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March 28, 2017

Mr. Robert Strahan
Fire Chief
Greenfield Fire Department
412 Main Street
Greenfield, MA 01301

RE: Indoor Air Quality (IAQ) Testing
Greenfield Fire Department

Dear Mr. Strahan:

Pursuant to your request, Green Environmental Consulting, Inc (GEC) performed Indoor Air Quality (IAQ) testing at the Greenfield Fire Department building located in Greenfield, MA.

GEC's IAQ testing included measurements of common IAQ test parameters as well as air sampling for mold.

Objective

GEC understands that occupants have expressed concern regarding the air quality in the building. Concerns regarding potential mold contamination were also expressed.

The purpose of the testing was to provide information on building IAQ as compared to current guidelines outlined by regulatory agencies such as the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the National Institute for Occupational Safety and Health (NIOSH) and the Massachusetts Department of Public Health (MDPH), as well as private organizations such as the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).

Observations

The subject building is a two-story, brick, firehouse constructed circa 1937 with garage bays for the fire apparatus, fire chief's office, fire prevention offices and a dispatch room on the first floor. On the second floor are a recreation room, dormitories, a locker room, kitchen, library, officers' rooms, and the necessary toilets, showers, etc.

The building is heated by radiators supplied with forced hot-water from pellet boilers located in the basement. It is important to note that the pellet boilers were not running on the day of the testing.

Anecdotal information, provided by building personnel indicated that the boilers are not functioning properly and have periodically backfired in the past, resulting in visible emissions into the building and elevated carbon monoxide measurements.

An air-conditioning system provides cool air to the dispatch room and fire prevention offices. Ventilation to the building is provided solely by openable windows.

On March 6, 2017, Mr. Adam Lesko, a Certified Indoor Environmental Consultant (CIEC) and Certified Microbial Consultant (CMC), documented observations of building conditions during a typical workday. Outlined below are GEC's observations:

- No visible mold growth was observed
- No unusual or "musty" odors were observed
- Evidence of water infiltration was observed (deteriorated plaster, chipping paint) on exterior plaster walls in the dormitories on the second floor.

IAQ Sampling/Results

Measurements of common IAQ test parameters were collected at eleven (11) building locations utilizing direct reading instrumentation to document conditions in occupied areas of the building.

Measurements of Carbon Dioxide, Temperature and Relative Humidity (RH) were collected to assess ventilation and also as an indicator of thermal comfort. In addition, testing was performed to detect the presence of Carbon Monoxide and total concentrations of fine dust particles with an upper size limit 2.5 microns (PM 2.5).

Sampling to characterize the indoor concentrations of Carbon Dioxide, Temperature, Relative Humidity (RH) and Carbon Monoxide (CO) was conducted in the building by means of a TSI Q-TRAK™ IAQ Monitor, Model 7545.

Airborne Particulate sampling in the building was conducted using a TSI DustTrak™ II Handheld Aerosol Monitor, Model 8532.

Refer to Attachment No. 1 for a summary of the IAQ readings collected.

Carbon Dioxide

Carbon Dioxide (CO_2) is an odorless, colorless gas found naturally in the environment. CO_2 is a by-product of human respiration, combustion, and other processes. CO_2 is expected to be found inside buildings. Typical background concentrations measured outside of buildings are roughly 300-450 part per million (ppm).

CO_2 measurements are commonly used to assess the adequacy of ventilation within buildings. The rationale for using CO_2 in this process is that as CO_2 levels rise, it indicates that the ventilation system is malfunctioning or the design occupancy of the room is being exceeded. When this happens, a buildup of environmental pollutants that originate from building occupants, building materials, office furnishings, housekeeping chemicals or other sources can occur.

The OSHA standard for carbon dioxide is 5,000 parts per million parts (ppm). This standard establishes levels that workers may be exposed to for 40 hours/week, based on a time-weighted average.

The Massachusetts Building Code requires a minimum ventilation rate of 20 cubic feet per minute (cfm) of fresh outside air per occupant or have openable windows in each room. The ventilation system must be on at all times when the room is occupied.

