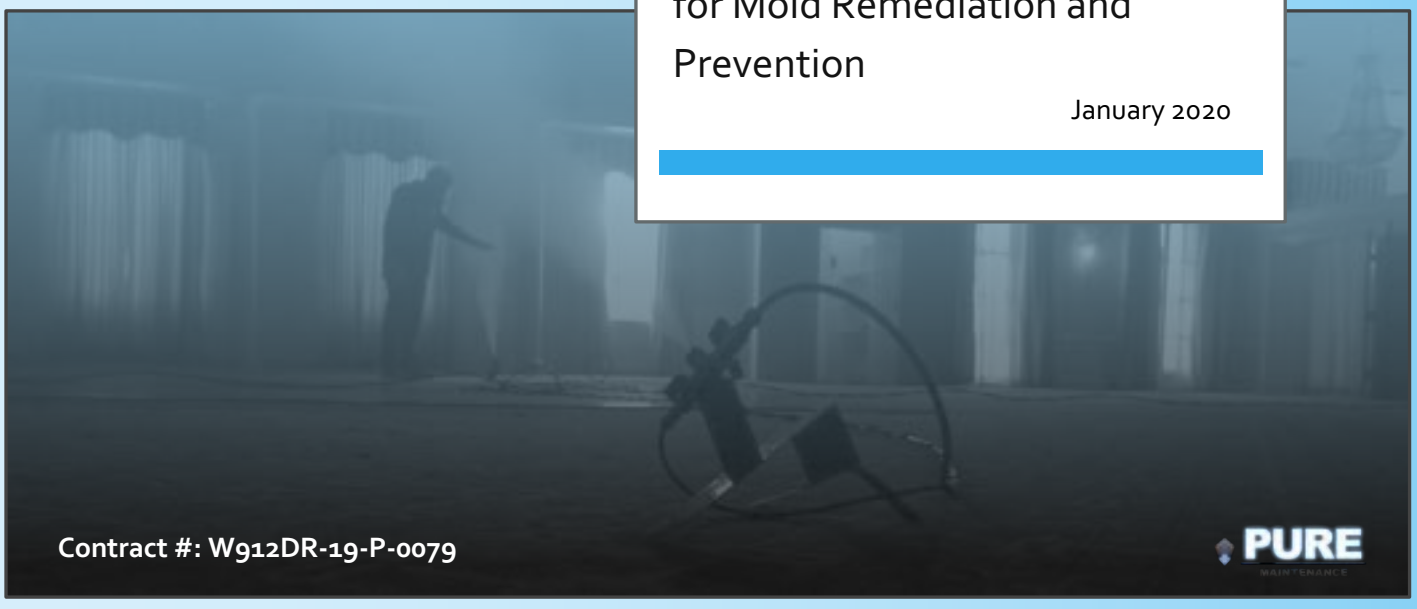
A 2-step process for pathogen removal and prevention was used to demonstrate a lower cost, less invasive, more efficient and highly effective approach to improved indoor air quality. The process uses a dry fog (nothing gets wet) to treat the indoor air and surfaces. Occupants are often able to return indoors 2 hours following treatment.

Following treatment, Building 60 test results indicate a 98% reduction in total spore count and 99% reduction in marker mold count. Spore trap culturable air sampling results indicate the small percentages of total and marker mold spores (2% and 1% respectively) identified by air sampling after treatment, are all not viable.

Dry Fog Treatment of Building 60 Fort McNair, Washington DC

Indoor Air Quality Treatment for Mold Remediation and Prevention

January 2020



Contract #: W912DR-19-P-0079

PURE MAINTENANCE

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Dry Fog Treatment of Building 60 Ft McNair, Washington DC

Executive Summary

On 22-23 October 2019, Building 60, located on Fort McNair, Washington DC was treated for mold and poor indoor air quality. Treatment of the 22,500 ft^2 facility was performed using a 2-step dry fog technology. The technology is a patented dry fog (i.e. nothing gets wet) used to treat indoor air and surfaces. Step 1 uses a cold sterilant (InstaPURE) to eradicate mold, pathogens and fungi. Step 2 applies a microbial protectant (EverPURE) on all surfaces. Both the cold sterilant and the microbial protectant are EPA registered products.

The 1st Step of treatment occurs during the evaporation/phase change of the chemical which creates a harsh environment for mold and bacteria. Because the fine droplets, averaging 7.5 μm in diameter, are so small and their contact angles are large enough that they tend to bounce around the room and surfaces do not get wet. Given the droplets are smaller than mold spores, they are able to disperse to areas accessible by mold spores and permeate areas where mold spores can't. The 2nd Step applies EverPURE, an antimicrobial coating, over all surfaces within the treated area. It is applied in a spray-like manner, using the same equipment, and adjusting the liquid and air pressures to achieve a slightly larger droplet size. This application acts as a coating or microscopic physical barrier to mold growth from spores entering the facility through the HVAC system, open windows and doorways, or from persons via their clothing and/or personal items.

Air and surface samples were collected before and after treatment and follow-up samples were taken 8 weeks following treatment. Samples were collected at 18 indoor locations and 2 outdoor locations. The total number of samples collected was 87. Treatment of the facility was completed in 48 hours. After treatment analytical results indicate a 98% reduction in total mold spore count and a 99% reduction in marker mold count. Follow-up samples collected 8 weeks following treatment provided analytical results showing a 95% reduction in total mold spore count and a 99% reduction in marker mold count.

The authors recommend addressing facility infrastructure issues where rainwater is allowed to enter the building as well as any internal water pipe/drain leakage issues. Water damage internal to the facility will eventually degrade the EverPURE treatment allowing mold spores to survive and grow where conditions are favorable.

No further treatment action is needed prior to occupancy or any building renovation activities. Additional follow-up sampling should be conducted yearly, until the building's HVAC and other control systems are operational, to ensure marker mold spore counts remain below background levels.

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Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AEGL	Acute Exposure Guideline Levels
AIHA	American Industrial Hygiene Association
AT	After Treatment
BT	Before Treatment
CERL	Construction Engineering Research Laboratory
cfu	colony forming unit
COC	Chain-of-Custody
CONUS	Continental United States
COTS	Commercial Off The Shelf
CY	Calendar Year
DPW	Directorate of Public Works
ERDC	Engineering Research and Development Center
ft^2	square feet
HVAC	Heating Ventilation and Air Conditioning
IH	Industrial Hygienist
JBMHH	Joint Base Meyer-Henderson Hall
LLC	Limited Liability Company
lpm	liters per minute
m^3	cubic meter
mph	miles per hour
OCONUS	Outside Continental United States
OEHS	Occupational and Environmental Health and Safety
OSHA	Occupational Safety and Health Administration
PAA	Peracetic Acid
PEL	Permissible Exposure Limit
SDS	Safety Data Sheets
TLV-STEL	Threshold Limit Value – Short-Term Exposure Limit
TWA	time weighted average
USACE	U.S. Army Corps of Engineers
VPA	Vaporized Peracetic Acid

1. INTRODUCTION

This report presents the activities and results from a proof of concept for dry fog treatment of Building 60 at Fort McNair, Washington DC. It contains the objectives, methods and results for indoor application to occupied facilities with minimal impact to the occupants.

1.1. Background

Mold is a fungus able to grow on any surface where favorable conditions exist. Its growth damages building infrastructure and negatively impacts the health of the occupants. Numerous facilities suffer from deficient architectural, site, and HVAC features that promote mold growth. The U.S. Army Corps of Engineers – Baltimore District, on behalf of the Joint Base Meyer-Henderson Hall Directorate of Public Works (JBMHH DPW), issued a contract to Mountain View Maintenance LLC dba Pure Maintenance to demonstrate a novel indoor air quality treatment technology and its ability to render a facility habitable within 24 hours after treatment. The technology requires minimal PPE and minimal manpower. A simple application of the technology provides the work required to destroy existing mold and pathogens and prevent future growth.

1.2. Objective

The main objective of the project was to demonstrate the effectiveness of dry fog mold remediation through pre and post treatment sampling and analysis. The treatment is also much quicker and lower cost than other traditional treatment methods. The demonstration will consist of applying the treatment technology to the entire internal space within Building 60, as well as before and after treatment sampling and analysis.

More specifically, the technical objectives are to:

1. Evaluate the efficiency of the dry fog remediation process and determine the length of time required to treat a facility.
2. Determine the efficacy and performance (via sampling and analysis) of the dry fog process.
3. Verify initial remediation impacts(s) and non-reoccurrence of mold/mildew (via sampling and analysis).

In summary, the goal of this project, and the focus of these objectives, is to verify the effectiveness and ease-of-use of the dry fog technology for the Joint Base Meyer-Henderson Hall Directorate of Public Works (JBMHH DPW) so they may better shape future indoor air and surface remediation efforts on their installations.

1.3. Scope

The scope of the project required the following activities be performed and/or delivered during project execution.

1. Site visit
2. Sampling Plan
3. Treatment and Sampling & Analysis
4. Draft and Final Report

2. DESCRIPTION OF THE PROJECT

The project included the treatment, via dry fog, of The Officers' Club (Building 60) at Fort McNair, Washington, DC. Treatment of the entire indoor space of the facility was performed, including before and after air and surface sampling to verify the efficacy of the treatment. The project activities, results and deliverables are documented within this report, delivered in Draft and Final formats to the government Project Manager.

2.1. Location

Building 60 (The Officers' Club) is located on C Street, between 1st and 2nd Avenue as shown in Figure 1. It is a 22,500 ft² facility constructed in 1903[1]. Building 60 is currently unoccupied due to unhealthy indoor air quality and failing internal infrastructure. The interior has degraded, mostly due to aged building management systems and their inability to maintain a healthy indoor environment, to such a degree that workers are hesitant to enter the building. Recent limited operation of the aged building management systems has greatly accelerated the degradation of the interior.

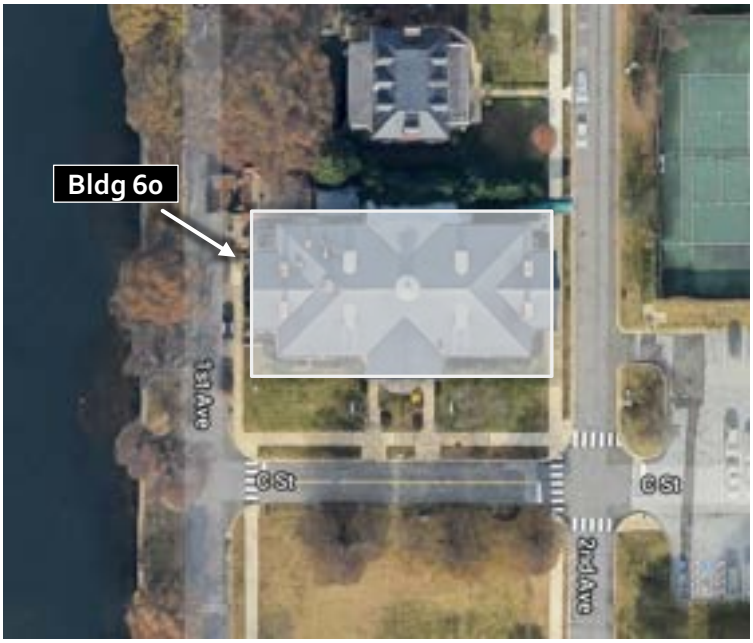

Figure 1. Building 60 (The Officer's Club) location

2.2. Execution

On 13 September 2019, Mountain View Maintenance LLC dba Pure Maintenance was awarded contract W912DR-19-P-0079 to provide dry fog treatment to Building 60 (Figure 2). Execution of the project required a kick-off meeting, a site visit, application of the dry fog treatment, sampling and analysis (before, after and 8 weeks following treatment) and Draft and Final versions of a project report.

Figure 2. Building 60 front exterior view

2.2.1. Existing Conditions

Mold is everywhere. There are over 100,000 types of mold/fungus. When it has a food source, water, and the correct temperature (depending on the type of mold), it grows very quickly. Once it begins multiplying, the spores, and mycotoxins, are transported throughout the enclosed facility via the HVAC system. It continues to spread throughout the building due to "normal" indoor air currents generated by persons under normal living conditions. Mold spores are on surfaces as well as airborne throughout the facility from normal operation of the HVAC system. Figures 3 and 4 show some of the existing mold/fungal growth within Building 60. It is common to assume the "problem" is what is visible to the observer, as shown here. In reality, this is only a small portion of existing potentially adverse conditions.

Figure 3. Macro photos of existing surface mold/fungal growth near sample location 5

Figure 4. Mold/fungal growth at heat vent in Building 60

2.2.2. Treatment

All 3 floors (basement, first floor and second floor), as well as the attic space, of Building 60 were treated with InstaPURE and EverPURE. Treatment occurred over a 2 day period (22-23 October 2019). Figure 5 shows the dry-fog system equipment staged for treatment at Building 60.

2.2.3. Sampling

Sampling was performed before and after treatment. A total of 58 samples (22 spore trap, 18 spore trap culturable and 18 surface samples) were taken over the initial 2 day period. No samples were taken during treatment. Follow-up sampling, a total of 29 samples (11 spore trap, 9 spore trap culturable and 9 surface samples) was performed 8 weeks following treatment. In total, 87 samples (33 spore trap, 27 spore trap culturable and 27 surface samples) were taken during execution of the project.

Figure 5. Dry fog system staged for treatment

Three sampling methods were performed before treatment and repeated after treatment and again 8 weeks following treatment. Each method is identified below and includes a brief synopsis of its procedures and purpose(s)[2]. Sample collection devices for these three sampling methods are shown in Figure 6. All samples, air and surface, were sent to EMLabs P&K in Phoenix, AZ for analysis.

