

Chapleau Museum

Mould Investigation and Assessment Report

Prepared by:

AECOM Canada Ltd.

523 Wellington Street East

Sault Ste. Marie, ON, Canada P6A 2M4

www.aecom.com

705 942 2612 tel

705 942 3642 fax

Project Number:

60302548

Date:

July 2013

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- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations")
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- 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
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- as required by law
- for use by governmental reviewing agencies

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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.



AECOM
523 Wellington Street East
Sault Ste. Marie, ON, Canada P6A 2M4
www.aecom.com

705 942 2612 tel
705 942 3642 fax

April 30th, 2013

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

Dear Mr. Pellow

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

Please find AECOM's Report entitled "Mould Investigation and Assessment Report Completed for the Chapleau Museum", located in the Township of Chapleau Ontario.

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

Sincerely,
AECOM Canada Ltd.

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

Encl.

Distribution List

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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.

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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 ¹"the total mold spore concentration per cubic metre is above 10,000", and ²"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;

¹ Baxter, D.M. 1998. "Fungi Spore Concentrations Inside 'Clean' and 'Water-damaged' Commercial and Residential Buildings." Environmental Testing Associates, San Diego, CA. Centers for Disease Control and Prevention (CDC). 2000. Update: pulmonary hemorrhage/hemosiderosis among Cleveland, Ohio, 1993-1996. MMWR 49:180-184

² Ronald E. Gots, M.D., Ph.D. "Principal, International Center for Toxicology and Medicine (ICTM) "CORRECTING MOLD MISINFORMATION"
<http://www.wmmic.com/infodocs/mold.htm>

³Table – Indoor Mould Classifications: Residential Buildings

	Clean Environment	Mouldy Environment
Total Spores	Less than 1,200	Greater than 1,300
Aspergillus/Penicillium	Less than 750	Greater than 900
Ascospores/Basidiospores	Less than 1,200	Greater than 1,300

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/m³). 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 (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 (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 / or Bulk Sampling

Over the last eighteen (18) years, Colin Liddiard (Colin) has completed numerous Phase I, II and III Environmental Site Assessments, and over the last fifteen (15) years, Colin has completed over one hundred (100) mould investigations and assessments in general accordance with the Environmental Abatement Council of Ontario (EACO), *“Mould Abatement Guidelines: Second Edition: 2010”*, the Institute for Inspection, Cleaning, Restoration Certification (IICRC), *“S520 Standard and Reference Guide for Professional Mold Remediation, Second Edition: 2008”*, the Canadian Construction Association *“Mould Guidelines for the Canadian Construction Industry – February 2004”*, the National Air Duct Cleaners Association *“ACR 2002 – Assessment, Cleaning, and Restoration of HVAC systems”*, the Manitoba Department of Labour *“Guidelines for the Investigation, Assessment and Remediation of Mould in Workplaces – March 2001”*, Health Canada document *“Fungal Contamination in Public Building”* and New York City Department of Health *“Guidelines on Assessment and Remediation of Fungi in Indoor Environments – June 2000”*

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

Environmental Abatement Council of Ontario (EACO): ***Mould Abatement Guidelines: Second Edition: 2010***

Institute for Inspection, Cleaning, Restoration Certification (IICRC): ***S520 Standard and Reference Guide for Professional Mold Remediation: Second Edition: 2008***

Health Canada: ***Fungal Contamination in Public Buildings: Health Effects and Investigation Methods: Health Canada, 2004***

Canadian Construction Association (CCA 82): ***Mould Guidelines for the Canadian Construction Industry. February 2004***

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

Health Canada: ***Construction-related Nosocomial Infections in Patients in Health Care Facilities – Decreasing the Risk of Aspergillus, Legionella and Other Infections: Health Canada, 2001***

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***

New York City Department of Health: ***The New York City Guidelines, Guidelines on Assessment and Remediation of Fungi in Indoor Environments. New York, New York: New York City Department of Health, 2000***

Health Canada: ***Fungal Contamination in Public Buildings: A Guide to Recognition and Management: Federal-Provincial Committee on Environmental and Occupational Health: Ottawa, Ontario. Health Canada, 1995***