The Massachusetts Department of Public Health (MDPH) states the following: "The Department of Public Health uses a guideline of 800 ppm for publicly occupied buildings. Inadequate ventilation and/or elevated temperatures are major causes of complaints such as respiratory, eye, nose and throat irritation, lethargy and headaches."

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) sponsors and conducts research to establish ventilation rates that are thought to be sufficient to dilute the pollutant load in "normally" occupied commercial properties. ASHRAE publishes ventilation Standard 62.1, "Ventilation for Acceptable Air Quality".

In this Standard, ASHRAE states that "maintaining a steady-state CO_2 concentration in a space no greater than about 700 ppm above outdoor air levels will indicate that a substantial majority of visitors entering a space will be satisfied with respect to human bioeffluents (body odor)". In most cases this would result in indoor CO_2 concentrations of less than 1050 ppm.

CO_2 concentrations recorded in the building during the testing ranged from 575 ppm to 816 ppm. The outdoor Carbon Dioxide concentration was 460 ppm.

Temperature and Humidity

Guidelines for thermal comfort are developed by ASHRAE in conjunction with the American National Standards Institute (ANSI) and are published in the ANSI/ASHRAE Standard 55, "Thermal Environmental Conditions for Human Occupancy". These guidelines establish comfort parameters that are thought to satisfy 80% of the building inhabitants.

OSHA recommends that the indoor temperature be controlled in the range of 68.0 °F to 76.0 °F and that the Relative Humidity be controlled in the 20% to 60% range.

The MDPH recommends a comfort range for indoor air temperature's of between 70.0 °F to 78.0 °F and a comfort range for indoor relative humidity between 40% to 60%.

Temperature measurements collected in the building ranged from 66.8°F to 68.3°F. The RH levels were between 13.7% and 19.6%.

The outdoor temperature was 30.0 °F; the outdoor RH was 21.0%.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas that most often occurs as a by-product of incomplete hydrocarbon combustion. Exposure to carbon monoxide can produce immediate and acute health affects. Several air quality standards have been established to address carbon monoxide pollution and prevent symptoms from exposure to these substances.

Typical examples of outdoor CO sources in a building include vehicular emission from traffic or parking areas and building exhaust stacks. Indoor sources include furnaces, boilers, and stoves.

The National Ambient Air Quality Primary Standard (NAAQS) established by the US EPA for CO in the outdoor air is 9 ppm as an 8-hour average.

OSHA has proposed lowering the workplace Permissible Limit (PEL) for CO from 50 to 35 ppm for an 8-hour period. The American Conference of Governmental Industrial Hygienists (ACGIH) suggests 25 ppm as the 8-hour limit.

When indoor concentrations of carbon monoxide exceed 5 ppm, it is prudent practice to investigate possible sources and implement remedial actions. In addition, Indoor CO levels should generally be less than or equal to outdoor levels.

CO levels measured inside the building were None Detect (ND) in all of the areas surveyed.

Airborne Particulate

Airborne particulates in the form of dust, soot and ETS (Environmental Tobacco Smoke) may cause nose and throat irritation and may also trigger allergic reactions.

The National Ambient Air Quality Primary Standard for particulates is 150 ug/m^3 as a maximum 24-hour acceptable level. This standard applies to airborne particulates with a diameter of 10 microns or less (PM 10). The EPA has a more stringent 24-hour standard for particles with a diameter of 2.5 microns (PM 2.5) requiring that outdoor air levels be maintained below 35 ug/m^3 over a 24-hour period.

In contrast to these environmental levels, the Occupational Safety and Health Administration (OSHA) has established an 8-hour Permissible Exposure Limit (PEL) for workplace exposures to respirable nuisance particulates of 5 milligrams of dust per cubic meter of air (5 mg/m^3). This is equivalent to 5,000 ug/m^3.

Concentrations of dust particles with an upper size limit of 2.5 microns (PM 2.5) collected during the testing ranged from 16.0 to 32.0 ug/m^3.

Mold Sampling/Results

Air samples were collected and submitted to EMLab P&K in Marlton, New Jersey for fungal analysis. EMLab P&K is an American Industrial Hygiene Association (AIHA) environmental microbiology (EMPAT and EMLAP) accredited laboratory.