1. *Spore Trap using Zefon Air-O-Cell™* - This sampling method is performed by pulling 15 lpm (liters per minute) through the Zefon Air-O-Cell™ cassette. The objective of this sampling method is to capture and quantify fungal spores present in the air and assess whether the existing levels suggest a fungal problem in the indoor locations.
2. *Spore Trap Using Via-Cell®* - This sampling method is performed similar to the method above, however the Via-Cell® is used to capture the collected sample. The objective of this method is to capture and quantify the different culturable fungal spores present in the air. This quantification is then used to indicate a fungal problem in the indoor locations.
3. *Pull Tape* - This sampling method is performed by pressing the adhesive side of a 1 to 2 inch long by ¾ inch wide piece of clear tape over the suspect surface. The

Figure 6. Air and surface sample collection devices

tape is then removed and put into an individual sample collection container. The objective of this method is to determine and identify molds growing on the surface sampled and whether the spore population on the surface represents normal or skewed populations of spore type.

2.2.4. Analysis

Analysis of the samples collected was performed according to each of the three collection methods described above. These analyses are each briefly described below.

1. Spore Trap Analysis: This analysis is performed to identify genus or group of all fungi present, their quantity and a general assessment of background debris.
2. Spore Trap Analysis Culturable Air Fungi (including Asp spp.): The purpose of this analysis is to identification to genus (species for Aspergillus), of all culturable fungi present and their quantification.
3. Direct Microscopic Exam: This analysis is performed to visually estimate the presence of any fungal growth in the sample and identify it to genus or relevant group. Other particulates and other fungal spores (not representing fungal growth) are also assessed qualitatively.

Table 1 provides the number, type and analysis performed for indoor and outdoor locations.

Table 1. Sample type and analysis

# of Samples	Type of Sample	Analysis	Location	Event*
27	Air	Spore Trap (culturable/viability)	Indoor	9 BT; 9 AT; 9 FU
27	Air	Spore Trap (non-culturable/non viability)	Indoor	9 BT; 9 AT; 9 FU
6	Air	Spore Trap (non-culturable/non viability)	Outdoor	2 BT; 2 AT; 2 FU
27	Surface	Direct Examination	Indoor	9 BT; 9 AT; 9 FU
87	Total			

*BT: before treatment; AT: after treatment; FU: follow-up (8 weeks following treatment)

3. METHOD

3.1. Technology

The dry fog treatment is a two-step process. Step one involves releasing InstaPURE and step two applies EverPURE. The 1st step introduces InstaPURE, a cold sterilant, to the indoor air environment and across surfaces. This is done via a dry fog. Treatment occurs during the evaporation/phase change of the chemical which creates a hostile environment for mold and bacteria. Because the fine

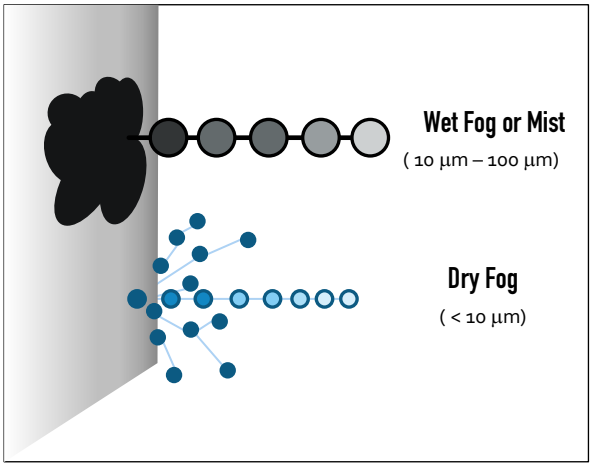

Figure 7. Physical behavior of small vs larger particle size

droplets are so small, averaging 7.5 µm in diameter, and their contact angles are large, they tend to bounce around the room and surfaces do not get wet (Figure 7). Given the droplets are smaller than mold spores, they are able to disperse to areas accessible by mold spores and permeate areas where mold spores can't. The 2nd step applies EverPURE, an antimicrobial coating, over all surfaces within the treated area. It is applied in a spray-like manner, using the same equipment, by adjusting the liquid and air pressures to achieve a slightly larger droplet size. This acts as a microscopic physical barrier to inhibit mold growth from spores entering the facility through the HVAC system, open windows and doorways, or from persons via their clothing or other personal items.

3.2. Treatment Equipment and Materials

The dry fog treatment system consists of the following equipment and materials:

- Dry fog tank
- Two spray nozzles w/stands
- 100' of 1/4" flexible liquid tubing; 100' of 3/8" flexible air tubing
- Three mobile air compressors
- InstaPURE
- EverPURE
- Distilled water
- Gloves
- Respirator

All of the above equipment and materials (with the exception of the dry fog tank) are commercial-off-the-shelf (COTS) products.

InstaPURE and EverPURE are also commercially available under their manufacturers' name or other branded names. The Safety Data Sheets (SDS) for InstaPURE and EverPURE are provided in Appendix A and B respectively.

As noted above, InstaPURE is a cold sterilant. Its active ingredients include acetic acid and hydrogen peroxide. This is commonly referred to as peracetic acid or PAA. Because of its effectiveness against bacteria, fungi, and viruses, PAA is used as a disinfectant in the food and medical industries. PAA oxidizes the outer cell membrane of vegetative bacterial cells, endospores, yeast, and mold spores, making it an effective sanitizer against all microorganisms, including bacterial spores. The reason for the excellent and rapid antimicrobial effects of PAA is its specific capability to penetrate the cell membrane. Once inside the cell, PAA plays a role in denaturing proteins, disrupting cell wall permeability, and oxidizing sulfhydryl and sulfur bonds in enzymes and other proteins. The end products of peracetic acid oxidation are acetic acid (vinegar) and water[3].

The dry fog treatment process uses peracetic acid in the vapor form, where it is commonly referred to as vapor peracetic acid or VPA. Through extensive testing of more than 100 materials, VPA has shown high material compatibility. For example, the VPA method can safely sterilize products that would normally be damaged by a liquid chemical, even copper, which is known to oxidize from liquid PAA. A product containing liquid copper was exposed to the VPA process in 10 repeated four-hour cycles, only showing a slight dulling of the original gloss. Tests have also been successfully conducted using multiple sterilization cycles on thermoplastics, thermosets, adhesives, batteries, and bioabsorbables. VPA's non-toxic, sterile processing solution leaves behind no harmful residuals, providing not only a safer work environment for employees but a safer product for patients. With VPA breaking down into carbon dioxide, oxygen and water, the VPA process is noncarcinogenic, nonexplosive/ flammable, and requires no external ventilation. It can be integrated directly into the on-site manufacturing process, reducing transportation and inventory costs associated with other contract sterilization methods[4].

While the Occupational Safety and Health Administration (OSHA) does not currently have permissible exposure limit (PEL) for peracetic acid, Industrial Hygienists (IH) and Occupational and Environmental Health and Safety (OEHS) professionals are not entirely without guidance. In 2014, the American Conference of Governmental Industrial Hygienists (ACGIH) adopted a Threshold Limit Value – Short-Term Exposure Limit (TLV-STEL) for peracetic acid of 0.4ppm (1.24 mg/m3) as a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday[5].

The Acute Exposure Guideline Levels (AEGL) AEGL-1 value is 0.52 mg/m3 (0.17 ppm) for all exposure durations from 10 minutes to 8 hours. This value was derived from an exposure concentration of 1.56 mg/m3 (0.5 ppm), which, according to Fraser and Thorbinson (1986), is expected to cause no discomfort and according to McDonagh (1997) is not immediately irritating but would be unpleasant for an extended period of time. Therefore, 1.56 mg/m3 (0.5 ppm) is considered to be the threshold for irritation to mucous membranes and eyes[6]. It is also noted that the effects of peracetic acid exposure correlate with concentration more than time and it is freely soluble in water; therefore, it should be effectively scrubbed in the nasal passage, particularly at the very low AEGL-1 concentration.

Currently, Pure Maintenance's practice is to inform the inhabitants of the facility they may enter the facility 2 hours following demobilization from the site. This is typically a minimum of 3 hours following treatment. Experience from treatment of 10's of thousands of facilities, this generally provides enough time for the concentrations to dissipate enough to allow inhabitants to comfortable occupy the space without any lacrimation or irritation. The faint "vinegary" smell will often linger for a day or two, but there is no irritation or discomfort. Occasionally, more susceptible individuals will wait longer, 6 to 8 hours following treatment, before occupying the facility. Thus, qualitatively putting the levels below the 0.5 ppm level. Pure Maintenance's post treatment quantitative monitoring of VPA (concentrations versus time after treatment) is ongoing in order to quantitatively determine average post treatment concentrations at 0 to 4 hours following treatment.

3.3. Other Treatment Methods

There are currently a number of ways to treat indoor spaces to achieve a healthy indoor air quality. In Table 2 below, the reader is presented with a general qualitative description of the more commonly known treatment methods currently being used throughout industry. An evaluation of methods, other than the dry-fog, considering ease of implementation (including building occupant vacancy requirement), cost, efficacy, and long term protection, via direct comparison during treatment, was not within the scope of this project. Therefore, the brief descriptions below are based on the experiences of Certified Mold Inspector personnel having a combined 27+ years in the indoor air treatment and mold removal industry.

Table 2. Comparison of common mold treatment methods

Method	Description
Ozone	• Available via numerous ozone generating devices • Fills the facility with ozone or trioxygen • Requires certain materials/belongings to be covered prior to treatment
Hydrogen Peroxide Vapor	• Used in vapor form, is used to fill the facility • Has a low vapor pressure
Traditional Tear Out	• Focuses on the idea that all of the mold within the home is located where the water problem (or visible mold) occurred • Approach is to designate the area that has moisture (i.e. leaking, flooding, etc.) and physically contain that space with a plastic barrier • Negative pressure is created within the area and the tear out and rebuild process is initiated • HEPA filtered air scrubbers are operated until an acceptable air quality test is achieved • Process is time consuming, very inconvenient for building occupants
Liquid Sprays	• Can be Eco-friendly such as RMR Brands®, Mold Off®, etc. • Can be different variations of common bleach (i.e. sodium hypochlorite) • Effective on hard nonporous surfaces • Limited, if any, effect on airborne mold spores • Localized treatment

3.4. Application

The 1st step (InstaPURE) is performed by placing the fog heads (Figure 8) on the floor of each room as it is treated. The fog is released into the room and fogging continues from room-to-room throughout the facility. Each room of the facility is fogged, and the door is shut (where applicable), then the next room is fogged. This allows residual dwell time until the remainder of the facility has been treated.

Figure 8. Application of InstaPURE

The 2nd step (EverPURE) is applied in more of a painting fashion (Figure 9). The fog heads are used as spray nozzles and all surfaces within the facility are lightly coated with EverPURE. The air is also permeated with the EverPURE while it is being applied to the surfaces.

Figure 9. Application of EverPURE

3.5. Sampling and Analysis

Two types of sampling and analysis were performed, spore trap (air) and direct microscopic exam from the tape pull method (surface). Samples were taken from 11 locations (9 indoor and 2 outdoor), as shown in Figures 10, 11 and 12. Full resolution versions of the floor plans are included in Appendix C.

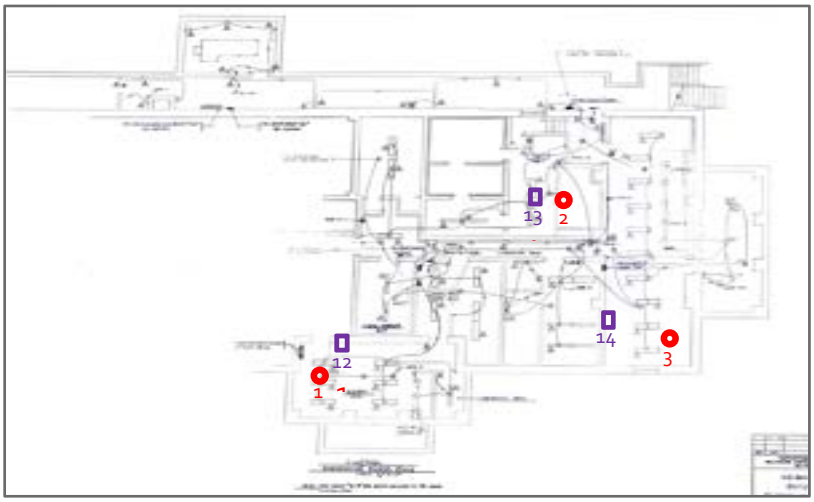

Figure 10. Basement sampling locations

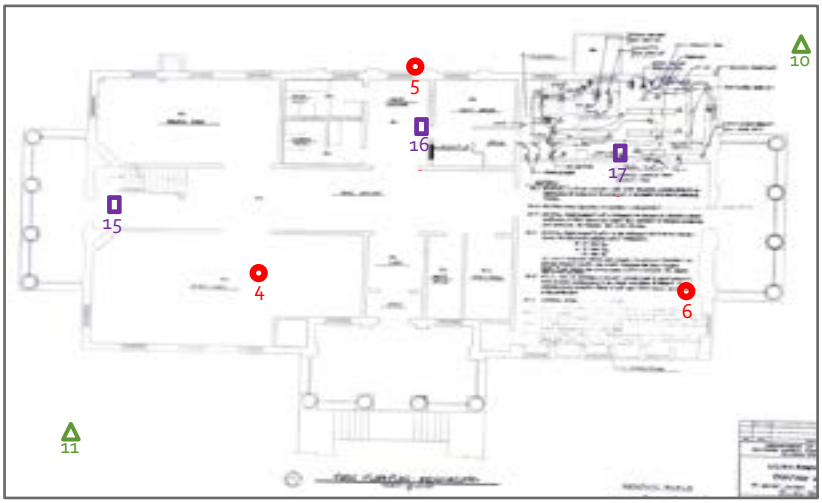

Figure 11. First floor sampling locations, including outdoor/background locations

