



# POST-REMEDIATION MOLD ASSESSMENT REPORT

Lewis Independent School District  
Huffines Middle School – Server Room  
1440 N. Valley Parkway  
Lewisville, Texas  
Project Number: 01A.1288.008



February 20, 2019

Lewisville ISD  
340 Lake Haven  
Lewisville, Texas 75057  
Attn: Mr. Paul Siddall

Re: **Post-Remediation Mold Assessment Report**  
Huffines Middle School – Server Room  
1440 N Valley Parkway  
Lewisville, Texas  
Project Number: 01A.1288.008

Ensolum, LLC was retained to complete a Post-Remediation Mold Assessment within Huffines Middle School located at 1440 N Valley Parkway, Lewisville, 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 me at 972.364.7643 or [dbowden@ensolum.com](mailto:dbowden@ensolum.com) with any questions or concerns you may have.

Sincerely,

A handwritten signature in black ink, appearing to read "Tod L. McLellan".

Tod L. McLellan, MAC  
Mold Assessment License: MAC1361  
Exp. Date: 03/08/2020

A handwritten signature in black ink, appearing to read "Darren Bowden".

Darren Bowden, MAC  
Principal  
MAC0321 EXP: 2/15/2020

## Table of Contents

1.0	EXECUTIVE SUMMARY .....	1
2.0	INTRODUCTION.....	2
3.0	PROCEDURE .....	3
4.0	RESULTS .....	5
5.0	CONCLUSIONS .....	6
6.0	RECOMMENDATIONS .....	7
	APPENDIX A: ANALYTICAL DATA .....	I
	APPENDIX B: PHOTOGRAPHIC DOCUMENTATION.....	II
	APPENDIX C: CERTIFICATED OF MOLD DAMAGE REMEDIATION.....	III
	APPENDIX D: LICENSES .....	IV
	APPENDIX E: MOLD REMEDIATION PROTOCOL.....	V
	APPENDIX F: DEFINITIONS AND LIMITATIONS.....	VI

## 1.0 EXECUTIVE SUMMARY

Ensolum, LLC. (Ensolum) was retained by Lewisville Independent School District (Client) to complete a Post-Remediation Investigation of the contained areas within the server room of Huffines Middle School located at 1440 N Valley Parkway in Lewisville, Texas. This assessment completed on February 18, 2019, included the collection of airborne fungal samples in the containment area(s).

This assessment indicated that remedial efforts completed within affected areas were successful. This was verified analytically, procedurally and visually. The remediation areas are approved for reconstruction.

## 2.0 INTRODUCTION

Ensolum was retained by LISD (Client) to complete a Post-Remediation Mold Assessment for the contained areas within the server room of Huffines Middle School. The purpose of this assessment was to determine if remedial efforts within the affected areas were successful analytically, procedurally and visually.

Mr. Tod McLellan (MAC1361) of Ensolum completed the on-site investigation on February 18, 2019. The Client provided access to the contained areas of the structure for the duration of the investigation.

After accessing containment area(s), Mr. McLellan proceeded to complete the Post-Remediation Mold Assessment.

### 3.0 PROCEDURE

Mr. McLellan visually inspected the exterior of the containment(s) and verified that they were intact, installed and maintained in accordance with the protocol. Interior investigation of the containment(s) verified that all remediation objectives were successfully completed.

Visible investigation of the containments verified that no visible fungal growth or signs of surface fungal contamination were present on the remediated building materials within the containment(s).

A moisture investigation was completed utilizing a GE Protimeter BLD5360 Surveymaster moisture meter within the containment(s). At the time of investigation, building materials in the containment(s) did not yield elevated moisture concentrations in comparison with similar and non-affected building materials in the structure.

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
Inside Containment	02-18-2019	68.3°	26.1%	26.75
Outdoor	02-18-2019	45.0°	33.1%	14.56
Outdoor	02-18-2019	38.9°	42.5%	14.79

Area air samples were collected with Allergenco-D spore trap cassettes and analyzed for airborne fungal spores and structures. The spore traps were affixed to a calibrated Buck Bioair™ bioaerosol sampling pump. Samples were collected at a rate of 15 liters per minute. Indoor air sample(s) were collected for a five (5) minute period of time (75 liters) at a height of approximately five (5) feet above finished floor (AFF). Outdoor air samples were collected for a five (5) minutes period of time (75 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 on the following page:

SPORE TRAP LOCATIONS	
SAMPLE NUMBER	LOCATION
245316 (ST – 1)	Inside Containment
245294 (ST – 2)	Outside Building
245309 (ST – 3)	Outside Building

A clean pair of nitrile gloves was worn during the collection of each surface fungal sample. Following collection, each sample was labeled with a unique sample number and location and secured for shipment to the laboratory. The sample information was recorded onto the laboratory chain of custody form. The samples were hand-delivered, following proper chain of custody procedures, to Moody Labs in Farmers Branch, Texas. Moody Labs is accredited by the American Industrial Hygiene Association's EMPAT program for microbiological analysis and by the State of Texas Department of Licensing and Regulation.

## 4.0 RESULTS

Currently, there are no regulatory standards for airborne fungal contamination. Therefore, the results of the fungal analysis are compared against scientific guidelines. Bioaerosol samples are evaluated by comparing the indoor samples against the outdoor sample; and by comparing sample results from complaint areas against non-complaint areas. 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.

Based on the results of the fungal air samples collected the sample collected inside the containment did not yield elevated concentrations of airborne fungal spores and structures in comparison with the outdoor samples.

