1%
			Drechslera / Bipolaris group	7	<1%
			Total:	1469	100%



Summary

2051 Valley View Lane Farmers Branch, TX 75234 Phone: (972) 241-8460 TDLR License No.: LAB0117 AIHA EMPAT ID: 102577

Client: Ensolum, LLC Lab Job No.: 19F-03072

Project: Lewisville ISD, Liberty Elementary School Report Date: 03/20/2019 12:23 PM

Project #: 01A1288014 **Sample Date:** 03/19/2019

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Allergenco D

Test Method: Mold: ASTM D7391-17e1 - Standard Profile Page 2 of 2

On 3/19/2019, three (3) samples were submitted by Tod McLellan of Ensolum, LLC (located at 2351 W. Northwest Hwy Suite #1203, Dallas, TX 75220) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

Sample Number	Volume (liters)	Sample Description	Identification	Concentration spores/cubic meter		
245223	150	Outdoor (West)	Cladosporium	391	33%	
			Basidiospores	327	28%	
			Aspergillus / Penicillium	185	16%	
			Ascospores	171	15%	
			Myxomycete / Rust / Smut	43	4%	
			Hyphal / Spore Fragments - Hyaline	21	2%	
			Cercospora / Pseudocercospora	7	<1%	
			Coprinus group Fusarium		<1%	
				7	<1%	
			Epicoccum	7	<1%	
			Alternaria	7	<1%	
			Total:	1173	100%	

Results may not be reported except in full. Data contained in this test report relates only to the samples tested. This report does not express or imply interpretation of the results contained herein. Interpretation should be made by a qualified professional.

Moody Labs assumes no responsibility for the manner in which these samples were collected or handled prior to being received at this laboratory. Moody Labs assumes no responsibility for the qualifications of personnel performing sampling and/or interpretations of this data.

Analyst(s): Phoebe Stell

Lab Director : Heather Lopez Approved Signatory

Lab Director: Bruce Crabb Approved Signator

Thank you for choosing Moody Labs

Approved Signatory:

Approved Signatory:

Benne Vull

SMLMS v13.08



Data Detail

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

TDLR License No.: LAB0117 AIHA EMPAT ID: 102577

Client: Ensolum, LLC Lab Job No.: 19F-03072

Project : Lewisville ISD, Liberty Elementary School **Report Date :** 03/20/2019 12:23 PM

Project #: 01A1288014 **Sample Date:** 03/19/2019

Sample Type: Spore Trap, Non-cultured

Spore Trap Type: Allergenco D

Test Method: Mold: ASTM D7391-17e1 - Standard Profile

This report consists of three sections; a summary section, a data detail section, and an analytical notes section. Results may not be reported except in full.

Sample ID:	245230					245225				245223					
Location:	Room 421					Outdoor (South)				Outdoor (West)					
Media Expires On:	Dec 2019					Dec 2019						Dec 2	2019		
Notes Included:															
Volume:	150			150						15	50				
	raw ct.	RL	spores/m³	%total	spores/m³ SF	raw ct.	RL	spores/m³	%total	spores/m³ SF	raw ct.	RL	spores/m³	%total	spores/m³ SF
Agaricales group						1	7	7	<1%	7					
Alternaria						3	7	21	1%	20	1	7	7	<1%	7
Ascospores	3	7	21	10%	20	37	7	263	18%	260	24	7	171	15%	170
Aspergillus / Penicillium	6	7	43	21%	40	27	7	192	13%	190	26	7	185	16%	180
Basidiospores	3	7	21	10%	20	62	7	441	30%	440	46	7	327	28%	330
Cercospora / Pseudocercospora											1	7	7	<1%	7
Chaetomium															
Cladosporium	6	7	43	21%	40	49	7	348	24%	350	55	7	391	33%	390
Coprinus group						2	7	14	<1%	10	1	7	7	<1%	7
Drechslera / Bipolaris group						1	7	7	<1%	7					
Epicoccum						3	7	21	1%	20	1	7	7	<1%	7
Fusarium											1	7	7	<1%	7
Hyphal / Spore Fragments - Dematiace	6	7	43	21%	40	9	7	64	4%	64					
Hyphal / Spore Fragments - Hyaline	1	7	7	3%	7	3	7	21	1%	20	3	7	21	2%	20
Memnoniella															
Myxomycete / Rust / Smut	3	7	21	10%	20	4	7	28	2%	30	6	7	43	4%	40
Peronospora						1	7	7	<1%	7					
Pithomyces	1	7	7	3%	7	1	7	7	<1%	7					
Stachybotrys															
Torula						4	7	28	2%	30					
TOTALS	29		206	100%	210	207		1469	100%	1500	165		1173	100%	1200
Analyst			Phoeb	e Stell		Phoebe Stell				Phoebe Stell					
Analysis Date			3/20/	2019		3/20/2019				3/20/2019					
Debris Rating	5			5				4							
Debris Composition															
Fibers	3/5			1/5			1/5								
Inorganic/Other	4/5			5/5				4/5							
Insect Parts	2/5			2/5				1/5							
Pollen	2/5					4,	/5				3/	5			
Skin/Dander	5/5					1,	[′] 5		1		1/	' 5			

