February 13, 2018

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

Attn: Mr. W. Robert Newberry, IV
E-mail: wnewber@clemson.edu

Re: Limited Mold and Allergen Investigation Report
Manning Hall Student Housing, Unit 10D4
Clemson, South Carolina 29631
Terracon Project No. 86127158 – Task 124

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) conducted a limited mold and allergen investigation in Unit 10D4 of Manning Hall at Clemson University in Clemson, South Carolina. Reportedly, residents of this dormitory room have reported respiratory irritation. This service was conducted in general accordance with our Master Service Agreement with Clemson University.

PROJECT DESCRIPTION

Scope of Services

At the request of Clemson University, Terracon representative Mr. Benjamin Hestir conducted a limited mold and allergen investigation in Unit 10D4 at Manning Hall, on Friday, January 19, 2018. Manning Hall was constructed in 1967. This student housing unit contains 2 bunk beds, 2 sets of drawers and 2 closets. This dorm unit is located on the 10th floor.

On our January 19th visit, Terracon made measurements of temperature and relative humidity and conducted airborne mold sampling which consisted of collecting spore trap air samples in four locations inside the dorm and the collection of two additional samples outside for comparison. We also collected two composite microvac dust samples for allergen analysis.

Standard of Care

This limited mold and allergen investigation was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. Terracon did not attempt to identify every potential exposure or hazard present in the subject building. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our sampling. Many factors, such as weather conditions, building occupancy, ventilation patterns and seasonal variations in fungal concentrations, can affect the conditions observed. The information contained in this report should not be relied upon to represent conditions that existed prior to or after this sampling. Terracon does not warrant the services of regulatory agencies, laboratories or other third parties supplying information that may have been used in the preparation of this report.

SAMPLING CRITERIA AND METHODS

Mold and Allergen Sampling

Total mold spore trap samples were collected using Allergenco-D™ spore trap cassettes specifically designed for the collection of airborne mold spores. Air samples were collected using a calibrated Zefon Bio-Pump™ at a flow rate of 15 liters per minute (LPM) for 5 minutes at each location.

After collection, the spore trap samples were delivered by overnight courier to EMSL in Cinnaminson, New Jersey. EMSL is accredited by the AIHA® Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), Accreditation #100194. Air samples were analyzed by direct microscopic examination and results are reported in spores per cubic meter of air (spores/m^3).

To help interpret the mold sampling results, we compared indoor air and outdoor air measurements. High variability in airborne fungal spore concentrations can exist in different geographic locations, during different seasons, and weather patterns, and over the course of a given day. As a general rule, indoor air fungal spore concentrations in a heating, ventilation and air-conditioning (HVAC)-supplied building are typically less than, but qualitatively similar to, fungal spore concentrations found in the outside environment.

No state or federal exposure limits have been established for fungal aerosols. Regulatory standards, medically based threshold limit or dose-response relationships have not been established for exposure to airborne or surface concentrations of mold spores. Terracon relies upon experience, professional judgment, current scientific literature, guidelines and recommendations made by professional organizations and experts, and statistical methods in interpreting mold sampling results.

Two composite allergen dust samples were collected from carpet, chair fabrics and furniture surfaces in the dorm room using a high volume air sampling pump in conjunction with a 3-piece 37 millimeter dust sampling cassette preloaded with a 5.0 micrometer polyvinyl chloride (PVC) filter.

After composite dust sample collection, the allergen sample was shipped by overnight courier to EMSL in Cinnaminson, New Jersey. EMSL is accredited by the AIHA® Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), Accreditation #100194. Allergen samples were analyzed by direct microscopic examination for allergens from dust mites, mouse, rat, cat, dog, and cockroach. Allergen results are reported in micrograms per gram of dust (µg/g).

Temperature and Relative Humidity

Indoor air temperature and relative humidity are physical conditions important to the perception of comfort. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has published recommendations regarding thermal comfort. ASHRAE Standard 55-2013, Thermal Environmental Conditions for Human Occupancy, identifies six primary factors that affect comfort: metabolic rate (affected by the activity being performed); clothing insulation; air temperature; radiant temperature; air speed; and humidity.

