Chapleau Museum

Mould Investigation and Assessment Report

Prepared by:
AECOM Canada Ltd.
523 Wellington Street East 705 942 2612 tel
Sault Ste. Marie, ON, Canada  P6A 2M4 705 942 3642  fax
www.aecom.com

Project Number: 60302548

Date: July 2013
Statement of Qualifications and Limitations

The attached Report (the “Report”) has been prepared by AECOM Canada Ltd. (“Consultant”) for the benefit of the Township of Chapleau (“Client”) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the “Agreement”).

The information, data, recommendations and conclusions contained in the Report (collectively, the “Information”):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the “Limitations”)
- represents Consultant’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports
- may be based on information provided to Consultant which has not been independently verified
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued
- must be read as a whole and sections thereof should not be read out of such context
- was prepared for the specific purposes described in the Report and the Agreement
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

- as agreed in writing by Consultant and Client
- as required by law
- for use by governmental reviewing agencies

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information (“improper use of the Report”), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.
April 30th, 2013

Mr. Allan Pellow
Township of Chapleau
20 Pine Street West
PO Box 129
Chapleau, Ontario P0M 1K0

Dear Mr. Pellow

Project No: 60302548
Regarding: Mould Investigation and Assessment Report
Chapleau Museum, Chapleau Ontario


Should you have questions, concerns or wish to discuss, please contact the undersigned at your convenience.

Sincerely,
AECOM Canada Ltd.

[Signature]

Colin C Liddiard, C.E.T, EP
Environmental Coordinator
Sault Ste. Marie, Ontario
colin.liddiard@aecom.com

Encl.
Distribution List

<table>
<thead>
<tr>
<th># of Hard Copies</th>
<th>PDF Required</th>
<th>Association / Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>The Township of Chapleau</td>
</tr>
</tbody>
</table>

Revision Log

<table>
<thead>
<tr>
<th>Revision #</th>
<th>Revised By</th>
<th>Date</th>
<th>Issue / Revision Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AECOM Signatures

Report Prepared By:  
Colin C Liddiard, C.E.T.  
Environmental Coordinator

Report Reviewed By:  
Sean M. Hart, Mould Assessor  
Sr. Project Manager
Executive Summary

On June 13th, 2013, AECOM Canada Ltd. (AECOM) was commissioned by Township of Chapleau. (herein referred to as the “Township”) to complete a mould investigation and assessment for the structure known as the Chapleau Museum, located at 94 Monk Street in the Town of Chapleau, Ontario.

Based on discussion with Township representatives, the building was closed to the public and Township employees in 2011, due to an order issued by the Ministry of Labour requiring that a mould investigation and assessment be completed to determine whether concerns exist for workers being exposed to an indoor mould growth problem.

Subsequently, the Township retained AECOM to conduct a mould investigation and assessment to review building conditions and whether an indoor mould growth problem exists.

During the course of AECOM’s June 20th, 2013, assessment, a total of four (4) non-viable assessment air samples were collected from areas of the structure, for which laboratory results revealed the presence of Aspergillus/Penicillium-type spores on the samples collected in the southwest corner of the main floor, and basement area. In addition, Pithomyces spores were identified on the samples collected from the northeast corner of the main floor and basement, suggesting the presence of mould amplification sites. Furthermore, Cladosporium and Acremonium mould growth was identified on a sample collected from the surface of wall materials located in the northeast corner of the basement.

Therefore, based on the mould investigation and assessments completed on June 20th, 2013, it is in the opinion of AECOM that further action is required with respect to remediation activities for mould growth and spore contamination identified within the building. However, prior to doing so, all sources of water intrusion problems must be addressed. We recommend that only contractors with specific training in mould remediation techniques and equipment should perform mould remediation activities since inadequately trained personnel can seriously exacerbate the problem. Furthermore, based on the potentials for exposures to mould growth and release of spores, remediation of mould contaminated building materials should generally follow “Level III Mould Abatement, large-scale mould growth abatement (>100 square feet of visible growth)” in accordance with the Canadian Construction Association standard CCA 82 “Mould guidelines for the Canadian Construction Industry – February 2004”. In addition, the Environmental Abatement Council of Ontario (EACO), “Mould Abatement Guidelines: Second Edition: 2010”, and the Institute for Inspection, Cleaning, Restoration Certification (IICRC), “S520 Standard and Reference Guide for Professional Mold Remediation, Second Edition: 2008”, should be referenced for the remediation of mould growth and spore impacts.
# Table of Contents

