Town of Proctor
Special Selectboard Meeting Minutes
Draft
September 19, 2018
5:10 P.M. – 6:30 P.M.

Board Members Present:
Bruce Baccei, Chair
Bob Protivansky
Tom Hogan
Judy Frazier
Ben Curtis

Employees Present:
Rhoda Grace, Assistant Town Clerk & Treasurer
Stan Wilbur, Town Manager

Others Present:
Jesse Stratton, Project Manager, ATC Group Services

I. Call to Order

The meeting was called to order at 5:10 p.m.

II. Review and Approve Agenda

Judy Frazier made the motion to approve the agenda. The motion was seconded by Tom Hogan and unanimously approved.

III. Town Clerk's Office

- VOSHA Alleged Workplace Hazzard
  Jesse Stratton, Project Manager, ATC Group Services described ATC's qualification, staff and services. Referencing ATC's September 14, 2018 Indoor Air Quality Investigation report, he went over the observations and sampling performed on September 14, 2018, highlighting sampling methods, results in comparison with current regulatory and industry standards, conclusions and recommendations. He answered questions regarding the investigations and findings and various methods to address the recommended actions. The report is attached to and make a part of these minutes.

  Selectboard discussion resulted in a consensus to remove all wood paneling and carpeting in the 1st level and clean all exposed surfaces; replace the small drain at the bottom of the entrance ramp with full walk width drain grates at both the top and bottom of the ramp and tie the new drains to the existing storm drain system in the parking lot; retain a rodent exterminator to control rodent activity in the building; and that these activities shall be undertaken as soon as possible. This actions with a anticipated schedule shall be reported to Mr. Les Burns, VOSAHA Chief Compliance Officer.

- Asbestos
  While investigating the VOSHA complaint, ATC observed possible asbestos pipe insulation materials in the electrical/fuel tank room. Testing confirmed the materials were asbestos. ATC was asked to prepare an asbestos abatement work plan and put

the work out to bid as soon as possible. An "Authorized Personal Only" sign will be placed on the electrical/fuel tank room door immensely.

IV. Salt Shed

ClearSpan, the firm previously been selected by the Selectboard to furnish and install the truss building for the reinforced concrete foundation salt shed design, provided a $77,363.85 quote erect a block foundation and truss building with an open front. The quote included design and stamped drawings required for a VT Fire Safety permit. The Town will provide a 70'x 60' asphalt concrete paved area and the concrete blocks meeting ClearSpan specifications. The estimated cost for the Town portion of the project is $30,000. Stan Wilbur was asked to contact ClearSpan to clarify block foundation specifications and request a quote to add a front wall and door. The salt shed will be on the September 24, 2018 agenda.

V. Adjourn

Judy Frazier made the motion at 6:30 p.m. to adjourn the September 19, 2018 special Selectboard meeting. The motion was seconded by Bob Protivansky and unanimously approved.

ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

171 Commerce Street · PO Box 1486
Williston, VT 05495
Telephone 802-862-1980
Fax 737-207-8272
www.atcgroupservices.com

September 14, 2018

Stan Wilbur
Town Manager
Town of Proctor
45 Main Street
Proctor, VT 05765

Transmitted via email to: proctor_manager@comcast.net

Subject: Indoor Air Quality Investigation
Town Clerks Office
45 Main Street
Proctor, Vermont 05765
ATC Project Number: 280IH00081

Dear Stan:

The Town of Proctor authorized ATC Group Services, LLC (ATC) to perform an indoor air quality investigation within the Town Clerks Office located at 45 Main Street in Proctor, Vermont. This evaluation included a visual survey of selected areas within the facility to identify potential water impacted materials and indoor air contamination sources. In addition to the visual survey, ATC conducted sampling for total airborne fungal structures (spore traps), and the following real-time parameters: temperature, relative humidity, carbon dioxide, carbon monoxide, dew point, and total volatile organic compounds (TVOCs). ATC also conducted building material moisture testing to identify areas at risk for microbial growth.

As a result of this investigation, ATC identified areas impacted by moisture. ATC did not identify any indoor sources of airborne microbial spores.

This report presents the results of the observations and sampling performed on September 12, 2018 by Nathan Amato of ATC.

1.0 Background

The Proctor Town Clerks Office is a public building including space for offices and meetings. The area of concern consists of the first level of the building in the town clerks office area. According to reports from building personnel, there have been complaints of odors, stagnant air, water intrusion, rodent droppings and suspected microbial growth within the above mentioned facility.

2.0 Initial Assessment

2.1 Observations

The Proctor Town Clerks Office is a wood and masonry structure with two levels. It includes staff offices, and a meeting hall. Typical exterior finishes include mortared stone and wooden trim. The roof

is pitched slate. Typical interior finishes include wooden panel walls, carpet and vinyl floor tile floors, wood trim, and a drop ceiling. Windows are generally operable.

Building heating is provided by baseboard hot water. Ventilation is through windows and window mounted AC units.

ATC did identify a slight musty or mildew odor in the area of concern during the site visit. Evidence of water damage/ staining was observed in the areas of concern on the 1st floor. Evidence of mouse droppings was also present in the areas of concern. Two dehumidifiers were present in Storage Rooms 1 and 2 in the first level of the building. ATC did not observe suspect visible microbial growth in the areas of concern.

2.2 Microbial Air and Surface Sampling

On September 12, 2018 ATC conducted air sampling for total fungal structures (bioaerosol) in three (3) indoor locations and two (2) outdoor locations for comparison. Zefon Air-O-Cell microbial spore trap cassettes were used to collect each sample of total airborne fungal structures for 10 minutes at a calibrated flow rate of 15 liters per minute. Sampling equipment was calibrated prior to sample collection. A field blank was collected for quality control purposes.