Air Samples (non-culturable)

Six (6) air samples were collected and submitted for laboratory analysis of total fungal spore concentrations (microscopic method). Samples were collected from areas presumed to be affected by airborne mold spores (Emergency Operations Conference Room, NE Corner and West Bunks), from non-affected areas (Admin. Assistants Office and Operations), as well as from outdoors for comparison to the natural environment.

GEC utilized Zefon Air-o-Cell cassettes and a high volume pump to collect the airborne fungal samples. Samples were collected for 5 minutes at a calibrated flow rate of 15 liters per minute. The flow rate of the sampling pump was calibrated prior to and following sample collection at each location.

The current approach to the interpretation of total airborne fungal sampling results relies on comparisons of indoor vs. outdoor results and affected vs. non-affected area results. In general, indoor concentrations should be lower than outdoor concentrations. In addition, fungal spore types and species identified in indoor vs. outdoor and affected vs. non-affected areas should qualitatively be generally similar.

Indoor fungal concentrations were low and spore types and species identified in indoor vs. outdoor and affected vs. non-affected areas were qualitatively generally similar.

Refer to the laboratory results provided in Attachment 2 for detailed descriptions of sample locations, individual sample results, as well as chain-of-custody records.

Moisture Readings

Qualitative measurements of moisture content were taken using a non-destructive Tramex Survey Encounter.

Results of moisture measurements taken from the water-damaged plaster walls in the dormitory areas were compared qualitatively to similar materials in other areas of the building and did not indicate elevated levels of moisture.

Conclusions/Recommendations

The majority of CO_2 measurements collected in the building were below the MDPH guideline of 800 parts per million (ppm), indicating adequate ventilation.

Temperatures generally satisfied the thermal comfort guidelines.

Relative humidity levels were at the low end of the comfort scale. As there is no mechanical means to humidify the building, seasonal and daily Relative Humidity fluctuations are to be expected. For buildings in New England, periods of low relative humidity during the heating season are often unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control for dusts, using a vacuum cleaner equipped with a high-efficiency particulate air (HEPA) filter in conjunction with wet wiping of all surfaces is recommended.

CO levels measured inside the building were None Detect (ND) in all of the areas surveyed.

Airborne particulate readings collected in the building were low and below established standards.

The results of the total airborne fungal sampling performed as well as GEC's visual observations did not indicate that fungal amplification (growth) sites are currently present in the building.

The key to mold control is moisture control. In order to decrease the likelihood of any potential future mold growth, GEC recommends that the source(s) of water intrusions/leaks at exterior walls in the 2nd floor dormitory area should be identified and repaired. This identification of water intrusions/leaks will likely require consultation with additional professionals and specialists. A structural engineer should be consulted to evaluate the condition of the exterior brick walls. In addition, a roofing specialist should be consulted to determine if there are any current roof leaks. Particular attention should be paid to the parapet walls on the roof.

The malfunctioning of the pellet boilers is likely to have a significant negative impact on the indoor air quality in the building and should be repaired prior to their continued use.

Limitations

Although a reasonable attempt has been made to locate suspect fungi (mold) in the areas identified, the inspection techniques used are inherently limited in the sense that only full demolition procedures will reveal all building materials of a structure and, therefore, all areas of potential fungal growth. Other unidentified microbiological impact may be located within walls, ceiling cavities, below flooring or grade, and other non-accessible areas. Caution should be used during any remediation activities.

This report does not warrant against future conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during GEC's inspection of the site. This report does not address the question of potential bacterial contamination.

GEC is pleased to have worked with you on this important project. If you have any questions regarding this evaluation, please contact us at (413) 341-3418.

Sincerely,

Green Environmental Consulting, Inc

Adam Lesko, CIEC, CMC

Certified Indoor Environmental Consultant (CIEC)

Certified Microbial Consultant (CMC)