Statement of Qualifications and Limitations  
Letter of Transmittal  
Distribution List  
Executive Summary  

1. INTRODUCTION ............................................................................................................................................ 3  
   1.1 Terms of Reference .................................................................................................................................... 3  
   1.2 Background ............................................................................................................................................... 3  
   1.3 Scope of Work ............................................................................................................................................ 3  
   1.4 Safety, Health and the Environment ............................................................................................................ 3  
   1.5 Reporting Limitations ................................................................................................................................. 4  
   1.6 Methodology ............................................................................................................................................. 4  

2. INVESTIGATION AND ASSESSMENT ........................................................................................................... 5  
   2.1 Visual Inspection ......................................................................................................................................... 5  
   2.2 Bio-Tape® Samples .................................................................................................................................... 5  
   2.3 Non-Viable Air Sampling – Spore Trap Cassettes ....................................................................................... 6  

3. SUMMARY OF LABORATORY ANALYSIS ..................................................................................................... 6  
   3.1 Bio-Tape® Samples .................................................................................................................................... 6  
   3.2 Non-Viable Air Sampling – Spore Trap Cassettes ....................................................................................... 6  

4. CONCLUSION .................................................................................................................................................... 6  

5. QUALIFICATIONS OF CONSULTANT AND LEAD ASSESSOR ........................................................................ 7  

6. REFERENCES ..................................................................................................................................................... 8  

List of Tables  
Table 1 Spore Trap Analytical Results  

Appendices  
Appendix A. EMC Laboratory Analytical Reports
1. INTRODUCTION

1.1 Terms of Reference

On June 13th, 2013, AECOM Canada Ltd. (AECOM) was commissioned by Township of Chapleau, (herein referred to as the ‘Township’) to complete a mould investigation and assessment for the structure known as the Chapleau Museum, located at 94 Monk Street in the Town of Chapleau, Ontario (herein referred to as the ‘Site’).

1.2 Background

Based on discussion with Township representatives, the building was closed to the public and Township employees in 2011, due to an order issued by the Ministry of Labour requiring that a mould investigation and assessment be completed to determine whether concerns exist for workers being exposed to an indoor mould growth problem.

Subsequently, the Township retained AECOM to conduct a mould investigation and assessment to review building conditions and whether an indoor mould growth problem exists.

1.3 Scope of Work

The scope of work associated with the mould investigation and assessment was as follows:

- Conduct a non-intrusive visual inspection of accessible areas of the building, to review building conditions, identify visible mould contaminated and/or concerns for potential hidden mould growth;

- Collect non-viable air samples to review the airborne fungal spores to a genus level, and to quantify the relative indoor airborne spore concentrations;

- Collect bulk and/or lift-tape samples from building materials that appeared to support mould growth, to review the type (species) and confirm mould growth;

- Relinquish samples to a Microbiology Laboratory who participates with the American Industrial Hygiene Association’s (AIHA) Environmental Microbiology Proficiency Analytical Testing program, for ‘direct microscopy examination’ and ‘spore trap analyses’; and,

- Provide a mould investigation and assessment report on findings, opinions, conclusion and if necessary, recommendations for remediation.

1.4 Safety, Health and the Environment

Prior to commencing the field component of the investigation and assessment, AECOM reviewed all safety, health and environmental concerns relevant to the Site, as well as the tasks involved with completing the work that would identify any hazards to the workers, the public or the environment.

A potential health and safety concern was identified for potential exposure to elevated concentrations of mould spores; therefore, the assessor used a half face-piece respirator equipped with N95 cartridges during the course of the assessment and sample collection. Otherwise, no other health and safety concerns were identified that would pose unsafe or hazardous working conditions. Safe work practices were implemented throughout the entirety of the project, and no injuries or impairment to the environment was recorded.
1.5 Reporting Limitations

This mould investigation and assessment is limited to the review and assessment for mould growth and potential spore impacts associated with visibly accessible areas of the structure. The possibility remains that unexpected environmental conditions may be encountered at the Site in locations not specifically observed or investigated.

AECOM makes no other evaluations whatsoever, including those concerning the legal significance of designated substances, or exposures to mould growth. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with one’s own legal counsel.

All occupant health inquiries should be referred to a physician knowledgeable in the health effects of environmental mould exposures. Any use which a third party makes of this report, or any reliance on or decisions to be made based upon it, are the responsibility of such third parties.