## 5.0 CONCLUSIONS

- Based on the visual assessment, the contained areas are free of visible mold and wood rot.
- The project was completed in compliance with the remediation protocol and work plan.
- Visual and procedural investigation and clearance sampling results of the contained areas verified that remedial objectives were successfully completed.
- Moisture investigation of the previously saturated building materials in the containments verified that moisture concentrations were not elevated in comparison with similar and non-affected building materials in the structure.
- The active sources of water intrusion which created conditions favorable to fungal growth were reportedly repaired prior to remediation and post-remediation fungal investigations.

## 6.0 RECOMMENDATIONS

- The work areas are approved for reconstruction.

## APPENDIX A

### ANALYTICAL DATA



# IAQ Mold Report

## 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-01854

**Project :** Huffines Middle School

**Report Date :** 02/18/2019 12:33 PM

**Project # :** 01A1288008

**Sample Date:** 02/18/2019

**Sample Type:** Spore Trap, Non-cultured

**Spore Trap Type:** Allergenco D

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

Page 1 of 2

On 2/18/2019, 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
245316	75	Server Room	Epicoccum Aspergillus / Penicillium Alternaria  Total:	93 44% 93 44% 27 13%  213 100%
245294	75	Outdoor East	Cladosporium Aspergillus / Penicillium Basidiospores Myxomycete / Rust / Smut Hyphal / Spore Fragments - Dematiaceous Hyphal / Spore Fragments - Hyaline Coprinus group Epicoccum  Total:	467 52% 253 28% 80 9% 53 6% 13 1% 13 1% 13 1% 13 1%  905 100%
245309	75	Outdoor North	Aspergillus / Penicillium Basidiospores Cladosporium Hyphal / Spore Fragments - Dematiaceous Ascospores Myxomycete / Rust / Smut Non-specified Fungal Spore(s) Cercospora Fusarium  Total:	307 34% 240 27% 187 21% 53 6% 40 4% 27 3% 13 1% 13 1% 13 1%  893 100%



## IAQ Mold Report

### Summary

TDLR License No.: LAB0117

AIHA EMPAT ID: 102577

2051 Valley View Lane

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

**Client :** Ensolum, LLC**Project :** Huffines Middle School**Project # :** 01A1288008**Sample Type:** Spore Trap, Non-cultured**Test Method:** Mold: ASTM D7391-17e1 - Standard Profile**Lab Job No. :** 19F-01854**Report Date :** 02/18/2019 12:33 PM**Sample Date:** 02/18/2019**Spore Trap Type:** Allergenco D

Page 2 of 2

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Sample Number	Volume (liters)	Sample Description	Identification	Concentration spores/cubic meter

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):** Heather Lopez**Lab Director :** Heather Lopez**Lab Director :** Bruce Crabb**Approved Signatory :****Approved Signatory :**

Thank you for choosing Moody Labs

SMLMS v13.02



# IAQ Mold Report

## Data Detail

TDLR License No.: LAB0117

AIHA EMPAT ID: 102577

2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

**Client :** Ensolum, LLC**Project :** Huffines Middle School**Project # :** 01A1288008**Sample Type:** Spore Trap, Non-cultured**Test Method:** Mold: ASTM D7391-17e1 - Standard Profile**Lab Job No. :** 19F-01854**Report Date :** 02/18/2019 12:33 PM**Sample Date:** 02/18/2019**Spore Trap Type:** Allergenco D

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:	245316					245294					245309				
Location:	Server Room					Outdoor East					Outdoor North				
Media Expires On:	Dec 2019					Dec 2019					Dec 2019				
Notes Included:															
Volume:	75					75					75				
	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															
Alternaria	2	13	27	13%	30										
Ascospores											3	13	40	4%	40
Aspergillus / Penicillium	7	13	93	44%	90	19	13	253	28%	250	23	13	307	34%	310
Basidiospores						6	13	80	9%	80	18	13	240	27%	240
Cercospora											1	13	13	1%	10
Chaetomium															
Cladosporium						35	13	467	52%	470	14	13	187	21%	190
Coprinus group						1	13	13	1%	10					
Curvularia															
Diatrypaceae															
Drechslera / Bipolaris group															
Epicoccum	7	13	93	44%	90	1	13	13	1%	10					
Fusarium											1	13	13	1%	10
Ganoderma															
Hyphal / Spore Fragments - Dematiace						1	13	13	1%	10	4	13	53	6%	50
Hyphal / Spore Fragments - Hyaline						1	13	13	1%	10					
Memnoniella															
Myxomycete / Rust / Smut						4	13	53	6%	50	2	13	27	3%	30
Nigrospora															
Non-specified Fungal Spore(s)											1	13	13	1%	10
Oidium															
Paecilomyces															
Periconia															
Peronospora															
Pestalotia / Pestalotiopsis															
Pithomyces															
Pyricularia															
Scopulariopsis															
Spegazzinia															
Stachybotrys															
Tetraploa															
Torula															
Ulocladium / Stemphylium															
Zygophiala															
TOTALS	16		213	100%	210	68		905	100%	900	67		893	100%	890
Analyst	Heather Lopez					Heather Lopez					Heather Lopez				
Analysis Date	2/18/2019					2/18/2019					2/18/2019				



# IAQ Mold Report

## Data Detail

TDLR License No.: LAB0117

AIHA EMPAT ID: 102577

2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

**Client :** Ensolum, LLC

**Project :** Huffines Middle School

**Project # :** 01A1288008

**Sample Type:** Spore Trap, Non-cultured

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

**Lab Job No. :** 19F-01854

**Report Date :** 02/18/2019 12:33 PM

**Sample Date:** 02/18/2019

**Spore Trap Type:** Allergenco D

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.

Debris Rating	3	2	2
Debris Composition			
Fibers	2/5	1/5	1/5
Inorganic/Other	1/5	2/5	2/5
Insect Parts	0/5	0/5	0/5
Pollen	0/5	0/5	0/5
Skin/Dander	3/5	1/5	1/5

End of Data Detail section  
19F-01854

SMLMS v13.02



# IAQ Mold Report

## 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

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Page 1 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.