End of Data Detail section 19F-03072

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Analytical Notes

TDLR License No.: LAB0117

AIHA EMPAT ID: 102577

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Ensolum, LLC Lab Job No.: 19F-03072

Project: Lewisville ISD, Liberty Elementary School Report Date: 03/20/2019 12:23 PM

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Allergenco D

Test Method: Mold: ASTM D7391-17e1 - Standard Profile Page 1 of 2

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Samples Analyzed

Sample No 245230 : Room 421

Notes: 55% Occluded.

Sample No 245225 : Outdoor (South)

Notes: 60% Occluded.

Field Blanks

No discernable field blanks were submitted with this set of samples.

NOTE: All remaining samples suitable for analysis.

Methods

Method: ASTM D7391-17e1: Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy.

Samples are read at 100% unless noted. Partial readings may be employed when concentrations are elevated. Use final spore concentrations, not raw spore counts, for interpretation of results.

Calculation: Spores/cubic meter = (Raw spore count)*(RL)

Note: RL (Reporting Limit) is based upon 1 raw spore count.

Moody Labs recommends two significant figures for calculated values based on ASTM D7391-17e1.

This report must not be used by the customer to claim product certification, approval, or endorsement by AIHA, ISO, or any agency of the Federal Government.

Debris Rating Key

- 0 No linear trace detected
- 1 Trace particulate/debris
- 2 Light particulate/debris
- 3 Moderate particulate/debris.
- 4 Substantial particulate/debris
- 5 Extensive particulate/debris
- 6 Field blank
- 10 Hold Sample
- 11 Modified Analysis per Client Instructions

NOTE: Particulate/debris are defined as skin, fibers, pollen grains, insect parts, fungal and/or other non-fungal particles.

SMLMS v13.08



Analytical Notes

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Client: Ensolum, LLC Lab Job No.: 19F-03072

Project: Lewisville ISD, Liberty Elementary School Report Date: 03/20/2019 12:23 PM

Sample Type: Spore Trap, Non-cultured Spore Trap Type: Allergenco D

Test Method: Mold: ASTM D7391-17e1 - Standard Profile Page 2 of 2

This report consists of three sections; a summary section, a data detail section, and an analytical notes section. Results may not be reported except in full.