1.6 Methodology

Visual inspections included observations of exposed and accessible building materials and contents located within the building basement and main floor. In addition, with the use of Delmhorst BD-2100 Moisture Metre, inspection of building materials was conducted to review the relative moisture content. Furthermore, a Extech RH300 Psychrometer was used to monitor the indoor ambient temperature and humidity levels.

Non-viable air samples were collected with the use of Zefon Bio-Pump and non-viable Air-O-Cell spore trap cassettes to determine mould spores per cubic meter of air (spores/m³). The pump was calibrated to a flow rate of 15-litres per minute (Lpm) and samples were collected over a period of ten (10) minutes (min). Assessment samples were collected from the areas of concern (AOC) for potential exposures to mould growth and/or spores. Reference samples were collected from outdoors.

For the purposes of assessing whether a mould growth problem exists, assessment samples are compared to reference samples, where airborne spore concentrations identified outdoor, or indoor areas without concern for significant mould growth, are similar, or less than, ‘reference sample’ concentrations. Generally, the ‘fungal ecology’ is considered normal when the presence and concentrations of mould species within assessment samples are similar to those present in reference samples. The ‘fungal ecology’ is considered problematic when a significant presence of mould species within assessment samples is not present in reference samples, or when the concentrations of mould spores within assessment samples are significantly elevated in comparison to reference samples. Moreover, the ‘fungal ecology’ is considered problematic when “the total mold spore concentration per cubic metre is above 10,000”, and “one should be concerned about concentrations of mold (specific species) detected in indoor ambient air that are greater than 100 to 200 CFU/m³ or greater than 1000 spores/m³”.

Furthermore, the National Allergy Bureau (NAB™) a section of the American Academy of Allergy, Asthma and Immunology’s (AAAAI™) considers ‘mold counts in outdoor air of 0-6499 spores per cubic meter of air as low, to 6500 to 12,999 spores per cubic meter of air as moderate, to 13,000 to 49,999 spores per cubic meter of air as high, and above 50,000 as very high’.

The following table is also referred to when concluding whether a mould problem exists in an indoor environment;

---


Table – Indoor Mould Classifications: Residential Buildings

<table>
<thead>
<tr>
<th></th>
<th>Clean Environment</th>
<th>Mouldy Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Spores</td>
<td>Less than 1,200</td>
<td>Greater than 1,300</td>
</tr>
<tr>
<td>Aspergillus/Penicillium</td>
<td>Less than 750</td>
<td>Greater than 900</td>
</tr>
<tr>
<td>Ascospores/Basidiospores</td>
<td>Less than 1,200</td>
<td>Greater than 1,300</td>
</tr>
</tbody>
</table>

Sample collection involved drawing air into a 37 mm cassette with adhesive coated glass cover slips. Spore quantification was made at 630x magnification with results presented as number of spores per cubic meter of air ($ct/m^3$). Non-viable air samples and Bio-Tape® samples were relinquished to EMC Scientific Incorporated Laboratory for analyses. EMC Scientific Incorporated Laboratory participates in the American Industrial Hygiene Association Environmental Microbiology Proficiency Testing Program.

2. INVESTIGATION AND ASSESSMENT

2.1 Visual Inspection

On June 20th, 2013, AECOM attended the Site and conducted a non-intrusive visual inspection to review the condition of building materials and contents located within visibly accessible areas of the building, to investigate for concerns associated with the presence of mould growth, and assess whether indoor environmental conditions were conducive for mould proliferation.

Inspections conducted for the exterior of the building revealed that the condition of building materials appeared in good condition; however, cracks were observed in the stone foundation located at the rear corner of the building, which may be a source for indoor water intrusion.

Inspections conducted for the interior components of the building’s main floor did not reveal visible mould growth or evidence of water intrusion that may contribute to the proliferation of mould. RH readings for the first floor area were recorded to average 57% and the indoor temperature was 12.1 degrees Celsius ($^\circ$C). The RH is high and the temperature low and not within the recommended ASHRAE standards for indoor occupied spaces. Moisture content for interior building materials located along exterior wall were recorded at ten (10) locations, which readings revealed moisture contents of 8.2 to 10.8% that is considered within normal ranges.

Inspections conducted for the interior components of the building’s basement area revealed visible mould growth on the surface of plywood sheathing materials located at the rear corner of the building, in the vicinity of observed cracks in the stone foundation wall. In addition, water stains observed on wall and flooring materials suggest evidence of water intrusion that may contribute to the proliferation of mould. RH readings for the basement area were recorded to average 81.7% and the indoor temperature was 9.9 degrees Celsius ($^\circ$C). The RH is very high and the temperature very low and not within the recommended ASHRAE standards for indoor occupied spaces. Moisture content for interior building materials located along exterior wall were recorded at twenty-five (25) locations, which readings revealed moisture contents of 14 to 24% that is considered slightly elevated.