The American Conference of Governmental Industrial Hygienists (ACGIH) considers comparison of indoor/outdoor bioaerosol data a common method for evaluating indoor fungal reservoirs or concerns. In normal indoor environments, the total concentrations of fungi in the indoor air are commonly equal to, or less than, the total concentration outdoors. If indoor fungal bioaerosol concentrations are greater than those outdoors, then indoor fungal reservoirs are likely to be present. In addition, the types (i.e., taxa or groups) of fungal bioaerosols found inside a building should be qualitatively similar to the taxa recovered outdoors, presuming outdoor air is the only source of indoor fungal bioaerosols. There are no regulatory standards or other widely accepted numerical guidelines available for interpretation of bioaerosol data. Current ACGIH guidelines (Macher, 1999) refrain from providing numerical thresholds for bioaerosols. A study by Horner, et al (2004) suggests that most indoor environments, with no history of water damage, exhibit the presence of species of *Cladosporium* and the *Penicillium/Aspergillus* group of molds, but that the presence of more than a very few spores of species of *Stachybotrys*, *Chaetomium*, and *Ulocladium* in an indoor sample indicates reservoirs of molds related to severe or prolonged water damage.

The air samples were submitted to Aerobiology Laboratory Associates Inc. of Dulles, VA for analysis of predominant mold species and concentrations. The following Table 1 presents the total quantitative results for the total airborne fungal structure samples:

Table 1: Total Airborne Fungal Structure Sample Analysis September 12, 2018			
Sample Number	***Location***	***Predominant Types***	***Total Structures/m^3***
Z-01	Exterior – Parking Area	Basidiospores, Ascospores, Cladosporium	39,138
Z-02	1st Level Office (Area of Concern)	Basidiospores, Smuts, Periconia, Myxomycetes	1,273
Z-03	1st Level Entry (Area of Concern)	Basidiospores, Penicillium/ Aspergillus Group, Smuts, Periconia, Myxomycetes	807
Z-04	2nd Level Meeting Room	Basidiospores, Penicillium/ Aspergillus Group	1,320
Z-06	Exterior – West of Building	Basidiospores, Ascospores	34,099
Z-07	Field Blank	---	0

ND - No spores detected

Total fungal structure concentrations found in the three (3) indoor locations were lower than concentrations found outside. The 1st Level Entry (Z-03) and 1st Level Office (Z-02) had slightly higher concentrations of Smuts, Periconia, Myxomycetes as compared to outdoor samples. Overall the airborne fungal spore samples do not indicate a significant source or amplification of airborne fungi at the time of sampling.

A sample location diagram is provided in **Appendix A**. Laboratory reports can be found in **Appendix B**.

Microbial Surface Sampling

A surface sample (tape lift) from a surface potentially contaminated by mold growth was collected at the site. A total of two (2) samples were collected from areas reported by the building occupants to have been previously containing suspect apparent visible microbial growth. There was no suspect apparent visible microbial growth present at the time of the sampling. The surface samples were submitted to Aerobiology Laboratory Associates Inc. of Dulles, VA for analysis of predominant mold taxa and relative loading via direct microscopic exam. The following Table summarizes the results of the microbial surface sampling.

Fungal Surface Sample Analysis September 12, 2018			
Sample Number	***Location***	***Surface Tested***	***Predominant Species and Relative Quantity***
TL-01	Storage Area 2	Carpet	Occasional Pithomyces Spores
TL-02	Stairway	Carpet	Occasional Pithomyces Spores and Hyphal Elements

The samples were found to contain low amounts of mold spores of the genus Pithomyces. This does not indicate a significant presence of an indoor source of spores.

A sample location diagram is provided in **Appendix A**. Laboratory hardcopy results can be found in **Appendix B.**

2.3 Building Material Moisture Testing

ATC collected moisture measurements from representative materials within the areas of concern. A Protimeter Mini moisture meter (inventory # 011052) was utilized to collect Wood Moisture Equivalent (WME) readings of building materials potentially affected by moisture/water intrusion. The instrument reports moisture content relative to wood as a percentage of saturation.

Moisture meter measurements using a Protimeter Mini moisture meter may be interpreted and categorized as follows:

- Less than 16 percent (Green Zone of scale display) — the material is considered to be "dry" under normal indoor humidity condition.

- 16-19 percent (Yellow Zone) — the moisture content of the material is considered questionable as related to potential moisture damage and may permit microbial growth on the material.

- Greater than 19 percent (Red Zone) — the material is considered to exhibit an unacceptable moisture content that may contribute to physical degradation of the material(s) and permit microbial growth. Mitigation and remediation of the damage is generally indicated.

Moisture readings were above 19% for the meter in the bottom 2" of the wood walls in the Office Area, Entry, and Storage Room 2 , and throughout the entire carpet in Storage Room 2. This generally indicates a high potential for conditions in which mold growth can be sustained. A moisture mapping diagram is included in **Appendix B.**

2.4 Real-Time Parameter Sampling Results and Interpretation

2.4.1 Results Summary: While on-site ATC measured real-time levels of the following parameters: carbon monoxide, carbon dioxide, temperature, relative humidity, dew point, and total VOCs in various areas within the building and outdoors.