**NOTE: No abnormalities or exceptions noted during analysis. All samples suitable for analysis.**

**NOTE: No discernable field blanks were included with this sample set.**

## 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.



## IAQ Mold Report

### 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

**Project :** Huffines Middle School

**Project # :** 01A1288008

**Sample Type:** Spore Trap, Non-cultured

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**Lab Job No. :** 19F-01854

**Report Date :** 02/18/2019 12:33 PM

**Sample Date :** 02/18/2019

**Spore Trap Type:** Allergenco D

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.



**SBA WOSB**  
Woman Owned Small Business



End of Analytical Notes section

19F-01854

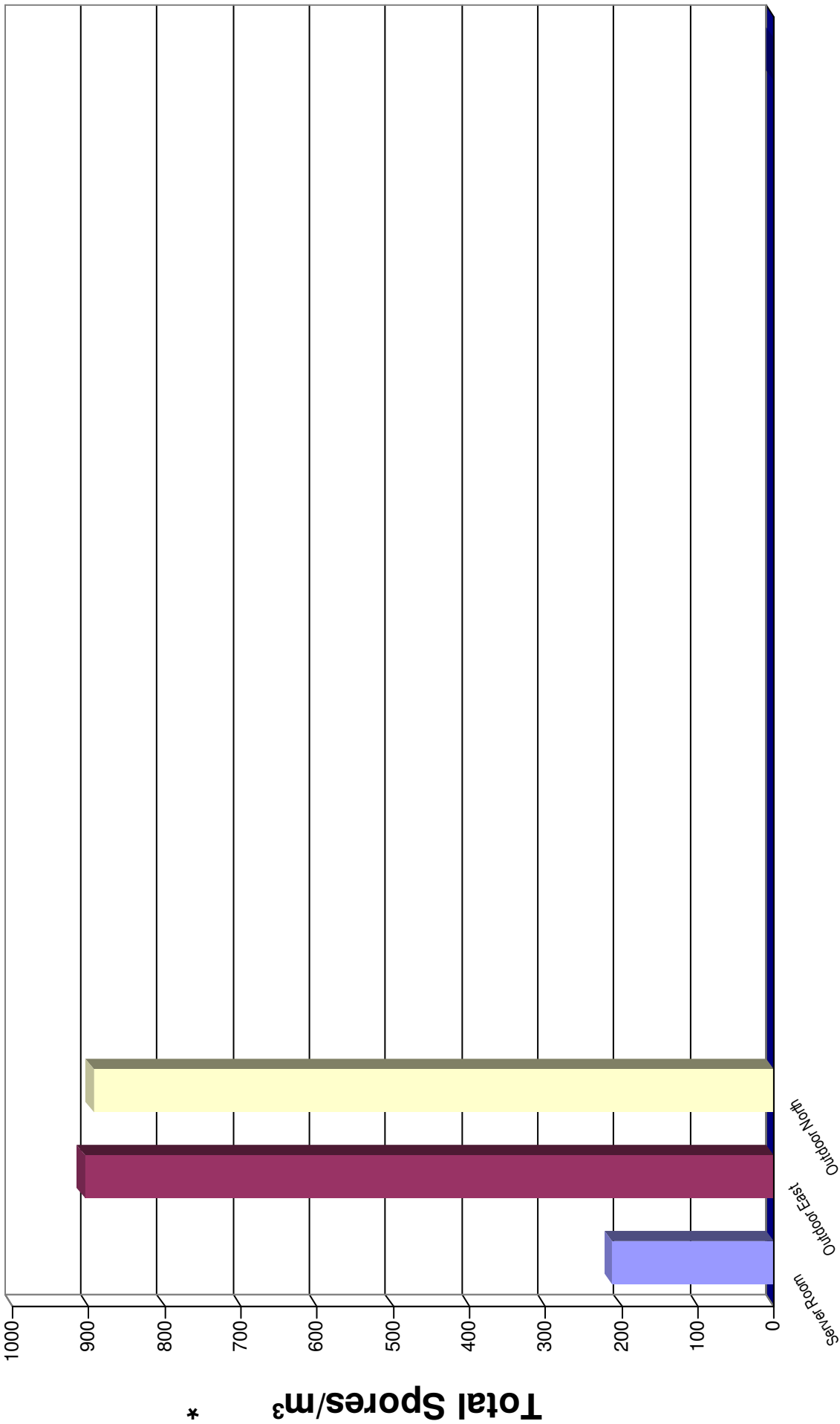
Moody Labs  
2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

IAQ Mold Report  
Supplemental Overview

TDLR License No.: LAB0117  
AIHA EMPAT ID: 102577

Client : Ensolum, LLC  
Project : Huffines Middle School  
Project # : 01A1288008

Lab Job No. 19F-01854  
Report Date 02/18/2019 12:33 PM  
Sample Date : 02/18/2019