Although the relationships are complex, a temperature range between 73 and 79 degrees Fahrenheit (°F) with relative humidity between roughly 20 and 60 percent (%) are recommended for persons in a conditioned setting wearing light summer clothing. Higher temperatures require lower humidity for comfort. For persons in winter clothing, temperatures can range between 68 and 75°F, with relative humidity between 20% and 60%, with preferred conditions falling between 30% and 50% for both winter and summer temperatures.

EPA recommends maintaining indoor humidity below 60%, ideally 30-50%, if possible.

Readings of temperature and relative humidity were collected with an Extech Model 445580 IAQ instrument which was calibrated by the manufacturer.

FINDINGS

General Observations

- Other air samples were being collected at the time of our sampling effort.
- No evidence of water leaks or mold growth were observed.
- Photographs from the assessment are attached.

Mold Air Sampling

On the afternoon of January 19, 2018, Terracon collected four mold spore trap samples inside the dorm at 10D4 Manning Hall and two samples in outdoor locations for comparison. The results of the total spore count samples analyses are summarized in Table 1 below:

Table 1: Summary of Total Spore Count Analyses – January 19, 2018

Sample #	10D4-1	10D4-2	10D4-3	10D4-4	10D4-7	10D4-8
Location Description	**Right side desk**	**Left side desk**	**Right bureau**	**Left bed at head**	**Outside Manning entrance**	**Outside in traffic circle**
Spore Type	**Spores/m³**	**Spores/m³**	**Spores/m³**	**Spores/m³**		**Spores/m³**
Ascospores	---	---	---	---	40	---
Basidiospores	40	---	---	---	---	---
Cladosporium	90	40	---	100	---	400
Curvalaria	40	---	---	---	---	---
Epicoccum	---	---	---	---	40	40
Penicillium/ Aspergillus	---	---	40	---	---	100
Rust	40	---	---	40	---	---
Smuts/*Periconia*/ Myxomycetes	---	---	---	40	40	---
Pyricularia	40	---	---	---	---	---
Unidentifiable spore	---	---	---	---	40	---
Total	**250**	**40**	**40**	**180**	**160**	**540**
Temperature (degrees F.)	70.7	69.8	71.2	70.5	62.9	---
Relative Humidity (%)	15.2	15.2	15.7	16.1	9.5	---

There was no visual evidence of mold growth or water leaks in the dorm room.

The highest outdoor total spore count was approximately two times higher than the highest total spore count inside. The predominant mold genera indoors was *Cladosporium.* The predominant mold spore types outdoors were *Cladosporium and Aspergillis/Penicillium*. The weather on the day we sampled was moderate (62ºF) with a slight breeze. The laboratory analytical report is attached.

Temperature and Relative Humidity

The indoor temperature was 71ºF and the relative humidity was 15%. The outdoor temperature was 62ºF and the relative humidity was 9.5%.

Allergen Sampling

On the afternoon of January 19, 2018, Terracon collected two dust samples from the carpeting, chair fabric, and furniture in the dorm room at 10D4 Manning Hall. The samples were analyzed for allergens from dust mites, mouse, rat, cat, dog, and cockroach.

Allergens were identified in the samples. Table 2 below summarizes the laboratory results. The laboratory analytical report is attached and references additional information.

Table 2: Summary of Allergen Analyses – January 19, 2018

Sample #	10D4-5		10D4-6	
Location Description	**Composite from floor near door**		**Composite from floor near window**	
Allergen Type/Antigen	**Concentration (ug/g)**	**Laboratory assigned risk factor**	**Concentration (ug/g)**	**Laboratory assigned risk factor**
Dust Mites / Der fl	0.07	Low	ND	Low
Dust Mites / Der pl	0.10	Low	0.04	Low
Mouse / Mus ml	0.14	Low	ND	Low
Rat / Rat nl	0.04	NA	0.02	NA
Cat / Fel dl	0.67	Low	0.31	Low
Dog / Can fl	0.63	Low	0.24	Low
Cockroach / Bla G2	ND	Low	ND	Low