2.2 Bio-Tape® Samples

During the June 20th, 2013, Site visit, AECOM collected one (1) Bio-Tape® sample from the surface of plywood wall sheathing materials located in the northeast corner of the basement, approximately 100mm above the floor.

$^3$numbers are in spores per cubic meter Source: Baxter et al. Journal of Occupational Environmental Hygiene, 2005
2.3 Non-Viable Air Sampling – Spore Trap Cassettes

AECOM collected a four (4) non-viable assessment air samples from areas impacted by the loss, and one (1) ‘reference’ non-viable air sample, from outdoors for comparative purposes. Air samples were collected as follows:

- Samples labelled CM-AQ1 was collected from the northeast corner of the main floor, centrally;
- Samples labelled CM-AQ2 was collected from the southwest corner of the main floor, centrally;
- Samples labelled CM-AQ3 was collected from the northeast corner of the basement, centrally;
- Samples labelled CM-AQ4 was collected from the southwest corner of the basement, centrally; and,
- Samples labelled CM-AQ5 was collected outdoors, adjacent to the main entrance.

3. SUMMARY OF LABORATORY ANALYSIS

3.1 Bio-Tape® Samples

The laboratory identified moderate Cladosporium and Acremonium mould growth the Bio-Tape® samples collected from the surface of plywood wall sheathing materials located in the northeast corner of the basement. Refer to Appendix A – EMC Scientific Laboratory Analytical Reports.

3.2 Non-Viable Air Sampling – Spore Trap Cassettes

Review of the laboratory report for samples revealed Alternaria spores were identified in two of the assessment samples, and Cladosporium spores in all of the assessment samples; however, when comparing the above noted spore concentrations to the reference samples, the concentrations of these fungal spores were not elevated.

The laboratory report also revealed Aspergillus/Penicillium-type spores on three (3) assessment samples, which when comparing the above noted spore concentrations to the reference sample, the concentrations of these fungal spores were elevated in the southwest corner of the main floor, and basement area.

The laboratory also identified concentrations of Pithomyces spores within the assessment samples collected from northeast corner of the main floor and basement, which were not identified in the reference sample.

Samples were relinquished to EMC Scientific Incorporated Laboratory for fungal spore identification and spore count per cubic meter of air, refer to Tables 1 Spore Trap Analytical Results and Appendix A – EMC Scientific Laboratory Analytical Reports.

4. CONCLUSION

During the course of AECOM’s June 20th, 2013, assessment, a total of four (4) non-viable assessment air samples were collected from areas of the structure, for which laboratory results revealed the presence of Aspergillus/Penicillium-type spores on the samples collected in the southwest corner of the main floor, and basement area. In addition, Pithomyces spores were identified on the samples collected from the northeast corner of the main floor and basement, suggesting the presence of mould amplification sites. Furthermore, Cladosporium and Acremonium mould growth was identified on a sample collected from the surface of wall materials located in the northeast corner of the basement.

Therefore, based on the mould investigation and assessments completed on June 20th, 2013, it is in the opinion of AECOM that further action is required with respect to remediation activities for mould growth and spore
contamination identified within the facility. However, prior to doing so, all sources of water intrusion problems must be addressed. We recommend that only contractors with specific training in mould remediation techniques and equipment should perform mould remediation activities since inadequately trained personnel can seriously exacerbate the problem. Furthermore, based on the potentials for exposures to mould growth and release of spores, remediation of mould contaminated building materials should generally follow “Level III Mould Abatement, large-scale mould growth abatement (>100 square feet of visible growth)” in accordance with the Canadian Construction Association standard CCA 82 “Mould guidelines for the Canadian Construction Industry – February 2004”. In addition, the Environmental Abatement Council of Ontario (EACO), “Mould Abatement Guidelines: Second Edition: 2010”, and the Institute for Inspection, Cleaning, Restoration Certification (IICRC), “S520 Standard and Reference Guide for Professional Mold Remediation, Second Edition: 2008”, should be referenced for the remediation of mould growth and spore impacts.