2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

## IAQ Mold Report Supplemental Overview

TDLR License No.: LAB0117  
AIHA EMPAT ID: 102577

**Client :** Ensolum, LLC

**Project :** Huffines Middle School

**Project #:** 01A1288008

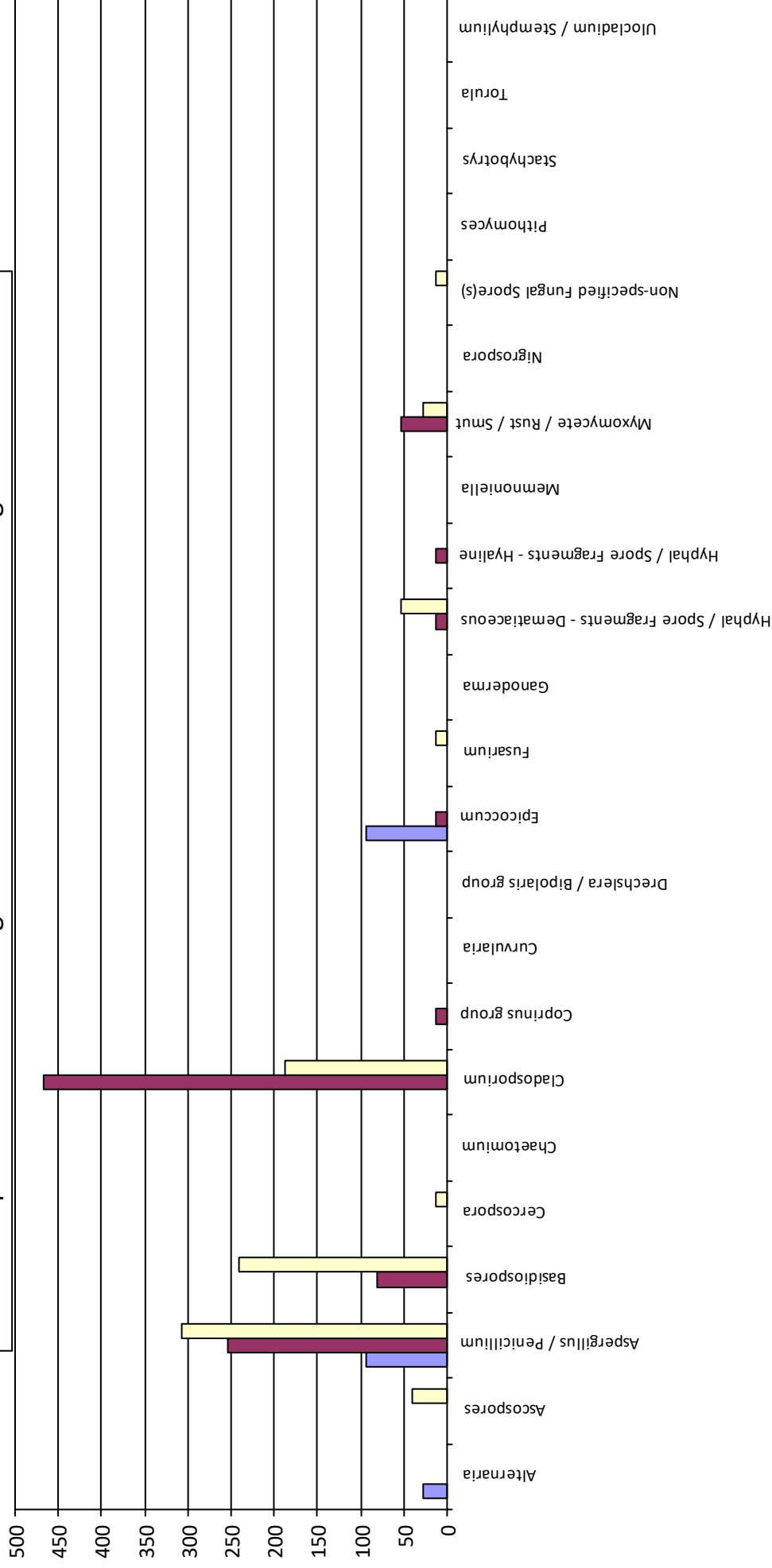
**Lab Job No.** 19F-01854

**Report Date** 02/18/2019 12:33 PM

**Sample Date :** 02/18/2019

Server Room

■ Sample ■ Average Reference 1 ■ Average Reference 2



Average Reference 1 = Outdoor East

Average Reference 2 = Outdoor North



2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

## IAQ Mold Report Supplemental Overview

TDLR License No.: LAB0117  
AIHA EMPAT ID: 102577

**Client :** Ensolum, LLC

**Project :** Huffines Middle School

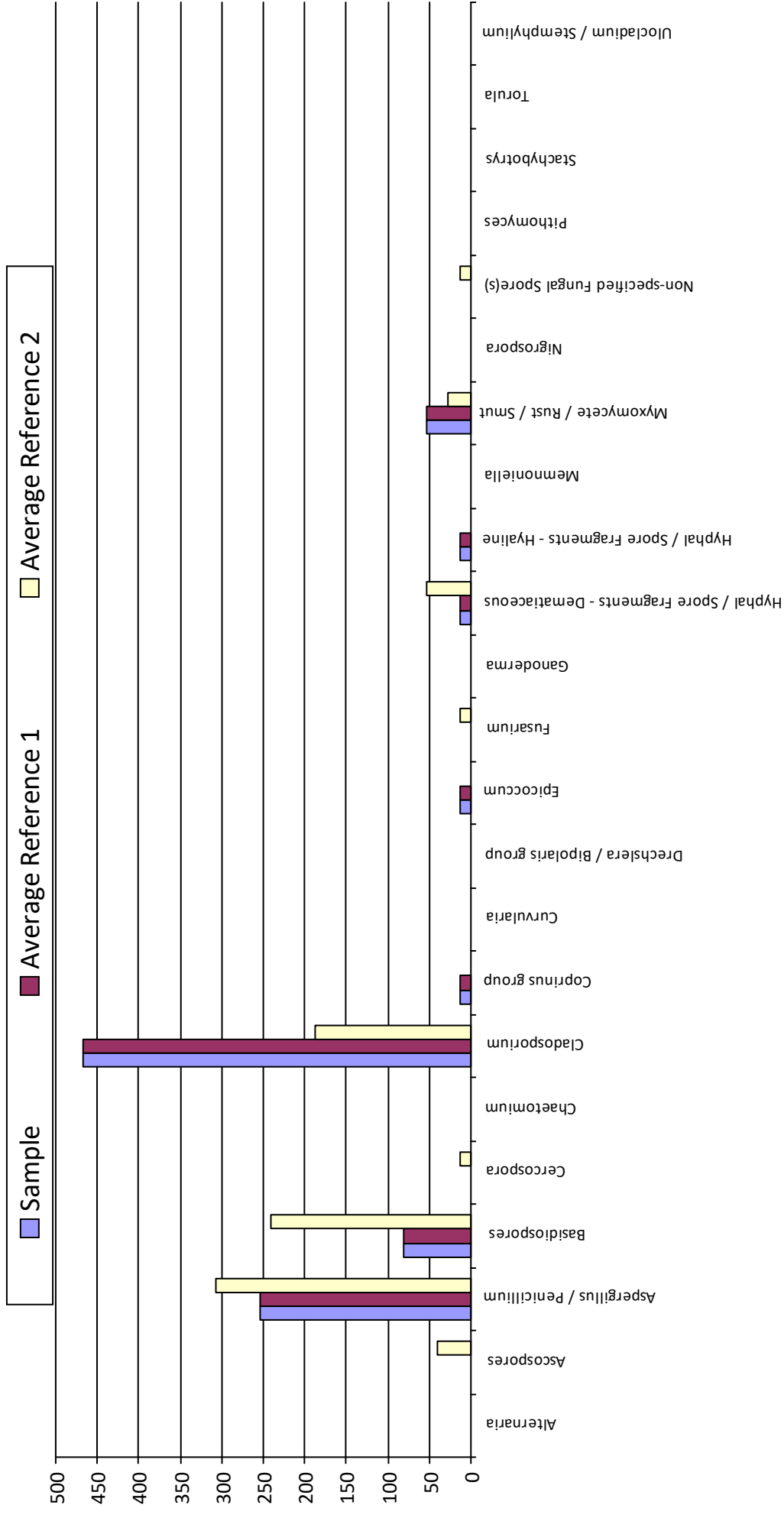
**Project # :** 01A1288008

**Lab Job No.** 19F-01854

**Report Date** 02/18/2019 12:33 PM

**Sample Date :** 02/18/2019

Outdoor East



Average Reference 1 = Outdoor East

Average Reference 2 = Outdoor North



2051 Valley View Lane  
Farmers Branch, TX 75234 Phone: (972) 241-8460

## IAQ Mold Report Supplemental Overview

TDLR License No.: LAB0117  
AIHA EMPAT ID: 102577

**Client :** Ensolum, LLC

**Project :** Huffines Middle School

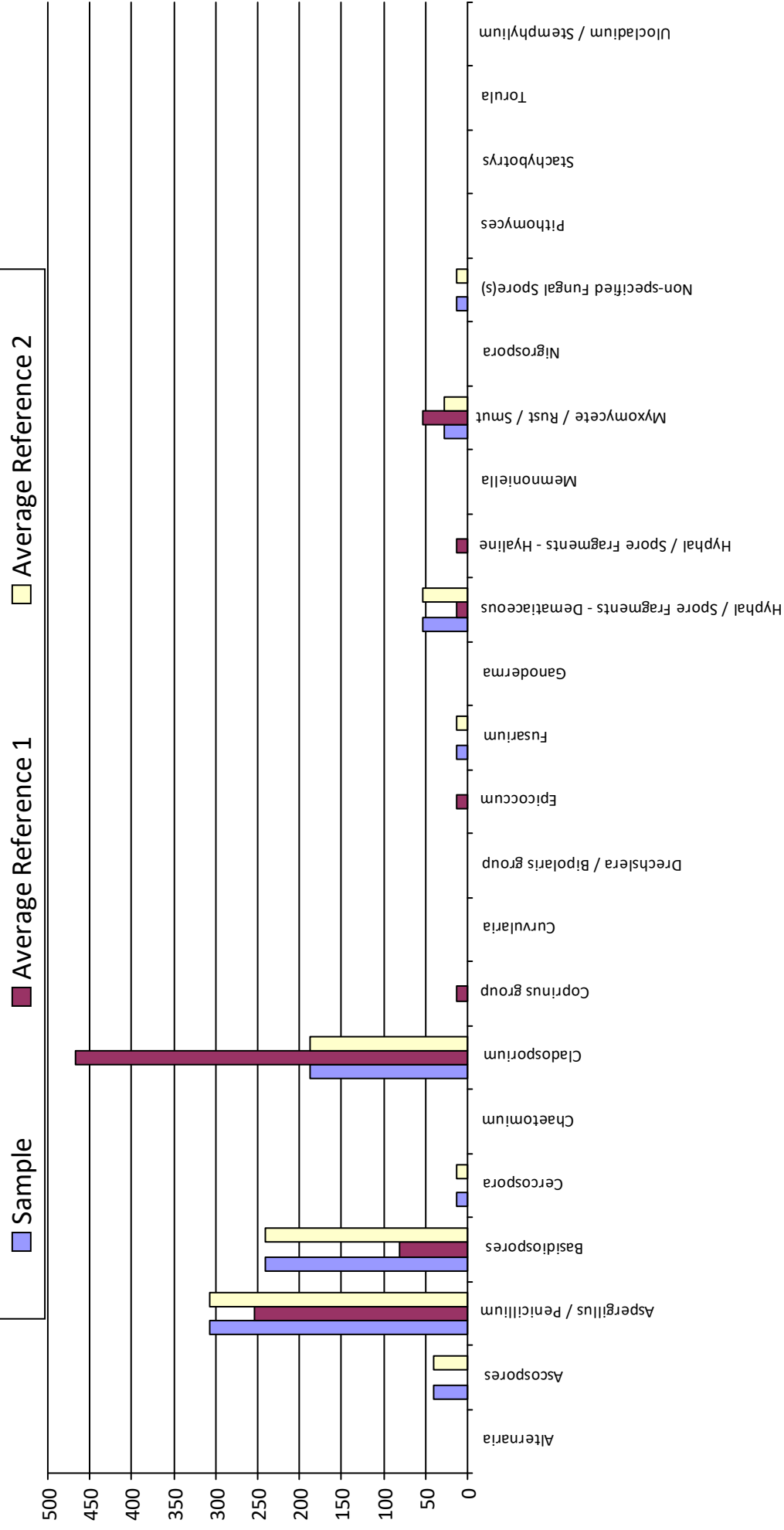
**Project # :** 01A1288008

**Lab Job No.** 19F-01854

**Report Date** 02/18/2019 12:33 PM

**Sample Date :** 02/18/2019

Outdoor North



Average Reference 1 = Outdoor East

Average Reference 2 = Outdoor North



## APPENDIX B

### PHOTOGRAPHIC DOCUMENTATION

## PROJECT PHOTOGRAPHS

Huffines Middle School  
Server Room  
Lewisville, Texas

### Photograph 1

View of mold affected materials.



### Photograph 2

View of remediated areas.



## APPENDIX C

### CERTIFICATE OF MOLD DAMAGE REMEDIATION

## CERTIFICATE OF MOLD DAMAGE REMEDIATION

Certificate Number 19-03-012 Date of Issuance February 19, 2019

Name Lewisville Independent School District-ATT: Mr. Paul Siddall