Carbon monoxide, carbon dioxide, temperature, relative humidity and dew point were measured utilizing a TSI IAQ-Calc Model 7545 (Serial Number 75451650004). TVOCs were measured utilizing an Ion Science model Phocheck Tiger with a 10.6 eV lamp (Serial Number T-105532). All data readings were collected in real-time. The instruments were calibrated per the manufacturers' specifications prior to data collection. An outdoor reading was also collected for comparative purposes. Results of these measurements are recorded in the following Table 3.

Table 3: Real Time Results September 12, 2018							
Sampling Area	***Time***	***Relative Humidity (%)***	***Temp. (°F)***	***Dew Point (°F)***	***CO_2 (ppm)***	***CO (ppm)***	***TVOCs (ppm)***
1st Level Entry	1230	28.7	79.4	53.7	837	ND	ND
Storage 2	1232	27.8	79.6	53.6	806	1	ND
Storage 1	1234	19.7	78.3	49.4	826	1	ND
Town Clerks Office Area	1236	30.1	77.9	52.7	792	1	ND
Breaker Room	1240	34.7	75.0	51.5	725	1	ND
2nd Floor Meeting Room	1250	36.1	75.9	52.9	767	1	ND
Outside	1245	40.2	79.6	58.1	415	1	ND

ND = None detected above instrument detection limits

Results in comparison with current regulatory and industry standards are given in the following sections.

2.4.2 Temperature and Relative Humidity: Indoor temperature and relative humidity can be compared to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 55-2004. ASHRAE standard 55-2004 (Thermal Environmental Conditions for Human Occupancy) generally defines methods for determining acceptable indoor temperature ranges based on the level of human occupant activity (i.e., metabolic rate), occupant clothing insulation, ambient humidity, and other factors. The intent of the standard is to provide acceptable thermal comfort for a desired percentage of building occupants. For typical office space as defined by the Standard, the following Table presents temperature ranges intended to provide acceptable thermal comfort for approximately 80% of the occupants.

Acceptable Temperature Ranges at Indicated Relative Humidity Typical Office Space Activity ASHRAE 55-2004		
Relative Humidity	**Temperature: Light Clothing**	**Temperature: Heavy Clothing**
10%	77-83°F	71-78°F
20%	76-82°F	70-78°F
30%	76-82°F	69-77°F
40%	76-81°F	69-77°F
50%	75-80°F	68-76°F
60%	75-78°F	68-75°F
70%	- -	67-73°F

Temperature levels inside tested areas of the building were found to range between 79.6°F and 75.0°F at the time of testing. With 10% ambient relative humidity (the average indoor relative humidity in occupied spaces was approximately 30%), temperature levels measured inside the building were generally above the temperature range presented in the above table for heavy clothing and within the range for light clothing. The results indicate that the temperatures in the space may feel hot for some occupants with heavy clothing.

Relative humidity levels inside occupied areas of the building were found to range between 19.7% and 36.1% at the time of testing. Outdoor relative humidity was measured at 40.2%. Standard 55-2004 does not provide recommendations for maintaining indoor relative humidity within a specific range but does establish an upper boundary for dew point at 62.2 degrees Fahrenheit, which occurs at varying combinations of temperature and relative humidity (i.e., approximately 65% relative humidity at an ambient temperature of 72°F). At the time of sampling, dew points within the facility did exceed the ASHRAE upper boundary of 62.2°F. In addition, ASHRAE Standard 62.1-2004 (see Carbon Dioxide discussion below) recommends a maximum relative humidity level of 65% where air-conditioning systems with dehumidification capability are installed.

It should be noted that ASHRAE Standard 55-2004 is only intended to provide acceptable thermal comfort for building occupants and is not intended to maintain conditions for preventing microbial growth. It should also be noted that no documented relative humidity value exists as a threshold that indicates the imminent growth of fungi (mold) on building materials and or surfaces. However, relative humidity levels directly correspond to dew point temperatures. Increasing relative humidity values, and therefore increasing dew point temperatures, may elevate the likelihood of surface condensation and subsequent potential microbial growth. Some building system components such as air conditioning ducts, cold water pipes, and concrete slabs on grade can be cooler than the maximum allowable dew point established by the Standard, resulting in condensation and potential microbial growth.

Temperature and relative humidity measurements as generally conducted for initial indoor air quality investigations are not intended to demonstrate compliance with all requirements of ASHRAE Standard 55-2004. The standard includes other requirements such as temperature variation and air speed within a space and defines specific protocols and procedure for evaluating compliance with the standard.

2.4.3 Carbon Dioxide: Carbon dioxide monitoring is a useful screening technique (non-quantitative) for determining if outside air supply is sufficient for maintaining acceptable indoor air quality. Carbon dioxide is a naturally occurring constituent of the atmosphere and is also a product of human respiration.

During periods of occupancy, carbon dioxide levels in a building will typically rise above normal background levels. The level of increase of carbon dioxide concentrations is generally related to the number of individuals in an area and the amount of outside air being introduced into that area.

Procedures for determining recommended outside air supply rates for occupied buildings are prescribed in the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Standard 62.1-2004, *Ventilation for Acceptable Indoor Air Quality*. The purpose of this standard is to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and is intended to minimize the potential for adverse health effects.

The ASHRAE Standard 62.1-2004 Ventilation Rate Procedure is a prescriptive procedure in which outdoor air intake rates are determined based on space type/application (e.g., general office, classroom, etc.), occupancy level, and floor area. The Ventilation Rate Procedure's minimum rates are based on contaminant sources and source strengths that are typical for the listed space types. For specific space types, the standard prescribes the amount of outside air supply required for the size of the area and the amount of outside air required for each person. These two outside air supply requirements are combined to determine the total outside air supply requirement for the occupied space. When the number of persons in an occupied space is not known, the standard defines default occupant density values that may be used for design purposes.