Attachment No. 1

Summary Table of IAQ Readings

Attachment No. 1 March 6, 2017

Greenfield Fire Department

IAQ Readings

Location	Number of Occupants	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temperature (°F)	Relative Humidity (%RH)	Airborne Particulate PM 2.5 (ug/m^3)
Operations	1	771	ND	67.5	15.2	25.0
Fire Prevention	1	648	ND	67.8	14.5	32.0
Dispatch	4	733	ND	68.3	14.9	28.0
Chief's Office	0	802	ND	67.6	13.7	16.0
Administration	1	816	ND	67.5	14.2	20.0
2nd Floor-Rec Room	0	636	ND	67.4	17.6	19.0
2nd Floor-Break Room	0	624	ND	67.6	17.7	21.0
2nd Floor-SW Corner Bunk	0	605	ND	67.8	17.2	21.0
2nd Floor-West Bunk	0	575	8	67.7	18.7	19.0
2nd Floor-NE Corner Bunk	0	604	ND	67.5	18.1	21.0
2nd Floor-NWCorner Bunk	0	592	ND	66.8	19.6	21.0

Parameter	Guideline Levels	Source
Carbon Dioxide	Less than 700 ppm CO_2 over outdoor ambient air (typically around 400 ppm) (G)	ASHRAE Standard 62.1 (see Note 1)
Temperature	Winter: 68 - 75 °F (G) Summer: 73 - 79 °F (G)	ASHRAE Standard 55 (see Note 2)
Relative Humidity	20% - 65% RH (G)	ASHRAE Standard 55 (see Note 2)
Carbon Monoxide	9 ppm (S)	EPA - 8 hr avg outdoor
Airborne Particulate (PM 2.5)	35 ug/m^3 (S)	EPA - 24-hr average outdoor

Note 1. Guideline based on ASHRAE Standard 62.1 assuming outdoor air supply rate of 15 cfm/person

Note 2. General guideline based on ASHRAE Standard 55 assuming typical conditions fro type of clothing, air movement, radiant heat and other complex factors

ND = None Detected

(S) = Standard

(G) = Guideline

Attachment No. 2

Laboratory Results/Mold Air Samples

EMLab P&K
A TestAmerica Company

Green Environmental Consulting

Report for:

Mr. Adam Lesko
Green Environmental Consulting, Inc
180 Pleasant Street
2nd Floor, Suite 213
Easthampton, MA 01027

Regarding: Project: 01870; Greenfield Fire Department
EML ID: 1689465

Approved by:

Technical Manager
Ariunaa Jalsrai

Dates of Analysis:
Spore trap analysis: 03-09-2017

Service SOPs: Spore trap analysis (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #103005

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 01870; Greenfield Fire Department

Date of Sampling: 03-06-2017
Date of Receipt: 03-07-2017
Date of Report: 03-09-2017

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Lab ID-Version‡ Location	Air vol. (L)	Background Debris	Counts of Fungal Structures	Fungal Structures/m3	Presumptive Fungal ID (raw counts*)	Percentage
7869864-1 03/09/2017	75	3+	8	110	Basidiospores (2)	47
23216394			4	53	Cladosporium (1)	24
Operations			4	53	Penicillium/Aspergillus types (1)	24
			1	13	Smuts, Periconia, Myxomycetes (1)	6
				§ Total: 230		
Comments:						
7869865-1 03/09/2017	75	3+	8	110	Basidiospores (2)	100
23216403						
Administrative				§ Total: 110		
Assistant's Office						
Comments:						
7869866-1 03/09/2017	75	2+	8	110	Basidiospores (2)	100
23215574						
West Bedroom				§ Total: 110		
Comments:						
7869867-1 03/09/2017	75	2+	4	53	Basidiospores (1)	50
23216371			4	53	Cladosporium (1)	50
NE Bedroom				§ Total: 110		
Comments:						
7869868-1 03/09/2017	75	3+	4	53	Basidiospores (1)	44
23216716			4	53	Cladosporium (1)	44
Emergency Operations			1	13	Smuts, Periconia, Myxomycetes (1)	11
Conference Rm				§ Total: 120		
Comments:						
7869869-1 03/09/2017	75	1+	8	110	Basidiospores (2)	100
23216377						
Exterior				§ Total: 110		
Comments:						

Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

*All AIHA accredited laboratories are required to provide raw counts of fungal structures in spore trap reports. These counts are defined by AIHA as "Actual count without extrapolation or calculation". The number in parentheses next to the fungal type represents the exact number (or raw count) of fungal structures observed.

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total has been rounded to two significant figures to reflect analytical precision.