Mailing Address 340 Lake Haven

City Lewisville State Texas Zip 75057

### Property Description:

Name/Description LISD Huffines MS Library Server Room #1106

Number 1400 Street N. Valley Pkwy. Lot N/A Block Unknown

Addition or Tract N/A City Lewisville County Denton

### Mold Assessment Consultant License Holder Certification

- I hereby certify that based on visual, procedural and analytical evaluation, the mold contamination identified for this project has been remediated as outlined in the mold management plan or remediation protocol.
- I further certify with reasonable certainty that the underlying cause or causes of the mold that were identified for this project in the mold management plan or remediation protocol have been remediated. A copy of the written evaluation that forms the basis for my certification has been provided to the person named in this certificate.

  
Mold Assessment Consultant  
License Holder Signature

MAC0321 - 2-15-2020  
Department of State Health Services  
Mold Assessment Consultant  
License No. and Expiration Date

2-18-2019  
Date

### Mold Remediation Contractor License Holder Certification

- I hereby certify that I completed mold remediation on this project and will provide the mold remediation certificate to the property owner no later than the 10<sup>th</sup> day after the date of completion.

  
Mold Remediation Contractor  
License Holder Signature

MRC-1243 / 03-12-2020  
Department of State Health Services  
Mold Remediation Contractor  
License No. and Expiration Date

February 18, 2019  
Date of  
Completion

### Mold Assessment Consultant or Adjustor License Holder Certification

- I hereby certify that I have inspected the property described in this certificate and that based on my inspection I have determined that the property does not contain evidence of mold damage. A copy of the written evaluation that forms the basis for my certification has been provided to the person named in this certificate.