If one assumes that an occupied space remains at a steady state condition with respect to occupancy, level of occupant activity, and ventilation rate, then the carbon dioxide concentration within the occupied space will reach a theoretical equilibrium. The standard does not define a maximum carbon dioxide

concentration which would apply to all occupied spaces. Appendix C of ASHRAE Standard 62.1, which is an informative appendix and is not a requirement of the standard, suggests a minimum outside air supply rate of 15 cubic feet per minute (cfm) per person to dilute odors from human bioeffluents to levels that will satisfy a substantial majority of persons unadapted to a space. Calculations presented in ASHRAE Appendix C indicated that at this outside air supply rate, and assuming sedentary persons (e.g., office work), an equilibrium carbon dioxide concentration of 600 ppm above background levels would be achieved during steady state conditions. Similarly, a theoretical carbon dioxide equilibrium concentration can be determined for the required outside air supply rates for the various space types listed by the standard. The following Table presents default design outside air supply rates for some of the common space types listed by the standard. Theoretical equilibrium carbon dioxide concentrations above background levels, assuming steady state conditions and sedentary persons, are also presented.

ASHRAE Standard 62.1-2004 Default Outside Air Supply Rates (1) and Theoretical Carbon Dioxide Concentrations at Steady State Conditions (2)

Space Type	*Default Occupant Density (Occupants per 1,000 SF)*	*Default Combined Outdoor Air Rate (cfm/person)*	*Approximate Equilibrium Carbon Dioxide Concentration Above Background*
General Office	5	17	600 ppm
Telephone/Data Entry	60	6	1,700 ppm
Classroom (ages 5-8)	25	15	700 ppm
Classroom (ages 9 plus)	35	13	800 ppm
Lecture Classroom	65	8	1,300 ppm
Lecture Hall (fixed seats)	150	8	1,300 ppm
Auditorium Seating Area	150	5	2,060 ppm
Courtroom	70	6	1,700 ppm

1) Partial list. Refer to standard for complete list.
2) Assumes steady state conditions with sedentary persons.

The ventilation rates presented above include both an area-related component and an occupant-density-related component, which are added together to determine the required ventilation for the space. If actual occupant densities are known and vary from those indicated above, then expected equilibrium carbon dioxide concentrations would be adjusted accordingly.

For the purposes of this investigation, carbon dioxide levels measured within the building were compared to the General Office space type given in the above table. The ambient outdoor (background) carbon dioxide concentration was measured at an average of 415 ppm at the time of sampling setting a comparative standard of 1,015 ppm. No tested locations within the building were found to have carbon dioxide concentrations in excess of 1,015 ppm at the time of testing.

Carbon dioxide monitoring as generally conducted for initial indoor air quality investigations is not intended to demonstrate compliance with ASHRAE Standard 62.1-2004. The standard does not specify a maximum carbon dioxide concentration. Actual conditions in an active occupied building will vary and equilibrium carbon dioxide concentrations generally would not be achieved. Other quantitative methods and/or engineering assessments are required to demonstrate compliance with the standard.

2.4.4 Carbon Monoxide: Indoor carbon monoxide levels can be compared with the Vermont Occupational Safety and Health Administration (VOSHA) permissible exposure limit (PEL) of 35 ppm. No carbon monoxide measurements were detected above the VOSHA PEL during the sampling event.

2.4.5 Total Volatile Organic Compound Sampling Results and Discussion: Currently, no regulatory agency (e.g. OSHA, EPA etc.) has promulgated standards for this indoor air quality parameter in non-industrial buildings, such as offices, schools and residences. For the real-time data collected, ATC has chosen to use the commonly accepted Target Guideline for TVOCs cited by the American Industrial Hygiene Association of 1 ppm (*Industrial Hygienists Guide to Indoor Air Quality Investigations* (1993), American Industrial Hygiene Association (AIHA). ATC did not identify any TVOC results in excess of the target guidelines or the instrument detection limit during the sampling event.

2.5 Conclusions

- ATC did observe a slight musty odor in the areas of concern (1st level).
- Overall, the airborne and surface fungal samples do not indicate a significant source or amplification of fungi at the time of sampling.
- Several moisture readings were above 19% for the meter which generally indicates a potential for conditions in which mold growth can be sustained.
- The presence of mouse droppings was observed throughout the areas of concern.
- Temperature within the surveyed areas of the facility was generally within appropriate ASHRAE standards at the time of the investigation.
- Relative humidity and dew point within the surveyed areas of the facility were generally within appropriate ASHRAE standards at the time of the investigation.
- Carbon dioxide concentrations were generally below the appropriate ASHRAE standard at the time of the investigation.
- Carbon monoxide concentrations within the surveyed areas of the facility were below appropriate VOSHA standards at the time of the investigation.
- ATC did not identify any TVOC results in excess of the target guidelines or the instrument detection limit during the sampling event.

2.6 Recommendations

Given these findings, ATC recommends that:

- Remove all water-impacted wall and carpet materials in the 1st level to allow for proper drying, inspecting and cleaning. Cleaning should be conducted via wet wiping with a mild detergent and HEPA vacuuming.
- Repair building issues which contribute to the water infiltration.
- Utilize a rodent exterminator to control rodent activity in the building.