Note: ug = microgram (10^{-6} grams), NA = Not Applicable, ND = not detected

CONCLUSIONS

The following conclusions are provided based on our assessment:

- The results of mold air sampling indicated that total airborne mold spore concentrations inside the building were below the total mold spore levels measured in the highest outdoor sample. Additionally the predominant mold spore indoors was also observed in the outdoor samples in lower concentrations. This may be considered favorable.
- Low levels of common allergens were identified from the dust samples collected in the unit and the allergen risk level assigned by the lab was low.
- There was no visual evidence of mold growth or water leaks in the dorm room.
- Temperature levels were within ASHRAE guideline ranges.
- Relative humidity levels measured were below the lower range of 20% recommended by EPA for indoor air. Sustained low humidity levels below 20% may cause additional complaints with building occupants.

Terracon appreciates the opportunity to provide this service to Clemson University. If you have any questions regarding this limited mold and allergen investigation report, please contact the undersigned at 864-292-2901.

Sincerely,
Terracon Consultants, Inc.

Benjamin Hestir, P.E.
Project Industrial Hygienist

Jeffrey A. Gurrie
Senior Industrial Hygienist

Attachments: Photographs
Laboratory Results

Photographs



Photo #1 View of Room 10D4 with asbestos pumps running



Photo #2 View of right side loft bed



Photo #3 View of left side loft bed



Photo #4 View of window and decorations



Photo #5 View of outdoor sample location #1 (sample 10D4-7)

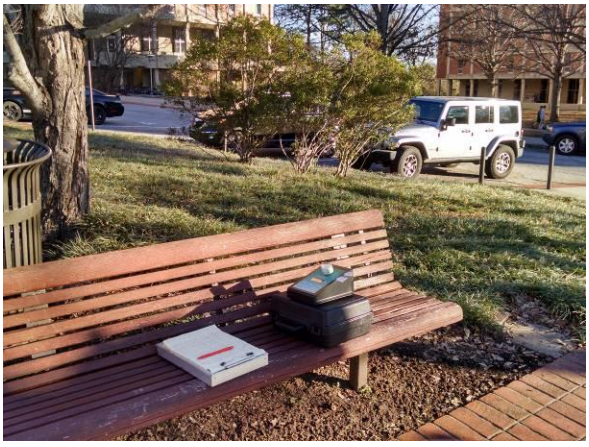


Photo #6 View of outdoor sample location #2 (sample 10D4-8)

Laboratory Results

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0262
http://www.EMSL.com / cinnmicrolab@emsl.com

Order ID: 371801135
Customer ID: GTER78
Customer PO: 86127158Task124
Project ID:

Attn: Ben Hestir
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone: (864) 292-2901
Fax: (864) 292-6361
Collected: 01/19/2018
Received: 01/24/2018
Analyzed: 01/28/2018

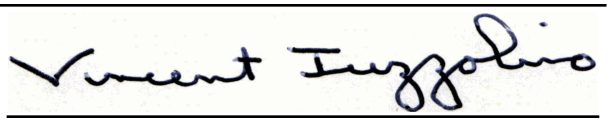
Proj: Manning 10D4

Test Report: Allergenco-D(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	371801135-0001			371801135-0002			371801135-0003		
Client Sample ID:	10D4-1			10D4-2			10D4-3		
Volume (L):	75			75			75		
Sample Location:	Right Side Desk			Left Side Desk			Right Bureau		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	1	40	100
Basidiospores	1	40	16	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	2	90	36	1	40	100	-	-	-
Curvularia	1	40	16	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	1	40	16	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Pyricularia	1	40	16	-	-	-	-	-	-
Total Fungi	**6**	**250**	**100**	**1**	**40**	**100**	**1**	**40**	**100**
Hyphal Fragment	1	40	-	1	40	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	2	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.



Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. *-* denotes not detected. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC--EMLAP Lab 100194

Initial report from: 01/29/2018 12:50:48

For Information on the fungi listed in this report please visit the Resources section at www.emsl.com

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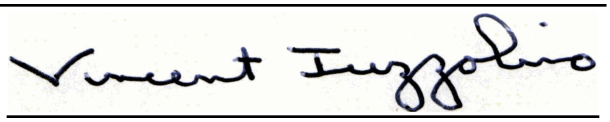
Proj: Manning 10D4

Test Report: Allergenco-D(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	371801135-0004			371801135-0007			371801135-0008		
Client Sample ID:	10D4-4			10D4-7			10D4-8		
Volume (L):	75			75			75		
Sample Location:	Left Bed at Head			Outside Manning Entrance			Outside in Traffic Circle		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	1	40	25	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	3	100	18.5
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	55.6	-	-	-	9	400	74.1
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	1	40	25	1	40	7.4
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	22.2	1	40	25	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	1	40	22.2	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	1	40	25	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-	-
Total Fungi	**5**	**180**	**100**	**4**	**160**	**100**	**13**	**540**	**100**
Hyphal Fragment	-	-	-	2	90	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	3	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	1	-	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.



Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. *-* denotes not detected. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC--EMLAP Lab 100194

Initial report from: 01/29/2018 12:50:48

For Information on the fungi listed in this report please visit the Resources section at www.emsl.com

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EMSL Order #:	**371801135**
Customer ID:	**GTER78**
Customer PO:	**86127158Task124**

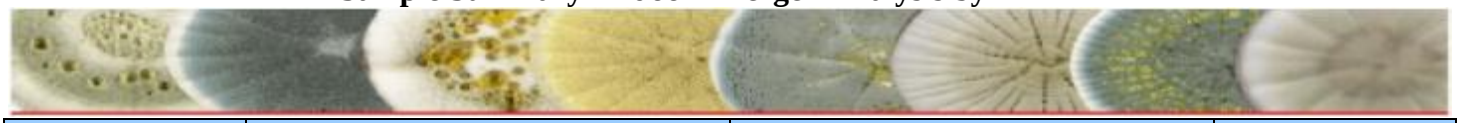
Attn: **Ben Hestir**
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Manning 10D4**

Date Collected: **1/19/2018**
Date Received: **1/24/2018**
Date Analyzed: **1/29/2018**

Sample Summary -Indoor Allergen Analysis by MARIA®



Lab Sample Number	Client Sample ID	Sample Location	Sample Type
371801135-0005	10D4-5	Floor Near Entry	Bulk
371801135-0006	10D4-6	Floor Near Window	Bulk

Report Date	Report Revision	Revision Comments
1/31/2018	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

About Us

EMSL Analytical, Inc. offers a full line of analytical solutions for over 30 years across North America. For more information about our nationally accredited locations, vast line of testing services, and our food safety solutions please visit www.EMSL.com or call



Disclaimers

All samples were collected by and all sampling data was provided by the client. The results are valid only for those samples analyzed, and only for those samples collected in accordance with the appropriate methodology as determined by the client. The results herein do not denote or represent a medical or clinical diagnosis or conclusion. In the event that sample(s) were submitted in opened, used, non-sterile or otherwise adulterated condition, EMSL shall not be responsible or liable. EMSL Analytical (Cinnaminson, NJ) is accredited by the American Industrial Hygiene Association (AIHA) in the EMLAP accreditation program for specified Field(s) of Testing as documented on the scope of accreditation.

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Greenville, SC 29615

Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Manning 10D4**

Date Collected: **1/19/2018**
Date Received: **1/24/2018**
Date Analyzed: **1/29/2018**

EMSL Sample #: **371801135-0005**
Client ID: **10D4-5**
Location: **Floor Near Entry**

Sample Type: **Bulk**
Sample Size: **66**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**0.07**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.10**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.14**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.04**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.67**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.63**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†Sufficient evidence is not available for risk levels.

Allergen Risk Levels:

High -Risk of acute asthmatic attack.

Moderate -Risk for sensitization and bronchial hyperactivity.

Low -Not sufficient to cause symptoms or ND (None Detected); Indicates that the amount of allergen in the sample is below the detection limits.