N/A  
Mold Assessment Consultant /  
Adjuster License Holder  
Signature

N/A  
Department of State Health Services  
Mold Assessment Consultant /  
Adjuster License  
No. and Expiration Date

N/A  
Date

**From:** [Siddall, Paul](#)  
**To:** [dbowden@ensolum.com](mailto:dbowden@ensolum.com)  
**Subject:** RE: Huffines Serve Room  
**Date:** Monday, February 25, 2019 3:29:33 PM  
**Attachments:** [image001.png](#)

---

Darren...  
The A/C unit in the Server has been adjusted to not create condensation.  
Thanks,  
Paul

---

**From:** dbowden@ensolum.com <dbowden@ensolum.com>  
**Sent:** Monday, February 25, 2019 2:39 PM  
**To:** Siddall, Paul <siddallp@lisd.net>  
**Subject:** Huffines Serve Room

Can you send me an email stating that the issue causing the mold has been fixed.

Darren G Bowden  
Ensolum, LLC | Environmental & Hydrogeologic Consultants  
2351 W Northwest Hwy., Ste. 1203 | Dallas, TX 75220  
Office (972) 364-7682 | Mobile (214) 364-8142  
[dbowden@ensolum.com](mailto:dbowden@ensolum.com)  
[www.ensolum.com](http://www.ensolum.com)



## APPENDIX D

### LICENSES

*Mike Arismendez*  
Chair

*Thomas F. Butler*  
Vice Chair



*Gerald R. Callas, M.D.*  
*Helen Callier*  
*Rick Figueroa*  
*Gary F. Wesson, D.D.S., M.S.*  
*Deborah A. Yurco*

*Mold Assessment Consultant*  
**TOD L MCLELLAN**

License Number: MAC1361

The person named above is licensed by the Texas Department of Licensing and Regulation.

**License Expires:** March 08, 2020

Brian E. Francis  
Executive Director

*Mike Arismendez*  
*Chair*

*Thomas F. Butler*  
*Vice Chair*



*Gerald R. Callas, M.D.*  
*Helen Callier*  
*Rick Figueroa*  
*Gary F. Wesson, D.D.S., M.S.*  
*Deborah A. Yurco*

*Mold Analysis Laboratory*  
**STEVE MOODY MICRO SERVICES LLC**

License Number: LAB0117

The entity named above is licensed by the Texas Department of Licensing and Regulation.