Limitations

This report has been prepared to assist **the Town of Proctor** in evaluating the indoor air quality within the Town Clerks Office in **Proctor, Vermont**. ATC provided these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of the client. The intent of the report is to aid the building owner, architect, construction manager, general contractors, and potential demolition and abatement contractors in locating fungi growth (mold). This report is not intended to serve as a bidding document nor as a project specification document and actual site conditions and quantities should be field-verified. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

Although a reasonable attempt has been made to locate suspect fungi (mold) in the areas identified, the inspection techniques used are inherently limited in the sense that only full demolition procedures will reveal all building materials of a structure and, therefore, all areas of potential fungal growth. The size of the area impacted by fungal growth is based on professional judgment and practicality. Additionally, other possible building material hazards such as asbestos and lead-based paint were not included as part of this evaluation and may require proper sampling for identification prior to disturbance. Other unidentified microbiological impact may be located within walls, ceiling cavities, below flooring or grade, and other non-accessible areas. Caution should be used during any remediation activities.

Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during ATC's inspection of the site.

Thank you for selecting ATC for your environmental management needs. If you have any questions, please do not hesitate to call us at (802) 862-1980.

Sincerely,
ATC Group Services LLC

Nathan Amato
Senior Environmental Technician
Direct Line +1 802 862 1980
Email: nathan.amato@atcgs.com

Thomas J. Broido
Branch Manager/Principal Scientist
Direct Line +1 802 862 1980
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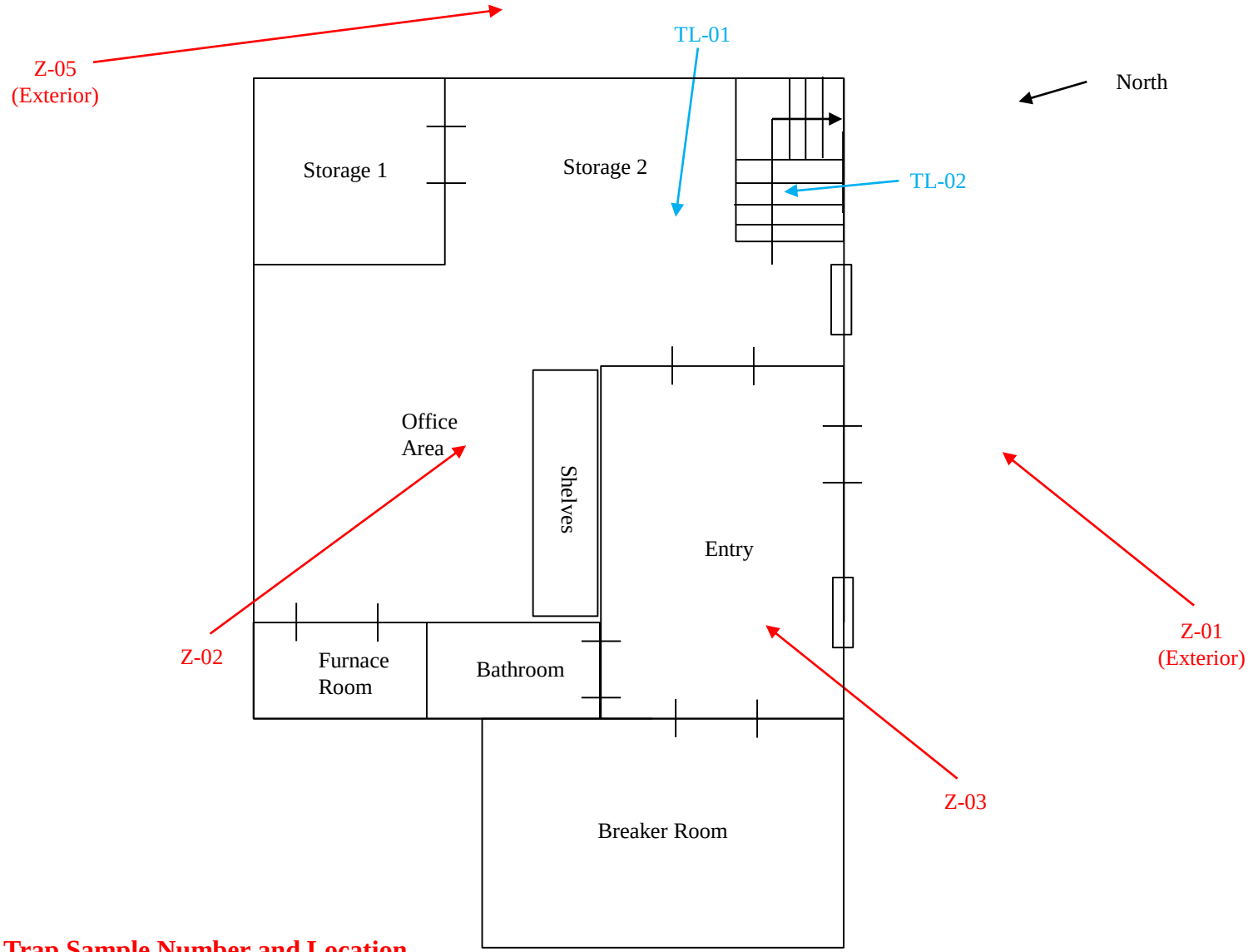
Appendix A