Health Canada: ***Indoor Air Quality in Office Buildings: A Technical Guide: Federal-Provincial Committee on Environmental and Occupational Health: Ottawa, Ontario. Health Canada, 1995***

Tables

Table 1 – Spore Trap Analytical Results

TABLE 1
SPORE TRAP ANALYTICAL RESULTS

Sample ID	1 REFERENCE SAMPLING		2 ASSESSMENT SAMPLING			
	CM-AQ-OUTDOORS	CM-AQ1	CM-AQ2	CM-AQ3	CM-AQ4	
Sampling Location	Outdoors - adjacent to main entrance	Northeast corner of main floor	Southwest corner of main floor	Northeast corner of basement	Southwest corner of basement	
Sampling Date	June 20, 2013	June 20, 2013	June 20, 2013	June 20, 2013	June 20, 2013	
Laboratory ID#	197477	197473	197474	197475	197476	
³ Total Spore Count	9580	3673	3927	12747	7840	
³FUNGAL SPORES OF CONCERN						
Alternaria	13		13	7		
Arthrinium						
⁴ Aspergillus/Penicillium type	20	13	53	12000	7333	
Ascospores/Basidiospores	3860	860	713	87	67	
Cercospora						
Chaetomium						
Cladosporium	253	120	127	133	53	
Curvularia						
Drechslera/Bipolaris group						
Epicoccum						
Fusarium						
Oidium	7					
Pithomyces		7		13		
Spegazzinia						
Smuts, Periconia, Myxomycetes	87		7			
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						

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.

Concentrations exceed the highest reported reference sample concentration

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*



Client's Sample ID	CM-AQ1			CM-AQ2			CM-AQ3			CM-AQ4			CM-OUTDOOR		
EMC Lab Sample No.	197473			197474			197475			197476			197477		
Sampling Date	Jun 20/13			Jun 20/13			Jun 20/13			Jun 20/13			Jun 20/13		
Description/Location	N.E. corner of main floor			S.W. corner of main floor			N.E. corner of basement			S.W. corner of basement			Outdoor reference		
Air Volume (m ³)	0.150			0.150			0.150			0.150			0.150		
Fungal Spores	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³	raw ct.	%	spores/m ³
<i>Alternaria</i>				2	0	13	1	0	7				2	0	13
<i>Arthrinium</i>															
Ascospores	76	14	507	59	10	393	7	0	47	3	0	20	500	35	3333
<i>Aspergillus/Penicillium</i> type	2	0	13	8	1	53	1800	94	12000	1100	94	7333	3	0	20
Basidiospores	53	10	353	48	8	320	6	0	40	7	1	47	79	5	527
<i>Cercospora</i>															
<i>Chaetomium</i>															
<i>Cladosporium</i>	18	3	120	19	3	127	20	1	133	8	1	53	38	3	253
Colorless	400	73	2667	450	76	3000	76	4	507	58	5	387	800	56	5333
<i>Curvularia</i>															
<i>Drechslera/Bipolaris</i> group															
<i>Epicoccum</i>															
<i>Fusarium</i>															
<i>Nigrospora</i>															
<i>Oidium</i>													1	0	7
<i>Pithomyces</i>	1	0	7				2	0	13						
Rusts	1	0	7										1	0	7
Smuts, <i>Periconia</i> , Myxomycetes				1	0	7							13	1	87
<i>Stachybotrys</i>															
<i>Ulocladium</i>															
Unidentified spores				2	0	13									
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:

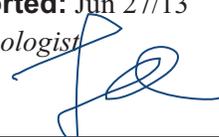
1. *Aspergillus/Penicillium* type spores may include those of *Acremonium*, *Paecilomyces*, *Trichoderma* and others.
2. A scale of 0+ to 3+ (indicating increasing amount) is used to rate abundance of fungal fragments and non-fungal material, with 3+ indicating the most abundance.
3. The presence of 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*



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

Note:

- Mould growth is subjectively assessed with description terms sparse, moderate and abundant.
- 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).
- The presence of a few spores generally represents settled spores on the surface of the sample rather than indicating mould growth.
- The results are only related to the samples analyzed.