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Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 01870; Greenfield Fire Department

Date of Sampling: 03-06-2017
Date of Receipt: 03-07-2017
Date of Report: 03-09-2017

MoldRANGE™, Local Climate; Extended Outdoor Comparison

Outdoor Location: 23216377, Exterior

Fungi Identified	Outdoor data	Typical Outdoor Data for: March in Northeast† EMLab Regional Climate code¹ B Annual Temp, B Elev., A Rain, A Temp. Range (n‡=44)						Typical Outdoor Data for: The entire year in Northeast† EMLab Regional Climate code¹ B Annual Temp, B Elev., A Rain, A Temp. Range (n‡=708)					
Project zip code 01301	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	-	-	-	-	-	7	7	13	27	67	110	35
Bipolaris/Drechslera group	-	-	-	-	-	-	< 2	8	11	13	13	27	5
Chaetomium	-	-	-	-	-	-	2	-	-	-	-	-	2
Cladosporium	-	35	43	110	160	210	57	53	80	360	1,300	2,700	79
Curvularia	-	-	-	-	-	-	2	7	13	17	67	140	14
Nigrospora	-	-	-	-	-	-	5	7	7	13	27	40	9
Penicillium/Aspergillus types	-	23	29	53	160	180	55	35	53	130	450	940	45
Stachybotrys	-	-	-	-	-	-	< 2	-	-	-	-	-	< 1
Torula	-	-	-	-	-	-	< 2	11	13	14	32	81	3
Seldom found growing indoors**													
Ascospores	-	-	-	-	-	-	34	53	87	400	1,300	3,000	75
Basidiospores	110	25	49	80	200	400	77	53	160	1,500	6,800	12,000	95
Rusts	-	-	-	-	-	-	2	7	13	27	67	110	17
Smuts, Periconia, Myxomycetes	-	-	-	-	-	-	11	7	13	33	110	230	56
§ **TOTAL SPORES/m3**	110												

¹EMLab Regional Climate codes are a climate classification scheme for regional geographic areas containing multiple states. The MoldRANGE™ Local Climate report uses the sampling location zip code to identify the EMLab Regional Climate code in that area. Using information available from the NOAA weather database, the EMLab Regional Climate code sharpens the precision of the MoldRANGE™ reporting system, providing more reliable estimates of the range and average concentrations of the different airborne fungal spore types for each region. Additional information on the EMLab Regional Climate code system can be found on the last page of this report.

†The Typical Outdoor Data represents the typical outdoor spore levels across the region's group of states for the time period and EMLab Regional Climate code indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically and if not enough data is available to make a statistically meaningful assessment, it is indicated with a dash.

‡ n is the sample size used to calculate the MoldRANGE™ Local Climate data summarized in the table.

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
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Re: 01870; Greenfield Fire Department

Date of Sampling: 03-06-2017
Date of Receipt: 03-07-2017
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Understanding EMLab Regional Climate Codes

Outdoor airborne spore concentrations are strongly influenced by climate and weather patterns, often resulting in pronounced seasonal and diurnal cycles (Burge 1995). The seasonal climatic changes directly affect the growth cycle of plants, thereby influencing fungal growth, spore maturation, and release cycles. By evaluating outdoor spore concentrations across similar climatic zones rather than for the state as a whole, it is possible to provide a more representative estimate of typical outdoor spore levels and frequency of occurrence for different airborne fungal spore types in a given area.

The EMLab Regional Climate code system is a novel and patent pending classification system that uses data from the NOAA - National Oceanic and Atmospheric Administration database to define unique climate zones. The following climate variables, for each regional zip code, are obtained from NOAA and assigned a letter code of A (above the regional average for that variable) or B (below the regional average for that variable):

1. Annual High Temperature
2. Elevation
3. Rainfall/Precipitation
4. Monthly Temperature Range

The result is a 4-character code assigned to each statewide zip code, referred to as the Regional Climate Code. Below are some examples of decoded Regional Climate Codes:

AAAA = Above avg. Annual High Temperature, Above avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range
AABB = Above avg. Annual High Temperature, Above avg. Elevation, Below avg. Rainfall/Precipitation, Below avg. Monthly Temperature Range
BBAA = Below avg. Annual High Temperature, Below avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range

The actual outdoor air sample data from matching regional climate codes in each group of states are then compiled in a manner relating typical spore concentrations and frequency of occurrence.