Sample Location Diagram & Moisture Map



Z-01 Spore Trap Sample Number and Location

TL-01 Tape Lift Sample Number and Location

SAMPLE LOCATION DIAGRAM

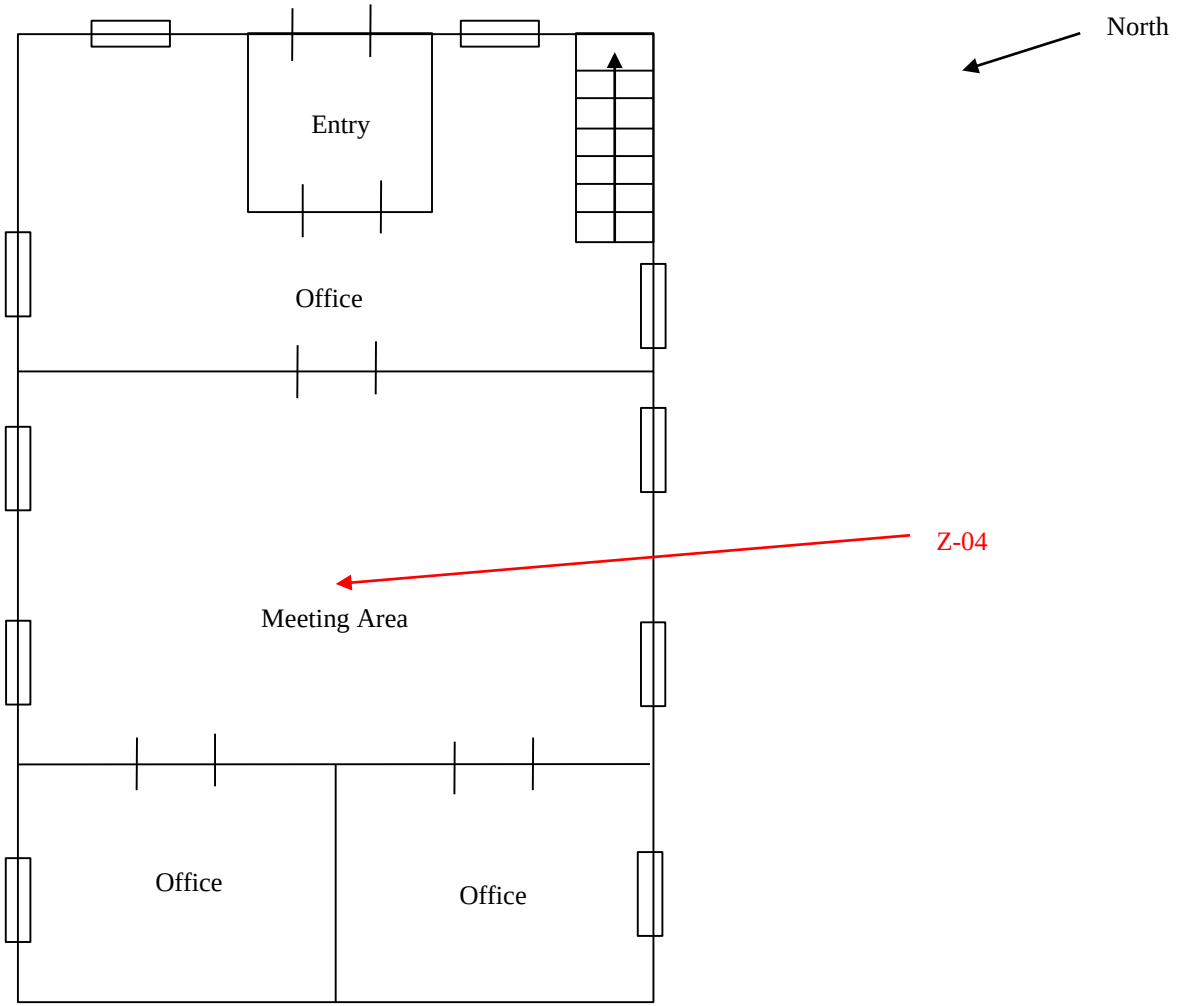
Address: **Town Clerks Office – 1st Floor**
Proctor, Vermont