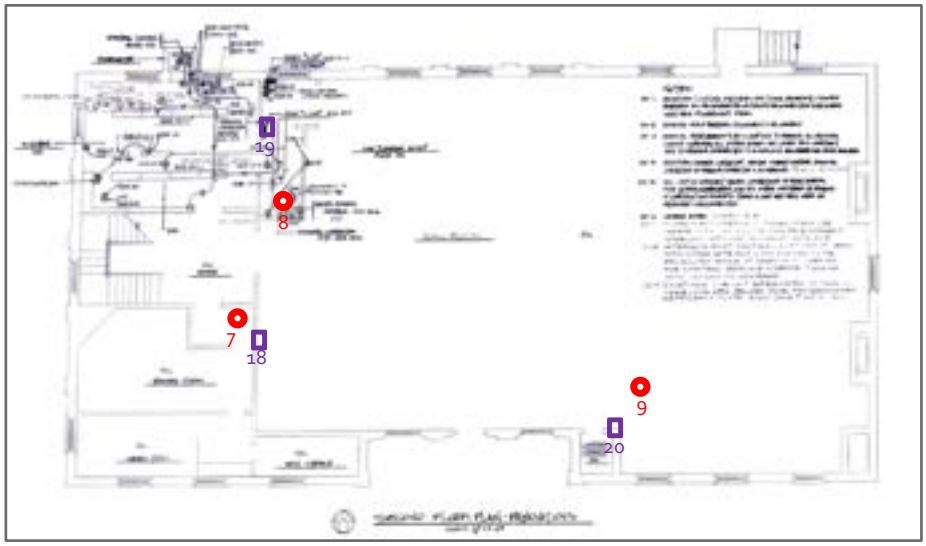

Figure 12. Second floor sampling locations

Air samples were collected before and after treatment from each of the 11 locations, however, surface samples were not collected at the outdoor locations 10 and 11.

3.5.1. Air Samples

Air samples were taken (Figure 13) according to sampling protocols for spore trap sampling. The purpose of spore trap sampling is to capture and quantify a broad spectrum of fungal spores from the air. Upon completion, both sides of the cassette are sealed off and the sample is ready for shipment.

Culturable spore trap air samples were also collected at all nine (9) indoor sampling locations. These samples were taken before and after treatment and during follow-up sampling using Via-Cell® collection devices. Similar to the Zefon Air-O-Cell™ but with additional capture capability to a habitable environment for continued viable fungal growth prior to laboratory analysis.

3.5.2. Surface Samples

Surface samples were collected using sampling protocols. Samples were collected by applying the tape to the surface and gently removing it (Figure 14) and putting it into the sample collection device. The purpose of the surface samples was to capture a qualitative representation of the type and amount of surface spores.

A Chain-of-Custody (COC) form was filled out and accompanied all samples to EMLabs P&K for laboratory analysis. The COC identifies a finite number of samples being sent to the laboratory and the requested analysis to perform on each. COC's are signed by sampling personnel and shipped with the respective samples to EMLabs P&K.

4. RESULTS

4.1. Analytical

This section provides the analytical laboratory results. Typically mold analyses are reported in terms of marker molds and outdoor (common) molds. Below is a brief discussion and identification of each type.

Figure 13. Air Sampling

Figure 14. Surface sampling

Marker Molds – These molds are uncommon types and are not usually found in significant numbers outdoors. They are, however, associated with more serious health problems and are often the best indicators of indoor mold issues. Typical marker molds are[7]:

- *Aureobasidium* – grows where moisture accumulates and yeast-like, beginning cream to pink becoming dark brown with age. Typically found in soils, fruit aerial portion of plants, marine estuary sediments and wood.
- *Chaetomium* - is not commonly found at significant levels indoors and is associated with health problems including fibromyalgia, MS, Lyme disease, and others.
- *Fusarium* – requires very wet conditions. Colonies are shades of pink to orange to purple.
- *Stachybotrys* – known as "black mold," is considered the most dangerous mold type and is typically found in low numbers, if at all, in outdoor samples.
- *Trichoderma* – found on paper, tapestry, wood, in kitchens on outer surface of unglazed ceramics. Strongly cellulolytic. Considered an emerging opportunist in immunocompromised persons.
- *Ulocladium* – found on gypsum board, paper, paint, tapestries, jute, other straw materials. It has a high water requirement. Colonies are dark brown to rusty brown, granular to velvety.

Stachybotrys, followed closely by Chaetomium, is the most dangerous mold to human health. In fact, some experts believe that once Stachybotrys has infiltrated a property, it can never be fully remediated. The most common symptoms from exposure are flu-like symptoms such as a sore throat, diarrhea, and headache[8].

Outdoor Molds – Common outdoor molds typically start growing outdoors and can still cause health issues when growing indoors. These health issues are usually related to cold, allergy, sinus, and respiratory problems. Examples of these molds include[7]:

- *Basidiospores* – which is an extremely common mold genus in outdoor samples that originate from fungus in gardens, forests, and woodlands. Basidiospores are often found in dirt of indoor potted plants or dust.
- *Cladosporium* – a genus that includes approximately 28-40 species and is one of the top three most common genus in the United States found indoors on a variety of substrates.
- *Penicillium/Aspergillus* – a genus that includes approximately 200 species and that is the most common fungal genus in the United States. Penicillium/Aspergillus is commonly found in house dust, water damaged wallpaper and sheet rock, wallpaper flue, fabrics, moist chipboards, and in rotting food.
- *Others* – molds in this category are generally found outdoors in moderate numbers and are therefore not considered markers of indoor growth.

Tables 3 and 4 below provide "typical" U.S. and Virginia outdoor average mold levels for October. The low, medium and high columns represent the 2.5%, 50%, and 97.5% percentile values of the spore count when the spore type is detected[9].

Table 3. U.S. National Outdoor Average for October

Fungal Type	Low (2.5%) (#spores/m3)	Medium (50%) (#spores/m3)	High (97.5%) (#spores/m3)	Frequency (%)
Alterna	13	40	107	60
Basidiospores	133	627	3625	96
Chaetomium	13	13	40	13
Cladosporium	213	800	2720	96
Penicillium/Aspergillus Types	100	267	747	80
Stachybotrys	13	13	40	3

Table 4. Typical Outdoor Spore Levels for Virginia

Fungal Type	Low (2.5%) (#spores/m3)	Medium (50%) (#spores/m3)	High (97.5%) (#spores/m3)	Frequency (%)
Alterna	13	33	92	52
Basidiospores	213	1867	12160	94
Chaetomium	7	13	27	5
Cladosporium	107	587	2095	89
Penicillium/Aspergillus Types	53	160	500	79
Stachybotrys	13	13	53	1

As noted in Section 3 above, sample locations 1-3 are in the basement, locations 4-6 are on the first floor and 7-9 are on the second floor. Locations 10 and 11 are outdoors and provide background levels for comparison purposes.

Tables 5 and 6 provide the analytical results for the air sampling before treatment (BT), after treatment (AT), and follow-up (FU) at the 9 indoor locations (1-9) and 2 outdoor locations (10-11). The fungal types identified are based on those reported via the analysis of samples collected. Table 5 includes the outdoor/common molds and Table 6 contains the marker molds. All values are reported in spores per cubic meter (spores/m^3) and maintain their significant figure representation per the laboratory analytical reporting.

As discussed in Section 3 above, this project adhered to industry standard sampling methods and analyses. All samples were sent to EMLabs P&K in Phoenix, AZ for analysis. EMLabs P&K is an American Industrial Hygiene Association (AIHA) accredited laboratory. It is recognized as one of the leading commercial indoor air quality (IAQ) testing laboratories in North America, specializing in the analysis of air, bulk, and surface samples for fungi and bacteria.

Table 5. Spore trap analytical results for outdoor/common molds (spores/m^3)

Sample Location	Sample Event	Basidiospores	Cladosporium	Penicillium/ Aspergillus types	Others	TOTAL
1	BT	210	750	370	53	1383
	AT	110	-	-	53	216
	FU	270	53	53	53	429
2	BT	1,100	690	1,500	160	3,450
	AT	110	-	430	53	593
	FU	370	53	370	53	846
3	BT	9,500	640	8,400	110	18,650
	AT	160	850	200	210	1,420
	FU	160	320	25,000	320	25,800
4	BT	-	31,000	59,000	160	90,160
	AT	210	1,100	2,300	-	3,610
	FU	110	270	2,100	17,000	19,480
5	BT	53	1,400,000	2,200	110	1,402,363
	AT	430	1,200	-	110	1,740
	FU	-	160	2,900	530	3,590
6	BT	53	1,400	11,000	430	12,883
	AT	750	2,100	1,300	270	4,420
	FU	53	430	160	19,000	19,643
7	BT	160	1,100	4,200	-	5,460
	AT	9,800	-	480	270	10,550
	FU	53	480	210	110	853
8	BT	210	960	1,000	320	2,490
	AT	320	590	1,800	160	2,870
	FU	53	590	320	53	1,016

9	BT	53	1,100	19,000	110	20,263
	AT	110	430	1,900	270	2,710
	FU	270	110	430	53	863
					BT	**1,560,000**
				Indoor Totals*	**AT**	**28,100**
					FU	**72,500**
10	BT	640	11,000	160	370	12,170
	AT	960	13,000	110	1,800	15,870
	FU	-	-	-	-	-
11	BT	53	120,000	430	640	121,123
	AT	270	4,400	910	1,100	6,680
	FU	1,200	53	160	-	1,413
					BT	**133,000**
				Background Totals*	**AT**	**22,600**
					FU	**1,410**

** Total has been rounded to significant figures to reflect analytical precision*

As shown above, the total number of common/outdoor molds prior to treatment was 1,560,000 spores/m^3. Following treatment and 8 weeks after treatment the results were 28,100 spores/m^3 and 72,500 spores/m^3 respectively. Background totals for common/outdoor mold types for before, after and follow-up sampling were 133,000 spores/m^3, 22,600 spores/m^3 and 1,410 spores/m^3 respectively. Graphic representation of the changes, due to treatment, in comparison to background levels are shown in Figure 15 below.

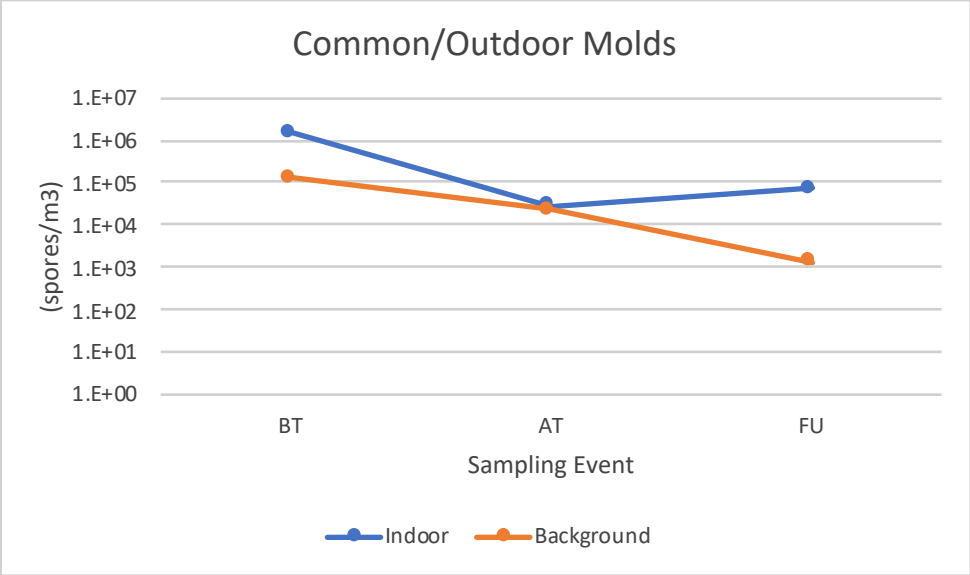

Figure 15. Semi-log plot of indoor versus background for common/outdoor mold types

Table 6 below presents the analytical results for marker molds, before, after and 8 weeks following treatment. The total number of marker molds prior to treatment was 25,000 spores/m^3. Following treatment and 8 weeks after treatment the results were 150 spores/m^3 and 200 spores/m^3 respectively. Marker mold common/outdoor sample totals for before, after and follow-

up sampling were 66 spores/m^3, none detected, and none detected respectively. Figure 16 shows the results in graphical format.