The results of this report should be communicated to all potential occupants, all parties of concern and personnel that may enter the facility. The full extent of mould growth and spore impacts, vertically and horizontally within the wall cavities, ceilings, floors, and other inaccessible areas is not known at this time. Further investigation of the water damage and/or mould contamination during this initial investigation could potentially contaminate and/or exacerbate the situation. Additional investigation and testing by AECOM is advised after the area(s) or structure has been isolated, known mould contamination areas remediated and the potential for cross-contamination is minimized.

5. QUALIFICATIONS OF CONSULTANT AND LEAD ASSESSOR

AECOM has extensive experience with hazardous materials and provides services for most of the areas covered within the Occupational Health and Safety Act (OHSA). Some of the specific disciplines of Environmental Consulting and Occupational Health for which AECOM has excelled include:

- Asbestos Consulting
- Building Surveys for Asbestos
- Asbestos Management Programs (AMP)
- Comprehensive Project Management
- Specifications & Scopes of Work
- Air Monitoring and Inspection Services
- Hazardous Materials Management
- Designated Substances (“Pre-Construction”) Surveys
- Lead Contamination
- PCBs
- Urea Formaldehyde Foam Insulation (UFFI)
- Hygiene Services
- Indoor Air Quality Assessments (IAQ)
- Mould Consulting
- Detailed Mould Investigations
- Specifications & Scopes of Work
- Health Hazard Assessment
- Air monitoring and I or Bulk Sampling

Colin’s client base includes the City of Sault Ste. Marie, the Algoma District School Board, Business Development Bank of Canada (Sault Ste. Marie Branch), Public Works and Governmental Services Canada, the Ontario Realty Corporation, Parks Canada, several provincial ministries, insurance adjusters, property managers, commercial institutions, health care facilities, industrial firms, banking institutions, and insurance companies.

This Mould Investigation and Assessment was conducted in accordance with generally accepted engineering practices, however, no warranty is provided or implied.

6. REFERENCES


National Air Duct Cleaners Association (NADCA): *ACR 2002 Assessment, Cleaning and Restoration of HVAC Systems*


American Conference of Governmental Industrial Hygienists: *Bioaerosols Assessment and Control*. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, 1999

Manitoba Department of Labour: *Guidelines for the Investigation, Assessment and Remediation of Mould in Workplaces*. Workplace Safety and Health Division Manitoba Department of Labour, March 2001


Tables

Table 1 – Spore Trap Analytical Results
# TABLE 1
## SPORE TRAP ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>1REFERENCE SAMPLING</th>
<th>2ASSESSMENT SAMPLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-OUTDOORS</td>
<td>CM-AQ1</td>
<td>CM-AQ2</td>
</tr>
<tr>
<td><strong>Sampling Location</strong></td>
<td><strong>Sampling Date</strong></td>
<td><strong>Laboratory ID#</strong></td>
</tr>
<tr>
<td>Outdoors - adjacent to main entrance</td>
<td>June 20, 2013</td>
<td>197477</td>
</tr>
<tr>
<td>Northeast corner of main floor</td>
<td>June 20, 2013</td>
<td>197473</td>
</tr>
<tr>
<td>Southwest corner of main floor</td>
<td>June 20, 2013</td>
<td>197474</td>
</tr>
<tr>
<td>Northeast corner of basement</td>
<td>June 20, 2013</td>
<td>197475</td>
</tr>
<tr>
<td>Southwest corner of basement</td>
<td>June 20, 2013</td>
<td>197476</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Reference Samples collected from outdoors, or indoors from area(s) not problematic for mould growth.
2. Assessment Sampling collected from areas of concern for identified mould growth.
3. Expressed in spores per cubic meter of air.
4. Aspergillus/Penicillium type spores may include those of Acremonium, Paecilomyces, Trichoderma and others.

27 Concentrations exceeded the highest reported reference sample concentration.

Table 1 Spore Trap.xlsx
Appendix A

EMC Laboratory Analytical Reports
To:      Colin Liddiard  
        AECOM Canada Limited  
        523 Wellington Street East  
        Sault Ste. Marie, Ontario  
        P6A 2M4

EMC LAB REPORT NUMBER:  41990
Job/Project Name:  Chapleau Museum Mould
Job/Project No:  60302548  No. of Samples:  5
Sample Type:  Air-O-Cell  Date Received:  Jun 24/13
Analysis Method(s):  Fungal Spore Counting
Date Analyzed:  Jun 27/13  Date Reported:  Jun 27/13

Analyst:  Dilshad Naeem, M.Sc., Microbiologist
Approved By:  Fajun Chen, Ph.D., Principal Mycologist