**License Expires:** March 01, 2020

Brian E. Francis  
Executive Director

## APPENDIX E

### MOLD REMEDIATION PROTOCOL



**MOLD REMEDIATION PROTOCOL**

**Huffines Middle School – Server Room  
1440 N Valley Parkway  
Lewisville, Texas**

March 12, 2019  
Ensolum Project No. 01A1288008

Prepared for:

**Lewisville Independent School District  
340 lake Haven  
Lewisville, Texas 75057  
Attn: Mr. Paul Siddell**

Prepared by:  
Ensolum, LLC  
2351 W. Northwest Hwy., Suite 1230  
Dallas, Texas 75220

---

Darren G. Bowden  
Mold Assessment Consultant  
Lic. No. MAC0321

## Table of Contents

<b>Material Description and Quantities</b>	<b>Section I</b>
<b>Work Practices</b>	<b>Section II</b>
<b>Removal</b>	<b>Section III</b>
<b>Disposal</b>	<b>Section IV</b>
<b>Clearance</b>	<b>Section V</b>
<b>Comments</b>	<b>Section VI</b>
<b>Notification</b>	<b>Section VII</b>
<b>Construction Notes</b>	<b>Section VIII</b>

## PROJECT/WORK IDENTIFICATION

General: Project name is Mold Remediation, Server Room, Huffines Middle School, Lewisville, Texas, dated March 12, 2019.

## I. MATERIAL DESCRIPTION AND QUANTITIES

Briefly and without force and effect upon the contract documents, the work of the Contract can be summarized as the removal of fungal growth and associated sheetrock in the following approximate quantities: \*\*

1. Fungal Growth associated with Sheetrock  
Server Room.....60 SF

## II. Work Practices

### A. Respiratory Protection (at a minimum):

During the removal of the fungal growth, the workers will be required to wear, at a minimum, half-face air purifying respirators. The workers will be fit tested in accordance with current OSHA guidelines.

### B. Protective Clothing:

During removal, workers will be required to wear disposable, full body coveralls, head covers, boots, goggles/eye protection and rubber gloves. Sleeves at wrists and cuffs at ankles shall be secure. Work clothes will be properly disposed of at the conclusion of work.

Authorized visitors, including the consultant's on-site representative, shall be provided with suitable protective clothing when they are required to enter the work area.

### C. Containment:

Materials affected by fungal growth shall be abated in a containment. The containment includes at a minimum: an enclosure consisting of one (1) layer of four (4) millimeter polyethylene sheeting on floors, walls and ceiling where applicable, in conjunction with a decontamination unit. Any non-movable objects that remain in the work area shall be sealed with two layers of 6-mil polyethylene sheeting.

Throughout the remediation activities, notice signs and barrier tape will be utilized to restrict unauthorized access to the work areas. The signs shall be at least eight (8) inches by ten (10) inches in size and shall bear the word, "NOTICE: Mold remediation project in progress" in black on a yellow background. The text of the signs must be legible from a distance ten (10) feet.

The containment will be placed under negative pressure during the project. In addition, air scrubber(s) shall be operated continuously after the remediation until the containment achieves clearance. Dehumidifiers will be utilized as needed to maintain the relative humidity below 60 percent.

No person shall remove or dismantle any walk-in containment structures or materials from a project site prior to receipt by the license mold remediation contractor or remediation company overseeing the project of a written notice from a licensed mold assessment consultant that the project has achieved clearance.

### III. REMOVAL

The Contractor will perform the removal and disposal in accordance with current local, state and federal regulations. The materials should be HEPA vacuumed and disinfected with Foster's 40/80, a hospital grade quaternary ammonium chloride disinfectant, or equivalent.

The fungal growth will be removed in conjunction with the sheetrock substrate. Any mold affected wood will be sanded.

All porous and non-porous surfaces within the work area and areas adjacent to the work area should be cleaned by simple wet wipe techniques and/or HEPA vacuum. Individuals with known allergies to fungal incitants should not be permitted to work on the project.

### IV. DISPOSAL

It is the Consultant's understanding that no special disposal requirements apply to mold waste materials and the waste can be disposed of as general construction waste. However, it is the responsibility of the Contractor to determine current waste handling, transportation, and disposal requirements as it pertains to current local, state and federal regulations. Waste will be containerized (e.g., bagged and goose-necked) inside containment and thoroughly cleaned before leaving the work area. The containers will be transported to the waste container without spillage.

### V. CLEARANCE

Ensolum will collect post-remediation fungal samples following remediation. Containment of the affected areas will be maintained during sample collection and until final determination is made. Fungal air samples collected from the containment will be analyzed and compared to a single, non-affected area of the structure and a representative outdoor sample. The following types of analysis may be conducted in the affected area to verify the effectiveness of the remediation process:

- Viable and Non-Viable Fungal Spores (Spore Trap Cassette)
- Viable and Non-Viable Fungal Spores (Direct Microscopic Examination – Biotape)

Area air and surface samples will be collected and analyzed for viable and non-viable fungal analysis. American Conference of Governmental Industrial Hygienists (ACGIH) guidelines will be followed for the sample collection and data interpretation. The sample(s) collected inside the containment must be qualitatively and quantitatively similar to the samples collected outside the building. In addition, Ensolum will use other indicators such as the presence of target molds including but not limited to *Stachybotrys*, *Chaetomium*, *Trichoderma*, *Fusarium*, *Aspergillus/Penicillium*, etc. when evaluating the post remediation clearance criteria. A clean pair of nitrile gloves will be worn for each sample collection.

In addition to the fungal sample collection, visual and procedural inspection will be used to determine if the remediation objectives have been completed. Confirmation of visual, procedural and analytical methods will be necessary prior to release of the containment to reconstruction.

Following the sample collection, each sample will be labeled with a unique sample number and location and will be secured for delivery to the laboratory. The sample information will be recorded onto the laboratory chain of custody form. The samples will be hand delivered, following proper chain of custody procedures, to Moody Labs. Moody Labs is accredited by the American Industrial Hygiene Association's EMPAT program for microbiological analysis and is certified by the State of Texas.