Table 6. Spore trap analytical results for marker molds (spores/m^3)

Sample Location	Sample Event	Aureobasidium	Chaetomium	Fusarium	Stachybotrys	Trichoderma	Ulocladium	TOTAL
1	BT	-	-	-	400	-	-	400
	AT	-	-	-	53	-	-	53
	FU	-	-	-	-	-	-	-
2	BT	-	530	-	630	-	-	1,160
	AT	-	-	-	13	-	-	13
	FU	-	-	-	-	-	-	-
3	BT	-	360	-	80	-	-	440
	AT	-	-	-	-	-	-	-
	FU	-	13	-	13	-	-	26
4	BT	-	27	-	40	-	-	67
	AT	-	-	-	-	-	-	-
	FU	-	-	-	-	-	-	-
5	BT	-	-	-	-	-	-	-
	AT	-	13	-	13	-	-	26
	FU	-	-	-	-	-	-	-
6	BT	-	27	-	270	-	-	297
	AT	-	-	-	-	-	-	-
	FU	-	53	-	110	-	-	163
7	BT	-	22000	-	150	-	-	22,150
	AT	-	27	-	-	-	-	27
	FU	-	-	-	13	-	-	13
8	BT	-	250	-	67	-	-	317
	AT	-	-	-	-	-	-	-
	FU	-	-	-	-	-	-	-
9	BT	-	13	-	27	-	-	40
	AT	-	-	-	27	-	-	27
	FU	-	-	-	-	-	-	-
							BT	**25,000**
						Indoor Totals*	**AT**	**150**
							FU	**200**
10	BT	-	-	53	-	-	-	53
	AT	-	-	-	-	-	-	-
	FU	-	-	-	-	-	-	-
11	BT	-	-	-	-	-	13	13
	AT	-	-	-	-	-	-	-
	FU	-	-	-	-	-	-	-
							BT	**66**
						Back-ground Totals*	**AT**	**-**
							FU	**-**

** Total has been rounded to significant figures to reflect analytical precision*

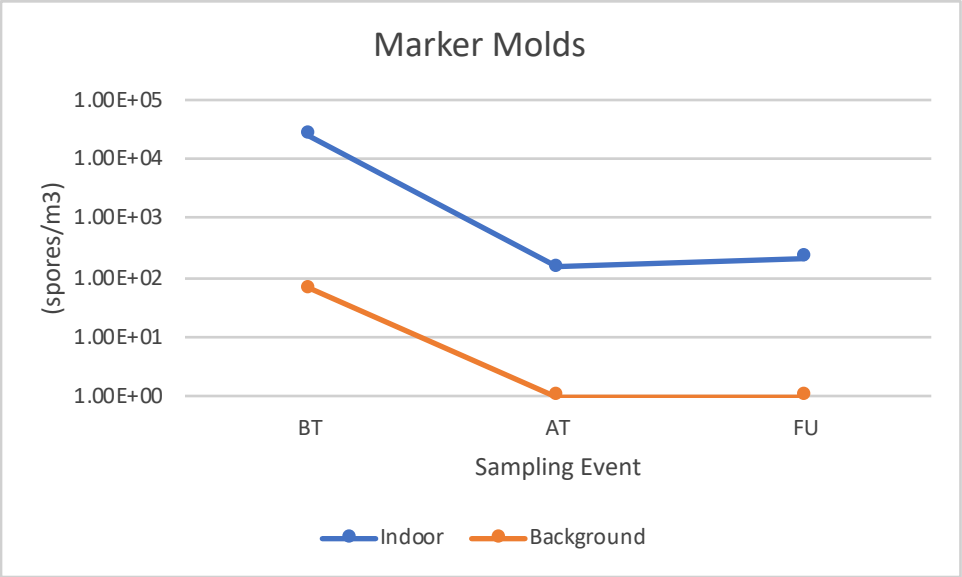

Figure 16. Semi-log plot of indoor versus background for marker mold types

Overall results from the spore trap air sampling before, after, and 8 weeks following treatment are shown in Table 7 below.

Table 7. Spore trap analytical results for non-culturable air sampling

Sampling Event	Total Mold Spores (spores/m³)		Marker Mold Spores (spores/m³)	
	Indoor	Outdoor/ Background	Indoor	Outdoor/ Background
BT	1,580,000	133,000	25,000	66
AT	28,200	22,600	150	-
FU	72,700	1,410	200	-
	Percent Removal		Percent Removal	
AT	98%	na	99%	na
FU	95%	na	99%	na

The outdoor/background follow-up sampling results are highly suspect. It is somewhat unusual to see total spore counts vary two orders of magnitude during the same season of the year. As shown in Table 4, the total spore count for this time of year is expected to be in the 10's of thousands (spores/m³). It should be noted that the area was experiencing very high (30-40 mph) winds during the follow-up sampling event. The ability for the small air pump to pull ambient air into the cassette during these extremely windy conditions is highly questionable, especially in a manner to provide samples representative of ambient conditions.

In the past, Pure Maintenance has always collected air samples via spore trap before and after treatment for analysis. A common question following treatment is how we know, if we haven't removed the materials where the mold was present, that we removed all of the mold. Typically,

there is very often an indication that mold spores (per the spore trap analytical results) are still present following treatment. A non-culturable spore trap analysis is an indication of spores, but it does not differentiate between those that are able to grow and those that are not (i.e. unable to grow under ideal conditions). For this reason, the culturable (i.e. "viable") samples were collected and analyzed for after and 8 weeks following treatment effectiveness.

Analytical results for the after treatment viability (AT-v) and follow-up (FU-v) sampling are provided in Table 8 below. The only indication of any viable fungi, following treatment, was Non-sporulating fungi of 44 cfu/m^3 at sample location 9 during after treatment sampling and Non-sporulating fungi of 27 cfu/m^3 and Aspergillus nidulans of 13 cfu/m^3 (which should be noted, is the detection limit) at sample location 6 during the follow-up sampling. Non-sporulating fungi refers to molds that fail to produce spores and typically indicates they have lost the ability, or conditions were not suitable to produce spores. Other than these exceptions, there is no indication of any viable spores remaining, based on the indoor air sampling conducted.

Table 8. Analytical results for culturable air sampling (cfu/m^3)

Sample Location	Sample Event	Aspergillus nidulans	Aspergillus ochraceus	Aspergillus versicolor	Aureobasidium	Basidiomycetes	Bipolaris/Drechsleara group	Botrytis	Chaetomium	Cladosporium	Curvularia	Epicoccum	Fusarium	Non-sporulating fungi	Paecilomyces	Penicillium	Phoma	Rhizopus	Stachybotrys chartarum	Ulocladium	Yeasts
1	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	13	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-
7	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	AT-v	-	-	-	-	-	-	-	-	-	-	-	-	44	-	-	-	-	-	-	-
	FU-v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The reader will note Table 8 does not include analytical results for the culturable air samples collected before dry fog treatment (BT-v). This is due to expiration of the samples' allowable time between collection and laboratory analysis. The cause of this due to additional transit time from one laboratory to another. Because the culturable analysis is a newly available analytical method, and this being the initial batch sent to the laboratory, the laboratory was not able to run the analysis in time to meet the deadline. The laboratory sent the samples to another laboratory which performed the analysis; however, the samples had expired, and the results are not valid, therefore they are not included in this report.

The impact to this project, as a result of not being able to include the aforementioned before treatment culturable samples is not severe, nor does it change the outcome of the treatment. What it does mean is that we are not able to quantify how many of the spores reported in the before treatment air samples analyses are "viable" (i.e. they were not dead or dormant). But we do know that many of them were, because of the visible growth at multiple locations within Building 60. Based on the analytical results of the after treatment culturable samples, as discussed above, 100% of the culturable spores were eliminated during treatment and those that do show-up in the air samples after treatment (Table 8) are not "viable". Follow-up sampling detected Aspergillus nidulans at 13 cfu/m3 (which should be noted is the detection limit).

Table 9 provides the analytical results for surface sampling at the 9 indoor sampling locations. Results are reported in terms of "spore types present" (indicative of mold growth). Qualitative results are assigned quantitative values by laboratory personnel via a grading system of <1+ to 4+, with <1+ being the detection limit and 4+ denoting the highest numbers indicative of mold growth. As noted below, surface samples, prior to treatment, indicate Chaetomium, Cladosporium, Penicillium/ Aspergillus types, and Stachybotrys. Following treatment, none of the surface samples indicate the presence of any remaining spores. Additional analytical results from the follow-up sampling, conducted 8 weeks following treatment, did not indicate the presence of any spores.

Table 9. Analytical results for surface sampling

Sample ID	Aureobasidium	Basidiospores	Chaetomium	Cladosporium	Fusarium	Penicillium/ Aspergillus types	Stachybotrys	Trichoderma	Ulocladium	Others
12-BT	-	-	-	3+	-	-	-	-	-	-
12-AT	-	-	-	-	-	-	-	-	-	-
12-FU	-	-	-	-	-	-	-	-	-	-
13-BT	-	-	1+	-	-	1+	4+	-	-	-
13-AT	-	-	-	-	-	-	-	-	-	-
13-FU	-	-	-	-	-	-	-	-	-	-
14-BT	-	-	-	3+	-	<1+	-	-	-	-
14-AT	-	-	-	-	-	-	-	-	-	-
14-FU	-	-	-	-	-	-	-	-	-	-

Sample ID	Aureobasidium	Basidiospores	Chaetomium	Cladosporium	Fusarium	Penicillium/ Aspergillus types	Stachybotrys	Trichoderma	Ulocladium	Others
15-BT	-	-	-	2+	-	1+		-	-	-
15-AT	-	-	-	-	-	-	-	-	-	-
15-FU	-	-	-	-	-	-	-	-	-	-
16-BT	-	-	-	3+	-	-	-	-	-	-
16-AT	-	-	-	-	-	-	-	-	-	-
16-FU	-	-	-	-	-	-	-	-	-	-
17-BT	-	-	-	2+	-	1+	-	-	-	-
17-AT	-	-	-	-	-	-	-	-	-	-
17-FU	-	-	-	-	-	-	-	-	-	-
18-BT	-	-	-	3+	-	2+	-	-	-	-
18-AT	-	-	-	-	-	-	-	-	-	-
18-FU	-	-	-	-	-	-	-	-	-	-
19-BT	-	-	-	-	-	-	-	-	-	1+
19-AT	-	-	-	-	-	-	-	-	-	-
19-FU	-	-	-	-	-	-	-	-	-	-
20-BT	-	-	-	2+	-	2+	-	-	-	-
20-AT	-	-	-	-	-	-	-	-	-	-
20-FU	-	-	-	-	-	-	-	-	-	-

All laboratory analytical reports are included in Appendix D. The COC's are provided in Appendix E.

4.2. Effectiveness

The overall effectiveness is generally determined by taking the total spore count prior to treatment and comparing it to the total spore count following treatment. Comparing these results to outdoor/background results is also a factor for interpreting the results. As shown previously, in Table 7, the Building 60 total spore count prior to treatment was 1,580,000 spores/m^3 and after treatment samples, collected at the same locations, was 28,200 spores/m^3. This indicates a removal efficacy of 98%. The follow-up sample results, 8 weeks following treatment, indicate a removal efficacy of 95%.

When considering the marker molds (Aureobasidium, Chaetomium, Fusarium, Stachybotrys, Trichoderma and Ulocladium), the indoor total before treatment was 25,000 spores/m^3 and after treatment samples, collected at the same locations, was 150 spores/m^3. This indicates a removal efficacy of 99%. The follow-up sample results indicate a continued removal efficacy of 99%.

Figure 17 provides a before and after visual representation of the wall/ceiling area near sampling location 5. As part of the InstaPURE treatment (Step 1), areas having visible mold are wiped clean for aesthetic purposes.

In summary, according to the test results, 98 % of all mold spores were removed during treatment and 95% efficacy for total spores remained 8 weeks following treatment. All "viable" mold spores (including 100% of the marker molds) were removed by the treatment, with the exception of Non-sporulating fungi at 44 cfu/m^3 after treatment and 27 cfu/m^3 of Non-sporulating fungi and 13 cfu/m3 of Aspergillus nidulans 8 weeks following treatment. Again, it should be noted that non-sporulating fungi refers to molds that fail to produce spores and typically indicates they have lost the ability or conditions were not suitable to produce spores. The Aspergillus nidulans detection is at the detection limit and equates to a single spore in the laboratory analysis.

Surface sampling indicated no spores present after treatment and still no spores present 8 weeks following treatment.

Figure 17. Before and after treatment at location 5

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The goal/objective of this project was to demonstrate the effectiveness and ease-of-use of the dry fog technology for the JBMHH DPW. Treatment of the 2 story, 22,500 ft facility (Building 60) was completed within 48 hours. The treatment resulted in 98% removal of all mold spores and 99% removal of marker molds. Eight weeks following treatment the efficacy was 95% of all mold spores and 99% of the marker molds. The dry fog treatment provides an effective and economical solution to extensive indoor air quality problems in facilities across the Department of Defense.

Viability sampling assesses the viability of many fungi. It provides counts indicative of the number of spores present in the air that are culturable. In our case, the only viable fungi remaining following treatment were non-sporulating fungi at 44 cfu/m^3 after sampling and 27 cfu/m^3 during follow-up sampling. Non-sporulating fungi refers to molds that fail to produce spores and typically indicates they have lost the ability or conditions were not suitable, to produce spores. Therefore, based on these viability sampling results, the small percentages of total spores and marker mold spores (2%, 5% at 8 weeks following treatment, and 1% respectively) identified by the culturable spore trap sampling, are not "viable" and no further treatment action is needed.

5.2. Recommendation

Pure Maintenance recommends addressing facility issues where water is allowed to enter the building. Water damage internal to the facility will eventually degrade the EverPURE treatment allowing mold spores to survive and grow where conditions are favorable.

To date, the long term effectiveness (i.e. 6 – 36 months following treatment) has not been evaluated on a federal facility. This is an area where data is also lacking within the industrial/commercial sector. Pure Maintenance would welcome an invitation to demonstrate long term effectiveness of the dry fog treatment and any other additional opportunities to improve indoor air quality at federal facilities (CONUS or OCONUS). The dry fog technology is accessible in all 50 states and US Territories.