<table>
<thead>
<tr>
<th>Client's Sample ID</th>
<th>CM-AQ1</th>
<th>CM-AQ2</th>
<th>CM-AQ3</th>
<th>CM-AQ4</th>
<th>CM-OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC Lab Sample No.</td>
<td>197473</td>
<td>197474</td>
<td>197475</td>
<td>197476</td>
<td>197477</td>
</tr>
<tr>
<td>Sampling Date</td>
<td>Jun 20/13</td>
<td>Jun 20/13</td>
<td>Jun 20/13</td>
<td>Jun 20/13</td>
<td>Jun 20/13</td>
</tr>
<tr>
<td>Description/Location</td>
<td>N.E. corner of main floor</td>
<td>S.W. corner of main floor</td>
<td>N.E. corner of basement</td>
<td>S.W. corner of basement</td>
<td>Outdoor reference</td>
</tr>
<tr>
<td>Air Volume (m³)</td>
<td>0.150</td>
<td>0.150</td>
<td>0.150</td>
<td>0.150</td>
<td>0.150</td>
</tr>
</tbody>
</table>

**Fungal Spores**

<table>
<thead>
<tr>
<th></th>
<th>raw ct.</th>
<th>% spores/m³</th>
<th>raw ct.</th>
<th>% spores/m³</th>
<th>raw ct.</th>
<th>% spores/m³</th>
<th>raw ct.</th>
<th>% spores/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternaria</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Arthrinium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ascosporia</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aspergillus/Penicillium type</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Basidiosporia</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cercospora</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chaetomium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cladosporium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Colorless</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Curvularia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Drechsleria/Bipolaris group</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Epicoccum</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fusarium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nigrospora</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oidium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pithomyces</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rusts</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Smuts, Periconia, Myxomycetes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stachybotrys</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ulocladium</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unidentified spores</td>
<td>2</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>13</td>
<td>0</td>
</tr>
</tbody>
</table>

**Number of spores/sample**

|                  | 551 | 589 | 1912 | 1176 | 1437 |

**Fungal fragments (0-3 +)**

|                  | 0+  | 0+  | 0+  | 0+  | 0+  |

**Non-fungal material (0-3 +)**

|                  | 2+  | 2+  | 2+  | 2+  | 2+  |

**TOTAL SPORES/M³**

|                  | 3,673 | 3,927 | 12,747 | 7,840 | 9,580 |

Note:
1. *Aspergillus/Penicillium* type spores may include those of *Acremonium, Paecilomyces, Trichoderma* and others.
2. A scale of 0 + to 3 + (indicating increasing amount) is used to rate abundance of fungal fragments and non-fungal material, with 3+ indicating the most abundance.
3. The presence of a large amount of dust debris may obscure some spores to be counted. Spore counts from samples with 3 + non-fungal material and/or 3 + fungal material may be treated as under-counts.
4. Unidentified spores are those lacking distinguishable characteristics for correct identification. Colorless are colorless spores lacking distinguishable characteristics.
5. These results are only related to the sample(s) analyzed.
Laboratory Analysis Report

To: Colin Liddiard  
AECOM Canada Limited  
523 Wellington Street East  
Sault Ste. Marie, Ontario  
P6A 2M4

EMC LAB REPORT NUMBER: 41991  
Job/Project Name: Chapleau Museum Mould  
Job/Project No: 60302548  
No. of Samples: 1  
Sample Type: Tape Lift  
Date Received: Jun 24/13  
Analysis Method(s): Direct Microscopic Examination  
Date Analyzed: Jun 27/13  
Date Reported: Jun 27/13  
Analyst: Fajun Chen, Ph.D., Principal Mycologist

<table>
<thead>
<tr>
<th>Client's Sample ID</th>
<th>Lab Sample No.</th>
<th>Date Sampled</th>
<th>Description/Location</th>
<th>Mould Identified, in Rank Order</th>
<th>Mould Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-LT1</td>
<td>197478</td>
<td>Jun 20/13</td>
<td>N.E. corner of basement 4” from ground</td>
<td>Cladosporium Acremonium Aspergillus/Penicillium (a few spores)</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Note:
1. Mould growth is subjectively assessed with description terms sparse, moderate and abundant.
2. The presence of spores (lacking other fungal structures associated) is assessed as following: a few spores (< 10 spores average per microscopic field at 400X), some spores (10 - 100 spores average per microscopic field at 400X), many spores (> 100 spores average per microscopic field at 400X).
3. The presence of a few spores generally represents settled spores on the surface of the sample rather than indicating mould growth.
4. The results are only related to the samples analyzed.