Project Number: 280IH00081

171 Commerce St. Williston, Vermont 05477
Phone:(802) 862-1980 Fax: (802) 862-1405

SOURCE : Field Notes

SCALE: None



SAMPLE LOCATION DIAGRAM

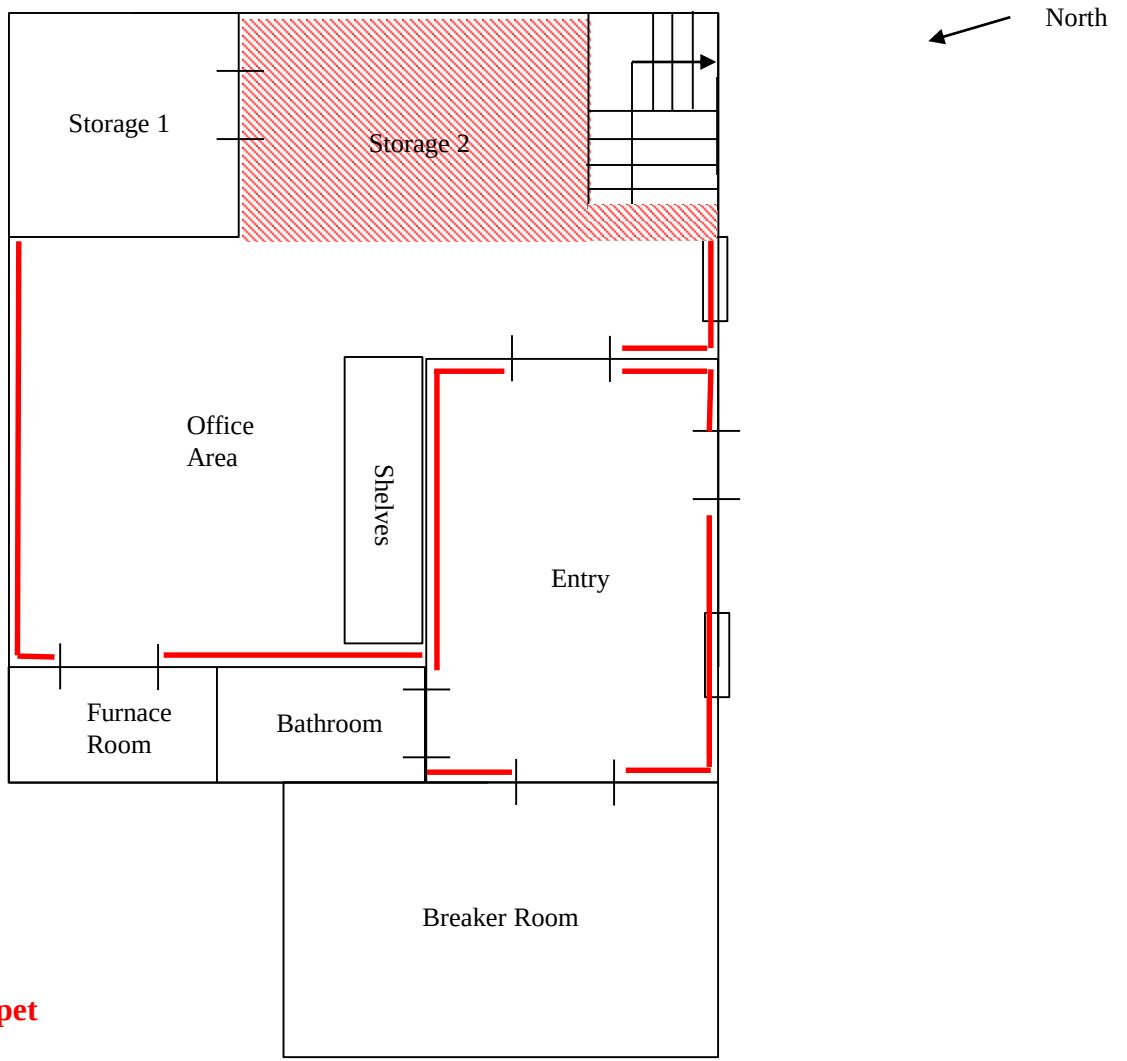
Address: **45 Main Street – 2nd Floor**
Proctor, Vermont

Project Number: 280IH00081

171 Commerce St. Williston, Vermont 05477
Phone:(802) 862-1980 Fax: (802) 862-1405

SOURCE : Field Notes

SCALE: None



= Elevated WME Carpet

= Elevated WME Bottom 2" of Wood Walls

Moisture Mapping Diagram

Address: Town Clerks Office – 1st Floor
Proctor, Vermont

Project Number: 280IH00081

ATC
171 Commerce St. Williston, Vermont 05477
Phone:(802) 862-1980 Fax: (802) 862-1405

SOURCE : Field Notes

SCALE: None

Appendix B

Laboratory Reports

Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

Certificate of Analysis
AIHA-LAP EMLAP# 102977

43760 Trade Center Place
Suite 100
Sterling, Virginia 20166
(877) 648-9150
www.aerobiology.net

ATC Group Services - VT
P.O. Box 1486
Williston, Vermont 05495
Attn: Nate Amato
Project: **280IH00081**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/12/2018
Date Received: 09/13/2018
Date Analyzed: 09/13/2018
Date Reported: 09/13/2018
Project ID: 18033798

1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	**Z-01**				**Z-02**			
Sample Location	**Exterior - Parking Lot**				**1st Level Office Area (AOC)**			
Sample Volume (L)	**150**				**150**			
Lab Sample Number	**18033798-001**				**18033798-002**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
ascospores	18	3834	10	-	18	120	9	-
basidiospores	146	31097	79	-	98	653	51	-
Cercospora	1	7	<1	-	-	-	-	-
Cladosporium	18	3834	10	-	23	153	12	-
Epicoccum	-	-	-	-	2	13	1	-
Fusicladium	1	7	<1	-	-	-	-	-
hyphal elements	-	-	-	-	4	27	2	-
Penicillium/Aspergillus group	52	347	1	-	18	120	9	-
Smuts,Periconia,Myxomycetes	2	13	<1	-	28	187	15	-
	Debris Rating **2**				Debris Rating **3**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments								
Total *See Footnotes	238	39138	~100%	-	191	1273	~100%	-

Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

Certificate of Analysis
AIHA-LAP EMLAP# 102977

43760 Trade Center Place
Suite 100
Sterling, Virginia 20166
(877) 648-9150
www.aerobiology.net

ATC Group Services - VT
P.O. Box 1486
Williston, Vermont 05495
Attn: Nate Amato
Project: **280IH00081**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/12/2018
Date Received: 09/13/2018
Date Analyzed: 09/13/2018
Date Reported: 09/13/2018
Project ID: 18033798

Client Sample Number	**Z-02**				**Z-04**			
Sample Location	**1st level Entry (AOC)**				**2nd Level Meeting Area (Non-Complaint)**			
Sample Volume (L)	**150**				**150**			
Lab Sample Number	**18033798-003**				**18033798-004**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
ascospores	10	67	8	-	12	80	6	-
basidiospores	67	447	55	-	119	793	60	-
Cercospora	1	7	1	-	-	-	-	-
Cladosporium	4	27	3	-	8	53	4	-
Curvularia	1	7	1	-	2	13	1	-
Epicoccum	-	-	-	-	1	7	1	-
hyphal elements	2	13	2	-	1	7	1	-
Penicillium/Aspergillus group	20	133	17	-	41	273	21	-
Pithomyces	1	7	1	-	2	13	1	-
Smuts,Periconia,Myxomycetes	15	100	12	-	12	80	6	-
	Debris Rating **3**				Debris Rating **3**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **7** spr/m³			
Comments	Large amount of particulate and fibers seen.				Large amount of particulate and fibers seen.			
Total *See Footnotes	121	807	~100%	-	198	1320	~100%	-