6. REFERENCES

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2. https://emlab.com/resources/fungal-library/
3. Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 8 Committee on Acute Exposure Guideline Levels; Committee on Toxicology; National Research Council ISBN: 0-309-14516-3, 464 pages, 6 x 9, (2010)
4. https://www.medicaldesignandoutsourcing.com/what-is-peracetic-acid-sterilization/
5. https://synergist.aiha.org/201612-peracetic-acid-uses-and-hazards
6. Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 8 http://www.nap.edu/catalog/12770.html
7. EMLab P&K Mold Report™ pp 2
8. https://thompsonwedeking.com/types-of-toxic-mold/
9. EMLab P&K 2012, IAQ Pocket Reference Guide – 7th Edition, pp 22, 24, 33

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APPENDIX A – InstaPURE Safety Data Sheets

ACTRIL® Cold Sterilant

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012.

:

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : ACTRIL Cold Sterilant

Product code : 78399-509/ 78400-309/ 78399-510

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Sterilization, Disinfection, and Sanitization of Medical Equipment

1.3. Details of the supplier of the safety data sheet

Medivators Inc.
14605 28th Avenue North
Minneapolis, MN 55447 - USA
T 1-800-328-3340

1.4. Emergency telephone number

Emergency number : 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin irritation 2
Serious eye damage 1

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS05

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : Causes skin irritation. Causes serious eye damage.

Precautionary statements (GHS-US) : Wash hands thoroughly after handling. Wear protective gloves/eye protection/face protection. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor.

2.3. Other hazards

No additional information available.

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable.

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Acetic acid	(CAS No) 64-19-7	5.2	Flam. Liq. 3 Acute Tox. 4 (Dermal) Skin Corr. 1A
Hydrogen peroxide	(CAS No) 7722-84-1	1.0	Ox. Liq. 1 Acute Tox. 4 (Oral) Acute Tox. 4 (Inhalation) Skin Corr. 1A

* The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops or persists.

First-aid measures after eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

First-aid measures after ingestion : If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause respiratory tract irritation.

Symptoms/injuries after skin contact : Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Symptoms/injuries after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Symptoms/injuries after ingestion : May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Treat for surrounding material.

Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Products of combustion may include, and are not limited to: oxides of carbon.

5.3. Advice for firefighters

Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.2. Environmental precautions

Relevant water authorities should be notified of any large spillage to water course or drain.

6.3. Methods and material for containment and cleaning up

For containment : Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Use appropriate personal protection equipment (PPE).

Methods for cleaning up : Scoop up material and place in a disposal container.

6.4. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not swallow. Handle and open container with care. When using do not eat, drink or smoke.

Hygiene measures : Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Acetic acid (64-19-7)		
ACGIH	ACGIH TWA (ppm)	10 ppm
ACGIH	ACGIH STEL (ppm)	15 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	25 mg/m³

Acetic acid (64-19-7)		
OSHA	OSHA PEL (TWA) (ppm)	10 ppm

Hydrogen peroxide (7722-84-1)		
ACGIH	ACGIH TWA (ppm)	1 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	1.4 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	1 ppm

8.2. Exposure controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

Hand protection : Wear chemically resistant protective gloves.

Eye protection : Wear approved eye protection (properly fitted dust- or splash-proof chemical safety goggles) and face protection (face shield).

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Maintain levels below Community environmental protection thresholds.

Other information : Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Clear

Colour : Colourless

Odour : Acidic

Odour threshold : No data available

pH : 1.5 – 2.0

Relative evaporation rate (butylacetate=1) : No data available

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : ≈ 110 °C (230 °F)

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : Not flammable

Vapour pressure : No data available

Relative vapour density at 20 °C : No data available

Relative density : 1.01

Solubility : No data available

Log Pow : No data available

Log Kow : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : No data available

Explosive properties : No data available

Oxidising properties : No data available

Explosive limits : No data available

9.2. Other information

No additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability
Stable under normal storage conditions.

10.3. Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid
Heat.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products
May include, and are not limited to: oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : Not classified.

ACTRIL Cold Sterilant	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 20 mg/l/4h

Acetic acid (64-19-7)	
LD50 oral rat	3310 mg/kg
LD50 dermal rabbit	1060 mg/kg
LC50 inhalation rat	11.4 mg/l/4h

Hydrogen peroxide (7722-84-1)	
LD50 oral rat	801 mg/kg
LD50 dermal rabbit	2000 mg/kg
LC50 inhalation rat	2 g/m³/4h

Skin corrosion/irritation : Causes skin irritation (on basis of test data).
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitisation : Based on available data, the classification criteria are not met.
Germ cell mutagenicity : Based on available data, the classification criteria are not met.
Carcinogenicity : Based on available data, the classification criteria are not met.

Hydrogen peroxide (7722-84-1)	
IARC group	3 - Not classifiable

Reproductive toxicity : Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure) : Based on available data, the classification criteria are not met.
Specific target organ toxicity (repeated exposure) : Based on available data, the classification criteria are not met.
Aspiration hazard : Based on available data, the classification criteria are not met.

Symptoms/injuries after inhalation : May cause respiratory tract irritation.
Symptoms/injuries after skin contact : Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
Symptoms/injuries after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
Symptoms/injuries after ingestion : May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : Not considered to be harmful to aquatic life.

Acetic acid (64-19-7)	
LC50 fishes 1	79 mg/l (96 h - Pimephales promelas [static])
EC50 Daphnia 1	65 mg/l (48 h - Daphnia magna [Static])
LC50 fish 2	75 mg/l (96 h - Lepomis macrochirus [static])

Hydrogen peroxide (7722-84-1)	
LC50 fishes 1	16.4 mg/l (96 h - Pimephales promelas)
EC50 Daphnia 1	18 - 32 mg/l (48 h - Daphnia magna [Static])
LC50 fish 2	18 - 56 mg/l (96 h - Lepomis macrochirus [static])

12.2. Persistence and degradability

ACTRIL Cold Sterilant	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

ACTRIL Cold Sterilant	
Bioaccumulative potential	Not established.

Acetic acid (64-19-7)	
Log Pow	-0.31 (at 20 °C)

Hydrogen peroxide (7722-84-1)	
BCF fish 1	(no bioaccumulation)

12.4. Mobility in soil

No additional information available.

12.5. Other adverse effects

Effect on ozone layer : No additional information available

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : This material must be disposed of in accordance with all local, state, provincial, and federal regulations. The generation of waste should be avoided or minimized wherever possible.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

Not regulated for transport.

14.2. UN proper shipping name

Not applicable.

14.3. Additional information

Other information : No supplementary information available.

Special transport precautions : Do not handle until all safety precautions have been read and understood.

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

15.3. US State regulations

ACTRIL Cold Sterilant	
State or local regulations	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

SECTION 16: Other information

Indication of changes : None.

Date of issue : 11/11/2014

Other information : None.

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

APPENDIX B – EverPURE Safety Data Sheets

Safety Data Sheet

Issue Date: 25-Jan-2012 **Revision Date:** 2-Jan-2018 **Version** 1

1. IDENTIFICATION

Product Identifier
Product Name Bio-Protect DP

Other means of identification
SDS # PSI-002

Recommended use of the chemical and restrictions on use
Recommended Use Disinfectant.

Details of the supplier of the safety data sheet
Manufacturer Address
ViaClean Technologies, LLC.
230 S Broad Street, Suite 1201
Philadelphia PA, 19102
Ph: 877-447-5956
Emergency Telephone Number
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Physical State Liquid **Odor** Mild Ethanol-like

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 1
Flammable Liquids	Category 3

Signal Word
Danger

Hazard Statements
Harmful if swallowed
Harmful in contact with skin
Causes severe skin burns and eye damage
Causes damage to organs
Flammable liquid and vapor

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response
Immediately call a poison center or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Call a poison center or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Do not induce vomiting
IN CASE OF FIRE: Use CO_2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Proprietary Chloride	Proprietary	30 - 40%
Proprietary Solvent	Proprietary	30 - 40%
Proprietary Quaternary ammonium	Proprietary	10 - 20%
Proprietary Alcohol	Proprietary	10 - 20%

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice Provide this SDS to medical personnel for treatment.

Eye Contact Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin Contact Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a poison center or doctor/physician if you feel unwell or if skin irritation persists. Wash contaminated clothing before reuse.

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician. If not breathing, give artificial respiration.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Most important symptoms and effects

Symptoms Harmful if swallowed. Harmful in contact with skin. Causes severe skin burns and eye damage.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat as methyl alcohol poisoning. Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsions may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short acting barbiturate drug.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical. Foam. Water spray (fog). Carbon dioxide (CO2).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Flammable liquid and vapor. Vapors are heavier than air and may travel along ground to ignition sources and flash back.

Hazardous Combustion Products Chlorine compounds. Carbon oxides & traces of incompletely burned carbon compounds. Silicon dioxide. Formaldehyde. Nitrogen oxides (NOx).

Sensitivity to Static Discharge Prevent electrostatic charge build-up by using common bonding and ground techniques.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool exposed containers with water to prevent rupturing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Ventilate area. Remove all ignition sources.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so. Soak up and contain spill with an inert (i.e. vermiculite, dry sand or earth) absorbent material.

Methods for Clean-Up Use only non-sparking tools. Sweep up and shovel into suitable containers for disposal. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing and eye/face protection. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Ground/bond container and receiving equipment. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a cool, well-ventilated place. Store locked up. Do not store at elevated temperatures (above 140 deg. F).

Incompatible Materials Acids. Alkalis. Strong oxidizing agents. Strong reducing agents. Anionic surfactants.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Proprietary Solvent	TWA: 10 ppm inhalable fraction and vapor	-	-
Proprietary Alcohol	STEL: 250 ppm TWA: 200 ppm S*	TWA: 200 ppm TWA: 260 mg/m^3 (vacated) TWA: 200 ppm (vacated) TWA: 260 mg/m^3 (vacated) STEL: 250 ppm (vacated) STEL: 325 mg/m^3 (vacated) S*	IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m^3 STEL: 250 ppm STEL: 325 mg/m^3

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area. Explosion-proof general and local exhaust ventilation.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Chemical safety goggles/faceshield. Refer to 29 CFR 1910.133 for eye and face protection regulations.

Skin and Body Protection Wear rubber or plastic gloves. Long sleeve shirt and long pants. Aprons. Refer to 29 CFR 1910.138 for appropriate skin and body protection.

Respiratory Protection IF TLV is exceeded, use a NIOSH/MSHA approved respirator. Refer to 29 CFR 1910.134 for respiratory protection requirements.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Not determined	**Odor**	Mild Ethanol-like
Color	Not determined	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	5.5	
Melting Point/Freezing Point	-2.2 °C / 28 °F	
Boiling Point/Boiling Range	65 °C / 149 °F	
Flash Point	33.9 °C / 93.02 °F	Pensky-Martens Closed Cup (PMCC)
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	N/A	
Lower Flammability Limit	N/A	
Vapor Pressure	100.00 mmHg	@ 25°C (77°F)
Vapor Density	N/A	
Specific Gravity	0.96 g/mL	@ 77°F (25°C)
Water Solubility	>99.00%	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	<100 cps	@ 25 °C (77 °F)
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Density	0.958 g/mL @ 20°C	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Excessive heat and fire. Keep from freezing.

Incompatible Materials
Acids. Alkalis. Strong oxidizing agents. Strong reducing agents. Anionic surfactants.

Hazardous Decomposition Products
Chlorine compounds. Carbon oxides & traces of incompletely burned carbon compounds. Silicon dioxide, Formaldehyde, Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes severe eye damage.

Skin Contact Harmful in contact with skin. Causes severe skin burns.

Inhalation Do not inhale.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Proprietary Solvent	= 5660 mg/kg (Rat)	= 2700 mg/kg (Rabbit)	-
Proprietary Quaternary ammonium	= 426 mg/kg (Rat)	-	-
Proprietary Alcohol	= 6200 mg/kg (Rat)	= 15800 mg/kg (Rabbit)	= 64000 ppm (Rat) 4 h = 22500 ppm (Rat) 8 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

STOT - single exposure Causes damage to organs.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
Harmful to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Proprietary Solvent	100: 96 h Desmodesmus subspicatus mg/L EC50	1300: 96 h Lepomis macrochirus mg/L LC50 static		100: 48 h Daphnia magna mg/L EC50 2850: 24 h Daphnia magna mg/L EC50
Proprietary Alcohol		28200: 96 h Pimephales promelas mg/L LC50 flow-through 18 - 20: 96 h Oncorhynchus mykiss mL/L LC50 static 19500 - 20700: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 100: 96 h Pimephales promelas mg/L LC50 static 13500 - 17600: 96 h Lepomis macrochirus mg/L LC50 flow-through		

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Proprietary Alcohol	-0.77

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Proprietary Alcohol		Included in waste stream: F039		U154

California Hazardous Waste Status

This product contains one or more substances that are listed with the State of California as a hazardous waste

Chemical Name	California Hazardous Waste Status
Proprietary Alcohol	Toxic Ignitable

14. TRANSPORT INFORMATION

DOT Hazard Class:	**8, PG II**
Bulk Only:	**No**
Proper Shipping Name:	**Disinfectants, Liquid, Corrosive N.O.S.**
UN / NA No.:	**UN1903**
DOT Label(s):	**CORROSIVE No. 8**
Further Information:	**IMO: CORROSIVE LIQUID, FLAMMABLE, N.O.S.**

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Proprietary Chloride	Present	X		Present		Present	X	Present	X	X
Proprietary Solvent	Present	X		Present		Present	X	Present	X	X
Proprietary Quaternary ammonium	Present	X		Present		Present	X	Present	X	X
Proprietary Alcohol	Present	X		Present		Present	X	Present	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Proprietary Alcohol	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Proprietary Solvent -		15 - 40	1.0
Proprietary Alcohol -		7 - 13	1.0

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Proprietary Alcohol -	Developmental

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Proprietary Solvent	X		X
Proprietary Alcohol	X	X	X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