The data presented in this report is from the Northeast Region which includes the states of: CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, and VT

The NOAA regional climate variables were selected by mapping data points from a subset of approximately 145,000 weather and geographic database entries to over 80,000 outdoor spore trap samples with known zip codes and assessing them using orthogonal array experimental design techniques. The results were then compared to the typical ranges of spore types found when grouping zip codes using the Koppen-Geiger climatic classification system; a commonly used climatic system that provides an objective numerical definition in terms of climatic elements such as temperature, rainfall, and other seasonal characteristics . The EMLab Regional Climate codes showed improved granularity and refinement of the zip code groupings, implying a better representation of the expected range of spore types to be found within an individual zip code.

The values on this report were calculated by obtaining the four variables listed above from the over 585 million data points of weather and geographic information available in the NOAA database, and determining the frequencies and percentile values of spore types by utilizing over 180,000 EMLab P&K outdoor spore trap samples with known zip codes.

This report groups regional zip codes in relation to these EMLab Regional Climate codes and summarizes MoldRANGE™ data by month and year within each EMLab Regional Climate code.

References:

Burge, Harriet, A. Bioaerosols: Boca Raton: Lewis Publishers, pp. 163-171, 1995.

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Date of Sampling: 03-06-2017
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MoldSCORE™: Spore Trap Report

Outdoor Sample: 23216377 Exterior

Fungi Identified	Outdoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3
Generally able to grow indoors*			
Alternaria		ND	< 13
Bipolaris/Drechslera group		ND	< 13
Chaetomium		ND	< 13
Cladosporium		ND	< 13
Curvularia		ND	< 13
Nigrospora		ND	< 13
Penicillium/Aspergillus types†		ND	< 13
Stachybotrys		ND	< 13
Torula		ND	< 13
Seldom found growing indoors**			
Ascospores		ND	< 13
Basidiospores		2	110
Rusts		ND	< 13
Smuts, Periconia, Myxomycetes		ND	< 13
Total			**107**

Location: 23216394 Operations

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3
Generally able to grow indoors*			
Alternaria		ND	< 13
Bipolaris/Drechslera group		ND	< 13
Chaetomium		ND	< 13
Cladosporium		1	53
Curvularia		ND	< 13
Nigrospora		ND	< 13
Penicillium/Aspergillus types†		1	53
Stachybotrys		ND	< 13
Torula		ND	< 13
Seldom found growing indoors**			
Ascospores		ND	< 13
Basidiospores		2	110
Rusts		ND	< 13
Smuts, Periconia, Myxomycetes		1	13
Total			**227**

MoldSCORE‡ 100 200 300	Score
	100
	100
	100
	103
	100
	100
	108
	100
	100
	100
	111
	100
	103
Final MoldSCORE	**111**

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Date of Sampling: 03-06-2017
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MoldSCORE™: Spore Trap Report

Location: 23216403 Administrative Assistant's Office

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300	Score
Generally able to grow indoors*					
Alternaria		ND	< 13		100
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		ND	< 13		100
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		ND	< 13		100
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		ND	< 13		100
Basidiospores		2	110		111
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		ND	< 13		100
Total			**107**	**Final MoldSCORE**	**111**

Location: 23215574 West Bedroom

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300	Score
Generally able to grow indoors*					
Alternaria		ND	< 13		100
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		ND	< 13		100
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		ND	< 13		100
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		ND	< 13		100
Basidiospores		2	110		111
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		ND	< 13		100
Total			**107**	**Final MoldSCORE**	**111**

EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 01870; Greenfield Fire Department

Date of Sampling: 03-06-2017
Date of Receipt: 03-07-2017
Date of Report: 03-09-2017

MoldSCORE™: Spore Trap Report

Location: 23216371 NE Bedroom

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300	Score
Generally able to grow indoors*					
Alternaria		ND	< 13		100
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		1	53		103
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		ND	< 13		100
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		ND	< 13		100
Basidiospores		1	53		105
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		ND	< 13		100
Total			**107**	**Final MoldSCORE**	**105**