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ATC Group Services - VT
P.O. Box 1486
Williston, Vermont 05495
Attn: Nate Amato
Project: **280IH00081**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/12/2018
Date Received: 09/13/2018
Date Analyzed: 09/13/2018
Date Reported: 09/13/2018
Project ID: 18033798

Client Sample Number	**Z-05**				**Z-06**			
Sample Location	**Exterior - West of Building**				**Blank**			
Sample Volume (L)	**150**				**0**			
Lab Sample Number	**18033798-005**				**18033798-006**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	2	13	<1	-	-	-	-	-
ascospores	31	6603	19	-	-	-	-	-
basidiospores	118	25133	74	-	-	-	-	-
Cercospora	5	33	<1	-	-	-	-	-
Cladosporium	10	2130	6	-	-	-	-	-
Curvularia	1	7	<1	-	-	-	-	-
Penicillium/Aspergillus group	15	100	<1	-	-	-	-	-
Smuts,Periconia,Myxomycetes	12	80	<1	-	-	-	-	-
	Debris Rating **2**				Debris Rating **0**			
Analytical Sensitivity	Analytical Sensitivity: **7** spr/m³				Analytical Sensitivity: **0** spr/m³			
Comments								
Total *See Footnotes	194	34099	~100%	-	0	0	-	-

Client Sample #: TL-01
Lab Sample #: 18033798-007
Sample Location: Storage Area 2 - Carpet
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: Same Day TAT

Results:	Observation
Occasional Pithomyces spores seen	1-5 per cover slip

Debris Rating: 2

Client Sample #: TL-02
Lab Sample #: 18033798-008
Sample Location: Stairway - Carpet
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: Same Day TAT

Results:	Observation
Occasional hyphal elements seen	1-5 per cover slip
Occasional Pithomyces spores seen	1-5 per cover slip

Debris Rating: 2

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P.O. Box 1486
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Attn: Nate Amato
Project: **280IH00081**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/12/2018
Date Received: 09/13/2018
Date Analyzed: 09/13/2018
Date Reported: 09/13/2018
Project ID: 18033798

Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

5. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

6. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

7. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

8. Due to rounding totals may not equal 100%.

9. Analytical Sensitivity for each spores is different for Non-viable sample when the spores are read at different percentage. Analytical Sensitivity is calculated as spr/m^3 divided by raw count. spr/m^3 = raw counts x (100/ % read) x (1000/Sample volume). If Analytical Sensitivity is 13 spr/m^3 at 100% read, Analytical Sensitivity at 50% read would be 27 spr/m^3, which is 2 times higher. Analytical Sensitivity provided on the report is based on an assumed 100% of the trace being analyzed.

10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. The results in this report are related to this project and these samples only.

13. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should considered (3) three. For example, a sample with a result of 55,443 spr/m^3 from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m^3.

14. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

Suzanne S. Blevins, B.S., SM (ASCP)
Laboratory Director

Aerobiology Laboratory Associates, Incorporated

CONSULTING LABORATORY

ACCREDITED LABORATORY AIHA Environmental Microbiology

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Company:	ATC Group Services LLC	Collected By: Nate Amato	Date: 9.12.18
Attn:	Nate Amato	Relinquished By:	Date: 9.12.18
Address:	171 Commerce St.	Received By:	Date: 9/13/18
Address:	Williston, VT	Sampler Type: Andersen___ SAS___ Cassette___ AeroTrap___ Other Buck	
Phone/Fax:	802.862.1980	PO#/Job#/Project Name: 2801H00081	
Email:	nathan.amato@atcgs.com		
Routine / 24 Hour / Same Day / 4 Hour / 2 Hour		Notes/CC Info:	

Sample No.	Test Code	Sample Location	Total Volume/Area
Z-01	1054	Exterior - Parking Lot	150 L
Z-02	↓	1st level office area (AOC)	↓
Z-03		1st level entry (AOC)	
Z-04		2nd Level meeting area (non-complaint)	
Z-05		Exterior - west of Building	
Z-06		Blank	N/A
TL-01	1051	Storage area 2 - carpet	1cm²
TL-02	↓	stairway - carpet	↓

1054	Direct, Non-viable Spore Trap	1015	Culture – WATER Legionella
1051	Direct, **Qualitative**– Swab/Tape	1016	Culture – SWAB Legionella
1050	Direct, **Qualitative**– Bulk	1010	WATER – Potable – E. coli/fecal coliforms
1049	Direct, *Quantitative* – Swab/Tape/Bulk	1012	SWAB – E. coli/fecal coliforms
1005	AIR Culture – Bacteria Count w/ ID's	1028	Sewage Screen (E. coli/Enterococcus/fecal coliforms)
1030	AIR Culture – Fungal Count w/ ID's	2056	Heterotrophic Plate Count
1006	SWAB Culture – Bacteria Count w/ ID's	1026	Non-biological Particle ID (Microbiology)
1031	SWAB Culture – Fungal Count w/ ID's	3001	ASBESTOS – Point count
1008	BULK Culture – Bacteria Count w/ ID's	3002	ASBESTOS – PLM Analysis
1033	BULK Culture – Fungal Count w/ ID's	3003	ASBESTOS – Particle characterization

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