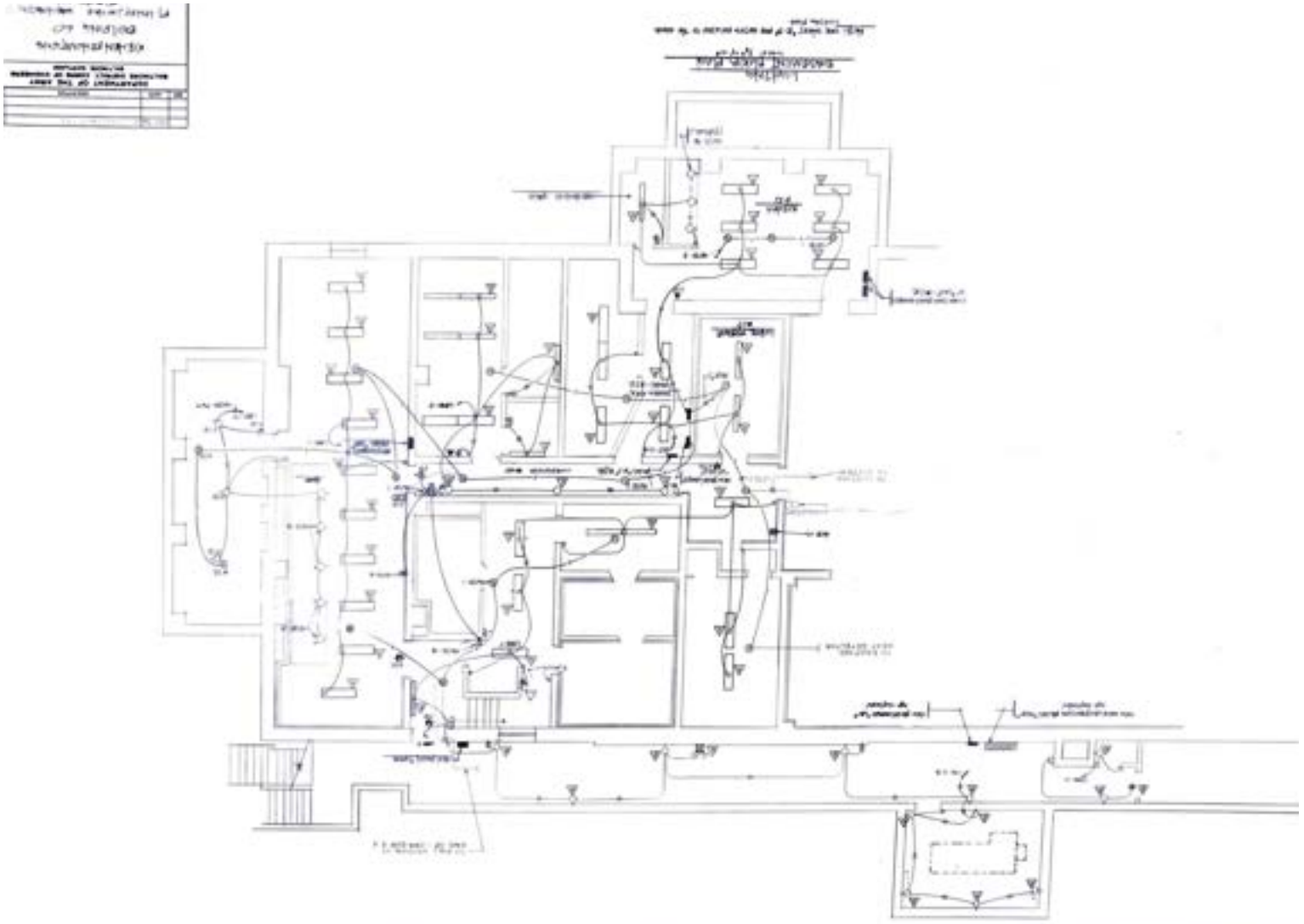
Issue Date: 25-Jan-2012
Revision Date: 2-Jan-2018
Revision Note: New Address

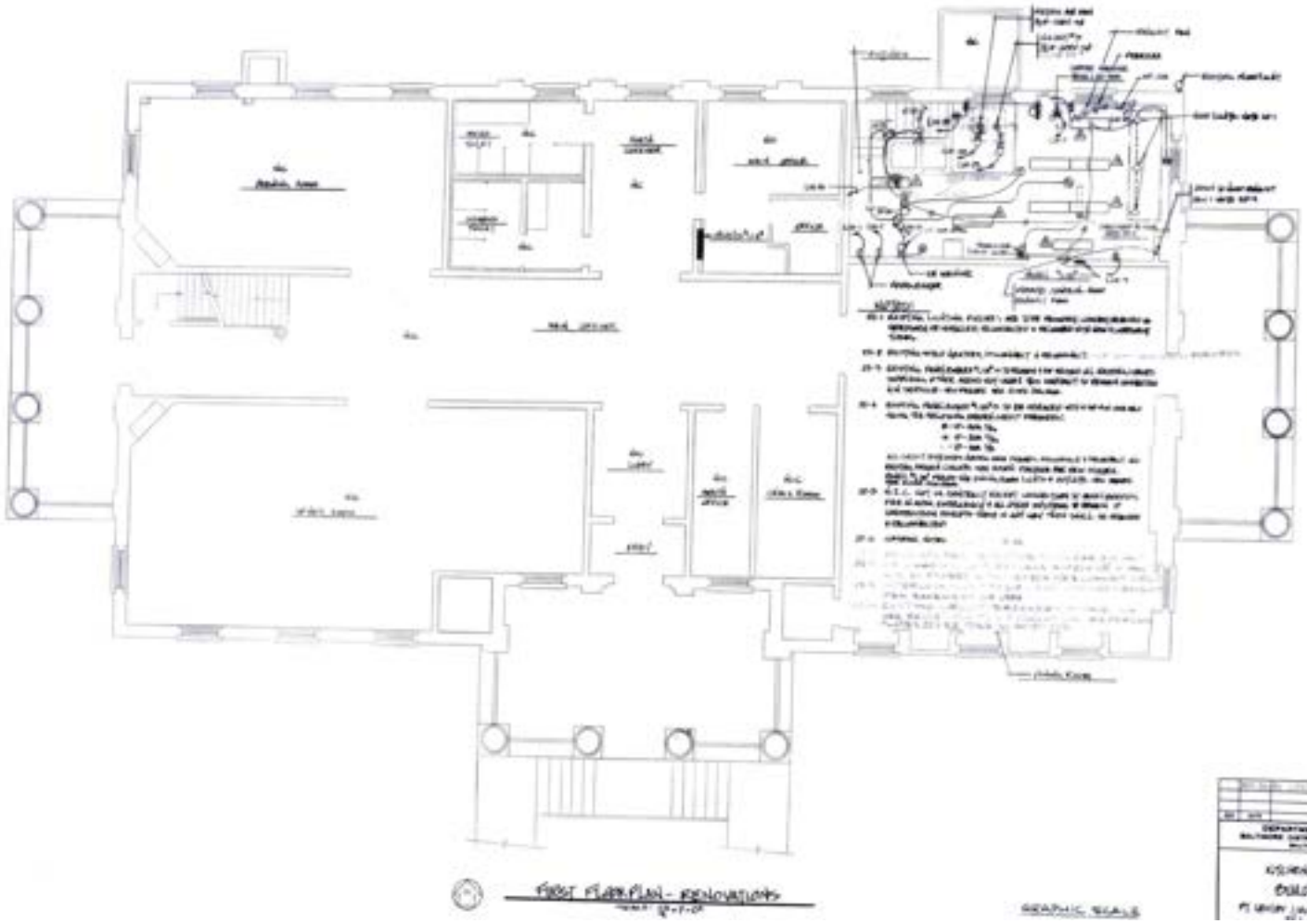
Disclaimer

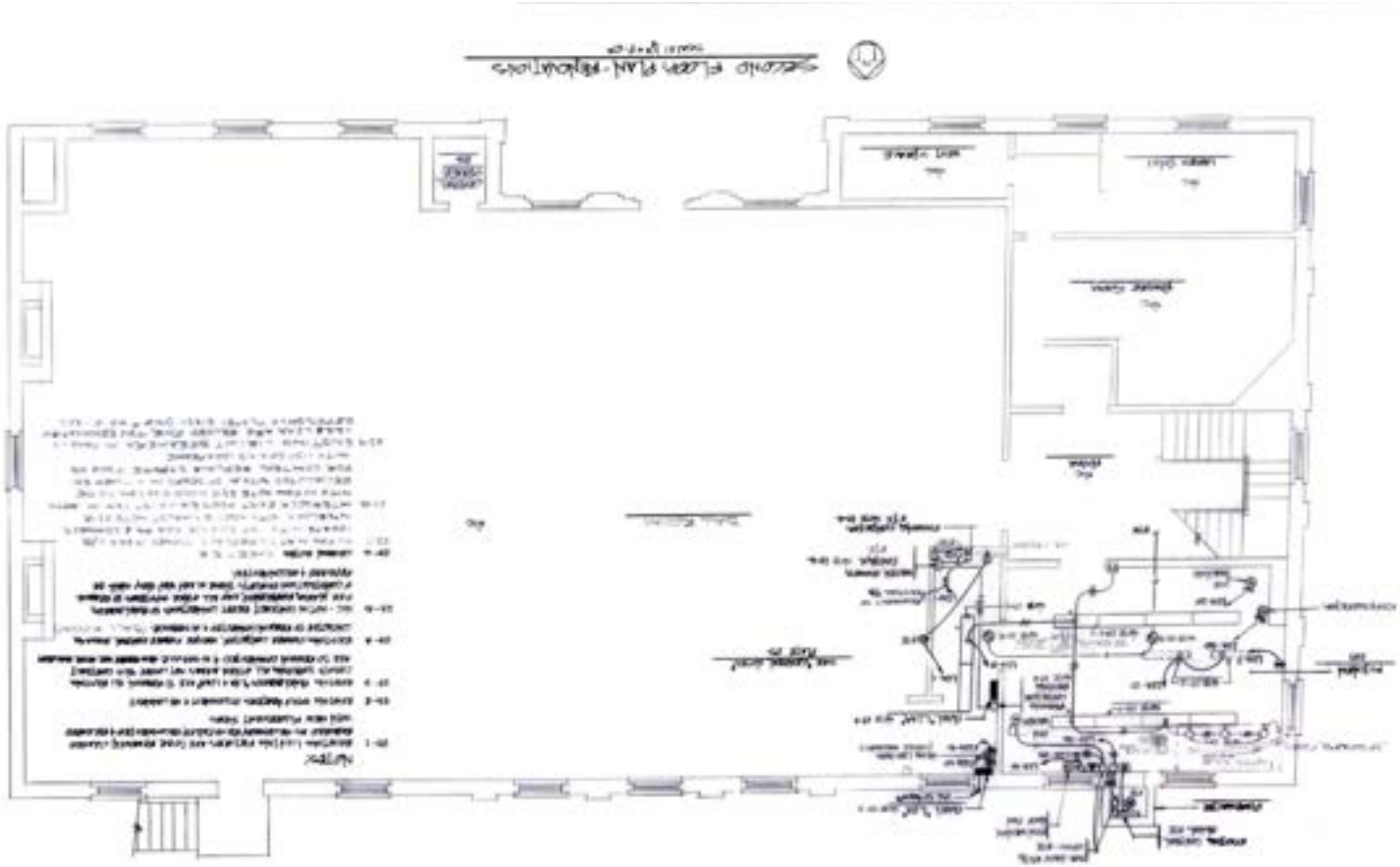
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

APPENDIX C – Sampling Locations Map







APPENDIX D – Laboratory Analytical Results

Pure Maintenance: UT
Mr Brandon Adams
1664 Woodland Park Dr. #301
Layton, UT 84041 USA

Eurofins EMLab P&K
www.MoldREPORT.com
info@MoldREPORT.com

Approved by:

Technical Manager
Joyce Van Ommen

Dates of Analysis:
MoldReport Direct exam: 10-24-2019 and 10-24-2019

Service SOPs: MoldReport Direct exam (EM-MY-S-1039)
AIHA-LAP, LLC accredited service, Lab ID #179768

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	12: 12 BT	13: 13 BT	14: 14 BT
Comments (see below):	None	None	None
Lab ID-Version‡:	10850048-1	10850049-1	10850050-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	1+	-
Cladosporium	3+	-	3+
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	1+	< 1+
Stachybotrys	-	4+	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Others	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	Very few	Very few	Very few
Background Debris and/or Description:**	Light	Light	Light

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	15: 15 BT	16: 16 BT	17: 17 BT
Comments (see below):	None	None	None
Lab ID-Version‡:	10850051-1	10850052-1	10850053-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	2+	3+	2+
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	1+	-	1+
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Others	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	Very few	Very few	Very few
Background Debris and/or Description:**	Light	Light	Light

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
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The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	18: 18 BT	19: 19 BT	20: 20 BT
Comments (see below):	None	None	None
Lab ID-Version‡:	10850054-1	10850055-1	10850056-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	3+	-	2+
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	2+	-	2+
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Others	-	1+	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	Very few	Very few	Very few
Background Debris and/or Description:**	Light	Moderate	Light

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Pure Maintenance: UT
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Eurofins EMLab P&K
www.MoldREPORT.com
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Approved by:

Technical Manager
Joyce Van Ommen

Dates of Analysis:
MoldReport Spore trap: 10-24-2019 and 10-24-2019

Service SOPs: MoldReport Spore trap (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #179768