Location: 23216716 Emergency Operations Conference Rm

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300	Score
Generally able to grow indoors*					
Alternaria		ND	< 13		100
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		1	53		103
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		ND	< 13		100
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		ND	< 13		100
Basidiospores		1	53		105
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		1	13		103
Total			**120**	**Final MoldSCORE**	**105**

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Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 01870; Greenfield Fire Department

Date of Sampling: 03-06-2017
Date of Receipt: 03-07-2017
Date of Report: 03-09-2017

MoldSCORE™: Spore Trap Report

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

CHAIN OF CUSTODY

www.EMLabPK.com

EMLab P&K A TestAmerica Company.

New Jersey: 3000 Lincoln Drive East, Suite A, Marlton, NJ 08053 * (866) 871-1984
Phoenix, AZ: 1501 West Knudsen drive, Phoenix, AZ 85027 * (800) 651-4802
SSF, CA: 6000 Shoreline Court, Suite 205, South San Francisco, CA 94080 * (866) 888-6653

Weather	Fog	Rain	Snow	Wind	Clear
Level: None	☐	☐	☐	☐	
Light	☐	☐	☐	☐	☑
Moderate	☐	☐	☐	☐	
Heavy	☐	☐	☐	☐	

REQL (Use

001689465

CONTACT INFORMATION

Company:	Green Environmental Consulting, Inc	Address:	180 Pleasant Street, Suite 213, Easthampton, MA 01027
Contact:	Adam Lesko	Special Instructions:	
Phone:	(413) 341-3418		

PROJECT INFORMATION

Project ID:	01870		
Project Description:	Greenfield Fire Department		
Project Zip Code:	01301	Sampling Date & Time:	3/6/17 @ 1100
PO Number:		Sampled By:	Adam Lesko

TURN AROUND TIME CODES (TAT)

- STD – Standard (DEFAULT)
- ND – Next Business Day
- SD – Same Business Day Rush
- WH – Weekend / Holiday

Rushes received after 2 pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

Sample ID	Description	Sample Type (Below)	TAT (Above)	Total Volume / Area (as applicable)	Notes (Time of day, Temp, RH, etc.)	Fungi – Spore Trap Analysis
23216394	Operations	ST	STD	75 L		☑
23216403	Administrative Assistant's Office	ST	STD	75 L		☑
23215874	West Bedroom	ST	STD	75 L		☑
23216371	NE Bedroom	ST	STD	75 L		☑
23215716	Emergency Operations Conference Rm	ST	STD	75 L		☑
23216377	Exterior	ST	STD	75 L		☑

Other analyses listed on the form:

- Non-Culturable, Spore Trap: Spore Trap Analysis – Other particles
- Non-Culturable, Tape, Swab, Bulk: Direct Microscopic Exam (Qualitative); Quantitative Spore Count Direct Exam
- BioCassette, Water, Bulk, Dust, Soil: 1-Media Surface Fungi (Genus ID + Asp. spp.); 2-Media Surface Fungi (Genus ID + Asp. spp.); 3-Media Surface Fungi (Genus ID + Asp. spp.); Culturable Air Fungi (Genus ID + Asp. spp.); Gram Stain & Counts (Culturable Air & Surface Bacteria); Legionella culture; Total Coliform, E. coli (Presence/Absence); Membrane Filtration (specify organism); MPN Bacteria (specify organism); QuantiTray – Sewage Screen
- Asbestos Analysis – PCM Airborne Fiber Count (NIOSH 7400); Asbestos Analysis – PLM (EPA method 600/R-93-116); PCR (specify test)

SAMPLE TYPE CODES			
BC – BioCassette ™	ST – Spore Trap: Zefon, Allergenco, Burkard ...	T – Tape	D – Dust
A1S – Anderson		SW – Swab	SO – Soil
SAS – Surface Air Sampler	P – Potable Water	B – Bulk	
CP – Contact Plate	NP – Non-Potable Water	O – Other:	

RELINQUISHED BY	DATE & TIME	RECEIVED BY	DATE & TIME
[signature]	3/6/17 @ 1530	[signature]	3/7/17 (0…

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at http://www.emlab.com/s/main/serviceterms.html