All samples were collected by and all sampling data was provided by the client. The results are valid only for those samples analyzed, and only for those samples collected in accordance with the appropriate methodology as determined by the client. The results herein do not denote or represent a medical or clinical diagnosis or conclusion. In the event that sample(s) were submitted in opened, used, non-sterile or otherwise adulterated condition, EMSL shall not be responsible or liable.

EMSL Analytical (Cinnaminson, NJ) is accredited by the American Industrial Hygiene Association (AIHA) in the EMLAP accreditation program for specified Field(s) of Testing as documented on the scope of accreditation.

This report has been prepared by EMSL Analytical, Inc. at the request of and for the exclusive use of the client named in this report. Completely read the important terms, conditions, and limitations that apply to this report

Report Date	**Report Revision**	**Revision Comments**
1/31/2018	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

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Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Manning 10D4**

Date Collected: **1/19/2018**
Date Received: **1/24/2018**
Date Analyzed: **1/29/2018**

EMSL Sample #: **371801135-0006**
Client ID: **10D4-6**
Location: **Floor Near Window**

Sample Type: **Bulk**
Sample Size: **40**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**ND**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.04**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.02**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.31**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.24**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†Sufficient evidence is not available for risk levels.

Allergen Risk Levels:

High -Risk of acute asthmatic attack.

Moderate -Risk for sensitization and bronchial hyperactivity.

Low -Not sufficient to cause symptoms or ND (None Detected); Indicates that the amount of allergen in the sample is below the detection limits.

All samples were collected by and all sampling data was provided by the client. The results are valid only for those samples analyzed, and only for those samples collected in accordance with the appropriate methodology as determined by the client. The results herein do not denote or represent a medical or clinical diagnosis or conclusion. In the event that sample(s) were submitted in opened, used, non-sterile or otherwise adulterated condition, EMSL shall not be responsible or liable.

EMSL Analytical (Cinnaminson, NJ) is accredited by the American Industrial Hygiene Association (AIHA) in the EMLAP accreditation program for specified Field(s) of Testing as documented on the scope of accreditation.

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Report Date	**Report Revision**	**Revision Comments**
1/31/2018	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

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EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800)220-3675 / (856)786-0262
http://www.EMSL.com cinnmicrolab@emsl.com

EMSL Order #: **371801135**
Customer ID: **GTER78**
Customer PO: **86127158Task124**

Attn: **Ben Hestir**
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Manning 10D4**

Date Collected: **1/19/2018**
Date Received: **1/24/2018**
Date Analyzed: **1/29/2018**

Guidelines to Interpretation

µg/g

Allergens	<DL	<1	1	2	3	4	5	6	7	8	9	>10
Fel d1	ND	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High	High	High
Can f1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Der p1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Der f1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Mus m1	ND	Low	Mod	Mod	Mod	High	High	High	High	High	High	High

µg/m3

Rat n1	ND	<0.7 µg /m3 = Not associated with increased risk of asthma

µg/g

	<DL	<0.08	0.08	0.09	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
Bla g2 †	ND	Low	Mod	Mod	Mod	Mod	Mod	Mod	High	High	High	High

† *Suggested levels. Not officially established.*

Note: *This report and guidelines furnish information only. Whether an individual suffers allergic symptoms or not depends on his/her medical history and previous exposure.*

References

Journal of Allergy and Clinical Immunology 1989; 83:416-427
Journal of Allergy and Clinical Immunology 1995; 96:449-456
The American review of respiratory disease 1990; 141:361-367
The American review of respiratory disease 1993; 147:573-578
Environmental Health Perspectives 2002; 110:419-425
Clinical and Experimental Allergy 1998; 28(5):537-44
Pediatric allergy-principles and practice. Mosby Inc 2003: 261-268.

Terminology

ELISA	Enzyme-linked Immunosorbent Assay
MARIA®	Multiplex Array for Indoor Allergens
Allergen	A substance which reacts with the body's immune system to produce an allergic reaction.
Antigen	A substance, foreign to the body, which stimulates the production of antibodies by the immune system.
Bla g2	*Blattella germanica* (Cockroach) allergen 2
Can f1	*Canis familiaris* (Dog) allergen 1
Der f1	*Dermatophagoides farinae* (Dust Mites) allergen 1
Der p1	*Dermatophagoides pteronyssinus* (Dust Mites) allergen 1
Detection Limits	DL is the smallest amount of a substance, in this case antigens, which can be measured.
Fel d1	*Felis domesticus* (Cat) allergen 1
Mus m1	*Mus musculus* (Mouse) allergen 1
ND	None detected, if any allergens are present they are below the detection limits.
Rat n1	*Rattus norvegicus* (Rat) allergen 1

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Greenville, SC 29615

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Project: **Manning 10D4**

Date Collected: **1/19/2018**
Date Received: **1/24/2018**
Date Analyzed: **1/29/2018**

Important Terms, Conditions, and Limitations

A. Sample Retention
Samples analyzed by EMSL will be retained for 60 days after analysis date. Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSL reserves the right to charge a sample disposal fee or return samples to the client.

B. Change Orders and Cancellation
All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

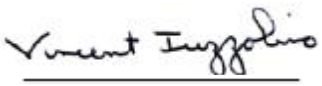
C. Warranty
EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

D. Limits of Liability
In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to insure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client orvalue of any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

E. Indemnification
Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL's services, the test result data or its use by client.

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Report Date	Report Revision	Revision Comments
1/31/2018	R0	Initial Report



Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

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EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Industrial Hygiene Chain of Custody

EMSL Order Number (Lab Use Only): 371801135

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 858-3502

Report To Contact Name: Ben Hestir		**Bill To Company:** Terracon (GTER78)	**Client ID #:**
Company Name: Terracon Consultants, Inc.		**Attention To:**	
Street: 72 Pointe Circle		**Street:**	
City: Greenville	**State/Province:** SC **Zip/Postal Code:** 29615	**City:**	**State/Province:** **Zip/Postal Code:**
Phone : 864-293-7348 **Fax :**		**Phone:** **Fax:**	
Project Name: Manning 10D4		**Email Results To:** ben.hestir@terracon.com	**U.S. State where Samples Collected:** SC
# Samples in Shipment: 8	**Date of Shipment:** 1/22/18	**Purchase Order:** 86127158 - Task 124	**Sampled By (Signature):** Ben Hestir

RECEIVED EMSL CINNAMINSON, NJ 2018 JAN 24 AM 8:12

Turnaround Time (TAT) – Please Check: If No Selection Made, Standard 2 Week TAT Will Apply

☐ 2 Week ☑ 1 Week ☐ 4 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day ☐ Other (Call Lab)

Media Type:

Manufacturer/Part #: **Lot #:**

Client Sample ID	Location/Description	Analyte / Method	Media	Flow (lpm)	Sample Time On	Sample Time Off	Volume / Area	Sample Type	Sample Date	Comments
10D4-1	Right side desk	M001	Allergen	15	1524	1529	75 L	☑ Area ☐ Personal	1/19/18	
10D4-2	Left side desk	M001	Allergen	15	1532	1537	75 L	☑ Area ☐ Personal	1/19/18	
10D4-3	Right bureau	M001	Allergen	15	1539	1544	75 L	☑ Area ☐ Personal	1/19/18	
10D4-4	Left bed at head	M001 M032	Allergen	15	1546	1551	75 L	☑ Area ☐ Personal	1/19/18	
10D4-5	Floor near entry	M038, M039, M044	Dust cas		1555	1600		☑ Area ☐ Personal	1/19/18	Allergens
10D4-6	Floor near window	M038, M039, M044	Dust cas		1602	1607		☑ Area ☐ Personal	1/19/18	Allergens
10D4-7	Outside Manning entrance	M001 M032	Allergen	15	1614	1619	75 L	☑ Area ☐ Personal	1/19/18	
10D4-8	Outside in traffic circle	M001	Allergen	15	1624	1629	75 L	☑ Area ☐ Personal	1/19/18	

Note: Most NIOSH and OSHA methods require field blanks. It is the IH field sampler's responsibility to submit the proper number of field blanks and duplicates.

Released By	Date	Received By	Date
Ben Hestir / Terracon	1/22/18	CRM FE	1-24-18 10:00

Comments:

OrderID: 371801135