Lab ID # 102571







TDLR License No.: LAB0117

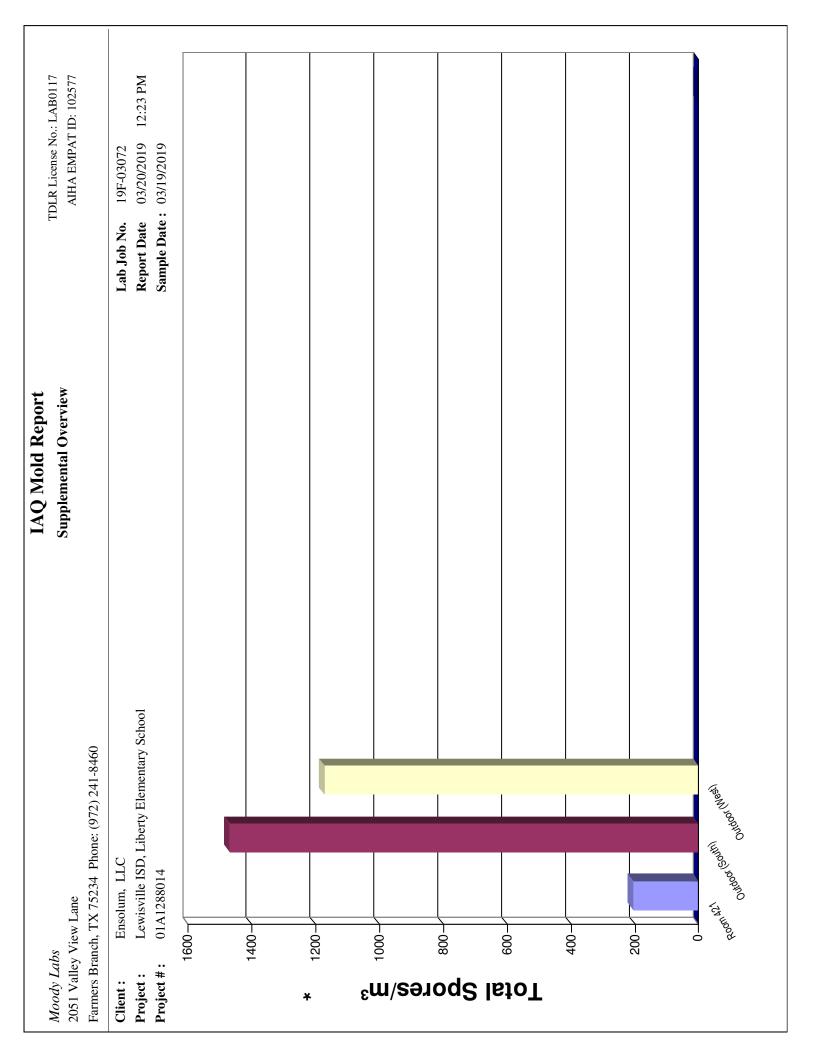
AIHA EMPAT ID: 102577





End of Analytical Notes section 19F-03072





TDLR License No.: LAB0117 AIHA EMPAT ID: 102577 12:23 PM 03/20/2019 **Sample Date:** 03/19/2019 19F-03072 Torula Stachybotrys Report Date Lab Job No. Average Reference 2 Pithomyces Peronospora Average Reference 2 = Outdoor (West)Myxomycete / Rust / Smut Memnoniella Supplemental Overview IAQ Mold Report Hyphal / Spore Fragments - Hyaline Hyphal / Spore Fragments - Dematiaceous Fusarium Average Reference 1 Epicoccum Drechslera / Bipolaris group Coprinus group Cladosporium Lewisville ISD, Liberty Elementary School Chaetomium Farmers Branch, TX 75234 Phone: (972) 241-8460 Cercospora / Pseudocercospora Sample Basidiospores Average Reference 1 = Outdoor (South)Aspergillus / Penicillium Ensolum, LLC 01A1288014 Ascospores 2051 Valley View Lane Alternaria Agaricales group Project #: Project: Client: 500 450 350 250 400 300 200 150 100 20 0

TDLR License No.: LAB0117 AIHA EMPAT ID: 102577 12:23 PM 03/20/2019 **Sample Date:** 03/19/2019 19F-03072 Torula Stachybotrys Lab Job No. Report Date ☐ Average Reference 2 Pithomyces Peronospora Average Reference 2 = Outdoor (West)Myxomycete / Rust / Smut Memnoniella Supplemental Overview IAQ Mold Report Hyphal / Spore Fragments - Hyaline Hyphal / Spore Fragments - Dematiaceous Outdoor (South) Fusarium Average Reference 1 Epicoccum Drechslera / Bipolaris group Coprinus group Cladosporium Lewisville ISD, Liberty Elementary School Chaetomium Farmers Branch, TX 75234 Phone: (972) 241-8460 Cercospora / Pseudocercospora Sample Basidiospores Average Reference 1 = Outdoor (South) Aspergillus / Penicillium Ensolum, LLC 01A1288014 Ascospores 2051 Valley View Lane Alternaria Agaricales group Project #: Project: Client: 500 450 400 350 300 250 200 150 100 20 0

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APPENDIX B

DEFINITIONS AND LIMITATIONS



Mold Services Definitions & Limitations

Ensolum performed services in accordance with generally accepted practices of the profession undertaken in similar services at the same time and in the same geographical area. No other warranties, express or implied, apply to the services hereunder or the final report.