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	1: 1-BT		2: 2-BT		3: 3-BT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10850057-1		10850058-1		10850059-1	
Analysis Date:	10/24/2019		10/24/2019		10/24/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	4	210	20	1,100	78	9,500
Chaetomium	-	-	40	530	27	360
Cladosporium	14	750	13	690	12	640
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	7	370	28	1,500	69	8,400
Stachybotrys	30	400	47	630	6	80
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	1	53	3	160	2	110
§ Total:		1,800		4,600		19,000
Additional Information:						
Hyphal fragments	160		110		53	
Skin cells	80 - 4,000		80 - 4,000		80 - 4,000	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	3		4		3	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	4: 4-BT		5: 5-BT		6: 6-BT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10850060-1		10850061-1		10850062-1	
Analysis Date:	10/24/2019		10/24/2019		10/24/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	-	-	1	53	1	53
Chaetomium	2	27	-	-	2	27
Cladosporium	258	31,000	2,592	1,400,000	26	1,400
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	111	59,000	41	2,200	93	11,000
Stachybotrys	3	40	-	-	20	270
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	3	160	2	110	8	430
§ Total:		91,000		1,400,000		13,000
Additional Information:						
Hyphal fragments	210		1,400		53	
Skin cells	80 - 4,000		80 - 4,000		80 - 4,000	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	4		2		4	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	7: 7-BT		8: 8-BT		9: 9-BT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10850063-1		10850064-1		10850065-1	
Analysis Date:	10/24/2019		10/24/2019		10/24/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	3	160	4	210	1	53
Chaetomium	412	22,000	19	250	1	13
Cladosporium	21	1,100	18	960	20	1,100
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	79	4,200	19	1,000	156	19,000
Stachybotrys	11	150	5	67	2	27
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	-	-	6	320	2	110
§ Total:		28,000		2,800		20,000
Additional Information:						
Hyphal fragments	6,200		-		53	
Skin cells	80 - 4,000		80 - 4,000		80 - 4,000	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	4		3		3	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Before Air Samples
Date of Sampling: 10-21-2019
Date of Receipt: 10-23-2019
Date of Report: 10-24-2019

MoldREPORT
Eurofins EMLab P & K
880 Riverside Parkway, West Sacramento, CA 95605
(866) 888-6653 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	10: 10-BT (Outdoor)		11: 11 BT (Outdoor)	
Comments (see below)	None		None	
Lab ID-Version‡:	10850066-1		10850067-1	
Analysis Date:	10/24/2019		10/24/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-
Basidiospores	12	640	1	53
Chaetomium	-	-	-	-
Cladosporium	212	11,000	216	120,000
Fusarium	1	53	-	-
Penicillium/Aspergillus types	3	160	8	430
Stachybotrys	-	-	-	-
Trichoderma	-	-	-	-
Ulocladium	-	-	1	13
Others	7	370	12	640
§ Total:		13,000		120,000
Additional Information:				
Hyphal fragments	-		53	
Skin cells	13 - 67		13 - 67	
Pollen	< 13		< 13	
Background debris (1-4)†	1		1	
Limit of detection	13		13	
Sample volume (liters)	75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Pure Maintenance: UT
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Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
MoldReport Direct exam: 10-25-2019

Service SOPs: MoldReport Direct exam (EM-MY-S-1039)
AIHA-LAP, LLC accredited service, Lab ID #102297

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	12: 12 AT	13: 13 AT	14: 14 AT
Comments (see below):	None	None	None
Lab ID-Version‡:	10854311-1	10854312-1	10854313-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	-	Very few	-
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	-	-	-
Background Debris and/or Description:**	Scant	Moderate	Scant

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	15: 15 AT	16: 16 AT	17: 17 AT
Comments (see below):	None	A	None
Lab ID-Version‡:	10854314-1	10854315-1	10854316-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	-
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	-	Very few	-
Background Debris and/or Description:**	Scant	Light	Scant

Comments: A) Bacteria-like organisms detected.

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
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Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	18: 18 AT	19: 19 AT	20: 20 AT
Comments (see below):	None	A	None
Lab ID-Version‡:	10854317-1	10854318-1	10854319-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	-	-	-
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	-	-	-
Background Debris and/or Description:**	Light	Scant	Scant

Comments: A) Bacteria-like organisms detected.

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Pure Maintenance: UT
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(801) 529-2976

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www.MoldREPORT.com
info@MoldREPORT.com

Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
MoldReport Spore trap: 10-25-2019 and 10-25-2019

Service SOPs: MoldReport Spore trap (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #102297

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received. Sample air volume is supplied by the client.

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.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
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Date of Report: 10-25-2019

MoldREPORT
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1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	1: 1 AT		2: 2 AT		3: 3 AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854329-1		10854330-1		10854331-1	
Analysis Date:	10/25/2019		10/25/2019		10/25/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	2	110	2	110	3	160
Chaetomium	-	-	-	-	-	-
Cladosporium	-	-	-	-	16	850
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	-	-	8	430	5	270
Stachybotrys	4	53	1	13	-	-
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	1	53	1	53	4	210
§ Total:		210		600		1,500
Additional Information:						
Hyphal fragments	-		-		-	
Skin cells	13 - 67		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	2		2		2	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	4: 4 AT		5: 5 AT		6: 6 AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854332-1		10854333-1		10854334-1	
Analysis Date:	10/25/2019		10/25/2019		10/25/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	4	210	8	430	14	750
Chaetomium	-	-	1	13	-	-
Cladosporium	20	1,100	22	1,200	40	2,100
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	43	2,300	-	-	25	1,300
Stachybotrys	-	-	1	13	-	-
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	-	-	2	110	5	270
§ Total:		3,600		1,700		4,500
Additional Information:						
Hyphal fragments	-		-		-	
Skin cells	13 - 67		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	2		2		2	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	7: 7 AT		8: 8 AT		9: 9 AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854335-1		10854336-1		10854337-1	
Analysis Date:	10/25/2019		10/25/2019		10/25/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	183	9,800	6	320	2	110
Chaetomium	2	27	-	-	-	-
Cladosporium	-	-	11	590	8	430
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	9	480	34	1,800	36	1,900
Stachybotrys	-	-	-	-	2	27
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	5	270	3	160	5	270
§ Total:		11,000		2,900		2,700
Additional Information:						
Hyphal fragments	53		53		110	
Skin cells	8,000 - 13,000		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	4		2		2	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair After Tests
Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 10-25-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	10: 10 AT		11: 11 AT	
Comments (see below)	None		None	
Lab ID-Version‡:	10854338-1		10854339-1	
Analysis Date:	10/25/2019		10/25/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-
Basidiospores	18	960	5	270
Chaetomium	-	-	-	-
Cladosporium	250	13,000	82	4,400
Fusarium	-	-	-	-
Penicillium/Aspergillus types	2	110	17	910
Stachybotrys	-	-	-	-
Trichoderma	-	-	-	-
Ulocladium	-	-	-	-
Others	33	1,800	20	1,100
§ Total:		16,000		6,600
Additional Information:				
Hyphal fragments	370		2,200	
Skin cells	4,000 - 8,000		80 - 4,000	
Pollen	< 13		< 13	
Background debris (1-4)†	3		3	
Limit of detection	13		13	
Sample volume (liters)	75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

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PURE MAINTENANCE

Report for:

Mr Brandon Adams
Pure Maintenance: UT
1664 Woodland Park Dr. #301
Layton, UT 84041

Regarding: Project: Fort McNair After Tests
EML ID: 2282937

Approved by:

Murali R Putty

Technical Manager
Murali Putty

Dates of Analysis:
MoldReport Culturable air fungi (Incl. Asp spp.): 11-04-2019

Service SOPs: MoldReport Culturable air fungi (Incl. Asp spp.) (EM-MY-S-1043)
AIHA-LAP, LLC accredited service, Lab ID #102856

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received. Sample air volume is supplied by the client.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins EMLab P&K's LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

Eurofins EMLab P&K
6000 Shoreline Ct, Ste 205, So. San Francisco, CA 94080
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair After Tests

Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 11-04-2019

CULTURABLE AIR FUNGI REPORT

Location:	2: 1 V-AT		3: 2 V-AT		4: 3 V-AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854320-1		10854321-1		10854322-1	
Analysis Date:	11/04/2019		11/04/2019		11/04/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus niger						
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi						
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	45		45		45	
§ TOTAL CFU*/M3		< 22		< 22		< 22

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

Note: Interpretation is left to the company and/or persons who conducted the field work. Variation is an inherent part of biological sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.
NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non-reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

The limit of detection is 1 raw count per volume of air sampled. The analytical sensitivity is 1 raw count/volume x the positive hole correction factor.

‡ 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 CFU/m3 has been rounded to two significant figures to reflect analytical precision.
Fungal culture types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

Eurofins EMLab P&K
6000 Shoreline Ct, Ste 205, So. San Francisco, CA 94080
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair After Tests

Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 11-04-2019

CULTURABLE AIR FUNGI REPORT

Location:	5: 4 V-AT		6: 5 V-AT		7: 6 V-AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854323-1		10854324-1		10854325-1	
Analysis Date:	11/04/2019		11/04/2019		11/04/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus niger						
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi						
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	45		45		45	
§ TOTAL CFU*/M3		< 22		< 22		< 22

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

Note: Interpretation is left to the company and/or persons who conducted the field work. Variation is an inherent part of biological sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.
NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non-reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

The limit of detection is 1 raw count per volume of air sampled. The analytical sensitivity is 1 raw count/volume x the positive hole correction factor.

‡ 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 CFU/m3 has been rounded to two significant figures to reflect analytical precision.
Fungal culture types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

Eurofins EMLab P&K
6000 Shoreline Ct, Ste 205, So. San Francisco, CA 94080
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair After Tests

Date of Sampling: 10-23-2019
Date of Receipt: 10-24-2019
Date of Report: 11-04-2019

CULTURABLE AIR FUNGI REPORT

Location:	8: 7 V-AT		9: 8 V-AT		10: 9 V-AT	
Comments (see below)	None		None		None	
Lab ID-Version‡:	10854326-1		10854327-1		10854328-1	
Analysis Date:	11/04/2019		11/04/2019		11/04/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus niger						
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi					2	44
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	45		45		45	
§ TOTAL CFU*/M3		< 22		< 22		44

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

Note: Interpretation is left to the company and/or persons who conducted the field work. Variation is an inherent part of biological sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.
NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non-reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

The limit of detection is 1 raw count per volume of air sampled. The analytical sensitivity is 1 raw count/volume x the positive hole correction factor.

‡ 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 CFU/m3 has been rounded to two significant figures to reflect analytical precision.
Fungal culture types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

Pure Maintenance: UT
Mr Brandon Adams
1664 Woodland Park Dr. #301
Layton, UT 84041 USA
(801) 529-2976

Eurofins EMLab P&K
www.MoldREPORT.com
info@MoldREPORT.com

Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
MoldReport Spore trap: 12-16-2019

Service SOPs: MoldReport Spore trap (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #102297

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received. Sample air volume is supplied by the client.

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.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Follow - Up Spore Trap
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	1: Fort McNair Follow - Up Spore Trap #		2: Fort McNair Follow - Up Spore Trap #		3: Fort McNair Follow - Up Spore Trap #	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11024316-1		11024317-1		11024318-1	
Analysis Date:	12/16/2019		12/16/2019		12/16/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	5	270	7	370	3	160
Chaetomium	-	-	-	-	1	13
Cladosporium	1	53	1	53	6	320
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	1	53	7	370	188	25,000
Stachybotrys	-	-	-	-	1	13
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	1	53	1	53	6	320
§ Total:		430		850		26,000
Additional Information:						
Hyphal fragments	53		53		210	
Skin cells	13 - 67		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	2		3		3	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Follow - Up Spore Trap
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	4: Fort McNair Follow - Up Spore Trap #		5: Fort McNair Follow - Up Spore Trap #		6: Fort McNair Follow - Up Spore Trap #	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11024319-1		11024320-1		11024321-1	
Analysis Date:	12/16/2019		12/16/2019		12/16/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	2	110	-	-	1	53
Chaetomium	-	-	-	-	4	53
Cladosporium	5	270	3	160	8	430
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	40	2,100	55	2,900	3	160
Stachybotrys	-	-	-	-	8	110
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	130	17,000	10	530	140	19,000
§ Total:		20,000		3,600		19,000
Additional Information:						
Hyphal fragments	1,800		110		690	
Skin cells	80 - 4,000		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	4		3		4	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Follow - Up Spore Trap
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	7: Fort McNair Follow - Up Spore Trap #		8: Fort McNair Follow - Up Spore Trap #		9: Fort McNair Follow - Up Spore Trap #	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11024322-1		11024323-1		11024324-1	
Analysis Date:	12/16/2019		12/16/2019		12/16/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-	-	-
Basidiospores	1	53	1	53	5	270
Chaetomium	-	-	-	-	-	-
Cladosporium	9	480	11	590	2	110
Fusarium	-	-	-	-	-	-
Penicillium/Aspergillus types	4	210	6	320	8	430
Stachybotrys	1	13	-	-	-	-
Trichoderma	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Others	2	110	1	53	1	53
§ Total:		870		1,000		850
Additional Information:						
Hyphal fragments	110		53		53	
Skin cells	13 - 67		13 - 67		13 - 67	
Pollen	< 13		< 13		< 13	
Background debris (1-4)†	3		3		3	
Limit of detection	13		13		13	
Sample volume (liters)	75		75		75	

Comments:
Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Follow - Up Spore Trap
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Spore Trap Analysis

Location:	10: Outside		11: Outside	
Comments (see below)	A		None	
Lab ID-Version‡:	11024325-1		11024326-1	
Analysis Date:	12/16/2019		12/16/2019	
Spore types detected:	raw ct.	per m3	raw ct.	per m3
Aureobasidium	-	-	-	-
Basidiospores	-	-	22	1,200
Chaetomium	-	-	-	-
Cladosporium	-	-	1	53
Fusarium	-	-	-	-
Penicillium/Aspergillus types	-	-	3	160
Stachybotrys	-	-	-	-
Trichoderma	-	-	-	-
Ulocladium	-	-	-	-
Others	-	-	-	-
§ Total:		< 13		1,400
Additional Information:				
Hyphal fragments	-		-	
Skin cells	13 - 67		13 - 67	
Pollen	< 13		< 13	
Background debris (1-4)†	1		2	
Limit of detection	13		13	
Sample volume (liters)	75		75	

Comments: A) No spores detected.