ENSOLUM is not a moisture intrusion assessment company. The client will retain responsibility for moisture intrusion remediation. The Client is encouraged to investigate the moisture intrusion and solicit a moisture intrusion remediation company to remediate the underlying cause of mold.

## VI. NOTIFICATION

The contractor is responsible for proper notification, if required, to all regulatory agencies having authority over proposed work including but not limited to city, county, state, and federal agencies. The TDSHS will be notified five (5) working days prior to the initiation of remediation activities on projects where more than twenty-five contiguous square feet of mold growth is scheduled for removal.

## VII. APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only and may not be fully conclusive. The Contractor shall be aware and compliant with all current regulations.

- A. Texas Department of State Health Services (TDSHS), Division of Occupational Health, Texas Mold Remediation Rules (TMARR), Texas Civil Statutes.
- B. National Institute for Occupational Safety and Health (NIOSH): "Respiratory Protection...A Guide for the Employee."
- C. American National Standards Institute (ANSI): Z86.1-1973...Commodity Specification
- D. Code of Federal Regulations (CFR):
  - 1. 29 CFR 1910.1001, Occupational Safety and Health Act (OSHA)
  - 2. 20 CFR 1910.20, Subpart C, General Safety and Health Provisions

## VIII. CONSTRUCTION NOTES

The Contractor will be responsible for routing water and electricity to the work areas. Water will be used only as needed to limit dust-related emissions and perform decontamination activities. No materials will be saturated with water during any part of this remediation project.

HVAC registers and ductwork present in the work areas are to be wiped and sealed by the Contractor prior to the initiation of remediation activities. The HVAC system is to be shutdown prior to and during the work.

The Contractor shall provide all items, articles, materials, operations or methods listed or mentioned including all labor, materials, equipment, applicable permits and notifications and all incidentals necessary and required for their use to complete the work specified.

Fire extinguishers shall be installed in the Equipment Room and Clean room or inside and outside of the containment if there is no decontamination unit specified.

The Contractor shall conduct a safety meeting for contractor's employees with emphasis on operation of fire extinguishers and emergency exits in case of fire.

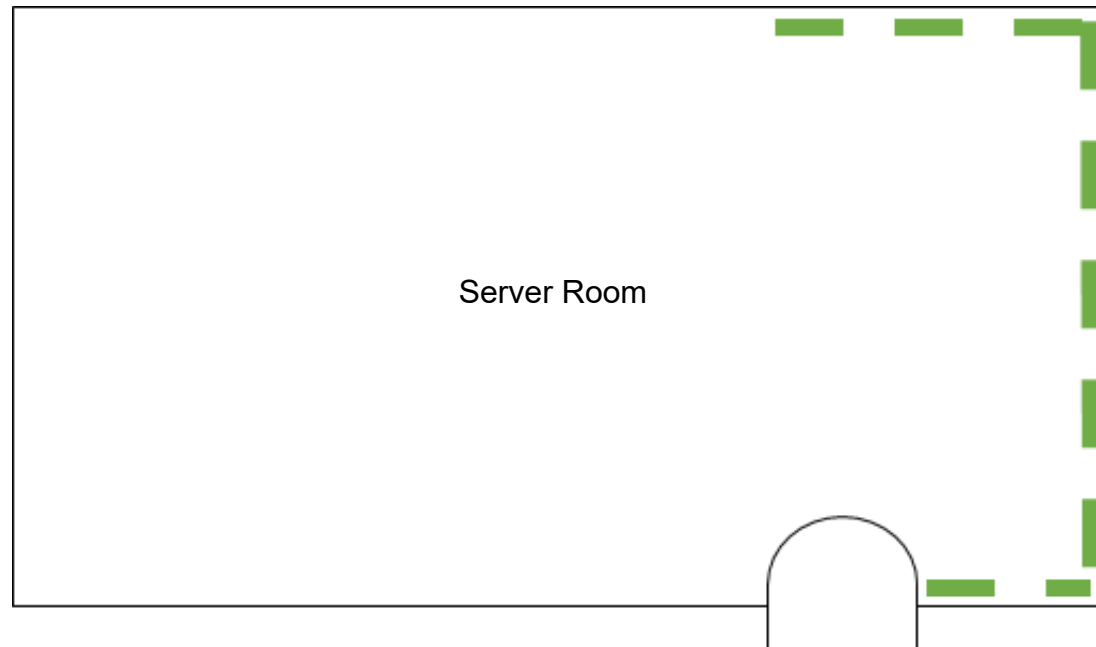
Contractor's employees shall not wear protective clothing and equipment in areas of the building outside the work area.

The Consultant will not be responsible for site safety, or the ways and means utilized by the Contractor.

Neither the Contractor nor the Consultant is responsible for identification or the elimination of moisture intrusion.

Ground-fault circuit interrupter (GFCI) units shall be installed on all electrical circuits used within the regulated areas(s).

The Owner or Owner's representative has the authority to stop the remediation work at any time he/she determines that conditions are not within the specified mold remediation protocol and applicable regulations. The work stoppage shall continue until conditions have been corrected and measures have been taken to the satisfaction of the owner. Standby time required to resolve violations shall be at the Contractor's expense.



LEGEND:

■ ■ ■ Areas with fungal growth

*Nathan Farnum*



Environmental & Hydrogeologic Consultants

Ensolum Project No.: 01A.1288.008

**SAMPLE LOCATION DIAGRAM**  
Huffines Middle School - Server Room  
1440 N. Valley Parkway  
Lewisville, TX

FIGURE

1

## APPENDIX F

### DEFINITIONS AND LIMITATIONS



# ENSOLUM

## 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 10<sup>th</sup> 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.