Ensolum's services and any report have been prepared on behalf of and for the exclusive use of the Client solely for its use and reliance in assessing the presence of mold in the Investigation Areas of the site. The Client was the only party to which Ensolum explained the risks and limitations of the services and was solely involved in shaping the scope of services. Accordingly, reliance on this report by any other party may involve assumptions leading to an unintended interpretation of findings and opinions. With the consent of the Client, Ensolum may offer reliance to third parties or contract with other parties to develop findings and opinions related to such party's unique risk management concerns. Notwithstanding the foregoing, reliance by any and all third parties upon this deliverable, Ensolum's services or any subsequent report shall be limited in the aggregate to the fair market value of the services provided by Ensolum.

"Limited Mold Assessment". This deliverable uses the term "Limited Mold Assessment" to denote that Ensolum's mold assessment services are limited: (i) to certain portions of the building structure (e.g., the Investigation Areas), by non-destructive sampling methodologies, and/or by access limitations to building materials or components within the Investigation Area(s). In contrast to a "Limited Assessment" is a comprehensive assessment would involve destructive sampling methods with the assessment to be conducted throughout the entire building structure.

Time sensitive. One must keep in mind that mold assessments are essentially a "snap shot in time," and the results are only relevant at the time of site reconnaissance. Because mold, when biologically active, is a living organism, its presence is influenced and controlled by environmental conditions. Mold assessments, therefore, are "time sensitive" in that the presence and concentration of mold and similar organisms in building structures or in the air is directly influenced by environmental conditions (such as humidity, moisture, nutrients and substrates), whether natural or caused by man, which conditions may vary significantly over relatively short periods of time.

Methodologies. Currently, mold assessment methodologies and protocols in Texas are governed by persuasive guidelines (rather than promulgated federal/state or local regulations). Presently, there is no data that supports a threshold limit or dose-response relationship for exposure to mold aeroallergens, individual pathogens, opportunistic pathogens and/or mycotoxins. The Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH) and other non-governmental associations, have not yet established permissible exposure limits (PELs), recommended exposure limits (RELs), or other limit values for fungi. Because no limit values presently exist. Ensolum will not and cannot represent that the site contains no harmful microbes, mold, fungi, or their metabolites, or other latent conditions beyond those identified by the limited scope of this mold assessment.



Findings limited. Findings in an LMA are limited due to the nature of the information obtained such as a visual reconnaissance of readily accessible areas of building structures, interview information, anecdotal information, and limited sampling data derived from one or more specific sampling events. Ensolum cannot warrant the accuracy of prior or subsequent information/data, reports and services performed by other firms at the Site. Ensolum assumes no responsibility or liability for errors in information or data provided by or through the client or third party sources. Ensolum's services are not to be construed as legal or medical interpretation or advice.

Moisture Intrusion Limitation. Ensolum performs mold assessment services and is not a moisture intrusion, HVAC, plumbing or building envelope specialist. However, during the course of conducting its mold assessment services, Ensolum will report observed areas of apparent moisture intrusion. Ensolum does not and will not investigate the cause or causes of such observed moisture intrusion. In the event apparent moisture intrusion is observed, Ensolum will recommend that the client contact a specialist (i.e., plumbing contractor, building envelope specialist, HVAC contractor, water intrusion specialist, etc.) to assist the client in determining the specific cause or causes of the moisture intrusion and remedial options.

Certificate of Mold Damage Remediation (CMDR). For mold remediation projects (above certain size thresholds), applicable Texas law (i.e., Texas Occupation Code Section 1958.54 and T.A.C. Section 295.397 (the Texas Mold Assessment and Remediation Rules), requires that a "Certificate of Mold Damage Remediation" be issued by the Mold Remediation Contractor upon successful completion of the project. This certificate must be provided to property owners no later than the 10th day after the date on which the mold remediation is completed at a property. The Mold Remediation Certificate issued by the Mold Remediation Contractor must include a certification by the Mold Assessor that the mold remediation project has been successfully completed in accordance with the mold remediation protocol.

Be advised that Ensolum's issuance of a CMDR upon successful completion of a Mold Remediation project does not mean, warrant or otherwise guarantee that mold will not be subsequently found in any portion of an Investigation Area or the Site. In the event that Ensolum is engaged to render services in connection with a mold remediation project, ENSOLUM will require Client to provide to Ensolum written documentation that all sources of moisture which contributed to the presence of mold in the Investigation Area have been fully remediated and corrected prior to achieving clearance.