Basidiospores (basidiomycetes): Basidiospores are extremely common outdoors and originate from fungi in gardens, forests, and woodlands. It is rare for the source of basidiospores to be indoors. However, basidiospores may be an indicator of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors. Spores from Cladosporium are generally present in outdoor and indoor air, even in relatively clean, mold-growth-free, indoor environments. Levels vary based upon activity levels, weather conditions, dustiness, outside air exchange rates, and other factors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments). Levels vary based upon activity levels, dustiness, weather conditions, outside air exchange rates, and other factors.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

Others: Molds in the "Others" category are generally found outdoors in moderate numbers, and are therefore not considered markers of indoor growth.

‡ 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".
† Background debris is an indication of the amounts of non-biological particulate matter present on the slide (dust in the air) and is graded from 1 to 4 with 4 indicating the largest amounts.

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.

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

Pure Maintenance: UT
Mr Brandon Adams
1664 Woodland Park Dr. #301
Layton, UT 84041 USA

Eurofins EMLab P&K
www.MoldREPORT.com
info@MoldREPORT.com

Approved by:

Operations Manager
Joshua Cox

Dates of Analysis:
MoldReport Direct exam: 12-16-2019

Service SOPs: MoldReport Direct exam (EM-MY-S-1039)
AIHA-LAP, LLC accredited service, Lab ID #102297

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Followup
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	1: Fort McNair Followup #1	2: Fort McNair Followup #2	3: Fort McNair Followup #3
Comments (see below):	None	None	None
Lab ID-Version‡:	11024159-1	11024160-1	11024161-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	-	-	-
Background Debris and/or Description:**	Scant	Scant	Scant

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.
**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Followup
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
1501 West Knudsen Drive, Phoenix, AZ 85027
(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	4: Fort McNair Followup #4	5: Fort McNair Followup #5	6: Fort McNair Followup #6
Comments (see below):	None	None	None
Lab ID-Version‡:	11024162-1	11024163-1	11024164-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Very few
Pollen	-	-	-
Background Debris and/or Description:**	Scant	Scant	Scant

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

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**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
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Client: Pure Maintenance: UT
Contact: Mr Brandon Adams
Project: Fort McNair Followup
Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-16-2019

MoldREPORT
Eurofins EMLab P & K
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(800) 651-4802 Fax (623) 780-7695

Laboratory Results

MoldREPORT: Direct Microscopic Examination

Location:	7: Fort McNair Followup #7	8: Fort McNair Followup #8	9: Fort McNair Followup #9
Comments (see below):	None	None	A
Lab ID-Version‡:	11024165-1	11024166-1	11024167-1
Spore types present (indicative of mold growth)§:			
Aureobasidium	-	-	-
Basidiospores	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Fusarium	-	-	-
Lumber mold†	-	-	-
Penicillium/Aspergillus types	-	-	-
Stachybotrys	-	-	-
Trichoderma	-	-	-
Ulocladium	-	-	-
Spore types present (not indicative of mold growth)§:			
All spore types	Very few	Very few	Very few
Other particles detected§:			
Skin cells	Very few	Very few	Few
Pollen	-	-	Very few
Background Debris and/or Description:**	Scant	Scant	Light

Comments: A) Bacteria-like organisms detected.

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

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**Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not graded for background debris, in which case a brief description of the material is reported..
‡ 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".
The limit of detection is < 1+ when mold growth is detected.
§All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

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PURE MAINTENANCE

Report for:

Mr Brandon Adams
Pure Maintenance: UT
1664 Woodland Park Dr. #301
Layton, UT 84041

Regarding: Project: Fort McNair Follow-Up
EML ID: 2316416

Approved by:

Murali R Putty

Technical Manager
Murali Putty

Dates of Analysis:
MoldReport Culturable air fungi (Incl. Asp spp.): 12-24-2019

Service SOPs: MoldReport Culturable air fungi (Incl. Asp spp.) (EM-MY-S-1043)
AIHA-LAP, LLC accredited service, Lab ID #102856

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received. Sample air volume is supplied by the client.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins EMLab P&K's LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

Eurofins EMLab P&K
6000 Shoreline Ct, Ste 205, So. San Francisco, CA 94080
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair Follow-Up

Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-24-2019

CULTURABLE AIR FUNGI REPORT

Location:	1: Fort McNair #1		2: Fort McNair #2		3: Fort McNair #3	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11023077-1		11023078-1		11023079-1	
Analysis Date:	12/24/2019		12/24/2019		12/24/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus nidulans						
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi						
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	75		75		75	
§ TOTAL CFU*/M3		< 13		< 13		< 13

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

Note: Interpretation is left to the company and/or persons who conducted the field work. Variation is an inherent part of biological sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.
NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non-reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

The limit of detection is 1 raw count per volume of air sampled. The analytical sensitivity is 1 raw count/volume x the positive hole correction factor.

‡ 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 CFU/m3 has been rounded to two significant figures to reflect analytical precision.
Fungal culture types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

Eurofins EMLab P&K
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(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair Follow-Up

Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-24-2019

CULTURABLE AIR FUNGI REPORT

Location:	4: Fort McNair #4		5: Fort McNair #5		6: Fort McNair #6	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11023080-1		11023081-1		11023082-1	
Analysis Date:	12/24/2019		12/24/2019		12/24/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus nidulans					1	13
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi					2	27
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	75		75		75	
§ TOTAL CFU*/M3		< 13		< 13		40

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

Note: Interpretation is left to the company and/or persons who conducted the field work. Variation is an inherent part of biological sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.
NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non-reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

The limit of detection is 1 raw count per volume of air sampled. The analytical sensitivity is 1 raw count/volume x the positive hole correction factor.

‡ 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 CFU/m3 has been rounded to two significant figures to reflect analytical precision.
Fungal culture types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

Eurofins EMLab P&K
6000 Shoreline Ct, Ste 205, So. San Francisco, CA 94080
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: Pure Maintenance: UT
C/O: Mr Brandon Adams
Re: Fort McNair Follow-Up

Date of Sampling: 12-11-2019
Date of Receipt: 12-13-2019
Date of Report: 12-24-2019

CULTURABLE AIR FUNGI REPORT

Location:	7: Fort McNair #7		8: Fort McNair #8		9: Fort McNair #9	
Comments (see below)	None		None		None	
Lab ID-Version‡:	11023083-1		11023084-1		11023085-1	
Analysis Date:	12/24/2019		12/24/2019		12/24/2019	
Medium:	MEA		MEA		MEA	
	raw ct.	cfu*/m3	raw ct.	cfu*/m3	raw ct.	cfu*/m3
Aspergillus nidulans						
Aspergillus ochraceus						
Aspergillus versicolor						
Aureobasidium						
Basidiomycetes						
Bipolaris/Drechslera group						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Non-sporulating fungi						
Paecilomyces						
Penicillium						
Phoma						
Rhizopus						
Stachybotrys chartarum						
Ulocladium						
Yeasts						
Positive Hole	0		0		0	
Sample volume (liters)	75		75		75	
§ TOTAL CFU*/M3		< 13		< 13		< 13

* cfu = colony forming units Positive hole correction chart used for all calculations

Comments:

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NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. A major factor is the accessibility of outdoor air. A residence with open doors and windows and heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. Dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)
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APPENDIX E – Chain of Custody

MoldREPORT

Customer Service: (800) 224-1527
www.MoldREPORT.com

002281893

JBMITTAL FORM / CHAIN OF CUSTODY (COC)

- Marlton, NJ: 3000 Lincoln Dr. East, Suite A, Marlton, NJ 08053
- Phoenix, AZ: 1501 West Knudsen Drive, Phoenix, AZ 85027
- SSF, CA: 6000 Shoreline Ct. # 205, So. San Francisco, CA 94080

Company / Acct. #:	Pure Maintenance UT (27324)
Contact Name:	Mr Brandon Adams
Contact Address:	1664 Woodland Park Dr. #301 Layton, UT 84041
Project Name:	FORT McNair Before Air Samples
Contact Phone #:	801-529-2976
Sampling Date:	Month 10 / Day 21 / Year 2019
Project Zip Code:	

Weather Conditions & Level

	Fog	Rain	Snow	Wind	Clear
None					
Light					X
Moderate					
Heavy					

Turn Around Time

- [x] Standard
- Next Day
- Same Day

Service Options (*Standard TAT only)

- [x] MoldREPORT™ (Default)
- Allergen (Screen*)
- Culturable Air*
- Allergen (Individual)

ID #	Sample Type (Circle Choice)	Total Volume / Area	Sample Description
1	(Spore Trap) Tape Bulk Swab Other	75	1-BT
2	(Spore Trap) Tape Bulk Swab Other	75	2-BT
3	(Spore Trap) Tape Bulk Swab Other	75	3-BT
4	(Spore Trap) Tape Bulk Swab Other	75	4-BT
5	(Spore Trap) Tape Bulk Swab Other	75	5-BT
6	(Spore Trap) Tape Bulk Swab Other	75	6-BT
7	(Spore Trap) Tape Bulk Swab Other	75	7-BT
8	(Spore Trap) Tape Bulk Swab Other	75	8-BT
9	(Spore Trap) Tape Bulk Swab Other	75	9-BT
10	(Spore Trap) Tape Bulk Swab Other	75	10-BT (outdoor)

Relinquished by:	Date & Time	Received by:	Date & Time
FedEx 9110	10/23/19	[illegible signature]	

Terms and Conditions:

Mold inspection and sampling should be performed only by professionals trained and qualified to conduct mold inspections in residential buildings. Laboratory analysis, test data and reports are based on samples submitted to Eurofins EMLab P&K performs the analysis of the samples.

None of Eurofins EMLab P&K or their affiliates, subsidiaries, suppliers, employees, agents, contractors and attorneys (each an "Eurofins EMLab P&K related party") are able to make and do not make any determinations as to the safety or health condition of a property in the report, nor do they make any determinations as to the abilities of the inspector.

The client and client's customer are solely responsible for the use of, and any determinations made from, the report, and no Eurofins EMLab P&K-related party shall have any liability with respect to decisions or recommendations made or actions taken by either the client or the client's customer based on the report.

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Eurofins EMLab P&K offers various reporting options, including MoldREPORT. MoldREPORT is designed for residential mold inspections, and is not designed nor intended for other types of inspections, including but not limited to school, hospital and industrial building inspections.

All test data are reported electronically. Special reporting requirements, or other special client preferences, are not included in the base price of the analyses. Only one TAT is available for all samples listed on this document. Please do not write outside of the indicated data entry locations on this form; all notes or marks outside of these areas will be discarded. Eurofins EMLab P&K will make a reasonable attempt to interpret data recorded in this document, but cannot accept responsibility for errors caused by illegible data on this document.

The invalidity or unenforceability, in whole or in part, of any provision, term or condition herein shall not invalidate or otherwise affect the enforceability of the remainder of those provisions, terms and conditions.

CLIENT AGREEMENT & AUTHORIZATION:

"I have read, understand, and agree to all of the terms and conditions above, and I request Eurofins EMLab P&K to process these samples accordingly and to charge the credit card on file for this account in payment for these services."

Client Signature: [signature]

Date: 10/23/19

MoldREPORT

Customer Service: (800) 224-1527
www.MoldREPORT.com

002281893

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Project Name:	Fort McNair Before
Contact Phone #:	801-529-2976
Sampling Date:	Month 10 Day 21 Year 19
Project Zip Code:	0

Turn Around Time
- (•) Standard
- ( ) Next Day
- ( ) Same Day

Service Options (*Standard TAT only)
- ( ) MoldREPORT™ (Default)
- ( ) Culturable Air*
- ( ) Allergen (Screen*)
- ( ) Allergen (Individual)

Weather Conditions & Level

	Fog	Rain	Snow	Wind	Clear
None					
Light					
Moderate					X
Heavy					

ID #	Sample Type (Circle Choice)	Total Volume / Area	Sample Description
1	(Spore Trap) Tape Bulk Swab Other	75	11 BT outdoor
2	Spore Trap (Tape) Bulk Swab Other		12 BT
3	Spore Trap (Tape) Bulk Swab Other		13 BT
4	Spore Trap (Tape) Bulk Swab Other		14 BT
5	Spore Trap (Tape) Bulk Swab Other		15 BT
6	Spore Trap (Tape) Bulk Swab Other		16 BT
7	Spore Trap (Tape) Bulk Swab Other		17 BT
8	Spore Trap (Tape) Bulk Swab Other		18 BT
9	Spore Trap (Tape) Bulk Swab Other		19 BT
10	Spore Trap (Tape) Bulk Swab Other		20 BT

Relinquished by:	Date & Time	Received by:	Date & Time
[illegible]	10/23/19	[illegible]	

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Except as expressly provided for hereunder, each Eurofins EMLab P&K related party hereby expressly disclaims any and all representations and warranties of any kind or nature, whether express, implied or statutory, related to the testing services, the report and the test data.

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Client Signature: [signature]

Date: